TAXONOMIC AND PHYLOGENETIC STUDIES OF WEST INDIAN LYCIDAE (INSECTA, COLEOPTERA, ELATEROIDEA)

by

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of

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in

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DEDICATION

This dissertation is dedicated to my family members, in special my grandparents, Deusdecyr “Curi” Ferreira (1933–2011) and Vera Cruz Ferreira; my parents, Alex Ferreira and Maria da Graça Henrique de Souza Ferreira; my brother and my sister, Gabriel de Souza Ferreira and Barbara de Souza Ferreira; my wife Thamires Gonçalves Silva, and my son, Oliver Almeida Ferreira.

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VITA

Vinicius de Souza Ferreira was born May 23, 1990, in the city of São Paulo, Brazil. In the Spring of 2008, Vinicius started his undergraduate studies at Universidade Cruzeiro do Sul (UNICSUL), having obtained his Bachelor of Science degree in Biological Sciences in the Fall of 2011. Vinicius's started his entomological and taxonomic training with the late Prof. Ubirajara Ribeiro Martins (1932–2015) at the Museu de Zoologia, Universidade de São Paulo (MZUSP), Brazil, one of the most prominent entomologists in South America and world authority in systematics of Cerambycidae. During his long training under the mentorship of Prof. Martins (2009–2013), Vinicius learned the basics of taxonomy, systematics and zoological nomenclature, which greatly influenced his views on the role of systematics and taxonomy in the remaining of the other biological sciences. In 2012, Vinicius was accepted at Professor Cleide Costa's lab at the MZUSP, where he pursued his master's degree studying beetles of the family Lycidae. The period of training under Prof. Costa influenced Vinicius' professional interests on beetles of the superfamily Elateroidea, in special groups affected by paedomorphic processes. In 2015, Vinicius was accepted into the lab of Michael Ivie at Montana State University and received a full scholarship from the National Council for Scientific and Technological Development of Brazil (CNPq), the premier scholarship from that country, having started his PhD studies in the Spring of 2016. During Vinicius' training in the Ivie lab, his research scope was greatly expanded with the implementation of an integrative phylogenetic approach to unravel the biodiversity of beetles using morphology and DNA, biogeography components, fossils and a heavily comparative morphology approach. Vinicius's PhD project was focused on the evolution and systematics of beetles of the family Lycidae of the West Indies, mainly the genus *Thonalmus* and the tribe Leptolycini, for which the results are herein presented.

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ABSTRACT

The Thonalmini and Leptolycini are two tribes of Net-winged beetles (Insecta, Coleoptera, Lycidae) endemic to the West Indies. Both tribes are characterized by their confusing taxonomic history and poorly known biology and evolutionary patterns, and the study of both groups is the topic of this dissertation. One of the chapters of this dissertation provides a taxonomic revision of the genus *Thonalmus* Bourgeois, 1883, the sole member of the tribe Thonalmini. In this study, I provide an updated taxonomic revision of the group, illustration of diagnostic characters, an identification key, distribution maps, updates in the nomenclature of the group and description of seven new species. I also provide the first species level phylogenetic hypotheses for *Thonalmus* (morphology, molecular based and total evidence), biogeographical dispersal patterns hypotheses, a time-calibrated phylogeny and character state reconstruction for the species of the genus. The other chapter of this dissertation investigates the different life-stages of the Leptolycini of the Puerto Rican bank. The morphology of the Leptolycini males conforms with other groups suspected to be paedomorphic, whilst the females are unknown and suspected to be completely larviform. In this chapter, I provided for the first time DNA barcoding life stages associations based on partial sequences of cytochrome c oxidase subunit 1 (COI) of adult males and their immature forms from Puerto Rico, altogether with collections-based associations of adult males, immatures and one extreme paedomorphic female from the Virgin Islands. In order to carry out these life-stage associations, I prepared an in-depth review of the Leptolycini fauna of the Puerto Rican bank (Puerto Rico and Virgin Islands), which is also presented in this chapter. This study provided the morphological diagnoses of the semaphoronts that were found in the region and several taxonomic and nomenclatural changes are proposed, including the descriptions of one new genus and seven new species and an updated key for all species and genera of the region.

DISCLAIMER

This dissertation does not constitute a published work for the purposes of zoological nomenclature (ICZN 1999, Art. 8). Following the ICZN (1999, Art. 8.2), I declare that the names and other nomenclatural acts herein proposed are not issued for public and permanent scientific record or for purposes of zoological nomenclature.

CHAPTER ONE

INTRODUCTION

The Lycidae are one of the more conspicuous families in the superfamily Elateroidea. Most species can be separated from other superficially similar families by their pronotum divided into two or more cells, often possessing raised ridges, the elytra with longitudinal, and very frequently bearing transversal lines (reticulate elytra), their 5-5-5 tarsal formula and their conical, medially separated, mesocoxae (Bocak and Bocakova 2010; Molino-Olmedo *et al*. 2020). The larvae and extreme paedomorphic females (*i.e*., larviform females) can be distinguished from other similar larvae by their non-opposable mandibles that are strongly approximated at the base and their weakly developed pygopodium (Molino-Olmedo *et al*. 2020). With over 4,600 described species (Bocak and Bocakova 2008; Masek *et al*. 2018) the family has a nearly worldwide distribution, with most of its diversity in tropical regions, mainly in the Oriental, Oceanic, and Australian regions (Bocak and Bocakova, 2010; Ferreira and Ivie, 2017; Masek *et al*. 2018).

Due to the presence of several intriguing biological phenomena in this family, such as mimicry, aposematism and paedomorphosis, the past decade saw an explosion in number of evolutionary and phylogenetics publications with this family, especially from the aforementioned regions above, where the diversity of the group is more prominent (*e.g*., Sklenarova *et al*. 2014; Li *et al*. 2018). Despite the many advances and substantial progress in the understanding of the higher-level (subfamilies and sometimes tribes) relationships of Lycidae (*e.g*., Masek *et al*. 2018;

Kusy *et al*. 2019), the basic knowledge of the group, especially regarding biological information and identification of taxa, remains mostly stagnated. The lack of taxonomic knowledge of the family affects the credibility and longevity of such phylogenies, simply because not even the own authors of these studies know what organisms they are dealing with and sequencing. Take for example the existing molecular-based phylogenies of the family Lycidae, in which only a very small fraction of their terminals have been identified to species, although a significant portion of these terminals are only identified to genus, tribe or other less specific taxonomic category (see trees and supplemental materials of Bocak *et al*. 2008; Bocak and Bocakova 2008; Masek *et al*. 2018; Kusy *et al*. 2019). This problem is not only restricted to higher-level phylogenetic studies, and the same problems are encountered in tribal, subtribal or even generic level phylogenies (*e.g*., Sklenarova *et al*. 2014; Motyka *et al*. 2017; Kusy *et al*. 2020).

Even though the taxonomic impediment plays a big role in the progress and advance of the studies of Lycidae, new comprehensive taxa descriptions and taxonomic revisions, especially of New World groups, have been slowly but continuously being published in the last decade (*e.g*., Kazantsev, 2017; Ferreira and Ivie, 2017; Ferreira and Ivie, 2018a, 2018b; Ferreira and Silveira, 2020; Ferreira, 2020). These purely taxonomic studies, whilst not receiving much attention due to their intrinsic specific scope and usability, are the backbone of evolutionary and organismal biological sciences, and a continuous support to this kind of research enables further development in phylogenetics and phylogenomic research. These shortcomings in taxonomic and phylogenetic knowledge prevent the advance of evolutionary studies of Lycidae, in particular the groups that are endemic to the New World region. The majority of these publications are purely

descriptive works from the XIX and XX centuries, and identification of most taxa, especially the ones that are affected by paedomorphosis, is virtually impossible. Among these groups of poorly known Lycidae are two tribes that are endemic to the West Indies, the Thonalmini and the Leptolycini. Both tribes are the subject of my studies, and the results of my findings are presented in the second and third chapters of this dissertation.

The second chapter of this dissertation provides a taxonomic revision of the genus *Thonalmus* Bourgeois, 1883, the sole member of the tribe Thonalmini. When alive, specimens display a bright red dorsal coloration (which fades to a yellow-orange tone when specimens are dead) and a metallic elytral apex blue or green. Beetles of this genus are widely distributed in the Greater Antilles and the Bahamas, with two species found in Montserrat. The taxonomic knowledge of the group is completely chaotic, and nothing was known on the phylogenetic relationships, biogeographic distribution patterns or overall biology of the group until the study herein provided. In this chapter, I provided the first taxonomic revision of the group, a thorough illustration of diagnostic characters, a taxonomic identification key, distribution maps, updates in the nomenclature of the group and description of seven new species. I also provide the first species level phylogenetic hypotheses for *Thonalmus* (morphology, molecular based and total evidence), as well as biogeographical dispersal patterns hypotheses, a time-calibrated phylogeny and character state reconstruction for the species of *Thonalmus*.

The third chapter of this dissertation investigates the different life-stages of the Leptolycini of the Puerto Rican bank. The morphology of the Leptolycini males conforms with the one from other groups suspected to be paedomorphic, whilst the females are unknown and

suspected to be completely larviform. In this chapter, I provide for the first time DNA barcoding life stages associations based on partial sequences of cytochrome c oxidase subunit 1 (COI) of adult males and their immature forms from Puerto Rico, altogether with collections-based associations of adult males, immatures and one extreme paedomorphic female from the Virgin Islands. In order to carry out these life-stage associations, I prepared an in-depth review of the Leptolycini fauna of the Puerto Rican bank (Puerto Rico and Virgin Islands), which is also presented in this chapter. This study ended up providing the morphological diagnosis of the semaphoronts that were found in the region and several taxonomic and nomenclatural changes are proposed, including the descriptions of one new genus and seven new species and an updated key for all species and genera of the region.

These two chapters are important contributions to the knowledge of Lycidae, in particular to the New World fauna. Understanding the evolutionary relationships of organisms are important, but such task cannot be completed without the existence of foundational taxonomic studies backing up that kind of research. With the studies provided here, I hope to have inspired more scientists in our field to understand the values, importance and relevance of an integrative taxonomic and phylogenetic approach in the study of the organisms.

CHAPTER TWO

REVISION AND PHYLOGENY OF THE WEST INDIAN NET WINGED BEETLE *THONALMUS* BOURGEOIS, 1883 (COLEOPTERA, ELATEROIDEA, LYCIDAE): AN INTEGRATIVE APPROACH TO SOLVE 257 YEARS OF UNSETTLING TAXONOMIC CONFUSION

Contribution of Authors and Co-Authors

Manuscript in Chapter 2

Author: V.S. Ferreira

Contributions: Conceived the study, examined all specimens, did all dissections, obtained and analyzed all DNA sequences, performed all phylogenetic and biogeography analyses, lead all the discussions, interpreted results, made all illustrations, wrote the manuscript.

Co-Author: Michael A. Ivie

Contributions: Conceived the study, discussed results.

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Abstract

Thonalmus Bourgeois, 1883 is one of the most charismatic and widely recognizable net-winged beetle genera in the New World currently with 13 recognized species. Despite the general popular interest in *Thonalmus*, the absence of an updated identification key for the species, lack of accurate species delimitations, erroneous information regarding the distribution of some of the species and the inexistence of a taxonomic revision of the genus makes the identification of *Thonalmus* at species level an impossible task. To address to these problems and to expand our knowledge on the group, for the first time, a large-scale study of *Thonalmus* has been done. *Thonalmus* was revised, type specimens of all described species were examined, and detailed redescriptions and rediagnoses presented for the genus and the already described species, followed by a thorough illustration of diagnostic characters, the development of a taxonomic identification key, distribution maps, updates in the nomenclature of the group and description of seven new species were provided. *Thonalmus abejaensis* **new species**, *Thonalmus centralis* **new species**, *Thonalmus darlingtoni* **new species**, *Thonalmus guerreiroi* **new species**, *Thonalmus humeralis* **new species** and *Thonalmus thomasi* **new species** are described from Hispaniola and *Thonalmus quadrilacinius* **new species** from Puerto Rico and Hispaniola. *Thonalmus bahamae* Leng and Mutchler, 1922 is proposed as a **new junior synonym** of *Thonalmus aulicus* (Jacquelin Du Val, 1856) and *Thonalmus chevrolati* Bourgeois, 1901 is proposed as a **new junior synonym** of *Thonalmus bicolor* (Linnaeus, 1763). The confusion related to the actual distribution of *Thonalmus bicolor* was clarified: *T. bicolor* is only known to occur in Hispaniola, and the species with a triangular scutellum commonly found in Jamaica is

Thonalmus militaris (Dalman, 1817) and its status as a **valid species is reinstated**; with these reforms and descriptions, the total number of valid species of *Thonalmus* raised from 13 to 19. We also provided species level phylogenetic hypotheses (morphology, molecular based and total evidence), as well as biogeographical dispersal patterns hypotheses, a time-calibrated phylogeny and a character state reconstruction for the species of *Thonalmus*. *Thonalmus* species-level phylogenetic hypotheses were proposed based on 77 morphological characters and four molecular markers (18S rRNA, D2 region of 28S rRNA, cox1-3′ mtDNA and fragments of rrnL) datasets using a Bayesian Inference (BI), Maximum-Likelihood (ML) and a Maximum-Parsimony (MP) approach, in morphology-based, molecular-based and total-evidence analyses. In all of our analyses *Thonalmus* was recovered as a monophyletic group with high to moderate support levels, even though support levels for the clades within the genus varied according to the reconstruction method and sources of data used (morphology, molecular, total-evidence), with our molecular-only analyses based on the BI and ML approaches presenting the results with better support. Our ancestral area reconstruction provided relatively high-support for the hypothetical ancestral area of all *Thonalmus* being Hispaniola and/or Hispaniola and Cuba, and our time-calibrated phylogenies recovered mean node ages for *Thonalmus* ranging from 48.85–68.34 Ma. We provided discussions on the relevance of morphological data for phylogenetic reconstructions and inconsistencies across the different methods, the relevance of a representative taxon sampling in scientific collections and on the phylogenetic placement of *Thonalmus* among other Lycidae and biogeography dispersal patterns of the group.

Keywords: West Indies, Caribbean, Cantharoidea, Neotropical region, Molecular Phylogenetics

Introduction

Most Neotropical Lycidae are characterized by an aposematic coloration pattern, usually ranging from combinations of black and yellow (*e.g.*, most Calopterini Bocakova 2003; Kazantsev 2017), entirely black or yellow (*e.g.*, taxa described in Kazantsev 2017 and Ferreira and Silveira 2020), but rarely red or with metallic colors (*e.g.*, some *Macrolygistopterus* Pic, 1929, Ferreira 2016). *Thonalmus* Bourgeois, 1833 is literally a brilliant exception to this pattern - when alive, specimens display a bright and vivacious red dorsal coloration (which fades to a yellow-orange tone when specimens are dead) and a metallic blue or green elytral apex (Fig. 2.1). Lycids of this genus are easily recognized and spotted in the wild and in scientific collections and are truly one of the most charismatic net-winged beetles in the world. Social media groups and entomology related websites and forums, such as Facebook, iNaturalist and blogs, to mention a few, have dozens of images of these unique and beautiful Neotropical beetles, followed by many accounts related to their distribution and biology.

The genus *Thonalmus* was originally erected to accommodate nine species, including species originally described in a variety of genera, including *Calopteron* Guérin-Méneville, 1830 and *Lycus* Fabricius, 1787 (both Lycidae), as well as *Pyrochroa* Geoffroy, 1762 (Pyrochroidae) and *Cantharis* Linnaeus, 1758 (Cantharidae). *Thonalmus* is endemic to the West Indies, with most species in the Greater Antilles, a few in the Bahamas and two species in the Lesser Antilles (Montserrat) (Fig. 2.3). As with many other lycids, most adult *Thonalmus* are found on vegetation and in flowers, including in disturbed environments, but overall, little is known about their biology (see details under biology section below).

The colorful and obvious appearance characteristics of *Thonalmus*, the fact that several species found together in aggregations in great numbers, and their involvement in mimicry rings relationships (Fig. 2.2) (Darlington 1938), contributed to the attention the group has received. Over the years *Thonalmus* has been the subject of various small, local and non-comprehensive independent studies (*e.g.*, Leng and Mutchler, 1922; Darlington 1938; Zayas 1984; Wojciechowska and Slipinski 1985), with several species and synonyms being described over the nearly 260 years since the first species description. *Thonalmus* intraspecific color variation (especially regarding colors of legs, tarsi and extent of elytral patterns) and size combined with the sexual dimorphism and an understandable natural fascination of explorers for shiny objects, made the genus one of the more (if not the most) noted, collected and recognizable lycid genus in the neotropics. Despite a general interest in *Thonalmus*, the absence of a current identification key and the lack of accurate species delimitations resulted in erroneous information regarding the distribution of the species and the need for an up-to-date taxonomic revision, preventing the identification of the *Thonalmus* species, a problem we hope to address here.

In this study, we revised the genus *Thonalmus*, and provided a detailed nomenclatural review, redescriptions and rediagnoses for the genus and the species, illustration of diagnostic characters, identification key, distribution maps, and description of seven new species. We also provide for the first time species-level phylogenies (morphology, molecular-based and total evidence), as well as a discussion of biogeographic patterns and a time-calibrated phylogeny of the species of *Thonalmus*.

Material and Methods

Label Information and Collections

Label information of type material and newly described taxa are presented under each species examined material section. Other examined material list is presented in the Appendix A. The appendix material includes full label data information, sex, number of specimens, globally unique identifier, collection code and type status. Type specimens of all species and 2,848 *Thonalmus* specimens from 27 collections coming from 11 countries were analyzed in our study. Transcription of label data from specimens follows Ivie (1985): the end of each line on a label is indicated by a ";" (semicolon); the individual labels are separated by a "/" (slash). Material examined is deposited in the following collections (respective past and current curators are indicated in parentheses):

AMNH - American Museum of Natural History, New York, New York, USA (Lee Herman Jr.).

ANSP - Academy of Natural Sciences, Philadelphia, Pennsylvania, USA (Donald Azuma).

BMNH - The Natural History Museum, London, United Kingdom (Christine von Hayek, Maxwell V. L. Barclay and Michael Geiser).

CAS - California Academy of Sciences, San Francisco, California, USA (Norman Penny and David Kavanaugh).

CMNH - Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA (Robert Davidson and Ginter Ekis).

CNC - Canadian National Collection of Insects, Ottawa, Ontario, Canada (Ales Smetana and Jean McNamara)

DEBU - University of Guelph, Guelph, Ontario, Canada (Steve Marshall).

EMEC - Essig Museum of Entomology, University of California, Berkeley, California, USA (Johm Chemsak).

EPRL - University of Puerto Rico, Mayaguez, Puerto Rico (Rafael Ingles).

FMNH - Field Museum of Natural History, Chicago, Illinois, USA (Alfred Newton).

FSCA - Florida State Collection of Arthropods, Division of Plant Industry, Gainesville, Florida, USA (Michael C. Thomas).

IRSB - Royal Belgian Institute of Natural Sciences, Brussels, Belgium (Pol Limbourg).

IZAC - Academia de Ciencias de Cuba, Instituto de Zoologia, Habana, Cuba.

LSAM - Lousiana State Arthropod Museum, Louisiana State University, Baton Rouge, Louisiana, USA (Nathan Lord and Chris Carlton).

MCZ - Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (Philip Perkins, Crystal Maier, Alfred Newton).

MNHC - Museo Nacional de Historia Natural, Havana, Cuba (Ormaily Madruga).

MNHN - Muséum National d'Histoire Naturelle, Paris, France (Azadeh Taghavian and Thierry Deuve).

MNHNSD - Museo Nacional de Historia Natural "Prof. Eugenio de Jesús Marcano", Santo Domingo, Dominican Republic (Ruth Bastardo).

MZPW - Muzeum i Instytut Zoologii, Polskeij Akademii NaukWarszawa, Lomna, Poland (S. Adam Slipinski, David Schimrosczyk and Wioletta Tomaszewska).

NMPC - National Museum, Prague, Czechia (Lukáš Sekerka, Jiri Hajek).

OSUC - Ohio State University, C.A. Triplehorn Insect Collection, Columbus, Ohio, USA (Charles Triplehorn).

TAMU - Texas A & M University, College Station, Texas, USA (Edward Riley).

USNM - National Museum of Natural History, Washington D.C., USA (Floyd Shockley, Robert D. Gordon, Gary F. Hevel, Wayne N. Mathis) (currently at the Montana Entomology Collection, Montana State University, Michael A. Ivie).

WIBF - West Indian Beetle Fauna Project Collection, Montana State University, Bozeman, Montana, USA (Michael A. Ivie).

ZAYAS – Fernando de Zayas collection (current location and curator unknow)

ZMAN - Instituut voor Taxonomische Zoologie, Zoologisch Museum, Universiteit van Amsterdam, Amsterdam, Netherlands (Ben Brugge).

Morphology and dissections protocols

Morphological terminology follows Bocak and Bocakova (1990), Kazantsev (2003) and Lawrence *et al*. (2011). Male and female genitalia were dissected after whole specimens were relaxed in hot dH_2O. For disarticulation and clearing processes, specimens were left overnight in a solution of KOH or left in cold KOH (also for some genitalia dissections) for approximately one hour, until musculature was detached from the sclerotized structures. Dissected male genitalia were permanently preserved in microtubes with glycerin under each respective specimen; disarticulated specimens are permanently deposited in dishes of glycerin in the disarticulated beetle collection at WIBF.

Imaging and illustrations

Specimens were examined under a Leica® Wild M3C stereoscopic microscope with magnification up to 64×. Most photos were taken using a Canon T3i DSLR with MP-E 65 mm lens using a Stackshot ™ - automated macro rail for focus stacking attached to a Yongnuo YN-24EX TTL Macro Flash using a plastic bowl as a diffuser and a JVC (DC Ky-F75U) digital camera mounted on a Leica MS5 stereoscope. Photo series were stacked using Zerene Stacker® 1.04 and enhancements to digital images were made in Adobe Photoshop® CC 2020. Drawings were prepared based on photographs using Adobe Illustrator® CC 2020.

Maps and georeferencing

The distribution maps were generated using the software Quantum Gis 3.10.9-A Coruña, using raster files available at https://data.humdata.org/. The distribution points were based on label information of examined specimens and georeferenced using Google Earth. The resulting .csv files were imported in Google Earth for data quality checking and exported as .kml file to be imported in Quantum Gis. Final plates preparations were made in Adobe Photoshop® CC 2020 and Adobe Illustrator® CC 2020.

Phylogenies, laboratory work and bioinformatics

Taxon sampling For our phylogenetic analyses we used 31 terminals. Our molecular analyses sampled nine (out of 19) *Thonalmus* species, and three outgroups: two Leptolycini (following Masek *et al*. 2018 which provisionally proposed the group as sister to Thonalmini), and a Lycini as a functional outgroup. DNA sequences used in our study were searched and

downloaded from GenBank (https://www.ncbi.nlm.nih.gov/genbank/) (total downloaded 24 sequences) or generated here for the first time (96 sequences) (Appendix C, Table S4). We used four molecular markers in this study: 18S rRNA (~1900 bp; 30 terminals), the D2 region of 28S rRNA (~690 bp; 30 terminals) and the fragments of rrnL (~700 bp; 30 terminals) and fragments of cox1-3′ mtDNA (800 bp; 30 terminals), hereafter respectively simply referred to as 18S, 28S, rrnl and cox. Our morphology-based analyses comprised 22 terminals and included all *Thonalmus* species (Table 2.2) and four outgroups (Leptolycini: *Leptolycus flavicollis*, Leng and Mutchler, 1922, *Cessator luquillonis* Kazantsev, 2009, *Tainopteron* sp.; Lycini: *Lycus* sp.).

DNA extraction, amplification and sequencing Whole genomic extractions were performed using the Qiagen DNeasy® Blood and Tissue Kit (Qiagen, Germantown, Maryland, USA), following the company manual and recommendations. DNA was permanently deposited in the Montana Entomology DNA collection, at -80º C. After re-curation and attribution of a WIBF (West Indian Beetle Fauna project barcode number, following this structure WIBF 12345), specimens were remounted and returned to their respective collections. PCR amplifications were performed with 25 µl reaction volume, using 12.5 µl GoTaq® Green Master Mix (Promega, Madison, WI, USA), 6.5 of UltraPure™ DNase/RNase-Free Distilled Water, 2 µl of each primer (list of primers provided in Kundrata *et al*. 2014) and 2 µl of template. The polymerase chain reaction (PCR) and primers conditions followed Kundrata *et al*. 2014 with the annealing temperatures used in Ferreira *et al*. (2019) with the exception of 28S, that had an annealing temperature of 51°C. PCR amplicons were sequenced in both directions by MCLABs (San Francisco, CA, USA) and sequences were submitted to Genbank (Appendix C, Table S4).

Sequences handling and dataset preparation New sequences were assembled in Geneious 11.1.2 (Biomatters Ltd., Auckland, New Zealand). At this stage, all sequences were individually examined; contaminated, short or somehow irregular sequences were discarded. Alignments were performed using MAFFT 7 under the G-INS-i algorithm for highly conserved sequences (cox, rrnl and 18S) and the L-INS-i for 28S (Katoh *et al*., 2002) implemented in the MAFFT server (https://mafft.cbrc.jp/alignment/server/), with the option adjust direction according to the first sequence (only for highly divergent data; extremely slow) selected when necessary. A GBlocks search (Talavera and Castresana, 2007) was performed on 28S in the server version of Gblocks 0.91b with the default settings, with the options 'smaller final blocks', 'gap positions' and 'nonconserved flanking positions' unchecked. GBlocks searches and deletes large segments of contiguous nonconserved positions, gap positions and nonconserved positions, reducing the need to manually edit alignments. The G1 statistic test (Hillis and Huelsenbeck, 1992) was calculated in PAUP 4.0a (Swofford 2002) to measure and evaluate the phylogenetic signal of the sequences.

Preliminary gene trees were inferred in a maximum-likelihood (ML) framework using FastTree 2.1.5 (Price *et al*., 2010) in Geneious 11.1.2 with a GTR model as a control mechanism before the concatenation of datasets (preliminary trees not presented in this study). Molecular datasets were concatenated with SequenceMatrix 1.8 (Vaidya *et al*., 2011) and exported in the Nexus format. Alignments were partitioned by gene and the protein-coding gene by codon position. The morphology dataset was constructed with Mesquite 3.2.1 (Maddison and Maddison, 2019) and exported in the Nexus format. The morphology coding protocol followed

the scheme proposed by Sereno (2007), on which neomorphic and transformational characters were coded separately. Morphology and molecular datasets were combined manually and saved in the Nexus format.

Phylogenetic analyses and model selection Multiple phylogenetic analyses were performed using Bayesian Inference (BI), Maximum Likelihood (ML) and Maximum Parsimony (MP). The BI approach was carried out by MrBayes 3.2.6 (Ronquist *et al*., 2012), while the ML approach was performed within W-IQTREE (DNA only analysis) or the command-line version IQTREE 2.0.6 (Total evidence analysis) (Trifinopoulos *et al*., 2016) and the MP approach carried out by PAUP 4.0 (Swofford 2002). Some of the BI and MP analyses were carried out on the CIPRES portal V. 3.3 (https://www.phylo.org/portal2/).

For BI analyses, estimation of substitution models was carried out using PartitionFinder2 v2.1 (Lanfear *et al*., 2016) using the Bayesian Information Criterion (BIC); 'MrBayes' models were considered, branch lengths were set to 'linked' and the search was set to the 'greedy' algorithm (Lanfear *et al*. 2012). For the ML analyses, estimation of substitution models was carried out using ModelFinder within W-IQ-TREE (Kalyaanamoorthy *et al*., 2017).

BI analyses (MCMC) were set to run for 30 million generations in two independent runs and 4 chains (3 heated and 1 cold chain) and sampled every 100 iterations; the burn-in was set to 25%. Stationarity was checked with the examination of the following: ESS (estimated sample size) of at least 100 (preferably above 200), the PSRF (Potential Scale Reduction Factor), close to 1.0, and average standard deviation of split frequencies (≤ 0.01). We used the command stopval= 0.01, and when the Markov Chain Monte Carlo (MCMC) reached stability, the analysis

was interrupted. Nodes with a posterior probability (PP) ≥ 0.95 were considered strongly supported.

The ML analyses were carried with 10,000 UFBoot iterations (Minh *et al*., 2013; Hoang *et al*., 2018). Support values of SH-aLRT ≥ 80% and UFboot ≥ 95% were considered strongly supported. The MP analyses was carried out in PAUP 4.0a, the tree search algorithm was the heuristic search by stepwise addition with tree bisection and reconnection (TBR) with 5,000 replicates. The support of the clades was measured by the resampling method of non-parametric bootstrap using 1,000 pseudoreplicates (following Barbosa 2016). Bootstrap support levels ≥ 80% were considered strongly supported. Blocks of commands for all analysis are presented in Appendix C.

Character mapping Characters and character states were mapped on a modified version of the total-evidence (TE) tree performed under a BI approach; in this version of the tree only one terminal per species was used. We used WinClada 1.00.08 (Nixon 2002) using the unambiguous optimization reconstruction method. Before character optimization in WinClada, we went to the tab ‘View’ and checked the option ‘Number all items from 1 (illogical style)’.The morphological dataset, originally prepared in the Nexus format was exported in Mesquite to the format .ss and the TE tree, in the .tre format had to be manually formatted: the tree had to be saved in a rooted format in iTol (Letunic and Bork 2019); subsequently, the terminal names had to be replaced by sequential numbers starting with the number '0' and presented in parenthetical format, with the codes 'tread' at the top and 'proc/;' at the beginning and end of the file, respectively. The final mapped tree was visualized in WinClada, saved as a .pdf and edited in Adobe Illustrator CC.

Divergence time estimations We provided dating time estimations for the *Thonalmus*' clades using two reconstruction methods, one with the software BEAST and one with MrBayes. For both analyses we used one individual of each species for which we had DNA data available, to reduce noise and to facilitate the visualization of the results. The following taxa were included in the analyses: nine *Thonalmus* species (*T. hubbardi*, *T. sinuaticosts*, *T. militaris*, *T. amabilis*, *T. suavis*, *T. bicolor*, *T. darlingtoni*, *T. dominicensis* and *T. quadrilacinius*), as well as three outgroups (*Lycus* sp., *Leptolycus flavicollis* and *Tainopteron* sp.). In both cases, the sequences were then exported to Nexus format using SequenceMatrix 1.8 (Vaidya *et al*., 2011) and protein-coding regions were set up by coding regions before being exported to the respective software. For the BEAST analyses, we used the same dataset used for the DNA-only analysis (three nuclear and one protein-coding mitochondrial gene) (Fig. 2.3), while in our MrBayes analysis, we only used *cox* sequences. Details for each of the analyses are as follows:

BEAST methods. Divergence time was estimated using a Bayesian approach implemented in BEAST and BEAUTi 1.8.4 (Drummond *et al*., 2006; Suchard & Rambaut, 2009) using the tutorial for the version 1.7.5 (BEAST tutorial 2013). Based on recent studies indicating that the model selection might not be relevant if the dataset presents quality data (*e.g*., Abadi *et al*. 2019) we used the HKY+I model for all partitions, as suggested in the tutorials. A relaxed molecular clock and an uncorrelated lognormal model were selected as they allow rate variation among branches (BEAST tutorial 2013). We used the Birth-death process, as it assumes that at any point in time every lineage undergoes speciation or goes extinct (BEAST tutorial 2013). In the 'Priors' tab, the 'ucldMean' hyperparameter was changed to Exponential, with a mean equal to

10 (BEAST tutorial 2013); still in the 'Priors' tab, the 'treeModel.rootHeight' was changed to 'Normal', with the value 'Mean' set to 130 Ma (hypothetical Lycidae origin, an average origin from Toussaint *et al*. (2016), Zhang *et al*. (2018) and McKenna *et al*. (2019)) and the 'Stdev' of 10 Ma and the box 'Truncate to' checked. New priors were added and a monophyletic constraint in the outgroup (*Leptolycus* and *Tainopteron*) was set, with a calibration node of 30 Ma (based on the description of *Cessator brodzinnskii* Ferreira and Ivie 2017), and the prior density was changed to a normal distribution, with a mean of 30 and Sigma of 5 and a prior was set to all specimens. Upon the generation of the xml file by BEAUTi, the following was removed from the MCMC portion of the text: *"<uniformPrior lower="0.0" upper="Infinity"><parameter idref="treeModel.rootHeight"> </uniformPrior>*"; this removal was necessary because the height of the root node is always bounded by the ages of its descendant nodes, and the age is already truncated (BEAST tutorial 2013). A prior for the Montserrat *Thonalmus* species was also set, with the same settings from above, but using the estimated age of the Montserrat (Mean 2.6, Sigma 3) as a calibration point (Harford *et al*. 2002), and assuming that *Thonalmus sinuaticostis* and *Thonalmus hubbardi* evolved within the island. Trees were summarized in TreeAnnotator, and the burn-in was set to 25%; for the Target tree type, we choose Maximum clade credibility tree, and for the Posterior Probability limit, Median heights. Trees were visualized in FigTree.

MrBayes methods. A ‘total-evidence dating’ approach, also known as fossil-tip calibration, was implemented in our study because it allows the integration of extinct and extant taxa in inferring phylogenies and estimation of divergence times (Ronquist *et al*. 2012). We used the Fossilized Birth Death Model (FBD), a calibration method that unifies extinct and extant

species with a single macroevolutionary model (Heath *et al*. 2014) and followed the tutorial of Zhang (2017).

The substitution models are the same used in the total-evidence BI analysis (see Table S1, Appendix C). We used one fossil (*Cessator brodzinskyi* Ferreira and Ivie, 2017) and one dating record for the Montserrat geological origin (see details below). The age priors for *C*. *brodzinski* from Dominican Amber was assigned between 30–45 Ma (Ferreira and Ivie 2017), and for the Montserrat species at 2.3–2.6 Ma (Harford *et al*. 2002), while we assigned the origin of Lycidae at the root between 130–160 Ma (see comments in Beast dating methods). We assigned uniform distributions (<min_age>, <max_age>) for Montserrat and *C*. *Brodzinski*, while the root had an offset exponential-distribution (<min_age>, <mean_age>). Based on our previously produced phylogenies, monophyletic constraints were set for all *Thonalmus*, *T*. *hubbardi* + *T*. *sinuaticostis* and all Leptolycini. Our analysis was set to run for 30 million generations, however, we used the command stopval= 0.01, and when the MCMC reached stability, the analysis was interrupted. We used the rates of molecular evolution proposed by Brower (1994), at 0.0115 substitutions/site/my/lineage.

Ancestral area reconstruction The ancestral areas were inferred using the Maximum Likelihood framework in BioGeoBEARS (Matzke 2014) implemented in RASP 4.2 (Yu *et al*. 2020), using the results of an analysis containing a dataset with only *cox* sequences and morphology and only one representative of each species (for command blocks see Appendix C); based on previous results (Figs. 3–6) monophyly constraints were set for the Montserratian (*T*. *hubbardi*, *T, sinuaticostis*) and Hispaniolan/Puerto Rican (*T*. *bicolor*, *T*. *darlingtoni*, *T*.

dominicensis, *T. quadrilacinius*, *T. abejaensis*, *T. humeralis*, *T. guerreiroi*, *T. centralis*, *T. thomasi*) clades, all *Thonalmus* and *Thonalmus* + Leptolycini; *Lycus* was set as the functional outgroup for this analysis. We compared the alternative models of colonization available in the BioGeoBEARS (Matzke 2014), and based our choice using the criteria of the model presenting the highest 'AICc_wt' value. We follow the definition of Matzke (2014) for the vicariance and dispersal events, on which: vicariance is defined when a widespread ancestral range area is divided up between the daughter species and dispersal is when an ancestral area is expanded by the addition of an area. The localities were assigned to each taxon following the coding system: (A) Montserrat, (B) Puerto Rico, (C) Mainland, (D) Cuba (including the Bahama banks), (E) Hispaniola and (F) Jamaica.

Results

Alignment of DNA Sequences, Phylogenetic Signal Test and Substitution Model Selections

Our final concatenated molecular dataset resulted in a 4,469 base pairs (bp) long file. The concatenated dataset contained 31 terminals (28 ingroups and 3 outgroups) and terminals were represented by at least three out of four molecular markers used in our study (with one exception, WIBF 041648, which only had two molecular markers available), representing 9 out of the 19 known *Thonalmus* species. All individual alignments passed the G1 test (Hillis and Huelsenbeck, 1992) ($p<0.05$), indicating a high level of genetic structure and a strong phylogenetic signal. Upon the use of GBlocks in our 28S alignments we found that the improvement on phylogenetic signal was only marginal and came to a cost of significantly reducing the number of bp for our

sequences, and we decided to use the original 28S sequences without the GBlocks treatment. The model selection and best partitioning scheme for the BI analyses was found by PartitionFinder2 (Appendix C, Table S1) and for the ML analyses by ModelFinder (Appendix C, Table S2). For the morphology-based phylogenies and Total-Evidence phylogenies, the substitution models used for the morphology partitions was the Mk+G model (Pagel 1994; Lewis 2001).

Scoring of Morphological Characters

We scored 77 characters (Table 2.1) for all 19 *Thonalmus* species and three outgroups, of which 76 are newly generated (scored data available at Appendix C, Table S5). All characters are independent, except for character 52 (conditional to 51) and 72, 73 and 74 (conditional to character 66), 71–74 and 76 (conditional to 75).

Table 2.1. List of *Thonalmus* morphological characters and states.

1. Antennae: Antennomeres III-X, shape (males). **0.** Serrate or subserrate. **1.** Pectinate. **2.** Filiform.
2. Antennae: color of terminal antennomere. **0.** Yellow or white **1.** Same as the other antennomeres.
3. Antennae: antennomeres III-XI in cross section. **0.** Compressed **1.** Rounded.
4. Antennae: Antennifers. **0.** Bulgy, gibbous. **1.** Flat, only slightly pronounced.
5. Antennae: Sensorial setae on antennae. **0.** Bristle-like. **1**. Short setae throughout. **2**. Short setae irregularly in the inner margins of antennomeres. **3**. Pubescent only.

6. Antennae: Proportion antennomere II:III. **0.** Subequal. **1.** II shorter than III, III up to 5× the length of II. **2**. II shorter than III, III up to 10× the length of II.

7. Antennae: Proportion antennomere III:IV. **0.** III 1/5 the length of IV. 1. III more than half the length of IV. **2.** III less than half the length of IV, but at least 2/3 the length.

8. Head: cuticle. **0.** Alveolate. **1.** Not alveolate.

9. Head: vertex. **0.** With a small depression, slightly concave. **1.** Convex, smooth.

10. Head: dorsal view shape. **0.** Elongate. **1.** Wider than long.

11. Head: eyes, dorsal view. **0.** Partially covered by pronotum **1.** Not covered by pronotum **2.** Completely covered by pronotum.

12. Head: Labrum. **0**. Present. **1**. Absent.

13. Head: Labrum, shape. **0**. Transverse. **1**. Longer than wide. **2**. As long as wide.

14. Head: prolonged in rostrum. **0**. Not prolonged. **1**. Prolonged.

15. Mouthparts: Labium. **0**. Present. **1**. Absent.

16. Mouthparts: Labium, shape of apical palpomere. **0**. Knife-shaped. **1**. Flattened and dilated **2**. Securiform.

17. Mouthparts: Mandibles. **0**. Developed, hook shaped. **1**. Rudimentary, strongly reduced.

18. Mouthparts: Maxillae, shape of apical palpomere. **0**. Flattened, not dilated. **1**. Flattened and dilated. **2**. Securiform. **3**. Pointed apically.

19. Pronotum: shape. **0**. Subpentagonal. **1**. Trapezoidal.

20. Pronotum: anterior and posterior margins. **0**. Emarginate. **1**. Imarginate.

21. Pronotum: lateral margins. **0**. Marginate. **1**. Imarginate.

22. Pronotum: median longitudinal carina, anterior margin. **0**. Absent. **1**. Present.

23. Pronotum: region surrounding disc, punctation. **0**. Moderately punctate. **1**. Smooth.

24. Hypomera: Hypomeral stemmata. **0**. Absent **1**. Present.

25. Prosternum: posterior margin shape. **0**. Blunt. **1**. Posteriorly divergent. **2**. Acute.

26. Prosternum: median process in males. **0**. Developed. **1**. Not developed.

27. Spiracles: Mesothoracic spiracles, projection grade. **0**. Moderately projecting. **1**. Greatly projecting. **2**. Not projecting.

28. Mesonotum: Scutellar shield. posterior margin **0**. Complete. **1**. Notched.

29. Mesonotum: Scutellar shield, exposed portion shape. **0**. Triangular. **1**. Retangular.

30. Mesonotum: Scutellar shield, posterior process: **0**. vestigial, with considerable elytro-scutellar dehiscence. **1**. developed and functional, locking folded elytra (Kazantsev, 2013).

31. Mesoventrite: median process. **0**. Absent. **1**. Present.

32. Mesanepisternum: length in comparison to mesepimeron, measured from the middle. **0**. Subequal in length to mesepimeron. **1**. Longer than mesepimeron. **2**. Shorter than mesepimeron.

33. Mesanepisternum: width in comparison to mesepimeron. **0**. Subequal in width to mesepimeron. **1**. Wider than mesepimeron. **2**. Narrower than mesepimeron.

34. Legs: male mesolegs, inner margin. **0**. Arcuate, giving a club-shape to the structure. **1**. Flat.

35. Legs: metacoxae, posterior face, *i.e*., a distinct excavation when meta-trochanter and femur are in rest position fitting in this pouch. **0**. Strongly developed. **1**. Weakly developed.

36. Legs: Trochanters, shape. **0**. Tubular. **1**. Triangular

37. Legs: male mesotibiae, dorsoventrally. **0**. Moderately to strongly arcuate, giving a club-shape to the structure. **1**. Flat or only weakly arcuate.

38. Tarsi: Tarsomere III and IV. **0**. Simple, narrowed. **1**. bilobed, expanded, not narrowed.

39. Membranous wings: venation. **0**. Simple. **1**. Reduced.

40. Elytra: color, presence of iridescent color in fascia. **0**. Absent. **1**. Present.

41. Elytra: shape. **0**. Expanded apically. **1**. Parallel sided.

42. Elytron: cells at apical portion. **0**. Coarsely faceted, irregular. **1**. Finally faceted, somewhat evenly distributed.

43. Elytron: Elytra coadaptation. **0**. Coadapted. **1**. Not coadapted.

44. Elytron: Elytra covering abdomen. **0**. Completely covering abdomen. **1**. Not completely covering abdomen.

45. Elytron: Elytral costa I. **0**. Present. **1**. Absent.

46. Elytron: Elytral costa I, shape. **0**. Straight. **1**. Inwards, meeting the inner lateral margin of elytra.

47. Elytron: Elytral costa I, extension. **0**. Reaching apex. **1**. Subapical, not reaching apex. **2**. Present only at basal portion.

48. Elytron: Elytral costa I in females, shape. **0**. Like males, simple. **1**. Thick, protruding.

49. Elytron: Elytral costa II. **0**. Present. **1**. Absent.

50. Elytron: Elytral costa III in Lycidae (II in *Thonalmus*). **0**. Present. **1**. Absent.

51. Elytron: Elytral costa III in Lycidae (II in *Thonalmus*), extension. **0**. Reaching apex. **1**. Subapical, not reaching apex. **2**. Fused with costa IV. **3**. Present only at basal portion.

52. Elytron: Elytral costa III and IV (II and III in *Thonalmus*) fusion. **0**. Anterior margin round. **1**. Anterior margin acuminate.

53. Elytron: Elytral costa IV (III in *Thonalmus*). **0**. Present. **1**. Absent.

54. Elytron: Elytral costa IV (III in *Thonalmus*), extension. **0**. Reaching apex. **1**. Subapical, not reaching apex. **2**. Fused with costa III. **3**. Present only at basal portion.

55. Elytron: Elytral costa IV (III in *Thonalmus*), shape. **0**. Straight. **1.** Sinuate.

56. Elytron: Elytral reticulation, transverse veins. **0**. Strongly developed forming cells. **1**. Weakly developed.

57. Elytron: overall shape. **0**. Tapering towards apex. **1**. Expanded posteriorly.

58. Elytra: elevations in the posterior portion (mammiform tubercles). **0**. Absent. **1**. Present.

59. Elytron: pubescence, fascia portion. **0**. Strongly concentrated along costae. **1**. Equally distributed throughout the entire elytron.

60. Elytron: epipleuron. **0**. Not or gradually narrowed and complete to apex. **1**. gradually narrowed and incomplete. **2**. Abruptly widened medially and complete to apex. (Modified from Lawrence *et al*. 2011).

61. Females: affected by paedomorphosis, larviform. **0**. Present. **1**. Absent.

62. Abdomen: females, ventral central modifications, shape, ventrite II. **0**. Simple. **1**. Thickened throughout.

63. Abdomen: females, ventral central modifications, shape, ventrite III. **0**. Simple. **1**. Posteriorly slightly thick, laterally bearing a thin prolongation. **2**. Thickened throughout. **3**. Bearing a thin prolongation that is enlarged apically and is kidney shaped. **4**. Bearing a thin prolongation that is enlarged apically and securiform.

64. Abdomen: females, ventral central modifications, shape, ventrite IV. **0**. Simple. **1**. Posteriorly slightly thick, laterally bearing a thin prolongation. **2**. Thickened throughout.

65. Abdomen: females, ventral lateral modifications. **0**. Present in ventrites II-IV. **1**. Absent.

66. Male genitalia: parameres. **0**. Simple, as a pair located beside the median lobe. **1**. Modified, encapsulating the median lobe, forming a tube.

67. Male genitalia: median lobe, flagellum. **0**. Bearing a long flagellum, multiple times the length of the genitalia itself. **1**. Not bearing a flagellum.

68. Male genitalia: symmetry. **0**. Symmetrical. **1**. Asymmetrical.

69. Male genitalia: median lobe, shape. **0**. Wide and robust throughout. **1**. Slender throughout. **2**. Slender, narrowed at apex. **3**. Slender, expanded apically. **4**. Slender, expanded apically sword like.

70. Male genitalia: median lobe opening. **0**. Dorsal. **1**. Ventral. **2**. Apical.

71. Male genitalia: parameres, setae in the apex. **0**. Absent. **1**. Present.

72. Male genitalia: modified parameres, general shape. **0**. Greatly enlarged at the base, tapering towards apex. **1**. Moderately wide at the base, tapering towards apex. **2**. Slender throughout. **3.** Fusiform.

73. Male genitalia: modified parameres, extension of dorsal cut. **0**. Shallow. **1**. Moderately Extended. **2**. Very extended.

74. Male genitalia: modified parameres, apex shape, dorsal anterior margin. **0**. Round. **1**.Pointed. **2**. V shaped. **3**. Acute.

75. Male genitalia: parameres. **0**. Present. **1**. Absent

76. Male genitalia: parameres length. **0**. As long as the phallus. **1**. Shortened (less than half of phallus length). **2**. Longer than phallus (extending the tip of phallus).

77. Male genitalia: phallobase base (anterior margin) shape. **0**. Round. **1**. Subquadrate. **2**. Notched medially (bisinuated).

Molecular Phylogenies

In our molecular phylogenies, *Thonalmus* was recovered as a monophyletic group with maximum support in all three different reconstruction approaches used (BI, ML and MP) (Appendix D, Fig. 1 for BI, Fig. 2 for ML and Fig. 3 for MP). The results of the BI and ML approaches resulted in identical topologies (Fig. 2.3) (Appendix D, Figs. 1 and 2), and in all three approaches, the *Thonalmus* species-groups that have the same biogeographical distribution formed monophyletic groups with moderate to high support levels (Fig. 2.3).

Thonalmus hubbardi and *Thonalmus sinuaticostis* (Montserrat) formed a monophyletic group sister with *Thonalmus militaris* (Jamaica) in the BI and ML analyses; the Cuban/Bahamian species, *Thonalmus suavis* and *Thonalmus amabilis*, formed a monophyletic group that is sister to the species distributed in Montserrat + Jamaica in our BI and ML analyses; in our MP analysis, the relationships between the Montserrat, Cuba and Bahamas and Jamaica were

rendered unresolved in a polytomy (Appendix D, Fig. 3). The last clade of all three analyses contained the species distributed in Hispaniola, *Thonalmus bicolor*, *Thonalmus dominicensis*, *Thonalmus darlingtoni* and *Thonalmus quadrilacinius* which was was recovered as monophyletic and rendered as sister to all other clades in (Fig. 2.3).

Even though the BI and ML trees displayed identical topologies (Appendix D, Fig. 1 for BI, Fig. 2 for ML), the support levels differed in some of the clades. The support levels for *T. hubbardi* (Appendix D, Fig. 1) had a low PP (75) and UFBoot (82) but presented an acceptable SH-aLRT (84) (while in our MP analysis a BS of 91 was recovered for the clade). The low support level at the base of *T. hubbardi* seems to be caused by a discordance among the two subclades, containing the terminals WIBF 041557, WIBF 041558 and WIBF 041516 (PP 100 and UFBoot and SH-aLRT of 97) and UPOL 000595 and WIBF 041515 (PP 60 and UFBoot 73 and SH-aLRT of 54) (Appendix D, Figs. 1 and 2). While our individual analyses and data quality check of *T. hubbardi* sequences (not presented in the study) did not show any inconsistencies, we suspect that the sequence from the specimen UPOL 000595, being from an older sampling and having been amplified in a different lab, could have contributed for the low support in the clade. However, for transparency and ethical reasons and also because the low support would not change the outcome of the relationship between *T. hubbardi* and *T. sinuaticostis* (the latter recovered with very high support in all three approaches and for which the basal support for both species is the maximum in all metrics used), we kept the sequence UPOL 000595 in all of our analyses. The other conflict of support levels in our BI and ML analyses is between the Montserrat clade and the Jamaican clade, containing *T. militaris*. While our BI analysis rendered

a high PP (96) for the relationship between the Jamaican and Montserratian clades, the ML analysis rendered remarkably low UFBoot (23) and SH-aLRT (60). Despite the unresolved tree of our MP analysis, the most parsimonious tree produced had 1,703 steps and presented a consistency index (CI) of 0.6345 and a retention index (RI) of 0.7729.

Morphology Phylogenies

In our morphology-based phylogenies, *Thonalmus* was also recovered as a monophyletic group in the three different reconstruction approaches that we used, ranging from a low (BI and ML analyses, Appendix D, Figs. 4 and 5, respectively) to moderate support levels (MP analysis, Appendix D, Fig. 6) at the base of the genus. The internal tree topologies, however, were inconsistent across the different approaches.

In our BI analysis (Appendix D, Fig. 4), the clade containing *T. hubbardi* + *T. sinuaticostis* (Montserrat) was recovered as sister to *T. suavis* (a Cuban/Bahamian species). The Montserratian clade (Montserrat + *T. suavis*) was recovered sister to the Jamaican (*T. militaris* and *Thonalmus subquadratus*) + part of the Hispaniolan clades (*Thonalmus abejaensis*, *Thonalmus humeralis*, *Thonalmus darlingtoni* and *Thonalmus guerreiroi*), and the Jamaican + Hispaniolan clade was recovered as sister to the Hispaniolan and Puerto Rican clade (*T. bicolor, T. dominicensis*, *T. quadrilacinius, Thonalmus centralis* and *Thonalmus thomasi*). The superclade containing all Montserratian, Hispaniolan, Puerto Rican and Jamaican species was then recovered as sister to the Cuban/Bahamian species group (*T. aulicus*, *Thonalmus mariani*, *T. amabilis*, *Thonalmus distinguendus* and *Thonalmus nigritarsis*, except *T. suavis*). While the Montserratian clade and Montserratian + *T. suavis* and *T. centralis* + *T. thomasi* and *T.*

abejaensis + *T. humeralis* clade presented moderate support levels (ranging from PP 81–92), all other relationships were poorly supported (Appendix D, Fig. 4).

Our ML analysis (Appendix D, Fig. 5) recovered the Montserratian (*T. sinuaticostis* + *T. hubbardi*) clade + *T. suavis* as a monophyletic group sister to the Cuban/Bahamian clade (*T. aulicus*, *T. mariani*, *T. amabilis*, *T. distinguendus* and *T. nigritarsis*). The clade containing (Montserratian + *T. suavis)* + (Cuban/Bahamian clade), was recovered as sister to the Hispaniolan clade A (*Thonalmus abejaensis*, *Thonalmus humeralis*, *Thonalmus darlingtoni* and *Thonalmus guerreiroi*), and these three clades together as sister to the Jamaican clade (*T. militaris* and *T. subquadratus*). As sister to the clade containing all Cuban/Bahamian, Jamaican and Montserratian species, the Hispaniolan and Puerto Rican clade (*T. bicolor, T. dominicensis*, *T. quadrilacinius*) was recovered, followed by a second Hispaniolan clade, B, (*T. centralis* + *T. thomasi*) (Appendix D, Fig. 5). Different from our BI analysis, on which the Hispaniolan and Puerto Rican species groups came out as a polyphyletic group in two clades (Appendix D, Fig. 4), our ML displayed the Hispaniolan and Puerto Rican species groups as three clades, even less resolved than our BI analyses (Appendix D, Fig. 5). The support levels (UFBoot and SH-alrt) of our ML analysis for most relationships (except the split between *T. centralis* + *T. thomasi* from the rest of *Thonalmus*) displayed high UFBoot support levels (although very low SH-alrt) (Appendix D, Fig. 5).

The MP analysis rendered a very unresolved tree (Appendix D, Fig. 6). The only clades recovered as monophyletic were the Montserratian (*T. hubbardi* + *T. sinuaticostis*), Jamaican (*T. militaris* + *T. subquadratus*) and *T. abejaensis* + *T. humeralis* clades, all of which with low

support (<80% BS). All other remaining taxa were recovered in a big polytomy and completely unresolved. The most parsimonious tree produced had 148 steps and presented a consistency index (CI) of 0.6824 and a retention index (RI) of 0.7098.

Total-Evidence Phylogenies

In our total-evidence (TE) phylogenies (Fig. 2.4), *Thonalmus* was recovered as a monophyletic group with very high support in all three different reconstruction approaches (BI, ML and MP) but the internal tree configurations were inconsistent across the different methods (Appendix D, Figs. 7, 8, 9 for BI, ML and MP analyses, respectively). Despite the high support levels at the base of the genus (in accordance with our molecular and morphology only phylogenies), overall, our trees presented low support levels for the internal branches and clades, especially for groups of which no DNA data was available (missing data) (Fig. 2.4).

Table 2.2. Summary of nodes recovered by the analyses of different datasets under different reconstruction methods. Clade relationships are presented in parenthetical notation.

	DNA			**Morphology**			**Total-Evidence**		
Clades/Reconstruction method	**MP**	**ML**	**BI**	**MP**	**ML**	**BI**	**MP**	**ML**	**BI**
Thonalmus	M	M	M	M	M	M	M	M	M
Montserratian	M	M	M	M	M	M	M	M	M
Jamaican	M	M	M	M	M	M	M	M	M
Hispaniolan and Puerto Rican	M	M	M	Po	Po	P	P	P	M
Cuban and Bahamian	Po	M	M	Po	P	P	Po	P	M
(Montserratian + Jamaican)	Po	M	M	Po	Po	Po	Po	M	M
(Montserratian +Jamaican + Cuban and Bahamian)	M	M	M	Po	Po	Po	Po	Po	M

Legend. M= Clade recovered monophyletic. **P**= Clade partially recovered, paraphyletic. **Po** = Clade not recovered, polyphyletic.

The BI analysis (Appendix D, Fig. 7) recovered the most similar tree to our molecular phylogeny (Fig. 2.3), on which the *Thonalmus* species-groups that have the same biogeographical distribution formed monophyletic groups. In the TE tree produced by our BI analysis, the Montserrat clade was recovered as sister to the Jamaican clade, together forming a monophyletic clade with the Cuban/Bahamian clade. The superclade Montserrat + Jamaica + Cuba and Bahamas was recovered sister to the Hispaniolan/Puerto Rican clade. Despite the similar topology with our molecular tree (Fig. 2.3), the support levels for the internal relationships were very low, although species for which we had DNA data the support levels were recovered with moderate to high values, especially in the crowns (Fig. 2.4).

Our ML analysis (Appendix D, Fig. 8) recovered a very unresolved tree. The only groups recovered as monophyletic were the Montserrat and Jamaican groups, with high support levels (Appendix D, Fig. 8), while the Hispaniolan/Puerto Rican and Cuban/Bahamian clades were rendered polyphyletic, with two Hispaniolan/Puerto Rican clades and two Cuban/Bahamian clades being independently recovered. On the other hand, as expected, the MP analysis (Appendix D, Fig. 9) also recovered an unresolved tree. Similar to the ML analysis, the Jamaica and Montserrat clades were recovered with moderate to high support levels, respectively, but overall, the generated tree was completely unresolved, with only two other monophyletic groups recovered (*T. quadrilacinius* + *T. dominicensis* and *T. abejaensis* + *T. humeralis*) with all internal relationships recovered as a polytomy. The most parsimonious tree produced had 2,088

steps and presented a consistency index (CI) of 0.6618 and a retention index (RI) of 0.7676. A summary of all analyses using the different datasets and approaches is presented in Table 2.2.

Character State Reconstruction

Based on our character optimization in our BI Total Evidence tree (Fig. 2.5) (based in Appendix D, Fig. 7, but with only one representative show for each species) we hypothesized synapomorphies for *Thonalmus* and its internal clades. We found 14 unreversed synapomorphies for *Thonalmus* with unambiguous optimization (Fig. 2.5 and Table 2.1), of which 11 did not experience additional transitions within the genus and are diagnostic for all *Thonalmus*: head viewed dorsally wider than long (Character 10, state 1), eyes when viewed dorsally partially covered by the pronotum (Character 11, state 0), anterior margin of pronotum emarginated (Character 20, state 0), pronotal disc moderately punctate (Character 23, state 0), mesospiracles moderately projecting (Character 27, state 0), presence of iridescent color in fascia (Character 40, state 1), elytral costa II absent (Character 49, state 1), elytron pubescence in the fascia region strongly concentrated along the elytral costae (Character 59, state 0), elytron epipleuron not or gradually narrowed and complete to apex (Character 60, state 0), parameres of male modified into a tube that encapsulates the median lobe (Character 66, state 0) and the male genitalia median lobe opening apically (Character 70, state 2).

The *Thonalmus* species-groups with the same biogeographical distribution have all been supported by at least one synapomorphy or homoplasy (Fig. 2.5). The Hispaniolan/Puerto Rican clade was supported by the synapomorphy 63(1), abdomen of females, ventrite III, posteriorly slightly thickened and 68(1), male genitalia asymmetrical (both characters posteriorly modified

or reversed in the species withing the group). The Montserratian clade was supported by one synapomorphy, 63(3), abdomen of females, ventrite III, bearing a thin prolongation that is enlarged apically and kidney shaped, and three homoplasies: head vertex convex (9(1)), elytral costa III reaching apex (54(0)), male genitalia not bearing a flagellum (67(1)) and extension of the dorsal cut in the parameres shallow (73(0)). The Jamaican clade was supported by the homoplastic character labrum longer than wide (13(1)), and the Cuban/Bahamian clade was supported by the synapomorphy median lobe as long as the parameres (76(0)), modified in *T. mariani* to state 76(2) (Fig. 2.5).

Divergence Time Estimation

The two divergence estimation analyses presented divergent results (summarized in Table 2.3) (Appendix D, Figs. 10 and 11). The divergence time estimation approach in MrBayes (Fig. 2.6) (Appendix D, Fig. 10) sets the origin of *Thonalmus* mean node age of ~ 48 Millions of years ago (Ma) (with a lower and upper bound of ~ 37 Ma and ~ 61 Ma, respectively); the Montserratian clade, containing *T. hubbardi* and *T. sinuaticostis*, was set with a mean node age of ~ 2.5 Ma (with a lower and upper bound of ~ 2.4 Ma and ~ 2.6 Ma), while the split between Montserrat and the Jamaican clade (represented by *T. militaris*) was set with a mean node age of ~ 28.4 Ma (with a lower and upper bound of ~ 21.4 Ma and ~ 37.6 Ma). The Cuban clade, represented by *T. amabilis* and *T. suavis*, was set with a mean node age of ~ 27.5 Ma (with a lower and upper bound of ~ 18.3 Ma and ~ 37.7 Ma), and the split between Cuba and Jamaica + Montserrat was set with a mean node age of ~ 38.9 Ma (with a lower and upper bound of ~ 29.2 Ma and ~ 50.5 Ma, respectively). The Hispaniolan clade, containing *T. bicolor*, *T. darlingtoni*, *T.*

dominicensis and also *T. quadrilacinius* (also present in Puerto Rico) was set with a mean node age of ~ 20.4 Ma (with a lower and upper bound of ~ 13.9 Ma and ~ 26.74.3 Ma), and with the basal split occurring at the base of *Thonalmus*. Nested in the Hispaniolan clade, *T. quadrilacinius*, the only extant *Thonalmus* species to colonize Puerto Rico, split from its common ancestor with *T. dominicensis*, with a node age set of ~ 2.9 Ma (with a lower and upper bound of ~ 2.3 Ma and ~ 4 Ma).

Table 2.3. Summary of divergence time estimation under two different methods. Clade relationships are presented in parenthetical notation.

	MrBayes		BEAST	
Clades/Divergence time estimation method	**MND (Ma)**	**95% HPD**	**MND (Ma)**	**95% HPD**
Thonalmus	48.85	37.31–61.9 5	68.34	34.71–114.87
Montserratian	2.56	2.42–2.6	6.12	2.37–10.07
(Montserratian + Jamaican)	28.46	21.7 2–37.61	31.15	9.64–65.33
(Cuban/Bahamian)	27.56	18.37–37.72	26.66	6.72–56.53
(Cuban/Bahamian) + (Montserratian + Jamaican)	48.85	37.31–61.95	47.33	19.4 4–89.59
(Hispaniolan + Puerto Rican)	20.48	13.95–26.74	43.61	16.36–85.31
T. quadrilacinius + *T. dominicensis*	2.95	2.35–4.05	6.03	0.64–18.69

Legend. Ma: Millions of years ago. **MND:** Mean node age. **HPD:** Highest posterior density.

The estimation approach in BEAST (Appendix D, Fig. 11) sets the mean node age of *Thonalmus* origin at ~ 68 Ma (with a lower and upper bound of ~ 34 Ma and ~115 Ma); the Montserratian clade was set with a mean node age of ~ 6 Ma (with a lower and upper bound of ~ 2.4 Ma and ~ 10 Ma), while the split between Montserrat and the Jamaican clade was set with a mean node age of ~ 31 Ma (with a lower and upper bound of ~ 9.6 Ma and ~ 65 Ma). The Cuban

clade was set with a mean node age of ~ 26 Ma (with a lower and upper bound of ~ 6.7 Ma and ~ 56 Ma), and the split between Cuba and Jamaica + Montserrat was set with a mean node age of ~ 47 Ma (with a lower and upper bound of ~ 19.4 Ma and ~ 89 Ma). The Hispaniolan clade was set with a mean node age of ~ 43 Ma (with a lower and upper bound of ~ 16.3 Ma and ~ 85.3 Ma, respectively), and with the basal split occurring at the base of *Thonalmus*. *T. quadrilacinius* split from its common ancestor with *T. dominicensis*, with a node age set of ~ 6 Ma (with a lower and upper bound of ~ 0.6 Ma and ~ 18.7 Ma, respectively).

Ancestral Area Reconstruction

The ancestral area reconstruction model best supported within BioGeoBears was DIVALIKE+J (Appendix C, Table S3). Our analysis provided relatively high support (86%) for the hypothetical ancestral area of all *Thonalmus* being Hispaniola and/or Hispaniola + Cuba (Fig. 2.7) (Appendix C, Table S7 and Appendix D, Fig. 12, node 43). In our group of interest, the *Thonalmus*, our analysis also supported dispersal and vicariant events (Appendix D, Figs. 13 and 14, respectively) at the base of all *Thonalmus* (Appendix D, Fig. 12, node 43), in the split between the Cuban and Bahamian + (Jamaican + Montserratian clade) (*idem*, node 34) and between the Jamaican and Montserratian clade (*idem*, node 28). An additional dispersal event was supported for the clade containing *T. quadrilacinius* and *T. dominicensis* (*idem*, node 39).

Taxonomic Revision

Family Lycidae Laporte, 1836

Subfamily Lycinae Laporte, 1836

Tribe Thonalmini Kleine, 1933

Type genus. *Thonalmus* Bourgeois, 1883.

Diagnosis

Thonalmini and its sole genus, *Thonalmus*, can be distinguished from all Neotropical Lycidae by the combination of a non-rostrate head (Fig. 2.13) (vs. rostrate in most Calochromini and Lycini, non-rostrate in *Calochromus* Guérin-Méneville, 1833 and in all other Neotropical Lycinae), a subpentagonal pronotum, strongly marginated, with an anterior lobe (Fig. 2.16) (vs. variable throughout the groups, but imarginated in some Leptolycini and Calopterini, anteriorly rarely lobed in other groups (some *Idiopteron* Bourgeois, 1905, *Caenia* Newman, 1838 and *Lycus* Fabricius, 1787)), the pronotal area surrounding disc strongly punctate (Fig. 2.16) (vs. rarely or weakly punctate in other Neotropical Lycinae), the elytra bearing three longitudinal costae (Fig. 2.17) (vs. variable throughout the groups), elytral fascia presenting an iridescent blue or green coloration (Fig. 2.17) (vs. rarely iridescent in the Neotropical region, with exception of *Macrolygistopterus* Pic, 1929 and *Calochromus sensu* Ferreira 2016), the male genitalia with parameres fused, forming a tube encapsulating the median lobe (Fig. 2.19) (vs. parameres absent or not modified into a tube encapsulating the median lobe in Neotropical Lycidae) and the median lobe bearing a long flagellum at the tip (Fig. 2.20) (lost or unobserved in some of the

species) (vs. absence of a long flagellum in all Neotropical groups, present in several Old World groups).

Phylogenetic Placement of the Tribe

From a phylogenetic perspective, the current relationship of *Thonalmus* with other lycids remains largely unresolved. Over the course of the past decades, *Thonalmus* has been positioned in different places in the Lycidae suprageneric classifications proposed: Bourgeois (1883, 1901) suggested a close relationship of the genus with *Lycus* and *Calopteron;* Kleine (1933) and seemingly identifying the uniqueness of *Thonalmus* among the New World lycid genera, erected the subtribe Thonalmini for the genus; Bocak and Bocakova (1990), in their suprageneric classification of Lycidae, suggested a close relationship with the Lycini based on similarities of the male genitalia. A couple of proposed classifications using a formal systematic phylogenetic approach have been published in the past two decades: Bocak and Bocakova (2008) and Bocak *et al*. (2008), in their molecular phylogeny using four genes, placed the genus close related to the Oriental and Palearctic tribe Lyponiini, however displaying very low support and confidence levels for these relationships. Masek *et al*. 2018, using the same four genes as Bocak and Bocakova (2008), but with an expanded dataset, placed Thonalmini as sister to the Neotropical Eurrhacini, and the two taxa as sister to the Leptolycini, endemic to the West Indies, but again, displaying low support levels for these relationships.

A recent publication dealing with the higher-level classification of Lycidae has been published using phylotranscriptomics data (Kusy *et al*. 2019), but *Thonalmus* and many other lycid tribes were not been included in that study. At least two morphology-based Lycidae

phylogenies have been published (Kazantsev 2003, 2013) but these also did not include *Thonalmus*. Richard S. Miller did his master's thesis revising and proposing a phylogeny and a revision for *Thonalmus* (Miller 1984); however, his study was never published and its goals, similar to the study proposed here, were focused on the internal relations of the species in the genus rather than an upper-level classification of the genus with other Lycidae.

Genus *Thonalmus* Bourgeois, 1883

(Figs. 2.1, 2.3–2.26)

Thonalmus Bourgeois, 1883: 376; 1901: 49. Leng and Mutchler, 1922: 417. Kleine, 1933: 18. Darlington 1936: 102. Mutchler 1937: 1. Blackwelder 1945: 343. Linsley 1959: 130. Turner 1970: 224. Lingafelter and Micheli 2004: 44. Barceló and Diéguez 2005: 10 [under Thonalmidae]. Peck 2005: 112. Eisner *et al*. 2008: 117. Bocak and Bocakova 2008: 717. Perez-Gelabert 2008: 101. Peck and Perez-Gelabert 2012: 26. Lingafelter 2013: 54. García *et al*. 2014: 334. Zaldivar *et al*. 2018: 6.

Type species. *Cantharis bicolor* Linnaeus, 1763 herein designated, in accordance with ICZN (1999), Art. 69, especially 69.2.

Differential Diagnosis

See tribe diagnosis above.

Redescription

Coloration: General dorsal coloration red or orange (Fig. 2.1) (faded in collection specimens); elytra with apical portions (fascia) ranging from half-length of elytra to apical fourth blue or green, iridescent (Figs. 2.8F, 2.10, 2.11, 2.17), in some specimens the colorful portion of elytra surpasses fascia region (Figs. 2.10 and 2.17 A, B, F, I, L, Q); legs ranging from completely red to partially black (Fig. 2.18); ventral and head view red, brown or orange, head sometimes black (Fig. 2.13). Antennae black, sometimes scape and pedicel orange (Figs. 2.14, 2.15). Body setose, with short, decumbent yellow setation; elytral fascia covered with sparse, short setation; remainder of body with fine yellow pubescence throughout.

Head: As long as wide, posteriorly partially covered by pronotum, prognathous. Vertex convex or concave, with or without a transverse impression (Fig. 2.13). Eyes hemispherical, projecting anterolaterally, coarsely granulate (Fig. 2.13). **Mouthparts:** Posterior margin of epistoma emarginate, labrum transverse or longer than wide (Fig. 2.13), densely setose. Mandibles co-opted with labrum, strongly hooked apically (Fig. 2.13). Maxillary palp four-segmented (as represented by *T. bicolor*, Fig. 2.8B), densely setose, apical palpomere broadened distally, securiform (Figs. 2.8B, 2.12). Labial palp three-segmented (as represented by *T. bicolor*, Fig. 2.8C), palpomeres I and II subequal in length, II broadened apically, palpomere III securiform.

Antennae: Approximate at base, subserrate (Fig. 2.14 and 2.15, except 2.14B) or pectinate (Fig. 2.14B), dorsoventrally compressed; antennifers approximate at base (Fig. 2.13); 11-segmented, connected by thin translucid membranes, covered with sparse, white short bristle-

like setation (Figs. 2.14 and 2.15), setation more developed in some of the species in basal segments of antennae (Figs. 2.14 and 2.15); scape conical, strongly developed in *Thonalmus militaris* (Fig. 2.15M), pedicel small, transverse, multiple times (4–5x) the length of the precedent; antennomeres III–X longer than wide, XI fusiform (Figs. 2.8A, 2.14 and 2.15); antennomere III subtriangular, antennomeres V–X either decreasing or increasing (Figs. 2.8A, 2.14 and 2.15) in length towards apex. Antennae in rest position, reaching first basal third (Fig. 2.10L, *T. mariani*) to mid-elytra or apical third (Figs. 2.10 and 2.11, except 2.10L).

Prothorax: Pronotum subpentagonal, as long as wide, widest at base, margins pronounced, bearing a longitudinal carina in anterior portion, bifurcate posteriorly forming incomplete lenticular cell present medially that bifurcates posteriorly towards posterior margin of pronotum (Fig. 2.16); cell ranging from strongly to weakly developed (Fig. 2.16); median anterior lobe ranging from strongly produced (*e.g.* Figs. 2.16J, P) to weakly produced (*e.g.* Figs. 2.16I); anterior angles round, forming a lobe, posteriorly bisinuate, posterior angles acute or moderately round (Fig. 2.16), divergent or convergent; submarginally densely punctate. Hypomeron concave. Prosternum Y-shaped; posterior margin rounded to bifurcate and divergent; laterally reaching hypomeron (as represented by *T. bicolor*, Fig. 2.8E).

Mesothorax: Mesoventrite trapezoidal, posteriorly reaching anterior margin of metaventrite, mesepimeron more densely pubescent than surrounding sclerites (as represented by *T. bicolor*, Fig. 2.8E). Mesonotum divided by scutellum into halves, posteriorly divergent (as represented by *T. bicolor*, Fig. 2.8E); scutellar shield triangular (Fig. 2.16M) to subquadrate or rectangular (Fig. 2.16, except 2.16M), apically entire or emarginate. Mesospiracles elongate,

slightly protuberant (as represented by *T. bicolor*, Fig. 2.8E). **Metathorax:** Metaventrite convex, posterolateral angles round; metadiscrimen complete; metanepisternum and metepimeron elongate (as represented by *T. bicolor*, Fig. 2.8E).

Elytra: Subparallel to expanded posteriorly (Figs. 2.10, 2.11 and 2.17), marginated, with margins strongly produced, longer than wide; reticulate, ranging from irregularly and weakly (Figs. 2.17B, C, G, J, L, N, P, Q–S) to strongly reticulate (Figs. 2.17A, D, E, F, H, I, K, M, O), with cells on elytra subcircular (Figs. 2.17B, G, J, L, N, P, Q, S), subquadrate (Fig. 2.17K), rectangular or irregular (Figs. 2.17A, C, D, E, F, H, I, M, O, R). Each elytron with three longitudinal costae, ranging from strongly developed and easily visible (Figs. 2.17A, D, E, F, H, I, J, K, M, O, P, S) to weakly developed and hardly visible (Figs. 2.17B, C, G, L, N, Q, R). Elytral costae arrangement variable, ranging from costa I reaching apex (Figs. 2.17, except A, F, I K) or fused to inner margin of elytron (Figs. 2.17A, F, I, K); costae II and III subparallel or sinuate (Fig. 2.17P), apically fused or seemingly fused (Figs. 2.17A, D, E, G, J, K, M, O, Q, R) or distinctly free (Figs. 2.17B, C, F, G, H, I, L, N, P, S), if fused, the fusion can be greatly expanded apically (Figs. 2.17A, K, Q); subapices of elytra simple or bearing a pair of mammiform tubercles (Figs. 2.17A, F, H, K), inflated expansions of the elytral costae II and III of some species. Membranous wings (as represented by *T. bicolor*) well developed (Fig. 2.9A).

Legs: dorsoventrally compressed; protrochantin slender and exposed; trochanters semi-triangular (Figs. 2.8D, 2.18) with inner margins sometimes acute, giving a thorn-like appearance (Figs. 2.8D, 2.18); femora and tibiae clavate, degree of inner margin of male femora curviness variable, ranging from flat (Figs. 2.18A, E, F, G, I, K, L, N) to strongly curved (Figs. 2.18B, C,

D, H, J, M, O, P, Q, R, S); tibial spurs small, slender and acute; pro- and mesocoxae conical, moderately elongate, obliquely positioned, metacoxae wider than long; tarsomeres 5-5-5, tarsomeres three and four expanded laterally, apical tarsomere bearing a pair of simple claws (Fig. 2.8B).

Abdomen: of males with eight ventrites, tapering towards apex; ventrite VII broadly and arcuately emarginate posteriorly, VIII elongate, enclosed dorsally by tergite X (as represented by *T. bicolor*, Fig. 2.9C). Female abdomen with seven ventrites (Fig. 2.9B), tapering towards apex; ranging from simple abdomen without modifications (Fig. 2.21A) to strongly modified (Fig. 2.20, B–H), bearing prolongations in the posterior margin of ventrites II-IV (Fig. 2.21, B–H), ranging from a thickening (Figs. 2.21B, D, F) that might bear a thin prolongation at their ends to a heavily modified structure, bearing bulbous appendages arising from ventrite III (Fig. 2.21G, H); lateral margins ranging from simple (Fig. 2.9B, 2.21 except C and H) to bearing thick prolongations (Fig. 2.21C, H).

Genitalia. Male genitalia highly modified: parameres fused, forming a long tube (Figs. 2.9D and E, 2.19, 2.20), symmetrical or asymmetrical, apically variable, ranging from a blunt ventral margin to strongly acuminate; dorsal portion with a V-shaped cut, ranging from narrowly to widely developed, with extension variable (Figs. 2.9D and E, 2.19, 2.20). Median lobe ranging from rod-like, thin and sclerotized (Figs. 2.9D and E) to strongly developed apically, bearing a long flagellum, sometimes multiple times longer than the remaining of the male genitalia (Figs. 2.9D and E, 2.19, 2.20), seemingly absent in some species and lost in several specimens. Phallobase small, multiple times (6–8×) shorter than tube (parameres), symmetrical. Female

genitalia (as represented by *T. bicolor*) short, styli small, twice the length of coxites, densely setose; coxites tapering distally; valvifers rod-like, as long as coxite length (Fig. 2.9F).

Length (pronotum + elytra): 3.7–15.1 mm. **Width (across humeri):** 1.5–4.0 mm.

Sexual Dimorphism

Some of the *Thonalmus* species present moderate to strong sexually dimorphism. Overall, females tend to be longer and wider than males, with a preponderance of females having a slightly distended abdomen, probably due to be carrying eggs. Females of *T. bicolor*, *T. militaris* and *T. hubbardi* (Fig. 2.11) present the elytral costae I strongly developed when compared to males (Figs. 10D, J and M, respectively). The abdomen of females of *T. bicolor*, *T. centralis*, *T. dominicensis*, *T. hubbardi*, *T. quadrilacinius*, *T. sinuaticostis* and *T. thomasi* (Fig. 2.21) are modified, ventrally carrying protuberances and appendages (see description section above).

Distribution

Thonalmus is endemic to the West Indies, with most species distributed in the Greater Antilles, and a few in the Bahamas, with two species found in Montserrat (Lesser Antilles) in their south; no species are known from mainland America (Figs. 2.3, 2.7, 2.22–2.26). Species are distributed in Cuba, the Bahamas, Jamaica, Hispaniola, Puerto Rico and Montserrat. Specimens have been intercepted in ports in Florida, US, but not established there (see distribution sections of *T. aulicus*, *T. nigritarsis* and *T. suavis* for further details). Reports from Guadeloupe, the Virgin Islands, Mexico and Africa are from mislabeled specimens (see below).

Records of *T. dominicensis* are mentioned from Guadeloupe, in the Lesser Antilles, (Bourgeois 1883: 378; Fleutiaux and Sallé 1889: 415; 1947: 155–157) and from Mexico (Bocak and Bocakova 1990: 635), but no evidence whatsoever has been provided for these records, and we interpret them as errors. Chalumeau (pers. comm. to Richard Miller, 1983), who resides in Guadeloupe, has not encountered any *Thonalmus* in the island, neither did MAI in his several expeditions as well. Until proven otherwise, it is reasonable to assume that *Thonalmus* does not occur in Guadeloupe.

Biology

We adult *Thonalmus* on a variety of cultivated and endemic plant hosts, being actively collected both during the day and night. Specimens have been collected at blacklight, light and Malaise traps and found in humid and dry woodlands, in pine forest (Pinales, Pinaceae), *Baccharis* sp. (Asterales, Asteraceae), avocado plants (*Persea americana*, Laurales, Lauraceae), sugar cane (*Saccharum* sp., Poales, Poacea), *Citrus aurantifolia* (Sapindales, Rutaceae), cotton, caribbean pine (*Pinus caribaea*, Pinales, Pinaceae), palmetto scrub (*Sabal etonia*, Arecales, Arecaceae), coffee (Gentianales, Rubiaceae), Magnoliacea (Magnoliales) forest, guava forest (Myrtales, Myrtaceae), *Citrus* sp. (Sapindales, Citreae), tropical almond blooms, dead logs with fungus, pine sawmill, *Heliconia* (Heliconiaceae) and on dead standing trees; *Morinda citrifolia* (Rubiales, Rubiaceae), *Mangifera indica* (Sapindales, Anacardiaceae), in rural areas close to banana plantations and in the interior of coppices; on *Lecythis elliptica* (Ericales, Lecythidaceae), *Leucaena glauca* (Fabales, Fabaceae) and *Ficus* sp. (Rosales, Moraceae) (see specific biology section under each species).

In Cuba, specimens were described as diurnal, where they can be found in scrubby or semi-open places, bordering woods, and only rarely in deep forests or open fields (Darlington 1938:682–683). Also, in Cuba, specimens have been reported in garbanzo (Zaldivar *et al*. 2018) and tobacco crops (Barceló and Diéguez 2005). In Puerto Rico, *Thonalmus* has been thought to be an introduced species, found in sugar-cane fields (Leng and Mutchler 1922: 422; Wolcott and r 1937: 535-536; Wolcott 1950: 281). Gosse (1848:268) described large aggregations of *Thonalmus* in trees 10 feet above the ground on Jamaica and Williams and Blackmer (1991) saw an aggregation at *Morinda* sp. (Rubiales, Rubiaceae) and Julio Micheli (pers. comm. to Richard Miller, 1983) mentioned having seen such an aggregation on Puerto Rico as well. During examination of specimens for this study, we have found multispecies aggregations in Hispaniola (*T. darlingtoni* (WIBF 043073–WIBF 043082, WIBF 042854–WIBF 042937), *T. bicolor* (WIBF 050944), *T. quadrilacinius* (WIBF 043225) and *T. dominicensis* (WIBF 043158) *T. humeralis* (WIBF 043296)) and Montserratian populations (various specimens, see Appendix A).

As in their mainland lycid relatives, *Thonalmus* release hemolymph drops as a protection repellant mechanism when put under stressful situations and have an unpleasant taste (see Eisner *et al*. 2008 for a review), at least for humans (M. Ivie, pers. observ.). They are involved in mimetic-ring relationships also in the West Indies, with many beetle families (*e.g*., Mutchler 1937; Darlington 1936; Linsley 1959; Lingafelter and Micheli 2004; Lingafelter 2013) (Fig. 2), as well as other arthropods displaying a *Thonalmus*-like color pattern. Darlington's classical experiments of mimicry in Cuba (1938) indicated that beetles displaying this color pattern

seemed to be protected from predators. In his studies of the chromosomes of Lycidae, Virkki (1978) recorded the karyotype of *Thonalmus*, but nothing else has been published in this matter.

Immature Stages

Even though there are no proven direct association or observations of *Thonalmus* larvae with their adult forms, due to the relatively advanced knowledge of the Lycidae larvae from the West Indies (Ferreira and Ivie in prep [chapter three of this dissertation]), we are confident to provide tentative associations of immature specimens for the genus. The larvae encountered and tentatively associated with the genus *Thonalmus* possess the characteristics of a Lycidae larva (see Molino et al. 2020 brief diagnosis) and can be separated from the Leptolycini immatures (only other Lycidae tribe present in the West Indies) by the combination of a body bearing dorsal and lateral setae throughout (Fig. 2.12) (vs. absent in the genus *Leptolycus* Leng and Mutchler, 1922), the absence of a strongly dorsally developed longitudinal line (vs. presence of such in *Cessator* Kazantsev, 2009), the integument with a smooth dorsal texture (Fig. 2.12) (vs. moderately to strongly punctate in *Cessator* and *Dracolycus* Ferreira and Ivie, 2021) and by the last abdominal segment being as long as wide or longer than wide with the posterior margin notched apically, bisinuate (vs. last abdominal segment in all known Leptolycini transverse, posteriorly straight and entire, never bisinuate).

Nomenclatural Notes

Most species currently classified in *Thonalmus* were originally described or placed in several other genera. A particularly interesting case is for *Thonalmus bicolor* (Linnaeus, 1763),

which was originally described in *Cantharis* L. (Cantharidae) and subsequently moved by multiple authors to *Lampyris* Geoffroy, 1762 (Lampyridae), 1762, *Pyrochroa* Geoffroy, 1762 (Pyrochroidae), *Lycus* Fabricius, 1787 (Lycidae), *Charactus* Dejean, 1833 (Lycidae) and *Calopteron* Laporte, 1836 (Lycidae), until it was finally made the type species of *Thonalmus* by Bourgeois (1883) (see synonymical table and taxonomic discussion sections in *T. bicolor*). Other species, such as *T. amabilis*, *T. aulicus*, *T. distinguendus*, *T. militaris*, were either described in *Lycus* or *Calopteron*, and some were even listed and included in Dejean's catalogues (1833, 1837) in the genus *Charactus* Dejean, 1833. A summary of the current *Thonalmus* recognized species and their distributions is presented in Table 2.4.

Table 2.4. Summary of *Thonalmus* species and their distribution

Thonalmus abejaensis **new species** – Hispaniola
Thonalmus amabilis (Jacquelin Du Val, 1856) – Cuba
Thonalmus aulicus (Jacquelin Du Val, 1856) – Cuba and Bahamas
Syn. *Calopteron elegantulum* Jacquelin Du Val, 1856
Syn. *Thonalmus bahamae* Leng and Mutchler, 1922 **new synonym**.
Thonalmus bicolor (Linnaeus, 1763) – Hispaniola
Syn. *Thonalmus chevrolati* Bourgeois, 1901 **new synonym**.
Thonalmus centralis **new species** – Hispaniola
Thonalmus darlingtoni **new species** – Hispaniola
Thonalmus distinguendus (Jacquelin Du Val, 1856) – Cuba
Thonalmus dominicensis (Chevrolat, 1870) – Hispaniola

Thonalmus guerreiroi **new species** – Hispaniola

Thonalmus hubbardi Leng and Mutchler 1922 – Montserrat

Thonalmus humeralis **new species** – Hispaniola

Thonalmus mariani Wojciechowska and Slipinski, 1985 – Cuba

Syn. *Thonalmus orientalis* Zayas, 1988

Thonalmus militaris (Dalman, 1817) – Jamaica **status reinstated**

Syn. *Calopteron denominatum* Chevrolat, 1870: 74.

Thonalmus nigritarsis (Chevrolat, 1870) – Cuba and Bahamas

Thonalmus quadrilacinius **new species** – Puerto Rico and Dominican Republic

Thonalmus sinuaticostis Leng and Mutchler, 1922 – Montserrat

Thonalmus suavis (Jacquelin Du Val, 1856) – Cuba and Bahamas

Thonalmus subquadratus Leng and Mutchler, 1922 – Jamaica

Thonalmus thomasi **new species** – Hispaniola

***Thonalmus abejaensis* new species**

(Figs. 2.4, 2.5, 2.7, 2.10A, 2.13A, 2.14A, 2.16A, 2.17A, 2.18A, 2.19A, 2.23B)

Examined material

Type material examined (n=19). Holotype: 1♂**:** Las Abejas; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols.; Matusik-Guerrero / 34987 [WIBF 043359] (MNHNSD). **Paratypes: 6**♂: Las Abejas; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols.; Matusik-Guerrero / 34987 (MNHNSD). **1**♀: ALTO Bandera; CONSTANZA; La

Vega, PROV.; LA VEGA, R.D.; [Unintelligible] 1/V/1988; H.L.DOMINguez / 32470 (MNHNSD). **1**♂: ALTO BANDERA; CONSTANZA; La Vega, PROV.; LA VEGA, R.D.; 1/V/1988; col.; H.L.DOMINguez / 32471 / 15.1129-19 / MNHNSD 15.87 (MNHNSD). **1**♀**, 2**♂: Loma Rucilla &; mts.N., Dom.Rep; June´38,5-8,000 ft; Darlington (MCZ). **1**♂: Camp Perrin; nr 1000 ft.; Oct.8-27 / Haiti; 1934; Darlington / Museum of: Comparative; Zoology (MCZ). **1**♀: Valle Nuevo; SE Constanza; Aug. ´38, Dom.Rep; c. 7,000 ft., Darl. (MCZ). **2**♂: DOM.REP: Prov. La Vega; Par. Nac. Armando Bermudez; La Cienaga-Los Tablones; 1187m. 29 JULY 1993; D.S.Sikes, beating veg. (WIBF). **1**♂: DOM.REP: Prov. Barahona; 18km Cabral, Polo Rd.; 1.5km SE Montear Nuevo; 18°06.452´N,71°14.717´W; 26JULY1999, 1020m (WIBF). **1**♀: DOM.REP.: Par.Nac.Almando ; Bermudez,Cordillera Cent. ; slopes of Pico del Yaque ; 04 Sep 1988, 1930-2415m ; beating in pine forest / M.A.Ivie,T.K.Philips ;& K. A. Johnson colrs (WIBF). **1**♂: REPUBLICA DOMINICANA: La; Vega, Constanza, Reserva; Cientifica Ebano Verde, El; Arroyazo, 18 September; 1999; coll. D. Perez, S. Medrano, & / 15.1142-19 / MNHNSD 15.100 (WIBF). (See Appendix A).

Etymology

The name of this species alludes to its type locality, Las Abejas [The Bees] in Dominican Republic.

Diagnosis

Thonalmus abejaensis can be readily identified from all other *Thonalmus* by the combination of the following characters: head vertex convex (Fig. 2.13A), the blue portion of

elytra anteriorly extending fascia region to basal third (Fig. 2.10A, 2.17A), the costa I fused to the inner margin of elytron, the costae II and III fused apically and each elytron bearing a mammiform tubercle in the apex (Fig. 2.10A, 2.17A), the male mesolegs with inner margins flat (Fig. 2.18A), the male genitalia with parameres fusiform with a narrow cut in the dorsal portion of the tube only present in the apical third, bearing a blunt ventral apex and a flagellum surpassing the tip of the parameres (Fig. 2.19A).

Description

General coloration: orange; head orange (Fig. 2.13A); antennae black; elytra fascia metallic blue, reaching apical 2/3 of elytral length, blue portion of elytra anteriorly extending fascia region to basal third (Figs. 2.10A, 2.17A); legs orange, tarsi, femora and tibiae apices with portions in black (Fig. 2.18A), in certain specimens, legs are dorsally black and the apical segments (V–VIII) of the female are black. Head: vertex convex; labrum transverse (Fig. 2.13A). Antennae subserrate; scape conical, weakly developed, flagellomere III ca. 4× length of pedicel; antennomeres IV and V subequal, XI ¼ shorter than precedent, fusiform (Fig. 2.14A). Pronotum: median cell weakly developed (Fig. 2.16A); median lobe weakly produced; anterior angles round, posterior angles acute, divergent (Fig. 2.16A). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16A). Elytra subparallel, slightly dehiscent (Fig. 2.10A), 5–5.5× length of pronotum, strongly reticulate, bearing irregularly shaped cells; elytral costae strongly developed and visible; costa I reaching 2/3 the length of elytra, fused to inner margin (Figs. 2.10A, 2.17A); costa II and III subapically fused, fusion greatly expanded; apices of costae II and III bearing each mammiform tubercles (Figs. 2.10A, 2.17A). Legs: pro- and mesocoxae

angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18A). Abdomen of females simple, not bearing any modifications. Male genitalia: parameres fusiform, tapering towards apex, bearing a narrow cut in dorsal portion of the tube, only present in apical third; apex of tube ventrally blunt (Fig. 2.19A). Median lobe rod-like, thin and sclerotized throughout, bearing a long flagellum, longer than the remaining of the male genitalia (Fig. 2.19A).

Length (pronotum + elytra): 6.7–13.9 mm. **Width (across humeri):** 1.6–3.8 mm.

Distribution

Sierra de Bahoruco, Hispaniola (Fig. 2.23B).

Type locality

Las Abejas, Provincia de Pedernales, Dominican Republic.

Biology

T. abejaensis is only known for a small series. Some specimens have been collected by beating vegetation and in pine forest (Pinales, Pinaceae). This species has a sympatric distribution with *T. guerreiroi*, *T. humeralis*, *T. darlingtoni* and *T. thomasi* (Figs. 2.23B and 2.25A).

Taxonomic Discussion

Thonalmus abejaensis is similar to *Thonalmus darlingtoni*, *Thonalmus guerreiroi* and *Thonalmus humeralis*, sharing with these three species the elytral costa I fused to the inner margin of elytra (Figs. 2.10A, F, I, K) and the inner margin of male mesolegs flat (Figs. 2.18A,

F, I, K). *T. abejaensis* shares with *T. darlingtoni* and *T. guerreiroi* the irregular cells on the elytra and the blue portion of elytra anteriorly extending fascia region to the elytral basal third (Figs. 2.10A, F, I and 2.17A, F, I), whilst it shares with *T. humeralis* the same genitalia shape (Figs. 2.19A, K) and the elytral costa I and II fused apically (Figs. 2.10A, K and 2.17A, K).

T. abejaensis differs from *T. darlingtoni*, *T. guerreiroi* by having the head vertex convex (Fig. 2.13A) (vs. concave in both species, Figs. 2.13F, I), the presence of mammiform tubercles in the apex of elytra (Fig. 2.17A) (vs. absent in both species, Figs. 2.17F, I), the elytral costa I and II fused apically (Fig. 2.17A) (vs. free in both species, Figs. 2.17F, I), the male genitalia with a shallow cut in the dorsal portion of the tube, only present in the apex (Fig. 2.19A) (vs. tube with a deep cut in the dorsal portion of the tube (present in apical half) in *T. darlingtoni* and moderately deep (present in apical third) in *T. guerreiroi,* Figs. 2.19F, I, respectively) and the median lobe thin throughout its extension, rod like (Fig. 2.19A) (vs. enlarged median lobe, tapered towards apex in *T. darlingtoni*, Fig. 2.19F). *T. abejaensis* differs from *T. humeralis* by the head vertex convex (Fig. 2.13A) (vs. concave in *T. humeralis,* Fig. 2.13K), the terminal maxillary palpomere not broadened apically (Fig. 2.13A) (vs. broadly expanded apically in *T. humeralis,* Fig. 2.13K), the humeral region only moderately explanate (Fig. 2.10A) (vs. strongly explanate in *T. humeralis,* Fig. 2.10K) and the large elytral cells irregular (Fig. 2.17A) (vs. small subquadrate in *T. humeralis*, Fig. 2.17K).

***Thonalmus amabilis* (Jacquelin du Val, 1857)**

(Figs. 2.3–2.7, 2.10B, 2.13B, 2.14B, 2.16B, 2.17B, 2.18B, 2.19B, 2.23A)

Calopteron amabile Jacquelin du Val 1857: 82. Gemminger and Harold 1869: 1630. Chevrolat 1870: 75. Gundlach 1891: 254. Leng and Mutchler 1914: 431.

Thonalmus amabilis; Bourgeois 1883: 379. Mayer and Giesbrecht 1884: 254. Gorham 1898: 317. Bourgeois 1901: 51. Leng and Mutchler 1922: 423. Mutchler 1923: 2. Kleine 1933: 18. Darlingon 1938: 686. Blackwelder 1945: 343. Wojciechowska and Slipinksi 1985: 265. Aragón *et al*. 2003: 72. Peck 2005: 112. Fernández García *et al*. 2010: 10.

Examined Material

Type material examined (n=2). Lectotype and paralectotype female (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7), both examined. **Lectotype 1♂**: Calopteron; amabile J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur/ LECTOTYPE; Calopteron; amabile Jac. Duval; det. V.S. Ferreira 2019 (MNHN) (Appendix B, Figure 1). **Paralectotype 1♂:** ♂/ Cuba; Calopteron; amabile Jacq.; [illegible] p. 82 cuba/ MUSEUM PARIS; Coll. J. Bourgeois 1911/ Thonalmus; amabilis; J. DuVal/ PARALECTOTYPE; Calopteron; amabile Jac. Duval; det. V.S. Ferreira 2019 (MNHN).

Material examined in addition to type specimens (**n=57**): Appendix A.

Diagnosis

Thonalmus amabilis can be readily identified from all other *Thonalmus* species by the combination of the head vertex concave, bearing a transverse impression (Fig. 2.13B), antennae of males pectinate (Fig. 2.10B, 2.14B), the elytra bearing small, subcircular cells, weakly

reticulate (Figs. 2.10B, 2.17B), the elytral costae weakly developed, costa II and III seemingly fused apically (Figs. 2.10B, 2.17B), tarsi, tibiae and apical halves of femora black (Figs. 2.10B, 2.18B), with the inner margin of male mesofemora strongly curved and pro- and meso coxae produced posteriorly, bearing a thorn-like appearance (Fig. 2.18B) and the male genitalia with a strongly developed, rod-like median lobe, with the apical third greatly expanded, bearing a short flagellum not surpassing the tip of the parameres, with the lateral margins of the parameres apex folded in dorsal view (Figs. 2.19B).

Redescription

General coloration: orange; head orange (Fig. 2.13B); antennae black; elytra fascia metallic blue, reaching apical half of elytral length, in certain specimens, blue portion of elytra anteriorly extending fascia region to basal third (Figs. 2.10B, 2.17B); legs black, except base of femora and trochanters, which are orange (Fig. 2.18B). Head: vertex concave, bearing a transverse impression (Fig. 2.13B); labrum transverse (Fig. 2.13B). Antennae of male pectinate from antennomeres IV–X, female antennae serrate; scape conical, weakly developed, antennomere III 4–5× the length of pedicel; flagellomeres IV and V subequal, XI ¼ shorter than precedent, fusiform (Figs. 2.13B, 2.14B). Pronotum: median cell weakly developed (Fig. 2.16B); median lobe weakly produced; anterior angles round, posterior angles acute, divergent (Fig. 2.13B, 2.16B). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16B). Elytra subparallel, slightly dehiscent (Fig. 2.10B, 2.17B), 3.5× the length of pronotum, weakly reticulate, with small, subcircular cells on elytra (Fig. 2.17B); elytral costae moderately developed and visible; costa I fading towards elytral apex, visible until 2/3 of fascia (Fig. 2.17B);

costa II and III subapically free, if apparently fused, fusion is weakly developed (Fig. 2.17B). Legs: pro- and mesocoxae acutely produced posteriorly, bearing a thorn-like appearance, mesofemora of males with inner margins strongly curved (Fig. 2.18B). Abdomen of females simple, not bearing any modifications. Male genitalia: parameres tubiform, slightly tapering towards apex, bearing a narrow and shallow cut in dorsal portion of tube, only present in apical region (Fig. 2.19B); apex of tube ventrally blunt, with lateral margins of apex in dorsal view folded (Fig. 2.19B). Median lobe rod-like, strongly developed and visible, not surpassing apex of parameres, with apical third greatly expanded, bearing a short flagellum (Fig. 2.19B).

Length (pronotum + elytra): 6.7–13.9 mm. **Width (across humeri):** 6.7–13.9 mm.

Distribution

Cuba and the Bahamas (Fig. 2.23A).

Type locality

Cuba.

Biology

T. amabilis specimens have been found flying in the woods and around vegetation during the day; specimens have been collected in pine forests and on *Baccharis* sp. (Asterales, Asteraceae), as well as in light traps, indicating that this species is also active during at night.

Taxonomic Discussion

T. amabilis is similar to *T. suavis*, sharing with that species the same dorsal, head and leg color patterns (Figs. 2.10B and 2.10Q, 2.17A and 2.17Q, 2.18B and 2.18Q), the head concave in the vertex (Figs. 2.13A and 2.13Q), the male mesofemora with inner margin strongly curved and the pro and mesocoxae produced posteriorly, bearing a thorn-like appearance (Figs. 2.18B and 2.18Q), as well as the elytra with small, subcircular cells (Figs. 2.17A and 2.17Q). *T. amabilis* is somewhat similar to *T. nigritarsis*, sharing the head vertex concave (Figs. 2.13B, 2.13N), the elytra with subcircular cells, the costae and reticulation weakly developed, with the costae II and III not fused apically, seemingly fused in some specimens (Figs. 2.17B, 2.17N).

T. amabilis differs from *T. suavis* in the antennae of males pectinate (Fig. 2.14B) (vs. serrate in males of *T. suavis*, Fig. 2.15Q), the elytral costae II and III not or only weakly fused in *T. amabilis* (Fig. 2.17B) (vs. fusion of costae II and III strongly visible, with fusion expanded posteriorly in *T. suavis*, Fig. 2.17Q), and the male genitalia, with apex of parameres blunt and with the lateral margins of the apex in dorsal view folded (Fig. 2.19B) (vs. parameres apically ensiform, acuminated and pointy without folds in the margins of parameres in *T. suavis*, Fig. 2.19Q).

T. amabilis differs from *T. nigritarsis* in the antennae of males being pectinate (Fig. 2.14B) (vs. serrate in males of *T. nigritarsis*, Fig. 2.15N), the fascia region of *T. amabilis* displaying a strong metallic pattern (Fig. 2.18B) (vs. weak or not metallic in *T. nigritarsis*, Fig. 2.18N), the male mesofemora with inner margin strongly curved and the pro and mesocoxae produced posteriorly, bearing a thorn-like appearance (Figs. 2.18B) of *T. amabilis* (vs. male

mesolegs flat, and meso- and metacoxae not having a thorn-like appearance in *T. nigritarsis*, Fig. 2.18N), the apex of parameres blunt, with the lateral margins of the apex in dorsal view folded (Fig. 2.19B) (vs. folds absent in *T. nigritarsis*, Fig. 2.19N) and the median lobe of *T. amabilis* moderately expanded in the apical third (Fig. 2.19B) (vs. median lobe of *T. nigritarsis* with the same thickness throughout, slightly expanded apically, Fig. 2.19N).

***Thonalmus aulicus* (Jacquelin Du Val, 1856)**

(Figs. 4, 5, 7, 10C, 13C, 14C, 16C, 17C, 18C, 19C, 22A)

Charactus aulicus Dejean, 1833: 99 (*nomem nudum*). Dejean 1837: 112.

Calopteron aulicum Jacquelin Du Val, 1856: 77, pl.7, fig.18. Gemminger and Harold 1869: 1630. Chevrolat 1870: 76. Leng and Mutchler 1914: 431.

Thonalmus aulicus. Bourgeois 1883: 379. Gundlach 1891: 255. Gorham 1898: 317. Bourgeois 1901: 51. Holland 1917: 338. Leng and Mutchler 1922: 424. Mutchler 1923: 2. Kleine 1933: 19. Darlington 1938: 686. Parsons 1940: 1. Blackwelder 1945: 343. Linsley, Eisner and Klots 1961: 23. Wojciechowska and Slipinksi 1985: 266. Peck 2005: 112. Fernández García *et al*. 2010: 10.

Calopteron elegantulum Jacquelin Du Val, 1856: 78. Gemminger and Harold 1869: 1631. Chevrolat 1870: 76. Gorham 1898: 317. Leng and Mutchler 1914: 431. Leng and Mutchler 1922: 424.

Thonalmus elegantulus. Bourgeois 1883: 380. Mayer and Giesbrecht 1884: 254. Gundlach 1891: 255. Leng and Mutchler 1922: 424. Kleine 1933: 19. Blackwelder 1945: 343.

Thonalmus bahamae Leng and Mutchler, 1922: 425, fig. 5. Kleine 1933: 19. Blackwelder 1945: 343. Turnbow and Thomas 2008: 43. **New synonym**.

Examined material

Type material examined (n=30). *Calopteron aulicum*: Lectotype (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7). **Lectotype** 1♀: Calopteron; aulicum J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur/ LECTOTYPE; Calopteron; aulicum Jac. Duval; det. V.S. Ferreira 2019 (MNHN) (Appendix B, Figure 2).

Calopteron elegantulum: **Lectotype** (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7). 1♂ (lectotype): Calopteron; elegantulum J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur/ LECTOTYPE; Calopteron; elegantulum Jac. Duval; det. V.S. Ferreira 2019 (MNHN) (Appendix B, Figure 3).

Thonalmus bahamae: **Holotype:** [Labels not available for this study] (Photograph examined, Appendix B, Figure 4) (AMNH). **Paratypes**: 1♂: Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24521/ ParatypeNo; 61026; USNM/ Property of; USNM (USNM). **1♀:** ♀/ Mangrove Cay; Anbros Is.; May-June 1917/ Wm. M. Mann; Collector/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524/ WieKHAM; Collection; 1933/ ParatypeNo; 61026; USNM/ Property of; USNM (USNM). **1♀:** ♀/ Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.;

No. 24524/ WieKHAM; Collection; 1933/ ParatypeNo; 61026; USNM/ Property of; USNM (USNM). **1**♀**:** Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24523/ ParatypeNo; 61026; USNM/ Property of; USNM (USNM). **1**♂**:** Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24521/ Collection of the; CALIFORNIA ACADEMY; OF SCIENCES, San; Francisco, Calif. (CAS). **2**♂**:** Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red] (AMNH). **4**♂: Near Blue; Hills. n.p.; V.31.04; W. M. Wheeler,; Collection/ Male/ PARATYPE [in red] (AMNH). **2**♂: Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red] (AMNH). **3**♂: Fresh Creek; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red] (AMNH). **1**♂: Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524/ Collection of the; CALIFORNIA ACADEMY; OF SCIENCES, San; Francisco, Calif. (CAS). **1**♀: Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24525/ PARATYPE; Thonalmus; bahamae; L&M (ANSP). **1**♂: Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24522/ ParatypeNo; 61026; USNM/ Thonalmus; bahamae; Leng Mutchler; Paratype/ Property of; USNM (USNM). **1**♀: Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24525/ PARATYPE; Thonalmus; bahamae; L&M (ANSP). **3**♀: Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ Paratype [in red] (USNM). **4**♀: Near Blue;

Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red] (AMNH). **1**♀: Fresh Creek; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ Paratype [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524 (AMNH).

Material examined in addition to type specimens (n=421): Appendix A.

Diagnosis

Thonalmus aulicus can be separated from all other *Thonalmus* by the combination of the vertex on the head concave, bearing a transverse impression (Fig. 2.13C), the elytra with reticulation and costae weakly developed, apically obliterated with all costae free (Figs. 2.10C, 2.17C), the pronotal cell strongly developed (Fig. 2.16C), the inner margins of male mesofemora strongly curved (Fig. 2.18C) and the parameres of the male genitalia basally expanded and globose, tapering medially but slightly expanded apically, bearing a blunt, apically sub square apex (Fig. 2.19C).

Redescription

General coloration: orange; head orange (Fig. 2.13C); antennae black; elytra fascia metallic blue or green, ranging from apical half (Figs. 2.10C, 2.17C) to 3/4 of elytral basal length, in certain specimens, blue portion of elytra anteriorly extending fascia region to basal third; legs, trochanter and femora usually orange, tarsi, tibiae and apex of femora black (Fig. 2.18C). Head: vertex concave, bearing a transverse impression (Fig. 2.13C); labrum transverse (Fig. 2.13C). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III distally slightly round, 4–5× the length of pedicel; antennomeres IV and V

subequal, XI ¼ longer than precedent, fusiform (Fig. 2.14C). Pronotum: median cell strongly developed (Fig. 2.16C); median lobe weakly produced; anterior and posterior angles round (Fig. 2.16C). Scutellar shied rectangular, apically medially emarginate (Fig. 2.16C). Elytra subparallel, slightly dehiscent (Figs. 2.10C, 2.17C), 3.5× the length of pronotum, weakly reticulated; costae I–III subapically obliterated, rarely strongly developed [some specimens from the Bahamas] (Figs. 2.10C, 2.17C). Abdomen of females simple, not bearing any modifications. Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18C). Male genitalia: parameres basally expanded, globose, tapering medially but slightly expanded apically (Fig. 2.19C); bearing a narrow and shallow cut in dorsal portion of tube, only present in apical region (Fig. 2.19C); apex of tube ventrally blunt, apically sub square (Fig. 2.19C). Median lobe rod-like, tapering towards apex, not surpassing the parameres; apically with membranous portion of median lobe strongly developed (Fig. 2.19C). Flagellum is absent in the species.

Length (pronotum + elytra): 5.3–13.2 mm. **Width (across humeri):** 1.5–3.4 mm.

Distribution

Bahamas and Cuba (Fig. 2.22A). One specimen (WIBF 042540), a female, has been intercepted in Orlando, FL, in 1945, under the board of the floor on an airplane after it returned from a flight to Cuba. This specimen has not been included in our distribution maps because it is a clear case of intercepted specimen.

Type locality

Cuba.

Biology

Specimens of *T. aulicus* are widely distributed in Cuba and in the Bahamas. Specimens have been seen and collected flying in the woods during the day (Darlington 1938) and in coastal coppice, on avocado plants (*Persea americana*, Laurales, Lauraceae), sugar cane (*Saccharum* sp., Poales, Poacea), *Citrus aurantifolia* (Sapindales, Rutaceae), cotton, Caribbean pine (*Pinus caribaea*, Pinales, Pinaceae) and palmetto scrub (*Sabal etonia*, Arecales, Arecaceae), showing a diverse and apparent non-specialized host preference. They have been collected using light traps and blacklight, indicating the species is active also during the night.

Notes

The specimen (WIBF 042263), a male from the MCZ, was included in our examined material list (Appendix A). The specimen contained a label indicating that it was illustrated in Darlington's mimicry paper (1938).

Nomenclatural Notes

Charactus aulicus was listed in Dejean's catalogues (1833, 1837), and even though *Charactus* Dejean, 1833 is a valid name because of the inclusion of several valid species in it (see details in Bousquet and Bouchard 2013: 24), *Charactus aulicus* was never formerly described before in Dejean's catalogue, therefore having the status of a *nomem nudum*.

Taxonomic discussion

Thonalmus aulicus is superficially similar to *T. distinguendus* and *T. mariani*, sharing with the two species the overall weakly developed elytral costae and general habitus appearance

(Figs. 2.17C, 2.17G, 2.17L), the pronotal cell strongly developed shared with *T. mariani*, (Fig. 2.16C, 2.16L) as well as the shape of the male genitalia (Fig. 2.19C, 2.19L).

T. aulicus differs from *T. distinguendus* in the shape of the pronotum, with posterior margins more flat in *T. aulicus* (Fig. 2.16C) (vs. strongly sinuate in *T. distinguendus*, Fig. 2.16G), the strongly developed pronotal cell in *T. aulicus* (Fig. 2.16G) (vs. weakly developed cell in *T. distinguendus*, Fig. 2.16G), the scutellar shield of *T. aulicus* notched apically (Fig. 2.16C) (vs. scutellar shield in *T. distinguendus* entire, Fig. 2.16G), the fascia in the elytra displaying a strong metallic color in *T. aulicus* (Fig. 2.17C) (vs. a weakly developed metallic coloration in *T. distinguendus*, Fig. 2.17G), the male mesoleg with the inner margins of mesofemora strongly curved (Fig. 2.18C) (vs. inner margin of male mesoleg flat in *T. distinguendus*, Fig. 2.18G) and the shape of male genitalia, with the parameres basally expanded and globose, tapering medially but slightly expanded apically, with a shallow and narrow dorsal cut only present apically in *T. aulicus* (Fig. 2.19C) (vs. parameres tapering towards apex, with a deep and wide dorsal cut present in apical third in *T. distinguendus*, Fig. 2.19G).

From *T. mariani*, *T. aulicus* differs by having elytra with reticulation weakly developed (Fig. 2.17C) (vs. strongly developed, especially apically in *T. mariani*, Fig. 2.17G), the antennae in rest position surpassing mid-elytra (Fig. 2.10C) (vs. antennae in rest position not surpassing mid-elytra in *T. mariani*, Fig. 2.10L), the male mesoleg with the inner margins of mesofemora strongly curved, with the trochanters and femora orange (Fig. 2.18C) (vs. inner margin of male mesoleg flat, with the femora mostly black in *T. mariani*, Fig. 2.18L) and the overall shorter species, with a range of 5.3–13.2 mm (vs. a range of 9.6–15.1 mm in *T. mariani*).

***Thonalmus bicolor* (Linnaeus, 1763)**

(Figs. 2.1C, 2.3–2.9, 2.10D, 2.11A, 2.13D, 2.14D, 2.16D, 2.17D, 2.18D, 2.19D, 2.21B, 2.24A)

Cantharis bicolor Linnaeus, 1763: 395. [Habitat in Senegal]

Lampyris bicolor; Linnaeus 1767: 646. [Habitat in Africa]

Pyrochroa bicolor; Fabricius 1775: 203 [Habitat in Africa]; Fabricius 1781: 255; 1787: 163.

Lycus bicolor (Linnaeus, 1763) (in part, Africa records); Fabricius 1792: 108; 1801: 113. Coquebert 1804: 128, tab 29, fig 4. Schönherr 1817: 77 [tome 1, part 3].

Charactus bicolor (Fabricius, 1801) [incorrect authorship, not Fabricius, should be Linnaeus, 1763]. Dejean 1833: 99 [Saint Domingue]. Dejean 1837: 112.

Charactus Formosus Mannerheim *nomen nudum* [S. Domingue]. Dejean 1833: 99. Dejean 1837: 112.

Charactus Pulchellus Guérin *nomen nudum* [S. Domingue]. Dejean 1837: 112.

Calopteron bicolor (Fabricius, 1801) [incorrect authorship, not Fabricius nor Laporte, should be Linnaeus, 1763] (in part, Hispaniola and Cuba); Jacqueline Du Val 1856: 77.

Lycus bicolor (Fabricius, 1801) [incorrect authorship, not Fabricius, should be Linnaeus, 1763]. Lacordaire 1857: 298. [Locality Haity, Cuba]

Calopteron bicolor (Linnaeus, 1763) (in part, Hispaniola, Guadeloupe, Cuba)*;* Gemminger and Harold 1869: 1630. Chevrolat, 1870: 73. Leng and Mutchler 1914: 431.

Thonalmus bicolor (Linnaeus, 1763) (in part, Hispaniola, Cuba, Guadeloupe); Bourgeois 1883: 378. Mayer and Giesbrecht 1884: 254. Fleutiaux and Sallé 1889: 415 [Guadeloupe].

Gorham 1898: 317. Kleine 1933: 19. Blackwelder 1945: 343. Paulian 1947: 155, Fig. 188. Peck 2005: 112. Peck, Thomas and Turnbow 2014: 57. Perez-Gelabert 2015: 69.

Thonalmus chevrolati Bourgeois, 1901: 50 (in part, Hispaniola). Leng and Mutchler 1922: 422. Mutchler 1923: 2. Wolcott 1923 (1924):81. Kleine 1933: 19. Wolcott 1936: 200. Wolcott and Martorell 1937: 535. Blackwelder 1945: 343. Wolcott 1950: 281. Martorell 1976:228. Virki 1978: 229. Perez-Gelabert 2008: 101. Perez-Gelabert 2020: 129.

Thonalmus chevrolatii. Leng and Mutchler 1914: 431 (*Lapsus calami*).

Examined Material

Examined Type material (n=6). Lectotype and paralectotypes designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7. *Cantharis bicolor*. **Lectotype**: **1**: bicolor/ 16/ LINN8480/ LECTOTYPE; Cantharis; bicolor Linnaeus 1763; det. V.S. Ferreira 2020 (LSUK) (Photograph examined, Appendix B, Figure 5A–C). **Paralectotypes**: **1**: LINN8481/ PARALECTOTYPE; Cantharis; bicolor Linnaeus 1763; det. V.S. Ferreira 2020 (LSUK) (Photograph examined, Appendix B, Figure 5D, E). **1**: LINN8482/ PARALECTOTYPE; Cantharis; bicolor Linnaeus 1763; det. V.S. Ferreira 2020 (LSUK) (Photograph examined, Appendix B, Figure 6F, G). **1:** LINN8483/ PARALECTOTYPE; Cantharis; bicolor Linnaeus 1763; det. V.S. Ferreira 2020 (LSUK) (Photograph examined, Appendix B, Figure 6H, I). **1**: LINN8484/ PARALECTOTYPE; Cantharis; bicolor Linnaeus 1763; det. V.S. Ferreira 2020 (LSUK) (Photograph examined, Appendix B, Figure 6J, K).

Thonalmus chevrolati: **1**♀: MUSEUM PARIS; ST-DOMINGUE; HOGARD/ Hogard; St. Domingue/ Thonalmus;chevrolati; Bourg.; J. Bourgeois det 1901/ bicolor; Lin; Antilles;

illegible/ LECTOTYPE; Thonalmus chevrolati Bourg.; det V.S. Ferreira 2019 (MNHN) (Appendix B, Figure 6).

Material examined in addition to type specimens (n=428): Appendix A.

Diagnosis

Thonalmus bicolor shares a lot in common with several species in Hispaniola (see taxonomic discussion below), but it can be separated from all other *Thonalmus* by the combination of the following characters: head vertex concave, bearing a transverse carina (Fig. 2.13D), the elytral reticulation strongly developed, with costa I free, subapically obliterated, and costae II and III fused apically, with fusion converging towards the inner margin of elytra (Fig. 2.8F, 2.17D), the elytral costae I of females strongly produced in basal fourth of elytra (Fig. 2.11A); the inner margin of male mesofemora is strongly curved (Fig. 2.8D, 2.18D), the abdomen of females have the posterior margin of ventrite III medially thickened, bearing a thin prolongation at their ends (Fig. 2.9B, 2.21B) and the male genitalia having slender asymmetrical parameres, slightly bent forward in ventral view, the tube >6.5× longer than phallobase, with median lobe bearing a long flagellum, multiple times longer than the length of the genitalia (Figs. 2.9D and E, 2.19D).

Redescription

General coloration orange; head orange (Fig. 2.13D); elytra fascia metallic blue or green, present in elytral apical third (Figs. 2.8F, 2.10D, 2.11A, 2.17D); legs, trochanter and femora orange, sometimes tarsi and apex of tibiae black (Figs. 2.18D). Head: vertex concave, bearing a

transverse impression (Fig. 2.13D); labrum transverse; maxillary terminal palpomere securiform (Fig. 2.8B, 2.13D). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III ca. 4× the length of pedicel, distally slightly round; flagellomeres IV and V subequal, XI ¼ longer than precedent (Fig. 2.8A, 2.14D). Pronotum: median cell moderately developed (Fig. 2.16D); median lobe weakly produced; anterior angles round, posterior weakly acute, divergent; anterior margin only weakly sinuated (Fig. 2.16D). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16D). Elytra subparallel, slightly dehiscent (Figs. 2.8F, 2.10D, 2.11A), ca. 3.2× length of pronotum, strongly reticulated, bearing irregular cells (Figs. 2.10D, 2.11A); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until subapical portion of fascia (Figs. 2.8F, 2.10D, 2.11A); costa II and III subapically fused, the fusion converging towards inner margin of elytra, faded apically (Figs. 2.8F, 2.10D, 2.11A). Female elytral costae I are strongly developed, much thicker and more pronounced when compared to males (Fig. 2.11A). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins strongly curved, with a small notch in the apical inner margin (Fig. 2.8D, 2.18D). Abdomen of females modified, posterior margin of ventrite III medially thickened, bearing a thin prolongation at their ends (Figs. 2.9B, 2.21B). Male genitalia: parameres slender, asymmetrical, slightly bent forward in ventral view, >6.5× longer than phallobase (Figs. 2.9D and E, 2.19D); bearing a narrow but deep cut in dorsal portion of tube, present from apical 2/3 through apex, covered by a thin translucid membrane (Figs. 2.9D and E, 2.19D); apex of tube acuminated, but not pointy, with thin folds throughout its margin, more prominently visible towards apex (Figs. 2.9D and E, 2.19D). Median lobe rod-like,

tapering towards apex, slightly thickened and dark colored apically (Fig. 2.19D), bearing a long flagellum, multiple times longer than male genitalia but lost in most examined specimens (Figs. 2.9D and E, 2.19D).

Length (pronotum + elytra): 3.7–5.6 mm. **Width (across humeri):** 1.1–1.4 mm.

Distribution

T. bicolor is widely distributed in Hispaniola (Fig. 2.24A). Two *T. bicolor* specimens (WIBF 051452, WIBF 051453) found in Puerto Rico were examined by us. The two specimens are those mentioned by Leng and Mutchler (1922: 422) and for which the information has been repeated in Wolcott (1950: 281, 282). Wolcott (1950) inquired the collector of the specimens, R. H. Van Zwaluwenburg, regarding where the specimens were found, and he replied: "*...when questioned many years later, he* [Zwaluwenburg] *could not remember whether his specimens were collected near the pier at Guánica where the cane boats from Santo Domingo landed, or dead in the hold of the boat after its load of cane fumigated with sulfur had been transferred to the empty waiting cane cars.* (pg. 281)". This is a clear case of human introduction of *T. bicolor* in Puerto Rico, as these are the only two specimens found in the island in 428 examined individuals. For this reason, we decided to not include Puerto Rico in the distribution range of *T. bicolor* considering them intercepted specimens.

Type Locality

Hispaniola. See distribution notes above.

Biology

Thonalmus bicolor is one of the more common and abundant *Thonalmus* species, having a sympatric distribution with several other species in Hispaniola. Specimens have been found in aggregations, in humid woodlands, in coffee (Gentianales, Rubiaceae), Magnoliacea (Magnoliales) forest, secondary pine (Pinales, Pinaceae) and guava forest (Myrtales, Myrtaceae) and on *Citrus* sp. (Sapindales, Citreae). Specimens were collected at light, by hand and beating, with a few records indicating they were collected at night and at lights.

Nomenclatural Discussion

The type species of *Thonalmus*, *Cantharis bicolor* Linnaeus, 1763, has a long and confusing nomenclatural history, for which the consequences are still felt. Originally described in *Cantharis*, and a few years later transferred to *Lampyris* (Linnaeus 1767: 646), the species was described as being distributed in Senegal, in Africa, an error that persisted for many decades. In subsequent years, *bicolor* was transferred again to a different genus, *Pyrochroa*, this time by Fabricius (1775: 203), still being mentioned in subsequent papers as an African species (Fabricius 1781: 255; 1787: 163).

Only a couple of years after Fabricius' papers mentioned above, Olivier (1790), in his *Histoire Naturelle des Insects*, mentioned in the introduction of his lycid chapter that Fabricius created the genus *Lycus* to accommodate many species formerly placed in the *Lampyres* (sic) [*Lampyris*] and *Pyrochres* (sic) [*Pyrochroa*], but that several species were still left in the older genera, indicating that these species needed to be moved. Among the several transfers made by Olivier to *Lycus*, he moved *bicolor*, at that moment *Pyrochroa bicolor* (Linnaeus, 1763), to that

the genus (Olivier 1790: Nr. 29, page 9), and following previous authors, he also listed the species as distributed in Africa.

Despite a few mentions in catalogues, nothing much was published with the group for many decades. More than 40 years after the transfer of *bicolor* to *Lycus* by Olivier, the species was again moved to the newly created genus *Charactus* Dejean 1833 (pg. 112), in the author's catalogue. Dejean's transfer was ignored and neglected by most taxonomists working with the group (see notes under *T. aulicus* and a detailed discussion in Bousquet and Bouchard 2013), however, his paper is important because it is the first to state that *bicolor* was found in Saint Domingue (now Hispaniola), not in Africa, as repeated by the old authors.

With the descriptions of several West Indian lycids by Jacqueline Du Val (1856:77), the author formally transfers *Lycus bicolor* to *Calopteron*, and mentions that the species is distributed in Cuba and Saint Domingue. Jacquelin Du Val classification was followed by several authors, including Chevrolat (1870), who named several other species now classified as *Thonalmus* (see synonimical table under the various species in this paper), until eventually the genus *Thonalmus* was erected by Bourgeois (1883) and *bicolor*, the type species, was finally placed within its current combination, as *Thonalmus bicolor*, with a distribution range limited to Saint Domingue (Hispaniola).

In 1901, in Bourgeois' "*Les Lycides du Museum d'Histoire naturelle de Paris*", he revisited his own *Thonalmus* classification and mentioned in a footnote a communication he had with Oberthür: "*Grâce à une obligeante communication de M. René Oberthür, j'ai acquis la certitude que le* ***Cantharis bicolor*** *L. (Amoenit. acad., VI, 1763, p.395) se rapporte au* ***Lycus***

militaris *Dalm., contrairement à l'opinion de Chevrolat et à celle que j'avais moi-même adoptée dans mom Synopsis du genre Thonalmus (Ann. Soc. ent. Fr., 1883, p. 378). J'ai done dû changer le nom de l'espéce considérée primitivement comme étant le bicolor L., et je l'ai appelée Chevrolati* (pg 50)". The consequences of his changes to the group were enormous: the *bicolor* of Linnaeus, originally treated as an African species by the old authors, but subsequently recognized by important workers as a Hispaniolan species (Jacquelin Du Val and Chevrolat), was from that moment on treated as the species widely collected in Jamaica, while the species widely distributed in Hispaniola received a new name, *Thonalmus chevrolati*. This change in species concepts and distributions was widely followed by the publication of Leng and Mutchler (1922) paper on the beetles of the West Indies, as this was the first modern taxonomic paper that included an identification key for the genus.

Other authors have used the name *bicolor* for species distributed in Jamaica, Hispaniola, Guadeloupe and Cuba (see synonymical tables under *T. militaris, T. bicolor* and *T. dominicensis*), contributing to the continuing confusion regarding the identification of the true *T. bicolor*. Olivier's 1790 paper seems to have being the first on which the species examined was different from Linnaeus' *bicolor* concept; in his redescription Olivier mentions that the species he examined had the following characteristics: "*Les antennes sont noires , comprimées , de la longueur du corps.* ***La tête est noire****. Le corcelet est rougeâtre* (Olivier 1790: Nr. 29, page 10)". The Jamaican species are the only *Thonalmus* that have a black head, clearly indicating that the specimen in hand was indeed from Jamaica. On another occasion, Castelnau (1840: 262) mentioned the characteristics of his *Calopteron bicolor*, distributed in Saint Domingue and Cuba,

as "*Rouge, avec la moitié postérieure des élytres d'un vert éclatant à reflets bleus; antennes et tarses noirs:* ***élytres avec une élévation vers l'extrémité***", a clear indication of what is nowadays listed as *Thonalmus dominicensis* (Chevrolat, 1870). Waterhouse (1878: 98, mentioning *Lycus bicolor* (L., 1763)), specified that the species had: "*Antennae long, slender, very compressed, the basal joint large,* ***pear-shaped"***, yet another characteristic of the Jamaican species.

This confusion with the names and distributions of species was mostly due to the failure to examine the type specimens by the multiple authors that worked with *bicolor*, including the paper by Leng and Mutchler (1922), the most popular and used of all publications dealing with *Thonalmus*. We were able to locate the syntypes of Linnaeus in his collection, currently housed in the Linnean Society of London. We located five syntypes (Appendix B, Fig. 5) and the specimens used in Linnaeus' original description are, in fact, species (plural) that are only present in Hispaniola, not in Jamaica, Cuba or any of the other localities mentioned by previous authors. With these, and also the examination of the type specimens of *Lycus militaris* Dalman, 1817 (Appendix B, Figs. 13–15), we were able to determine that the oldest name available for the Jamaican species with a triangular scutellar shield is *Lycus militaris*, in its current combination as *Thonalmus militaris* (Dalman, 1817), ending nearly a century of a misleading consolidation of the idea that the larger Jamaican *Thonalmus* species was *T. bicolor*, when in fact the name for that species should be *T. militaris*. As for the Linnean syntypes, we found that the type series had in fact two different species under the same name.

Through the examination of *Cantharis bicolor* type series photos (n=5), we were able to recognize two distinct species only known to occur in Hispaniola; both species are

morphologically similar, but present distinct unique morphological characteristics that allowed us to make a clear cut distinction of the species: one species (represented by the syntypes LINN 8481, http://linnean-online.org/25801/, LINN 8482, http://linnean-online.org/25802/, LINN 8483 http://linnean-online.org/25803/, LINN 8484, http://linnean-online.org/25804/) has an elevation in the posterior portion of each elytra, at the apex of the fascia region (Appendix B, Fig. 5D–K), termed in this paper mammiform tubercles (see examples in Figs. 2.17A, F, H, K), while the other species (syntype LINN 8480 http://linnean-online.org/25800/) presented a flat elytra, with a distinct fusion of elytral costae II and III (Appendix B, Fig. 5A and B).

To preserve the nomenclatural taxonomical stability within *Thonalmus*, we have decided that the specimen with a simple elytra, not bearing any modifications on its apices, and presenting the elytral costa II and III fused apically (Appendix B, Fig. 5A and B) (syntype LINN 8480 http://linnean-online.org/25800/) is hereby designated the lectotype of *Cantharis bicolor* Linnaeus, 1763, and the specimen to carry the species concept herein defined for that name. The designation of the syntype LINN 8480 as the lectotype of *Cantharis bicolor* makes the specimen the sole name-bearing type of this nominal taxon, and no later lectotype designation has any validity and supersedes any previous restrictions of the application of the name of the taxon and permanently deprives all other specimens formerly in the syntype series of the status of syntypes (ICZN 1999, Art. 74.1). The other specimens (LINN 8481, 8482, 8483 and 8484), herein designated paralectotypes of *Cantharis bicolor*, fit in the criteria established for the species defined in this study as *Calopteron dominicensis* Chevrolat, 1870, in its current combination as *Thonalmus dominicensis* (Figs. 2.10H, 2.16H). Important to note, regardless of the species

concept adopted for the specimens formerly placed in the syntype series (now lectotypes and paralectotypes, respectively), as established by the ICZN (1999), Art. 72.9, if two or more nominal species are included within a single taxonomic taxon (as is the case), their respective name-bearing types remain unchanged, so all specimens in the type series of *Cantharis bicolor* will permanently bear their type status.

Taxonomic Discussion

T. bicolor, *T. centralis*, *T. dominicensis*, *T. quadrilacinius* and *T. thomasi* are very similar among themselves. *T. bicolor* shares with all these species the concave head bearing a transverse carina (Figs. 2.13D, E, H, O, S), the antennae shape (Figs. 2.14D, 2.14E, 2.14H, 2.15O, 2.15S), the modified abdomen of females, bearing appendices (Figs. 2.21B, C, D, F, H) (in this matter, *T. bicolor* and *T. dominicensis* have identical female abdominal modifications, Fig. 2.21B and D) and an overall similar habitus appearance (Figs. 2.10D, E, H, O, S). *T. bicolor* shares with *T. centralis* and *T. quadrilacinius* the elytral costa conformation, with elytra costa I fading towards apex and elytral costae II and III fused apically (Figs. 2.17D, E, O), while with *T. dominicensis*, *T. quadrilacinius* and *T. thomasi* it shares the inner margin of male mesofemora strongly curved (Figs. 2.18D, H, O, S), and the overall shape and structure of the male genitalia, bearing a long flagellum (the latter also shared with *T. centralis*) (Figs. 2.21D, 2.14E, 2.14H, 2.15O, 2.15S).

T. bicolor differs from *T. centralis* in having the inner margin of male mesofemora strongly curved (Fig. 2.18D) (vs. inner margin of male mesofemora of *T. centralis* flat, Fig. 2.18E), the elytral costa I of females strongly developed in *T. bicolor* (Figs. 2.11A) (vs. similar in males and females in *T. centralis*), the abdomen of females with the posterior margin of

ventrite III medially thickened, bearing a thin prolongation at their ends (Figs. 2.9B and 2.21B) (vs. having the female abdomen ventrites III–IV of *T. centralis* posteriorly strongly medially thickened throughout, reaching the lateral margins, Fig. 2.21C) and the shape of the male genitalia, having slender asymmetrical parameres, being slightly bent forward in ventral view, with base of the tube only weakly expanded and the entire tube length >6.5× longer than phallobase in *T. bicolor* (Figs. 2.9D and E, 2.19D) (vs. symmetrical, only slightly bent forward, and with the base of the tube moderately expanded and the entire tube length <10× longer than phallobase in *T. centralis*, Fig. 2.19E).

T. bicolor differs from *T. dominicensis*, *T. quadrilacinius* and *T. thomasi* by having the elytral costae II and III fused apically (Figs. 2.8F, 2.17D) (vs. elytral costae free in *T. dominicensis* and *T. thomasi*, Figs. 2.17H, O), in having the apex of the elytra simple, not bearing any expansion (Fig. 2.17D) (vs. bearing mammiform tubercles in *T. dominicensis*, Fig. 2.17H); *T. bicolor*, despite sharing a modified female abdomen with these three species, their conformation is different in *T. quadrilacinius* and *T. thomasi*, differing from them by only having the posterior margin of ventrite III medially thickened, bearing a thin prolongation at their ends in *T. bicolor* (Figs. 2.21B) (vs. having the ventrites III and IV of females medially thickened and bearing thin prolongations at their ends, as well as little pegs in the median lateral portions of segments II-IV in *T. quadrilacinius*, Fig. 2.21F; vs. female abdominal segments III and IV with posterior margin thickened throughout, more strongly developed in segment III in *T. thomasi* females, Fig. 2.21H).

Note

The specimen of *Lycus bicolor* (Linnaeus, 1763) illustrated in Coquebert (1804: 128, tab 29, fig 4) has a triangular scutellar shield, a characteristic now known to belong to *T. militaris*, a species found in Jamaica, not in Hispaniola, as the true *T. bicolor* is distributed; upon a detailed examination of the description and other characteristics of the presented drawings, such as the color of the head orange with a transverse labrum (characteristic of *T. bicolor*, while the head is black and the labrum is as long as wide than wide in *T. militaris*) and a scape not greatly enlarged (characteristic of *T. bicolor*, while the scape is greatly enlarged in *T. militaris*) we have concluded that the drawing is simply inaccurate in its depiction of the scutellar shield of the specimen there represented, and Coquebert was indeed referring to the Hispaniolan species *Thonalmus bicolor*, not the Jamaican species *Thonalmus militaris*.

***Thonalmus centralis* new species**

(Figs. 2.1F, 2.4, 2.5, 2.7, 2.10E, 2.13E, 2.14E, 2.16E, 2.17E, 2.18E, 2.19E, 2.21C, 2.25A)

Examined material

Type material examined (n=41). Holotype: 1♂: ♂ / RioSanJuan; DR.3 - '28; G.S.Miller. [WIBF 043026] (USNM). **Paratypes: 1♀:** DOM. REPUBLIC; La Vega Prov. 4100' ; 2 km. E. Tireo ; V-8-1985 ; J. E. Wappes (WIBF). **2♂, 1♀:** Higueral, S.Dom.; II.1914 (AMNH). **1♂:** San Lorenzo,; R. Dom.VI.27-29,15 (AMNH). **2♂:** Constanza; Aug.'38, Dom.Rep. ; 3-4,000 ft. ; Darlington (MCZ). **1♂:** Constanza to; Jarabacoa; Aug.'38,Dom.Rep. ; 2-4,000

ft,Darl. (MCZ). **1♂:** Trow d' Eaw ; 19-XI-4000 ft / Haiti ; 1934 ; Darlington / Museum of ; Comparative ; Zoology (MCZ). **1♂:** LaRomana,S.D; 3-I-1914 (FSCA). **1♀:** DOMINICAN REPUBLIC:; La Vega Province; 5km SE Jarabacoa; 3-VI-1994; coll. M.C. Thomas (FSCA). **1♀:** DOMIN.REP: Prov.LaVega; La Cienega, 1100m; 19°04.07'N, 70°51.68'W; 29JULY1999, at night; M.A.Ivie & K.A.Guerrero (WIBF). **2♀:** DOMIN.REP: Prov.La Vega; La Cienega, 1100m; 19.0678°N, 70.8613°W; 29JULY1999, R.S.Miller ; BL, Hg vapor, beating (WIBF). **5♂:** DOM.REP: Prov. La Vega; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg. (WIBF). **7♂, 1♀:** Las Abejas; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols.; Matusik-Guerrero / [specimen codes ranging from 35005, 35004, 34992, 35043, 35041, 35037, 35017, 35009] (MNHNSD). **3♂:** Las Abejas, Sierra; Bahoruco; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI -1984; cols. Matusik-Guerrero / [specimen codes ranging from 35039, 35014, 35032] (MNHNSD). **2♂:** REP. DOM: La Vega, Jarabacoa; La Cienega de Manabao; 8-II-2001; Josue Henriquez/ 15.1159-19 / [MNHNSD 15.117 and MNHNSD 15.117] (MNHNSD). **1♂:** DOMINICAN REPUBLIC:Prov.; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W. Dunkle(FSCA). **1♂:** DOMINICAN REPUBLIC: ; La Vega Prov., PN Armando ; Bermudez, km 1-3 along trial ; W of La Cienaga 900-1100 m ; 19°01.753'N, 70°54.654'W ; beating - 22 June 2005 ; Steven Lingafelter (WIBF). **1♂:** Republica Dominicana; Prov.Sanchez Ramirez; Mina Pueblo Viejo; Hatillo, Margajita; 369-310 mE; 2095-124 mN; 23.iv.2003; Col.R.H. Bastardo/15.1178-19/MNHNSD 15.136 (MNHNSD). **1♂:** REPUBLICA DOMINICANA: La; Vega, Constanza, Reserva; Cientifica Ebano Verde, El; Arroyazo, 18 September; 1999; coll. Daniel Perez &

Sardis/ 15.1141-19 / MNHNSD 15.99(MNHNSD). **2♂:** LAS Abejas; PROV.; PEDERNALES, R.D.; 27-VI-1989; cols.; Matusik-Guerrero / [35010 and 35025] (MNHNSD). **1♂:** DOMINICAN REPUBLIC:; Prov. La Altagracia; 10km. E. Nisibon; 13-VI-1986, L.Stange ; & R. Woodruff (WIBF). **1♂:** Constanza to; Jarabacoa; Aug.'38, Dom.Rep.; 2-4,000 ft,Darl. (MCZ). (Appendix A).

Etymology

The name of this species alludes to its predominant Cordillera central distribution in the Dominican Republic.

Diagnosis

Thonalmus centralis is very similar to *T. bicolor* and the species shares many characteristics with other Hispaniolan *Thonalmus*, but it can be separated from all of them by the following combination of characters: head vertex concave, bearing a transverse carina (Fig. 2.13E), the elytral reticulation strongly developed, with costa I free, subapically obliterated, and costae II and III fused apically, with fusion converging towards the inner margin of elytra (Fig. 2.17E), the inner margin of male mesofemora flat (Fig. 2.18D), the female abdomen ventrites III–IV posteriorly strongly medially thickened throughout (Fig. 2.21C) and the base of parameres of the male genitalia moderately expanded at the base and apex of tube with apex acute when viewed ventrally (Fig. 2.19E). The species also present a preponderance of black coloration in the legs and lateral margins of pronotum.

Description

General coloration: orange, some specimens might present margins of pronotum black; head orange (Fig. 2.10E); elytra fascia metallic blue or green, present in elytral apical third (Figs. 2.10E, 2.17E); legs, trochanter and femora orange, dorsally black, tarsi black (Figs. 2.18E); specimens from Las Abejas have a preponderance of specimens with legs completely black and margins of pronotum black; Head: vertex bearing a transverse impression (Fig. 2.13E); labrum transverse (Fig. 2.13E). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III ca. 4× the length of pedicel, distally slightly round; antennomeres IV and V subequal, XI ¼ longer than precedent (Fig. 2.14E). Pronotum: median cell weakly developed (Fig. 2.16E); median lobe weakly produced; anterior angles round, posterior strongly acute, divergent (Fig. 2.16E). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16E). Elytra subparallel, weakly dehiscent posteriorly (Fig. 2.10E), ca. 4× the length of pronotum, strongly reticulated, bearing irregular cells (Figs. 2.10E, 2.17E); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until subapical portion of fascia (Fig. 2.17E); costa II and III subapically fused, the fusion converging towards the inner margin of elytra, faded apically (Fig. 2.17E). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18E). Abdomen of females modified, posterior margin of III–IV posteriorly strongly medially thickened throughout (Fig. 2.21C). Male genitalia: parameres slender, symmetrical, slightly bent forward in ventral view, the base moderately expanded, <10× longer than phallobase (Fig. 2.19E); bearing a narrow and shallow cut in dorsal portion of the tube, present in apical 3/3, covered by a thin translucid

membrane (Fig. 2.19E); apex of tube acuminated, in ventral view it is pointy, with thin folds throughout its margin (Fig. 2.19E). Median lobe rod-like, tapering towards apex, same thickness throughout its entire extension (Fig. 2.19E), specimens bearing remains of a flagellum (Fig. 2.19E).

Length (pronotum + elytra): 5.9–10.8 mm. **Width (across humeri):** 1.6–2.6 mm.

Distribution

Hispaniola (Fig. 2.25A).

Type Locality

Rio San Juan, Dominican Republic.

Biology

Very little is known about this species. Labels indicate that *T. centralis* have been collected in black light traps and beating in vegetation.

Taxonomic Discussion

T. centralis closest species are *T. bicolor* and *T. thomasi* (see taxonomic discussion under *T. bicolor*).

***Thonalmus darlingtoni* new species**

(Figs. 2.1F, 2.3–2.7, 2.10F, 2.13F, 2.14F, 2.16F, 2.17F, 2.18F, 2.19F, 2.21A, 2.25A)

Examined Material

Type material examined (n=219). Holotype: 1♂:DOMIN.REP : Prov. Pedernales; P.N.Sierra Baoruco, 1285m; 32km N CaboRojo, pine for; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation; #1 [WIBF 042933] (WIBF). **Paratypes: 1:** DOM.REP: Prov.Pedernales; 24 km N.Cabo Rojo, 610m; 20 AUG 1988,wet forest; M.Ivie.Philips & Johnson(WIBF). **1:** DOMINICAN REPUBLIC:Prov. ; Pedernales, Las Mercedes; Rd., Pine Zone, 27-V-1991; S. W. Dunkle(WIBF). **1:** DOMINICAN REP.:Prov.; Barahona, nr.Filipinas; Larimar Mine:20-26-; VI-1992: Woodruff,; Landolt,& Skelley (FSCA). **1♀:** Cape Haitien,; W.M.MannHaiti / Museum of ; Comparative ; Zoology (MCZ). **1♀:** NE foothills; La Hotte; 2-4000ft.; Oct.10-24 / Haiti; 1934; Darlington / Museum of : Comparative ; Zoology (MCZ). **6♀:** Grande Riviere; Hayti, Mann / Museum of ; Comparative; Zoology (MCZ). **1♀:** Hinoha Hayti; July Ependarn / Museum of; Comparative; Zoology (MCZ). **2♀:** Camp Perrin; nr 1000 ft.; Oct. 8-27 / Haiti; 1934; Darlington / Museum of : Comparative; Zoology (MCZ). **2♂:** Constanza to; Jarabacoa; Aug'38, Dom.Rep.; 2-4,000 ft,Darl. (MCZ). **9♂:** Grande Riviere; Hayti, Mann / Museum of; Comparative; Zoology (MCZ). **5♂:** Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology MCZ (MCZ). **1♂:** Mt. Quita- ; Espuela, Dom. Rep. ; July'38,2-3,000 ft. ; Darlington (MCZ). **1♂:** Mt. Diego de; Ocampo, Dom. Rep.; July'38,3-4,000 ft. ; Darlington (MCZ). **1♂:** gr. Riviere (MCZ). **1♂:** Higueral, S. Dom. ; II.1914 / Male (AMNH). **2♀:** Higueral, S. Dom. ; II.1914 / Female (AMNH). **2♀:** Aux Caves, Haiti ; Mch. 15-20, '22 ; F. 4644 (AMNH). **2♀:** DOMINICAN REP.: Prov. ; Barahona, near Filipinas ; Larimar Mine ; 26-VI/7-VIII-1992 ; F. W. Skillman Jr. ; beating (FSCA). **6♂, 5♀:** DOMIN.REP : Prov. Pedernales ;

P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1 (WIBF). **1♀:** DOMIN.REP: Prov. Pedernales; Par.Nac.Sierra de Baoruco ; 42.5km N. El Aceitiller ; 09AUG1999, 1495m ; M.A. Ivie colr.(WIBF). **2♀:** DOMIN.REP: Prov.Hato Mayor; 3 km S. Sabana de la Mar; 19°01.800 'N, 69°29.092 'W; 04AUG1999, 20m; M.A.Ivie & K.A.Guerrero (WIBF). **1♀:** DOMIN.REP: Prov.Hato Mayor; 3kmS. Sabana de la Mar, 21m; 19°01.800 'N, 69°29.092 'W; 04AUG1999, M.A.Ivie ; dead logs and fungus(WIBF). **1♀:** DOM REP: Pedernales; Prov. 25.5km N Cabo; Rojo 19-21-V-1991; M.C.Thomas, beating (WIBF). **4♀:** DOM.REP:Prov.Pedernales; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson(WIBF). **1♂:** DOM.REP: Prov. La Vega; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg. (WIBF). **2♀:** DOM.REP:Hato Mayor; 3km S. Sabana de la Mar; 19.03°N, 69.385°W; 04 AUG 1999, 21m; R. S. Miller colr (WIBF). **1♀:** Paso de la Vaca; Mons. Nouel-; Constanza Rd,; Prov. La Vega,; R. D.; Dec. 27, 1955.; Alt. 1500 m. / J. Maldonado.; Caprilles, Coll. (NMNH). **1♀:** ♀ / Mariani; Haiti 10-27-'25; WAHoffman (NMNH). **1♀:** Haiti No 363-25; Kenscoff. Haiti; April 4 1927; ♀ / G.N.Wolcott ; Coll.(NMNH). **1♀:** Petionville; Haiti. Jul.8 ; [Unintelligible] ; # 89. 1931 / ♀(NMNH). **1♀:** At Blanton mine N. of ; San Christobal,R.Dom. ; ♀ July 27, 1917 (377). ; Harold Morrison.(NMNH). **1♀:** ♀ / BassinBlen ; Tortne [Unintelligible] ; Haiti ECA ; GMLeonard / Apr' ug ; #23 (NMNH). **1♀:** DOMINICAN REP.:Prov. ; Barahona.nr.Filipinas; Larimar Mine: 26-VI-7- ; VII-1992: Woodruff & ; Skelley. day beatin (FSCA). **29♂,1♀:** DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson (WIBF). **1♂:** DOM

REP:Barahona Prov. ; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms (WIBF). **3♂:** Grande Riviere. ; W.M.MannHaiti / WMMann ; Coll. ; 1954 (USNM). **1♂:** Haiti; Kenscoff; VIII-11-35 / Sta 23 ; Blackwelder(USNM). **1♂:** 8 miles west Jayaco, la Vega Prov., ; Republica Dominicana ; August 3, 1967 ; J. C. Schaffner (TAMU). **1♂:** Sanchez,Dom.Rep.; July'38 ; Darlington (CAS). **1♂:** Higueral, S.Dom.; II.1914 / Male (CAS). **1♂:** Higueral, S.Dom. ;II.1914 / Male (ANSP). **3♂, 2♀:** HAITI: 3 MI. EAST; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL. (FSCA). **1♀:** Haiti; Kenscoff ; VIII-11-35 / Sta 23 ; Blackwelder (USNM). **1♀:** Cape Haitien,; W.M.MannHaiti / WMMann; Coll.; 1954 (USNM). **1♀:** Furcy, 4000'; Haiti 10-vii-1956; B&B Valentine / R.S.Miller ; Collection (WIBF). **1♀:** Morne Guimby, 22 km.; SE. Fond Verrettes,; Haiti 20-vii-1956 ; 6500' B.&B. Valentine / Foret des Pins, ; Hardwood cloud ; forest, beating. / R.S.Miller ; Collection (WIBF). **1♀:** DOM.REP: Prov. La Vega; Jarabacoa-El Rio Rd.; 910m. 11APR1992. M.Ivie; D.Sikes & W.Lanier (WIBF). **3♀:** DOM.REP:Prov.Pedernales; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson (WIBF). **1♀:** DOM. REPUBLIC; Puerto Plata Prov.; 14 km. W. P. Plata; V-11-1985; J.E. Wappes (WIBF). **6♂:** DOM.REP:Prov.Pedernales; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson (WIBF). **1♂:** DOMIN.REP: Prov. Pedernales; Par.Nac.Sierra de Baoruco ; 42.5km N. El Aceitiller ; 09AUG1999, 1495m ; M.A. Ivie colr. (WIBF). **1♂:** DOMINICAN REPUBLIC:Prov.; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W. Dunkle (WIBF). **1♂:** DOMINICAN REP.:Prov.; Barahona.nr.Filipinas; Larimar Mine: 20-26-; VI-1992: Woodruff,; Landolt, & Skelley (FSCA). **1♂:** DOMINICAN REPUBLIC: Barahona Prov.,near; Filipinas Larimar ; Mine ; 1/6-VII-1992 ; F.W.Skillman Jr. (FSCA). **1♂:** HAITI:

Dept. Sud-Oueste ; Massif de La Selle; Morne d'Enfer 1850m.; 15-V-1984 M.C. Thomas (WIBF). **1♂:** R. DOMINICANA, LA CUMBRE; DE PUERTO PLATA. 2000'; MAY 8-9 1985; E. GIESBERT, COLL. (WIBF). **1♂:** Sanchez.R.II; III.29-IV.1916 / Male (AMNH). **1♂:** Higueral,R.D.; Apr.10.1913 / J.R.Johnston; Coll. / P. R. S. G. A.; Ac.No. 844 1913 / Male (NMNH). **1♂:** San Lorenzo,; R.Dom. VI 27-29,15 / Female (AMNH). **1♂:** At Blanton mine N. of ; San Christobal,R.Dom. ; July 26, 1917 (374). ; Harold Morrison ♂ (NMNH). **1♀:** REPUBLICA DOMINICANA; Monsenor Nouvel; La Presa de Blanco; 11-14-V-2001; H. Takizawa / 15.1151-19 / MNHNSD 15.109 (MNHNSD). **1♀:** DOM.REP:Prov.Pedernales; Las Abejas, 1225m; 18.1504'N, 71.6231°W; 09 AUG 1999; R.S.Miller colr (WIBF). **1♂:** DOM.REP:Prov.Pedernales; 30.5km N.Cabo Rojo ; 18°07.28'N, 71°35.84'W ; 20 JULY 1999. 995m; R.S.Miller colr. (WIBF). **8♂, 2♀:** DOM.REP:Prov.Pedernales; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m; 18°07.36'N, 71°34.66'W; 26JULY1999. R. S. Miller; Aggregation #1 (WIBF). **5♀:** DOM.REP: Prov. La Vega; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld (WIBF). **2♂:** DOM.REP: Prov. La Vega; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg. (WIBF). 1♀: DOM.REP: Prov. La Vega; Par.Nac.Armando Bermudez ; LaCienaga-LosTablones; 1100-1245m, 09 APR 1992 ; M.A.Ivie.D.S.Sikes.W.Lanier (WIBF). **2♂:** DOMIN. REP: Prov. Pedernales; Par.Nac.Sierra de Baoruco ; Las Abejas, 09AUG1999,1250m ; 18°09.023'N, 71°37.387'W ; M.A.Ivie & K.A.Guerrero / at ; light (WIBF). **1♀:** DOMIN.REP: Prov.Hato Mayor; 3 km S. Sabana de la Mar; 19°01.800 'N, 69°29.092 'W; 04AUG1999, 20m; M.A.Ivie & K.A.Guerrero (WIBF). **1♂:** DOM.REP:Prov.Pedernales; 24 km

N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson (WIBF). **1♀:** DOM.REP: Prov.HatoMayor; W. Sabana de la Mar; Par. Nac. Los Haitises; bosque humido. 16 APR; 1992. M. A. Ivie colr (WIBF). **1♀:** DOM.REP: Pr.Pedernales ; Las Abejas, 1225m ; 18°09.032'N, 71°37.475W ; 22 JULY-09 AUG 1999 ; Ivie etal.Malaise trap (WIBF). **1♂:** DOM.REP:ProvHatoMayor; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier (WIBF). **1♀:** Wenskoff, Haiti; VII 1941; Payne 1450 m (MCZ). **1♀:** Constanza to; Jarabacoa; Aug'38, Dom.Rep.; 2-4,000 ft,Darl. (MCZ). **1♀:** HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL. (FSCA). **1♂:** Higueral.S.Dom.; II.1914 / Male (AMNH). **1♂:** DOMINICAN REP.: Prov. ; Barahona,nr. Filipinas, ; Larimar Mine;20-26-VI- ; 1992; R.E. Woodruff & ; P.E.Skelley, at light / -2 (FSCA). **1♀:** REPUBLICA DOMINICANA; Monsenor Nouvel; La Presa de Blanco; 11-14-V-2001; H. Takizawa / 15.1150-19 / MNHNSD 15.108 (MNHNSD). **1♀:** REPUBLICA DOMINICANA: La; Vega, Jarabacoa, PN; Armando Bermudez; Los Tablones (19°3'308",; 70°53'49"), 1278 m, 20 July; 2002, coll. Sardis Medrano / 15.1149-19 / MNHNSD 15.107 (MNHNSD). **1♂:** REPUBLICA DOMINICANA: La; Vega, Jarabacoa, La; Cienega de Manabao; 15 February 2000; coll. Josue Henriquez / 15.1185-19 / MNHNSD 15.143 (MNHNSD). **1♀:** REPUBLICA DOMINICANA: La; Vega, Constanza, La; Ondonada, 12-13 July 1998; coll. Santo Navarro & Denia; Veloz / 15.1186-19 / MNHNSD 15.144 (MNHNSD). **1♀:** REP. DOM: La Vega, Jarabacoa; La Cienega de Manabao; 8-II-2001; Josue Henriques / 15.1157-19 / MNHNSD 15.115 (MNHNSD). **1♀:** REP. DOM: La Vega, Jarabacoa; La Cienega de Manabao; 8-II-2001; Josue Henriques / 15.1156-19 / MNHNSD 15.114 (MNHNSD). **1♀:** REPUBLICA DOMINICANA: La; Vega,

Constanza, El; Aguacate, 19-16 July 1998; coll. S. Medrano, D. Veloz, &; S. Navarro / 15.1171-19 / MNHNSD 15.129 (MNHNSD). **1♀:** REPUBLICA DOMINICANA: La; Altagracia, Bayahibe,; Parque Nacional del Este,; Guaraguao Sendero Cueva; del Puente, 12 June 2001,; coll. Josue Herinquez / 15.1143-19 / MNHNSD 15.101 (MNHNSD). **1♀:** REPUBLICA DOMINICANA:; Duarte, San Francisco de; Macoris, Laguna Cano; Santana, 30 June 1999; coll. Santo Navarro & Denia; Veloz / 15.1177-19 / MNHNSD 15.135(MNHNSD). **1♀:** REPUBLICA DOMINICANA:; Monsenor Nouel, Bonao,; Blanco, Sende [Unintelligible] os; 13 May 2001; coll. C. A. Nunez y Haruo; Matsuzawa / 15.1162-19 / MNHNSD 15.120 (MNHNSD). **1♂:** Higueral; Sto Domingo; W.I. II-1914 / E.G.Smyth ; Collector / F.R.MasonColl. / 2 / ac22926 (AMNH). **1♂:** Pt.au Prince ; Haiti ; R.J.Crew ♂ / ex coll. ; Wickham (NMNH). **1♂:** Acc.363-25. ; Port au Prince. ♂ ; Haiti June 1925 / G.N.Wolcott ; Coll. (NMNH). **1♂:** REP.DOM.: Barahona, Cachote,; Finca de Vigilio Uceta (18°6'53"N,; 71°11'649"W), 1235 m, 30 June; 2004, coll. K.Guerrero,D.Lawrie,& ; D.Veloz / Photographed ; 2002-2003 ; CBSD / 15.1181-19 / MNHNSD 15.139 (MNHNSD). **1♂, 1♀:** REP.DOM:Monse or Noel; Bonao, Loma el pichon ; 27-30.VI, 1998 ; D. Veloz y S. Navarro / 15.1165-19 / MNHNSD 15.123 [and .124] (MNHNSD). **1♂:** REPUBLICA DOMINICANA; Hato Mayor; nr. San Rafael; 27-IV-2001; H. Takizawa / 15.1176-19 / MNHNSD 15.134 (MNHNSD). **1♂:** Herrero; DISTRITO NACIONAL; Rep. Dom.; 18-IV-1985; col. Reynoso / 31150 / 15.1114-19 / 15.1115-19 / MNHNSD 15.73 (MNHNSD). **1♂:** Herrero; DISTRITO NACIONAL; Rep. Dom.; 18-IV-1985; col. Reynoso / 31152 (MNHNSD). **1♂:** LAS Abejas; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; cols.; Matusik-Guerrero / 35033 (MNHNSD). **1♂:** LAS Abejas; Pedernales, PROV.;

PEDERNALES, R. D.; 27-VI-1989; cols.; Matusik-Guerrero / 35020 (MNHNSD). **1♂:** LA Abejas; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; cols.; Matusik-Guerrero / 34996 (MNHNSD). **1♀:** LAS Abejas; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; cols.; Matusik-Guerrero / 35021 (MNHNSD). **1♂:** LAS Abejas; PROV.; PEDERNALES, R. D.; 27-VI-1989; cols.; Matusik-Guerrero / 35028 (MNHNSD). **1♂:** LAS Abejas; PROV.; PEDERNALES, R. D.; 27-VI-1989; Matusik-Guerrero / 35024 (MNHNSD). **1♂:** LAS Abejas; PROV.; PEDERNALES, R. D.; 27-VI-1989; cols,; Matusik-Guerrero / 34983 (MNHNSD). **1♀:** LAS Abejas; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; cols,; Matusik-Guerrero / 34981 (MNHNSD). **1♂:** LAS Abejas; Sierra Baharoco; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; Matusik-Guerrero / 35007 (MNHNSD). **1♀:** LAS Abejas Sierra; Baharoco; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; cols. Matusik-Guerrero / 34998 (MNHNSD). **1♂:** Las Abejas, Sierra; Baharoco; Pedernales, PROV.; PEDERNALES, R. D.; 27-VI-1989; cols. Matusik.Guerrero / 34982 (MNHNSD). **1♀:** ALTO BANDERA; CONSTANZA; La Vega, PROV.; LA VEGA, R. D.; I/V/1988; col.; H. L. DOMINGUEZ / 32469 (MNHNSD). **1♂:** ALTO BANDERA; CONSTANZA; La Vega, PROV.; LA VEGA, R. D.; I/V/1988; col.; H. L. DOMINGUEZ / 32472 / 15.1130-19 / MNHNSD 15.88 (MNHNSD). **1♀:** Salto de las Aguas; blancas.; Constanza, PROV.; LA VEGA, R. D.; 17-VIII-1979; col. Marcano Hijo-Dguez. / 06294 (MNHNSD). **1♀:** Salto de las Aguas; blancas.; Constanza, PROV.; LA VEGA, R. D.; 17-VIII-1979; col. Dguez-Marcano Hijo. / 06295 (MNHNSD). **1♀:** Las Abejas, Sierra; Baharoco; PROV.; PEDERNALES, R. D.; 19-VI-1989; cols. Matusik-Guerrero / 34243 / 15.1118-19 / MNHNSD 15.76 (MNHNSD). **1♂:** El Majagual.; Azua, PROV.; AZUA, R. D.; 22-VII-1979;

Dominguez-Marcano. Reynoso / 04728 / 15.1206-19 / MNHNSD 15.164 (MNHNSD). **1♀:** El Manaclar; San Jose' de Ocoa; RB-4-19 [Unintelligible]; Cicero-Marcano. / 02485 / 15.1127-19 / MNHNSD 15.85 (MNHNSD). **1♂:** GrandeRiviere; W.M. MannHaiti/ Museum of; Comparative; Zoology (MCZ). **1♂:** DOM. REP: Prov. Pedernales; 24 km N. Cabo Rojo, 610m; 20 AUG 1988, wet forest; M. Ivie, Philips & Johnson (WIBF). **1♂:** D.R.: Las Abejas; 1300m, cloud forest; S.A. Marshall (DEBU). **1♂:** Mt. Diego de; Ocampo, Dom. Rep.; July'38,3-4,000 ft. ; Darlington (MCZ). **2♂:** DOM. REP: Prov. Pedernales; 24 km N. Cabo Rojo, 610m; 20 AUG 1988, wet forest; M. Ivie, Philips & Johnson (WIBF). **1♂:** Haiti 3 MI. East; Kenscoff; V.30.1973/ B.K. Dozier/ coll. (FSCA). (Appendix A).

Etymology

This species is named in honor of the great U.S. beetle systematist Philip Jackson Darlington Jr. (1904–1983). Darlington's experiments on mimicry in Cuba using *Thonalmus* (1938) was an inspirational piece for the development of the work here proposed and this is our homage to him.

Diagnosis

Thonalmus darlingtoni is characterized by the combination of the following characters: head vertex concave, bearing a transverse impression (Fig. 2.13F), the blue portion of elytra anteriorly extending fascia region to basal third (Fig. 2.10F, 2.17F), the costa I fused to the inner margin of elytron and the costae II and III free apically, with each elytron bearing a pair of mammiform tubercles in the apex (Fig. 2.10F, 2.17F), the male mesolegs with inner margins flat

(Fig. 2.18F) and the male genitalia with parameres slightly expanded at the base, bearing a deep cut in the dorsal portion of the tube that is present in the apical half, and the median lobe strongly developed, basally thicker, tapering towards apex (Fig. 2.19F).

Description

General coloration: orange; head orange, anterolateral portions of head black (Fig. 2.13F); elytra fascia metallic blue, reaching apical third of elytral length, blue portion of elytra anteriorly extending fascia region to basal third (Figs. 2.10F, 2.17F); legs orange, tarsi, tibiae and dorsal portion of femora black (Fig. 2.18F); some specimens with legs black, except by coxae and base of femora, which are orange. Head: vertex concave, bearing a transverse impression; labrum transverse (Fig. 2.13F). Antennae subserrate; scape conical, weakly developed, antennomere III ca. 7× the length of pedicel; antennomeres IV and V subequal, XI subequal in length with the precedent (Fig. 2.14F). Pronotum: median cell weakly developed (Fig. 2.16F); median lobe weakly produced; anterior angles round, posterior angles moderately acute, divergent (Fig. 2.16F). Scutellar shied rectangular, apically medially emarginate, the notch ranging from deeply to shallowly deep (Fig. 2.16F). Elytra subparallel, slightly dehiscent (Fig. 2.10F), 3.5× length of pronotum, strongly reticulate, bearing irregularly shaped cells; elytral costae strongly developed and visible; costa I reaching 2/3 length of elytra, fused to inner margin (Figs. 2.10F, 2.17F); costa II and III subapically free or only superficially or weakly fused, fusion greatly expanded; apices of costae II and III bearing each a mammiform tubercle (Figs. 2.10F, 2.17F). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18F). Abdomen of females simple, not bearing any modifications (Fig.

2.21A). Male genitalia: parameres fusiform, tapering towards apex, bearing a deep cut in dorsal portion of tube that is present in apical half; apex of tube acuminate, tip ventrally blunt (Fig.2.19F). Median lobe strongly developed, basally more developed, round, tapering towards apex, not extending length of the parameres, specimens bearing remains of a flagellum (Fig. 2.19F).

Length (pronotum + elytra): 6.8–12.1 mm. **Width (across humeri):** 1.8–3.7 mm.

Distribution

Hispaniola (Fig. 2.25A).

Type Locality

Parque Nacional Sierra de Baoruco, Pedernales, Dominican Republic.

Biology

T. darlingtoni specimens have been found in aggregations, in humid woodlands and wet forests, tropical almond blooms, dead logs with fungus and in pine tree forests. Specimens were collected at light, indicating specimens are active at night, by beating and in Malaise traps.

Taxonomic Discussion

T. darlingtoni and *T. abejaensis*, *T. guerreiroi* and *T. humeralis* are part of the group that shares the elytral costa I fused to the inner margin of elytra (Figs. 2.10A, F, I, K) and that possesses the inner margin of male mesolegs flat (Figs. 2.18A, F, I, K) (see taxonomic discussion under *T. abejaensis*). However, *T. darlingtoni* can be separated from *T. abejaensis* and T.

humeralis by having the elytral costa II and III free apically (Figs. 2.10F, 2.17F) (vs. elytral costa II and III distinctly fused in *T. abejaensis* and *T. humeralis*, Figs. 2.17A, 2.17K), the concave vertex on the head, bearing a transverse impression in *T. darlingtoni* (Fig. 2.13F) (vs. convex vertex in *T. abejaensis* and *T. humeralis*, Figs. 2.13A, 2.16K), the less pronounced humeri, terminal maxillary palpomere not enlarged apically and the presence of largely irregular cells on elytra of *T. darlingtoni* (Figs. 2.10F, 2.13F, 2.17F) (vs. strongly pronounced humeri, terminal maxillary palpomere enlarged and strongly developed and the subquadrate elytral cells of *T. humeralis*, Figs. 2.10K, 2.13K, 2.17K) and the shape of the male genitalia (see descriptive differences under *T. abejaensis* taxonomic discussion).

T. darlingtoni is also very similar to *T. guerreiroi*, differing from that species in bearing mammiform tubercles at the apices of the elytra (Figs. 2.10F, 2.17F) (vs. mammiform tubercles absent in *T. guerreiroi*, Figs. 2.10I, 2.17I) and in the shape of the male genitalia, characterized by having a deep cut in the dorsal portion of the tube, present in the apical half of the parameres, with the apex of the tube dorsally acuminate, and the median lobe strongly developed (Fig. 2.19F) (vs. *T. guerreiroi* with a shallower cut in the dorsal portion of the tube, only present in the apical third of parameres, with the apex of the tube ventrally truncate and the median lobe rod-like, Fig. 2.19I).

***Thonalmus distinguendus* (Jacquelin Du Val, 1856)**

(Figs. 2.4, 2.5, 2.7, 2.10G, 2.13G, 2.14G, 2.16G, 2.17G, 2.18G, 2.19G, 2.22B)

Calopteron distinguendum Jacquelin Du Val, 1856: 80. Gemminger and Harold 1869: 1631. Chevrolat 1870: 77. Gundlach 1891: 256. Gorham 1898: 317. Leng and Mutchler 1914: 431.

Thonalmus distinguendus; Bourgeois 1883: 379. Bourgeois 1901: 51. Kleine 1933: 19. Blackwelder 1945: 343.

Thonalmus aulicus var. *distinguendus*; Leng and Mutchler 1922: 425.

Calopteron distinguendenum (*Lapsus calami*). Fernández García *et al*. 2010: 11 [as a junior synonym of *T. aulicus*].

Examined Material

Examined Type material (n=1). *Calopteron distinguendum*: Lectotype (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7). **Lectotype** 1♂: *Calopteron*; *distinguendum* J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur/ LECTOTYPE; *Calopteron*; *distinguendum* Jac. Duval; det. V.S. Ferreira 2019 (MNHN) (Appendix B, figure 7).

Material examined in addition to type specimens (n=54): Appendix A.

Diagnosis

Thonalmus distinguendus can be separated from all other *Thonalmus* by the combination of a vertex on the head concave, bearing a transverse impression (Fig. 2.13G), the elytra with reticulation and costae weakly developed, apically obliterated and all costae free (Figs. 2.10G, 2.17G), the pronotal cell weakly developed (Fig. 2.16G), the anterior margin of pronotum

strongly sinuated (Fig. 2.16G), the scutellar shield rectangular, entire, not notched apically (Fig. 2.16G), the inner margins of male mesofemora flat (Fig. 2.18G) and the male genitalia with parameres tapering towards apex, with the tube bearing a deep dorsal cut present in apical third of the genitalia (Fig. 2.21G).

Redescription

General coloration: orange; head orange (Fig. 2.13G); elytra fascia blue, metallic coloration weakly developed, present in elytral apical third (Figs. 2.10G, 2.17G); legs mostly black, base of femora and coxae orange (Fig. 2.17G). Head: vertex bearing a transverse impression (Fig. 2.13G); labrum transverse (Fig. 2.13G). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III ca. 4× the length of pedicel, distally slightly round, antennomeres III–V subequal, XI 1/3 longer than precedent (Fig. 2.14G). Pronotum: median cell weakly developed (Fig. 2.16G); median lobe weakly produced; anterior angles round, posterior weakly acute, slightly, convergent, lateral margins weakly sinuated, anteriorly strongly sinuated (Fig. 2.16G). Scutellar shied rectangular, apically entire (Fig. 2.16G). Elytra subparallel, weakly dehiscent (Fig. 2.10G), ca. 3× length of pronotum, weakly reticulate, with small, subcircular cells on elytra (Fig. 2.10G, 2.17G); elytral costae moderately developed and visible; costa I fading towards elytral apex, visible until 2/3 of fascia (Fig. 2.17G); costa II and III subapically free, if apparently fused, fusion is weakly developed (Fig. 2.17G). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18G). Abdomen of females, not bearing any modifications. Male genitalia: parameres tapering towards apex, dorsally bearing a deep dorsal cut present in apical third (Fig. 2.21G);

apex of tube in ventral view acuminated, shortened, with angles sub square (Fig. 2.21G). Median lobe rod-like, weakly developed (Fig. 2.21G). Flagellum is absent in the species.

Length (pronotum + elytra): 4.8–8.6 mm. **Width (across humeri):** 1.3–2.4 mm.

Distribution

Cuba (Fig. 2.22B).

Type Locality

Cuba.

Biology

Specimens of *T. distinguendus* were found on cotton and *Citrus sinesi* (Sapindales, Rutaceae).

Taxonomic Discussion

T. distinguendus is similar to *T. aulicus* and *T. mariani* (See discussion under *T. aulicus*).

***Thonalmus dominicensis* (Chevrolat, 1870)**

(Figs. 2.3–2.7, 2.10H, 2.13H, 2.14H, 2.16H, 2.17H, 2.18H, 2.19H, 2.21D, 2.24B)

Charactus blandus Dejean, 1833: 99 (*nomem nudum*). [Saint Domingue]. Dejean 1837: 112.

Calopteron bicolor (Linnaeus, 1763) (in part, Hispaniola and Cuba) Castelnau 1840: 262.

Calopteron dominicense Chevrolat, 1870: 73.

Thonalmus dominicensis (in part, Hispaniola); Bourgeois 1883: 377. Mayer and Giesbrecht 1884: 254. Gorham 1898: 317. Bourgeois 1901: 50. Fleutiaux and Sallé 1889: 415. Leng and Mutchler 1914: 431. Leng and Mutchler 1922: 421. Mutchler 1923: 2. Kleine 1933: 19. Blackwelder 1945: 343. Paulian 1947: 157. Wolcott 1950: 281. Perez-Gelabert 2008: 101. Perez-Gelabert 2020: 129.

Examined Material

Examined Type material (n=1). Lectotype 1♂: ♂/ Coll. Chevrolat/ Lycus Dejardini Giar; Bicolor [illegible]; b. S. Doming. Ex muse Olivieri,/ Thonalmus; Dominicensis; Chevrolt./ MUSEUM PARIS; Coll. J. BOURGEOIS 1911/ LECTOTYPE; Thonalmus; dominicensis Chevrolat; det. V.S. Ferreira 2019 (MNHN) (Appendix B, figure 8).

Material examined in addition to type specimens (n=144): Appendix A.

Diagnosis

Thonalmus dominicensis is very similar to *T. bicolor* sharing the same diagnostic characters as that species, differing only in having the elytra with costa I free, subapically obliterated, costa II and III subapically free, seemingly fused, faded apically (Figs. 2.10H, 2.17H), with the apices of costae II and III bearing each a mammiform tubercle (Figs. 2.10H, 2.17H) and the elytral costae of females similar to the males.

Description

General coloration: orange; head orange (Fig. 2.13H); elytra fascia metallic blue or green, present in elytral apical third (Figs. 2.10H, 2.17H); legs, trochanter and femora orange,

sometimes tarsi and apex of tibiae black (Fig. 2.18H). Head: vertex bearing a transverse impression (Fig. 2.13H); labrum transverse (Fig. 2.13H). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III, ca. 4–7× the length of pedicel, distally slightly round; antennomeres IV and V subequal, XI ¼ longer than precedent (Fig. 2.14H). Pronotum: median cell moderately developed (Fig. 2.16H); median lobe weakly produced; anterior angles round, posterior weakly acute, divergent (Fig. 2.16H). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16H). Elytra subparallel, slightly dehiscent (Fig. 2.10H), ca. 3.2× length of pronotum, strongly reticulated, bearing irregular cells (Fig. 2.10H, 2.17H); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until subapical portion of fascia (Fig. 2.17H); costa II and III subapically free, seemingly fused, faded apically (Fig. 17H); apices of costae II and III bearing each mammiform tubercles (Fig. 2.6H). Legs: mesofemora of males with inner margins strongly curved, with a small notch in apical inner margin (Fig. 2.18H). Abdomen of females modified, posterior margin of ventrite III medially thickened, bearing a thin prolongation at their ends (Fig. 2.21D). Male genitalia: parameres slender, asymmetrical, slightly bent forward in ventral view, >6.5× longer than phallobase (Fig. 2.19H); bearing a narrow but deep cut in dorsal portion of the tube, present from apical 2/3 through apex, covered by a thin translucid membrane (Fig. 2.19H); apex of tube acuminated, but not pointy, with thin folds throughout its margin, more prominently visible towards apex (Figs. 2.19H). Median lobe rod-like, tapering towards apex, slightly thickened and dark colored apically (Fig. 2.19H), bearing a long flagellum, multiple times longer than male genitalia but lost in most specimens examined (Fig. 2.19H).

Length (pronotum + elytra): 7.8–11.9 mm. **Width (across humeri):** 2.0–3.2 mm.

Distribution

Hispaniola (Fig. 2.24B).

Type Locality

Saint Domingue, Dominican Republic.

Biology

T. dominicensis have a sympatric distribution with *T. bicolor*, with specimens of both species being collected on several occasions together, at the same time. Specimens have been reported to be found in aggregations, in humid woodlands, in pine sawmill and near streams, and collected during the day by beating.

Nomenclatural Notes

See nomenclatural notes under *T. aulicus* for an explanation on the status of the Dejean's name and the nomenclatural discussion under *T. bicolor*.

Taxonomic Discussion

T. dominicensis is very similar to *T. bicolor* and *T. centralis* (see taxonomic discussion under *T. bicolor*).

Thonalmus guerreiroi **new species**

(Figs. 2.4, 2.5, 2.7, 2.10I, 2.13I, 2.14I, 2.16I, 2.17I, 2.18I, 2.19I, 2.23B)

Examined Material

Examined Type material (n=5). Holotype: 1♂: Las Abejas; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols.; Matusik-Guerrero / 35027 [WIBF 043355] (MNHNSD). **Paratypes: 1♂:** Las Abejas; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols.; Matusik-Guerrero / 35016 (MNHNSD). **1♂:** Las Abejas; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; Matusik-Guerrero / 34980 (MNHNSD). **1♂:** Las Abejas, Sierra de; Bahoruco; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols. Matusik-Guerrero / 34979 (MNHNSD). **1♂:** Las Abejas, Sierra de; Bahoruco; Pedernales, PROV.; PEDERNALES, R.D.; 27-VI 1989; cols. Matusik-Guerrero / 35036 (MNHNSD). (Appendix A).

Etymology

This is species is named after Kelvin Antonio Guerrero, for his countless contributions to the knowledge fauna of insects, and especially beetles, of Dominican Republic. Kelvin Guerrero is the collector of many specimens used in this study, including the entire series of the species that has his name.

Diagnosis

Thonalmus guerreiroi can be separated from all other *Thonalmus* by the combination of head vertex concave, bearing a transverse impression (Fig. 2.13I), the blue portion of elytra

anteriorly extending fascia region to basal third (Fig. 2.10I, 2.17I), the elytral costa I fused to the inner margin of elytron, the elytral costae II and III free apically (Fig. 2.10I, 2.17I), the male mesolegs with inner margins flat (Fig. 2.18I) and the male genitalia with a shallow cut in the dorsal portion of the tube, only present in the apical third and the apex of the tube ventrally truncate (Fig. 2.19I).

Description

General coloration: orange; head orange, anterolateral portions slightly darker (Fig. 2.13I), pronotal disc anteriorly bearing a paired black macula (Fig. 2.10I, 2.16I); elytra fascia metallic blue, reaching apical third of elytral length, blue portion of elytra extending fascia and anteriorly reaching elytral middle third (Figs. 2.10I, 2.17I); legs black, distal portion of femora, trochanters and coxae, orange (Fig. 2.18I). Head: vertex concave, bearing a transverse impression; labrum transverse (Fig. 2.13I). Antennae subserrate; scape conical, weakly developed, antennomere III ca. 3.5× the length of pedicel; antennomeres IV and V subequal, XI subequal in length with the precedent (Fig. 2.14I). Pronotum: median cell weakly developed (Fig. 2.16I); median lobe weakly produced; anterior angles round, posterior angles moderately acute, divergent (Fig. 2.16I). Scutellar shield rectangular, apically medially emarginate, notch ranging from deeply to shallowly deep (Fig, 2.16I). Elytra subparallel, slightly dehiscent (Fig. 2.10I), 6× length of pronotum, strongly reticulate, bearing irregularly shaped cells; elytral costae strongly developed and visible; costa I reaching 2/3 length of elytra, fused to inner margin (Figs. 2.10I, 2.17I); costa II and III free, reaching elytral apex (Figs. 2.10I, 2.17I). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18I). Females unknown.

Male genitalia: parameres fusiform, with a shallow cut in dorsal portion of tube, only present in apical third of parameres (Fig. 2.19I); apex of tube is ventrally truncate, lateral margins of apex are folded dorsally (Fig. 2.19I); median lobe rod-like, thin throughout (Fig. 2.19I). No remains of a flagellum were found in the examined specimens.

Length (pronotum + elytra): 6.3–8 mm. **Width (across humeri):** 1.5–1.9 mm.

Distribution

Dominican Republic (Fig. 2.23B).

Type Locality

Las Abejas, Pedernales Province, Dominican Republic.

Biology

T. guerreiroi is only known for a small series, and no information on their biology is known. They have a sympatric distribution with *T. abejaensis*, for which the biology is also poorly known.

Taxonomic Discussion

T. guerreiroi is very similar to *T. darlingtoni* and *T. abejaensis* (see taxonomic discussion sections under these two species).

Thonalmus hubbardi **Leng and Mutchler,1922**

(Figs. 1E, 3–7, 10J, 11C, 13J, 14J, 16J, 17J, 18J, 19J, 21E, 26B)

Thonalmus hubbardi Leng and Mutchler, 1922: 426, figs. 6–6a. Kleine 1933: 19. Blackwelder 1945: 426. Chalumeau and Touroult 2005: 67. Ivie *et al*. 2008: 76.

Examined Material

Examined Type material (n=9). Holotype 1♂: Male/ Montserrat; West Indies/ HGHubbard; Collector; HOLO; TYPE [in a red label]/ Thonalmus; hubbardi; ♂ type/ Type No.; 61027; U.S.N.M. (USNM) (Appendix B, figure 9). **Allotype 1♀:** Female/ Mntserrat; 22.3 WI/ HGHubbard; Collector/ ALLOTYPE [in a red label]/ AllotypeNo.; 61027; U.S.N.M. (USNM) (Appendix B, figure 10). **Paratypes**: **3♀:** Mntserrat' 21.3 WI. / HGHubbard; Collector/ Female/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M.(USNM). **1♀:** Montserrat/ West Indies/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M.(USNM). **1♀:** Mntserrat; 19.3 WI/ HGHubbard; Collector/ Female/ Calopteron; bicolor/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075(AMNH). **1♀:** HGHubbard; Collector/ Montserrat; West Indies/ Female/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075(AMNH). **1♀:** Mntserrat; 1.3. WI/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075/ T. sinuacostis; Type (AMNH).

Material examined in addition to type specimens (n=280): Appendix A.

Diagnosis

T. hubbardi can be separated from all other known *Thonalmus* by the combination of the following characters: head vertex convex, not bearing a transverse impression (Fig. 2.13J), the elytral costae II and III straight, not sinuated, fused apically (Fig. 2.10J, 2.17J), the elytral costae I of females strongly developed in basal half (Fig. 2.10C), mesofemora of males with inner margins strongly curved with the pro- and meso coxae produced posteriorly, bearing a thorn-like appearance (Fig. 2.18J) and the abdomen of females telescoped, strongly modified, with the posterior margins of ventrites I and II thickened throughout, ventrite III medially bearing pedunculated appendages that are apically club-shaped and apically acuminate (Fig. 2.21E).

Redescription

General coloration: orange; head orange (Fig. 2.13J); elytra fascia blue, weakly metallicized, present in elytral apical half (Figs. 2.10J, 2.17J); legs orange, apical third of femora, tibiae and tarsi black (Fig. 2.18J). Head: vertex convex, not bearing any depression medially (Fig. 2.13J); labrum transverse (Fig. 2.13J). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III elongate, ca. 10× the length of pedicel, distally slightly round; antennomere IV-VIII subequal, 1/4 longer than III; antennomeres VI-XI slightly crenulate, with crenulations sparsely distributed, distant from each other (Fig. 2.14J); XI 1/3 longer than precedent (Fig. 2.14J). Pronotum: median cell moderately developed (Fig. 2.16J); median lobe strongly produced; anterior angles round, pronounced, posterior strongly acute, divergent, lateral margins strongly sinuated (Fig. 2.16J). Scutellar shield

rectangular, apically medially emarginate (Fig. 2.16J). Elytra subparallel, weakly dehiscent (Fig. 2.10J, 2.17J), ca. 3.5× length of pronotum, weakly reticulate, with small, subcircular cells on elytra (Fig. 2.17J); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until 2/3 of fascia (Figs. 2.10J, 2.17J); costa II and III fused subapically, fusion meeting the apical inner margin of elytra (Fig. 2.17J); female elytral costae I are strongly developed, much thicker and more pronounced when compared to males (Fig. 2.11C). Legs: pro- and meso coxae produced posteriorly, bearing a thorn-like appearance, mesofemora of males with inner margins strongly curved (Fig. 2.18J). Abdomen of females heavily modified, posterior margin of ventrites I and II thickened throughout, III medially bearing pedunculated appendages that are apically club-shaped, apically acuminated (Fig. 2.21E); in certain specimens, abdomen of females is strongly telescoped. Male genitalia: parameres fusiform, slightly tapering towards apex, bearing a narrow cut in dorsal portion of tube, only present in apical half; apex of tube ventrally blunt, with a pair of lenticular accessory structures in internal lateral portion of apex (Fig. 2.19J). Median lobe rod-like, thin and sclerotized throughout, with a membranous structure located apically (Fig. 2.19A). No remains of a flagellum were found in the examined specimens.

Length (pronotum + elytra): 6.1–12.7 mm. **Width (across humeri):** 1.3–2.8 mm.

Distribution

Montserrat (Fig. 2.26B).

Type Locality

Montserrat.

Biology

T. hubbardi and *T. sinuaticostis* have a nearly identical biology and a sympatric distribution. *T. hubbardi* is found in aggregations. Specimens were collected in UV light and Malaise, being found on *Heliconia* (Heliconiaceae) and on dead standing trees.

Taxonomic Discussion

T. hubbardi and *T. sinuaticostis* are very similar species, but *T. hubbardi* can be separated from *T. sinuaticostis* by the combination of elytral costa III straight, not sinuated, apically fused to costa II (Fig. 2.17J) (vs. strongly sinuated in *T. sinuaticostis*, both costae free, Fig. 2.17P), the elytral costa II thickened and strongly visible in apical half in *T. hubbardi* (Fig. 2.10J, 2.17J), strongly developed apically in the females (Fig. 2.11C) (vs. costa II only present in apex in *T. sinuaticostis*, not sexually dimorphic, Fig. 2.10P, 2.17P) and the pedunculated appendages arising from ventrite III of females that are club-shaped and anteriorly acuminated in *T. hubbardi* (Fig. 2.21E) (vs. pedunculated appendages arising from ventrite III of females of *T. sinuaticostis* are reniform and posteriorly acuminated, Fig. 2.21G).

***Thonalmus humeralis* new species**

(Figs. 2.4, 2.5, 2.7, 2.10K, 2.13P, 2.15K, 2.16K, 2.17K, 2.18K, 2.19K, 2.23B)

Examined Material

Examined Type material (n=27). Holotype: **1♂:** DOM.REP:Prov.Pedernales; P.N. Sierra de Baoruco; Las Abejas, 1240m; 18°09.023'N, 71°37.387'W; 09 AUG 1999, M.A. Ivie

[WIBF 043069] (WIBF). **Paratypes: 2♂:** Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000 ft.,July'38 ; Darlington (MCZ). **1?:** Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000 ft.,July'38 ; Darlington / R.S.Miller ; Collection (MCZ). **1♂:** Constanza ; Aug.'38,Dom.Rep ; 3-4,000 ft. ; Darlington (MCZ). **1♀, 2♂:** DOM.REP: Prov. La Vega; Par. Nac. ArmandoBermudez; LaCienaga-Los Tablones; 1187m. 29 JULY 1993; D.S.Sikes. beating veg. (WIBF). **1♂:** DominRep; Jarabacoa / Nov 1950 ; NLHKrauss (USNM). **1♀:** REP.DOMINICANA; La Cumbre (P.Plata) ; 380m,21-24.III.78 ; L.Masner,malaise (CNC). **1♀:** Higueral.S.Dom.; II.1914 / Female (AMNH). **1♀:** DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating / Michael ; Thomas (WIBF). **1♂:** R. DOMINICANA, LA CUMBRE; DE PUERTO PLATA. 2000'; MAY 8-9, 1985; E. GIESBERT. COLL. (WIBF). **1♂:** DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson (WIBF). **1♀:** DOMIN.REP: Prov.Hato Mayor; 3 km S. Sabana de la Mar; 19°01.800 'N, 69°29.092 'W; 04AUG1999, 20m; M.A.Ivie & K.A.Guerrero (WIBF). **1♂:** REP.DOM:Pedernales; Prov.Sierra Baoruco; 30 km N.Cabo Rojo ; 2400' XII-31-1986 ; Doyen & Santiago (EMEC). **1♂:** DOMIN.REP: Prov.Pedernales; P.N.SierradeBaoruco, 1240m; 18°09.023'N.71°37.387'W; LasAbejas,09AUG1999, light; M.A.Ivie & K.A.Guerrero (WIBF). **1♀:** DOMIN.REP: Prov. Pedernales; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1 (WIBF). **1♀:** DOMIN.REP: Prov. Pedernales; Par.Nac.Sierra de Baoruco ; Las Abejas, 09AUG1999,1250m ; 18°09.023'N, 71°37.387'W; M.A.Ivie & K.A.Guerrero / at ; light (WIBF). **1♀:** DOMIN.REP:Prov.Pedernales; N. of Pedernales, 188m; La Aguita, 21 JULY 1999; 18°09.172'N, 71°44.786'W; M.A.Ivie, Guerrero &

Dominici (WIBF). **1♂:** DOM.REP:Prov.Pedernales; 23km N. Cabo Rojo, 612m; 18°06'N, 71°38'W; 09 JULY 1993, beating; D.Sikes & R.Rosenfeld (WIBF). **1♀:** DOM.REP:Prov.Hato Mayor; W. Sabana de la Mar; Par. Nac. Los Haitises; bosque humido,01JULY1992; M.A. & R.O.Ivie colrs (WIBF). **1♂:** Constanza; Aug.'38, Dom.Rep; 3-4,000 ft.; Darlington (MCZ). **1?:** Colonia[unintelligible]. V.; 1000 m 1974 / Rep. Dominic.; J.& S.Klapperich (WIBF). **1♂:** Dominican Republic; RD-126 Santiago Prov.,; Caseta Parque en Diferencia,; PNAB, 740 m, 19°16.313'N; 71°03.132'W,8.iv.2003, D.; Perez, R. Bastardo, B. Hierro / 15.1179-19 / MNHNSD 15.137 (MNHNSD). **1♀:**REP. DOM: La Vega, Jarabacoa; La Cienega de Manabao; 8-II-2001; Josue Henriquez / 15.1160-19 / MNHNSD 15.118 (MNHNSD). **1♀:** REPUBLICA DOMINICANA:; Provincia La Vega, Trail Los; Tablones-La Cienega, P.N.; A. Bermudez, 20 July 2002,; coll. D. Perez, B. Hierro, R.; Bastardo / Photographed; 2002-2003; CBSD / 15.1146-19 / MNHNSD 15.104 (MNHNSD). (Appendix A).

Etymology

The name of this species refers to the raised, prominent humeri of the elytra, which are distinct in this species.

Diagnosis

Thonalmus humeralis can be separated from all other *Thonalmus* by the combination of the following characters: head vertex convex, not bearing a transverse impression (Fig. 2.16K), the humeri strongly pronounced and explanate (Fig. 2.10K), the elytra bearing subquadrate cells (Fig. 2.17K), the elytral costa I fused to the inner margin of elytron and the costae II and III

distinctly fused apically, with each elytron bearing a pair of mammiform tubercles in the apex (Fig. 2.10K, 2.17K), the male mesolegs with inner margins flat (Fig. 2.18K) and the male genitalia with parameres fusiform with a narrow cut in the dorsal portion of the tube only present in the apical third, bearing a blunt ventral apex and a flagellum surpassing the tip of the parameres (Fig. 2.19K).

Description

General coloration: orange; head orange (Fig. 2.13K); antennae black; elytra fascia metallic blue, reaching elytral apical half, blue portion of elytra slightly extending fascia anteriorly, weakly developed (Figs. 2.10K, 2.17K); legs, trochanter and apices of femora usually orange, remaining of femora, tibiae and tarsi black (Fig. 2.18K), in certain specimens, legs are dorsally black. Head: vertex convex; labrum transverse; maxillary terminal palpomere very broad and enlarged (Fig. 2.13K). Antennae subserrate, densely setose; scape conical, weakly developed, antennomere III ca. 3× the length of pedicel; antennomeres IV-IX subequal, XI ¼ shorter than precedent (Fig. 2.15K). Pronotum: median cell weakly developed (Fig. 2.16K); median lobe weakly produced; anterior angles round, posterior angles acute, divergent (Fig. 2.16K). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16K). Elytra subparallel, posteriorly slightly dehiscent, humeri strongly pronounced and explanate, with angles round (Fig. 2.10K), 5.5–6.2× length of pronotum, strongly reticulate, bearing small subquadrate shaped cells in orange portion or elytra, more or less rectangular in fascia portion (Fig. 2.17K); elytral costae strongly developed and visible; costa I reaching 2/3 length of elytra, fused to inner margin (Figs. 2.10K, 2.17K); costa II and III subapically fused, fusion greatly

expanded apically; apices of costae II and III bearing each mammiform tubercles (Figs. 2.10K, 2.17K). Legs: inner margin of males mesofemora flat (Fig. 2.18K). Abdomen of females simple, not bearing any modifications. Male genitalia: parameres fusiform, tapering towards apex, bearing a narrow cut in dorsal portion of tube, only present in apical third; apex of tube ventrally blunt (Fig. 2.19K). Median lobe rod-like, thin and sclerotized, bearing remains of a long flagellum (Fig. 2.19K).

Length (pronotum + elytra): 5.5–8.3 mm. **Width (across humeri):** 1.6–2.5 mm.

Distribution

Hispaniola (Fig. 2.24B).

Type Locality

Parque Nacional Sierra de Baoruco, Pedernales, Dominican Republic.

Biology

Thonalmus humeralis is another species only known from a small series. Some specimens have been collected by beating vegetation, Malaise traps and at lights in wet forests and humid woodlands.

Taxonomic Discussion

T. humeralis is similar to *T. abejaensis* and *T. darlingtoni* (see detailed differences under the taxonomic discussion section of both species).

***Thonalmus mariani* Wojciechowska and Slipinski, 1985**

(Figs. 2.4, 2.5, 2.7, 2.10L, 2.13L, 2.15L, 2.16L, 2.17L, 2.18L, 2.19L, 2.22B)

Thonalmus mariani Wojciechowska and Slipinski, 1985: 266. Ivie 1991: 400. Peck 2005: 112.

Thonalmus orientalis Zayas, 1988: 46. Ivie 1991: 400.

Examined Material

Examined Type material (n=3). *Thonalmus mariani*: **Holotype: 1♂:** ♂/ HOLOTYPE [in a red lable]/ Cuba 5-74; Grand Pindra; 1200m/ Thonalmus; mariani sp. n.; det.; A. Wojciechowska 1983 (NMPC) (Appendix B, figure 11). **Paratypes: 1♀:** Paratypus / Cuba 5-74; Grand Pindra; 1200m/ Thonalmus; mariani sp. n.; det.; A. Wojciechowska 1983 (NMPC). 1♀: Paratypus / Cuba 5-74; Grand Pindra; 1200m/ Thonalmus; mariani sp. n.; det.; A. Wojciechowska 1983 (MZPW) (Appendix B, figure 11).

Thonalmus orientalis: **Holotype**: **1♀:** Piloto, Mea,; Ote. VI-7-51,/ Tipo [in a circular red label] (Zayas) (Appendix B, figure 12).

Material examined in addition to type specimens (n=12): Appendix A.

Diagnosis

Thonalmus mariani can be separated from all other *Thonalmus* by the unique combination of the following characters: vertex on the head concave, bearing a transverse impression (Fig. 2.13L), the antennae in rest position not surpassing mid-elytra (Fig. 2.10L), the pronotal cell strongly developed (Fig. 2.16L), the elytral costae and reticulation strongly developed, especially

in the apical region (Fig. 2.10L, 2.17L), the inner margins of male mesofemora flat (Fig. 2.18L) and the overall bigger species (length range 9.6–15.1 mm).

Redescription

General coloration: red; head red (Fig. 2.13L); antennae black; elytra fascia metallic blue, present in elytral apical half (Figs. 2.10L, 2.17L), colored portion of elytra rarely extending fascia portion anteriorly (Fig. 2.17L); legs black, coxae, trochanters and apices of femora red (Fig. 2.18L). Head: vertex bearing a transverse impression (Fig. 2.13L); labrum transverse; maxillary terminal palpomere securiform (Fig. 2.13L). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, pedicel small, transverse, antennomere III, distally slightly round, 3× length of pedicel; antennomeres IV and V subequal, VI–X increasing in length and breadth, XI ¼ longer than precedent (Fig. 2.15L). Pronotum: median cell strongly developed (Fig. 2.16L); median lobe weakly produced; anterior angles round, posterior acute, strongly divergent (Fig. 2.16L). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16L). Elytra subparallel, slightly dehiscent (Fig. 2.10L), 3× length of pronotum, strongly reticulated, cells rectangular or irregular in fascia (Fig. 2.17L); elytral costae subapically obliterated, strongly developed (Figs. 2.10L, 2.17L); costa I obliterating towards apex, discontinued apically; costae II and III fused apically, fusion is round, weakly developed (Fig. 2.17L). Abdomen of females simple, not bearing any modifications. Legs: inner margin of males mesofemora flat (Fig. 2.18L). Male genitalia: parameres basally expanded, globose, tapering medially but slightly expanded apically (Fig. 2.19L); bearing a narrow and shallow cut in dorsal portion of tube, only present in apical region (Fig. 2.19L); apex of tube ventrally blunt,

apically sub square (Fig. 2.19L). Internal parts of the genitalia were missing in the examined specimen.

Length (pronotum + elytra): 9.6–15.1 mm. **Width (across humeri):** 2.8–4.0 mm.

Distribution

Cuba (Fig. 2.22B).

Type Locality

Gran Piedra, Cuba.

Biology

Thonalmus mariani is only known from a small series and we do not have information on the species biology.

Taxonomic discussion

T. mariani and *T. aulicus* are very similar species (see a detailed discussion under taxonomic discussion section of *T. aulicus*).

***Thonalmus militaris* (Dalman, 1817)**

(Figs. 2.3–2.7, 2.10M, 2.11B, 2.13M, 2.15M, 2.16M, 2.17M, 2.18M, 2.19M, 2.26A)

Lycus bicolor (Linnaeus, 1763) (in part, Jamaica records but listed as African); Olivier 1790: Nr. 29, page 9, tab 1, fig. 9a-b [Habitat in l'Afrique équinoxiale]. Waterhouse 1878: 98.

Calopteron bicolor (Linnaeus, 1763) (in part, Jamaica? records only); Gosse 1848: 268. Leng and Mutchler 1914: 431.

Lycus militaris Dalman, 1817: 30 [appendix]. Lacordaire 1857: 298. Kleine 1933: 19.

Calopteron militare; Gemminger and Harold 1869: 1631.

Thonalmus bicolor (Linnaeus, 1763) (in part, Jamaica); Gorham 1898: 317. Bourgeois 1901: 50. Leng and Mutchler 1922: 419. Kleine 1933: 19. Blackwelder 1945: 343. Paulian 1947: 155, Fig. 188. Williams and Blackmer 1991: 358. Peck 2005: 112. Peck, Thomas and Turnbow 2014: 58.

Thonalmus militaris; Bourgeois 1883: 377. Mayer and Giesbrecht 1884: 254. Leng and Mutchler 1914: 431.

Calopteron denominatum Chevrolat, 1870: 74.

Calopteron denominatus [Chevrolat, 1870]*;* Kleine 1933: 74.

Caleropteron bicolor; Gowdey 1926: 12 (*Lapsus calami*).

Caleropteron militaris; Gowdey 1926: 12 (*Lapsus calami*).

Examined Material

Examined Type material (n=2). Lectotype and paralectotype males (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7), both photographs examined. **Lectotype** 1♂: ♂/ Jamaica; Weffedelt/ Typus [in a red label]/ NHRS - JLKB; 000065314/ Thonalmus; bicolor L.; (sec. Kleine 1943)/ LECTOTYPE; Lycus; militaris Dalman; det. V.S. Ferreira 2020 (NHRS) (Supplementary material 2, figure 13). **Paralectotype** 1♂:

Typus [in a red label]/ NHRS - JLKB; 000065313/ PARALECTOTYPE; Lycus; militaris Dalman; det. V.S. Ferreira 2020 (NHRS) (Appendix B, figure 14).

Calopteron denominatum: **Lectotype: 1♂:** Jamaica?/ [Illegible]/ Coll. Chevrolat/ MUSEUM PARIS; Coll. J. Bourgeois 1911/ ♂/ Holotype [In a red label]/ Thonalmus bicolor I.; militaris Dalm.; denominatus Chevr. / Lectotype; Calopteron denominatum Chev.; det. V.S. Ferreira 2019 (MNHN). (Appendix B, figure 15).

Material examined in addition to type specimens (n=343): Appendix A.

Diagnosis

Thonalmus militaris can be separated from all other *Thonalmus* by the combination of the following characteristics: head black, the labrum longer than wide (Fig. 2.13M), the strongly developed pear-shaped scape (Fig. 2.13M), flagellomeres with a small, developed tooth in basal portion of the inner margin of antenna (Fig. 2.15M) and the scutellar shield triangular (Fig. 2.16M).

Redescription

General coloration orange; head black (Fig. 2.13M); elytra fascia metallic blue, present in elytral apical half (Figs. 2.10M, 2.17M); legs, black, coxae, trochanters and basal 2/3 of femora orange (Fig. 2.18M). Head: vertex bearing a transverse impression (Fig. 2.13M); labrum longer than wide (Fig. 2.13M). Antennae subserrate in both sexes, densely setose, setae decumbent; scape pear shaped, conical, strongly developed (Fig. 2.13M), antennomere III ca. 4× length of pedicel, distally slightly round; antennomeres IV twice length of III, with a small, developed

tooth in basal portion of the inner margin of antenna; antennomeres V–X subequal, XI ¼ longer than precedent (Fig. 2.15M). Pronotum: median cell moderately developed (Fig. 2.16M); median lobe weakly produced; anterior angles round, posterior weakly acute, divergent, posterior margin weakly sinuated (Fig. 2.16M). Scutellar shield triangular, apex acuminate (Fig. 2.16M). Elytra subparallel, slightly dehiscent (Fig. 2.10M), ca. 3.5× length of pronotum, moderately reticulated, bearing irregular and trapezoidal shaped cells (Fig. 2.10M, 2.17M); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until subapical portion of fascia (Fig. 2.17M); costa II and III subapically fused, fusion converging towards inner margin of elytra (Fig. 2.17M). Female elytral costae I are strongly developed, much thicker and more pronounced when compared to males (Fig. 2.11B). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins strongly curved (Fig. 2.18M). Abdomen of females simple. Male genitalia: parameres fusiform, slightly tapering towards apex, bearing a narrow cut in dorsal portion of tube, present in apical half (Fig. 2.19M); apex of tube ventrally blunt, slightly acuminated (Fig. 2.19M). Median lobe rod-like, thin and sclerotized throughout. No remains of a flagellum were found in the examined specimens.

Length (pronotum + elytra): 5.9–13.3 mm. **Width (across humeri):** 1.5–4.1 mm.

Distribution

Jamaica (Fig. 2.26A).

Type Locality

Jamaica.

Biology

T. militaris have been found in aggregations (Williams and Blackmer 1991). Specimens were collected in UV light traps, by beating vegetation, collected feeding and mating on *Morinda citrifolia* (Rubiales, Rubiaceae) and *Citrus* sp. (Sapindales, Citreae).

Nomenclatural Notes

Thonalmus militaris is the valid name of the large Jamaican species with a triangular scutellar shield that has been treated in literature for over 100 years as *Thonalmus bicolor*. See detailed discussion under *T. bicolor* nomenclatural discussion section.

***Thonalmus nigritarsis* (Chevrolat, 1870)**

(Figs. 2.4, 2.5, 2.7, 2.10N, 2.13N, 2.15N, 2.16N, 2.17N, 2.18N, 2.19N, 2.22B)

Calopteron nigritarse Chevrolat, 1870: 77. Gemminger and Harold 1869: 1630. Gundlach 1891: 255. Leng and Mutchler 1914: 431. Fernández García *et al*. 2010: 10 [as a junior synonym of *T. aulicus*].

Thonalmus nigritarsis; Bourgeois 1883: 379. Mayer and Giesbrecht 1884: 254. Bourgeois 1901:51. Kleine 1933: 19 (under *T. aulicus*). Blackwelder 1945: 343.

Thonalmus nigritarse. Gorham 1898: 317.

Examined Material

Examined Type material (n=3). Lectotype and paralectotypes (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7, hereby designated).

Lectotype 1♂: Calopteron; ♂ nigri;tarse; 277 /LECTOTYPE; Calopteron; nigritarse Chevrolat; det. V.S. Ferreira 2019 (MNHC) (Appendix B, figures 16 A and B). **Paralectotypes: 1♀:** Calopteron; ♀ nigritar; se; 277/PARALECTOTYPE; Calopteron; nigritarse Chevrolat; det. V.S. Ferreira 2019 (MNHC) (Appendix B, figures 16 C–F). **1♂:** ♀/ Coll. Chevrolat/ nigritarsis [illegible] Cuba; bicolor [illegible]/ Calopteron; bicolor 1-syel; 2-113-16; [illegible]; [illegible] 79 Cuba/ Museum Paris; Coll. J. BOURGEOIS 1911/ Thonalmus; nigritarsis Chevrol./ PARALECTOTYPE; Calopteron; nigritarse Chevrolat; det. V.S. Ferreira 2019 (MNHN).

Material examined in addition to type specimens (n=123): Appendix A.

Diagnosis

Thonalmus nigritarsis can be separated from all other *Thonalmus* by the combination of the following characteristics: vertex on the head concave, bearing a transverse impression (Fig. 2.13N), antennae in both sexes subserrate (Figs. 2.10N), the elytra bearing small, subcircular cells, weakly reticulate and elytral costae strongly developed and visible, free (Figs. 2.10N, 2.17N), inner margins of male mesofemora flat (Fig. 2.18N) and the male genitalia tubiform, with the apex of parameres acuminate, apically blunt, with the median lobe slightly expanded apically (Fig. 2.19N).

Redescription

General coloration: orange; head orange (Fig. 2.13N); antennae black, sometimes basal segments (scape, pedicel and antennomere III) partly or entirely lightly colored (Fig. 2.13N, 2.16N); elytra fascia blue, reaching apical third of elytral length (Fig. 2.10N, 2.17N); legs black, except basal 2/3 of femora, trochanters and coxae, which are orange (Fig. 2.18N). Head: vertex

bearing a transverse impression (Fig. 2.13N); labrum transverse (Fig. 2.13N). Antennae in both sexes subserrate; scape conical, weakly developed, antennomere III ca. 6× length of pedicel; antennomeres IV 1/3 longer than III; the V subequal with III; VI-X slightly increasing in length towards apex; XI ¼ shorter than precedent (Fig. 2.15N). Pronotum: median cell weakly developed (Fig. 2.16N); median lobe weakly produced; anterior angles round, posterior angles acute, divergent (Fig. 2.16N). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16N). Elytra subparallel (Fig. 2.10N), 3.2× length of pronotum, strongly reticulate, with small, subcircular cells on elytra (Fig. 2.10N, 2.17N); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until 2/3 of fascia (Fig. 2.17N); costa II and III reaching elytral apex, free (Fig. 2.17N). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins flat (Fig. 2.18N). Abdomen of females simple, not bearing any modifications. Male genitalia: parameres tubiform, slightly tapering towards apex, bearing a narrow and shallow cut in dorsal portion of the tube, only present in the apical region (Fig. 2.19N); apex of tube acuminated, apically blunt (Fig. 2.18N). Median lobe rod-like, strongly developed throughout, slightly expanded apically (Fig. 2.19N). Examined specimens bearing remains of a flagellum.

Length (pronotum + elytra): 5.7–10.9 mm. **Width (across humeri):** 1.4–3.2 mm.

Distribution

Cuba and the Bahamas (Fig. 2.22B). Two specimens, a male and a female (respectively WIBF 042443 and WIBF 042416) have been intercepted in Miami, FL, in 1954 in an airplane

coming from Cuba. These specimens have not been included in our distribution maps because they are another clear case of intercepted specimens (as with *T. aulicus*).

Type Locality

Cuba.

Biology

Thonalmus nigritarsis specimens have been found flying in the woods during the day; specimens have been collected by beating and sweeping in *Citrus sinensis* (Sapindales, Rutaceae), *Mangifera indica* (Sapindales, Anacardiaceae), sugar-cane plantations, in rural areas close to banana plantations and in the interior of coppices.

Taxonomic Discussion

T. nigritarsis is similar to *T. amabilis* (see details in the taxonomic discussion section under *T. amabilis*).

***Thonalmus quadrilacinius* new species**

(Figs. 2.1A, 2.1B, 2.3–2.7, 2.10O, 2.13O, 2.15O, 2.16O, 2.17O, 2.18O, 2.19O, 2.20, 2.21F, 2.25B)

Thonalmus chevrolati Bourgeois, 1901 (in part, Puerto Rico). Leng and Mutchler 1922: 422. Wolcott 1923 (1924): 81. Wolcott 1936: 200. Wolcott and Martorell 1937: 535. Wolcott 1943: 98. Blackwelder 1945: 343. Jackson and Bauzá-Salas 1965: 136.

Thonalmus dominicensis (Chevrolat, 1870) (in part, Puerto Rico and Guadeloupe). Wolcott 1936: 200. Wolcott 1943 [1950]: 98. Peck, Thomas and Turnbow 2014: 58.

Calopteron suave. (in part, Puerto Rico) Stahl 1882: 179, species 175; 85, 179, species 93 as *Calopteron suave*. Wolcott 1923 (1924):81.

Examined Material

Examined Type material (n=127). Holotype: **1♂:** Isabela, P.R.; E.E.A.; Marzo 1991; GONZALO Mejia [WIBF 043278] (UPR-RP). **Paratypes: 1♀:** Vega Baja; 23 IV 1988; C. Felix (UPR-RP). **1♂:** Puerto RIco; Boca de Cangrejos; ´´Pinones´´ Dec. 12; 1984, J. Negron (WIBF). **1♂:** Isabela, P.R.; E.E.A.; Mazzo 1991; GONZALO Mejia (UPR-RP). **1♀:** PUERTO RICO:Mayaguez ; Univ, P.R. M. Campus ; 18.2109°N 67. 14091248W; 28 NOV 2019; Flying during day (UPR-RP). **1♂:** R.DOMINICANA, ; 11KM S BARAHONA ; MAY 6-17, 1985 ; E.GIESBERT,COLL. (FSCA). **3♂:** R.DOMINICANA, ; 11KM S BARAHONA ; MAY 17, 1985 ; E.GIESBERT,COLL.(FSCA). **1♂, 1?:** DOMINICAN REPUBLIC: Prov ; La Altagracia, Nisibon ; 4-7 1978, Malaise Trap ; R. E. Woodruff & G. B. ; Fairchild colrs.(FSCA). **3♂, 3♀:** DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; C.W.O'Brien / R.S.Miller ; Collection (WIBF). **1♂, 1♀:** Romana Prov.,; REP. DOMINICANA ; 9 XI 1967 / L. H. Rolston ; Collector (TAMU). **1♂, 1♀:** Pto Rico; Ponce; J.M.Caprilles / June 1-15, ; 1945 ; light trap (USNM). **2♂:** 32 km. SW.Mirebalais, ; c500' Haiti 5-vii-1956 ; B. & B. Valentine / Beating dead ; branches in ; semi-desert. / R.S.Miller ; Collection (WIBF). **1♂:** Romana Prov., ; REP. DOMINICANA ; 9 XI 1967 / L. H. Rolston ; Collector (WIBF). **1♂:** Guaiamati; SDomingo / H. E. Box; July'25 (USNM). **1♂:** Guaiamati; SDomingo / H. E. Box; July'25/ 62 (USNM). **1♀:**

DOMINICAN REPUBLIC:; PROV.BARAHONA,5KM. ; NW OF BARAHONA,AGR. ; EXP.STA.,29-30-IV-78 / G. B. FAIRCHILD & ; R. E. WOODRUFF (FSCA). **1♂:** HAITI: Art Bonite Prov.; Mandarin, 10 km SSE; Gonaives 12-VIII-2010; collector R. Hirze (FSCA). **1♂:** DOMINICAN REPUBLIC:Prov. ; Barahona, 5 km. NW ; Barahona,Agaric.Exp.Sta. ; 29-30 IV 1978 ; R. E. Woodruff colr. (FSCA). **1♂:** DOMINICAN REPUBLIC:; Prov.Hato, Mayor ; km.23 N.Hato Mayor ; Finca Mango Limpio / 17-IX-1988 ; R.E.Woodruff ; on citrus (FSCA). **1♀:** DOM.REP.,Peravia, ; 13km.W.Bani ; Aug.12,1979 ; G. B.Marshall / R.S.Miller ; Collection (WIBF). **1♂:** DOMIN.REP:Prov.Pedernales; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for. ; 18°07.360'N, 71°34.657'W ; 22 JULY 1999. M. A. Ivie / aggregation; #1(WIBF). **1♀:** Haiti No.155-24; Christophe's Citadel; June 2 1927 / G.N.Wolcott ; Coll. (USNM). **1♂:** Acc. 63-25; Port au Prince,; Haiti Apr,1927 / G.N.Wolcott ; Coll. (USNM). **1♂:** HAITI; Col de sac; IV.1953; H.E.Box / Harold E.Box; Collection ; 1963 (USNM). **2♂:** La Moriniere ; Haiti III 1-5. ; 1922. / About 125 ft. alt.; F.4638 B. (AMNH). **1♂:** Constanza; Aug.'38,Dom.Rep ; 3-4,000 ft. ; Darlington (MCZ). **1♂:** 6m.E.of; San Cristobal ; Dom.Rep. ; VII-15-31 ; [Unintelligible], Cooley / ex.leaf ; of Mango ; #19 (NMNH). **1♂:** 58 / Romania.R.D ; april.9.1913. / W.V.Tower ; Collector (NMNH). **1♀:** P.R.Acc.No. 33-57; PONCE,D.R. ; 4/4/57 ; Coll.S.Madina (UPR). **1♀:** Quayanilla, P.R.; Nov [unintelligible],39 / G.N.Wolcott & ; L.F.Martorell ; Collectors / Acc.H 323-39 (UPR). **1♀:** Guanica, P.R.; Sept 10 1936 / Acc.#17-36 ; Coll by: ; G.N.Wolcott ; L.F Martorell / On cano. (UPR). **1♀:** PUERTO RICO; Fajardo-Finca; Elraro-Las Crombas; Oct.12,1977; M.Vir[unintelligible]i ♀ (UPR). **1♀:** Quayanilla, P.R.; Nov 8,39 / ♀; G.N.Wolcott & ; L.F.Martorell ; Collectors / Acc.H 323-39(NMNH). **1♀:** Quayanilla,

P.R.; Nov 8,39 / ♀; G.N.Wolcott & ; L.F.Martorell ; Collectors / Acc.H 323-40 (NMNH). **1♀:** Higueral S.Dom. (AMNH). **1♀:** La Moriniere; Haiti III.; 1-5. 1922. / About 125 ft. alt.; F. 4638 B. (AMNH). **1♀:** Pivert.; Haiti ; IV.1.1922 / About 300 ft. alt. ; F. 4657 (AMNH). **1♀:** PUERTO RICO; Barrio mora,; Isabela, VII-4-58; A.F.S Sanderson (AMNH). **1♀:** Clas Mesas; Mayaquez,P.R.; OCT. 3,81 P.R (FSCA). **1♀:** Camuy P.R.; Sept.5.81 ; Luis Me[unintelligible]s (FSCA). **1♀:** PUERTO RICO:; Varrio Mora,; nr. Isabela; 04JULY1958; M.W.Sanderson (WIBF). **1♀:** Mayaguez, P. R.; XI-10-1948 ; Coll.[unintelligible](EPRL). **1♀:** Mayaguez, P. R. ; XI-6 1948 ; Coll. CTURRO (EPRL). **1♀:** Mayaguez, P. R.; XI-2 1963 (EPRL). **1♀:** Mayaguez, P. R.; 10/2 1953 (EPRL). **1♀:** Mayaguez, P. R.; 1-XI-81 W.Colon 1954 (EPRL). **1♀:** Mayaguez, P. R.; Oct 28, 46; E Alicea (EPRL). **1♀:** Anasco, P.R.; XI-24, 1948; Coll: N. VAZQUez (EPRL). **1?:** Mayaguez, P. R.; X-23-1953 (EPRL). **1♂:** Mayaguez, P. R.; X-23-1953 (EPRL). **1♂:** Mayaguez, P. R.; XI-11-1953 (EPRL). **1♂:** Mayaguez, P. R.; X-18-1953 (EPRL). **1♂:** Mayaguez, P. R.; Oct [unintelligible] 1948; Coll. [unintelligible] Cruzado (EPRL). **1♂:** Mayaguez, P. R.; II-21 1942; Coll. R.Acevedo (EPRL). **1♂:** Mayaguez, P. R.; III-15 1942; Coll. [unintelligible] (EPRL). **1♂:** Mayaguez, P. R.; 5-Oct. 1940; Coll. J.Perocier (EPRL). **1♂:** Mayaguez, P. R.; XI 10 1948; Coll. R[unintelligible](EPRL). **1♂:** Fa. Lycidae / Mayaguez, P. R.; XI-25 1948; Coll. M Martinez (EPRL). **1♂:** Penuelas, P.R.; III-30 1942; Coll:W.Grana (EPRL). **1♂:** Consumo, P. R.; VIII-6-1953; Coll: S.Mediva (EPRL). **1♂:** Boqueron, P.R.; Oct 10-1948; Coll: [unintelligible] (EPRL). **1♀,1♂:** Losey Field,; near Ponce ; P.R.,IV-26-'45 ; R.Usinger. Coll. (EMEC). **1♂:** ARECEBO P.R; 10/10/81 ; G.VEIAZQUEZ (EMEC). **1♀:** Lajas P.R.; Oct 25, 1981; Stgo. Matos (EMEC). **2♀:** Isabela, P.R.; E.E.A.; Mazzo 1991; GONZALO Mejia

(UPR-RP). **1♀:** MOROUIS; 5 III 1988; A.F (UPR-RP). **3♂:** PR Mayaquz; Rum-vertearo; 13 X, 1987; Inglez III II(UPR-RP). **1♂:** Batas; 3/87; gladys Tonces (UPR-RP). **1♂:** Rio Picolia [unintelligible]; 2/28/1988; [unintelligible] (UPR-RP). **1?:** Anasco, P.R. ; Finca Alers ; 3 IX 1981 ; N.Semidey (FSCA). **1♂:** P.R.Acc.No.2848; Isabela P.R.; March 30,1948 / G.N.Wolcott ; Coll. (UPR). **2?:** Guanica, P.R. ; Sept 10 1936 / Acc.#17-36 ; Coll by: ; G.N.Wolcott ; L.F Martorell / On cano. (UPR). **1♂:** Quayanilla, P.R.; Nov 8, 39 / G.N.Wolcott & ; L. F. Martorell ; Collectors / Acc H 323-39 (UPR). **1♂:** Losey Field,; near Ponce ; P.R.,IV-26-'45 ; R.Usinger. Coll. (CNC). **1♂:** Mayaguez, P. R.; 9-16 July 1955.; Collected at light. / J.A.Ramos ; Collector (WIBF). **1♂:** Ponce, P. R.; May 1946; Coll: at light / J. Maldonado ; Capriles (WIBF). **1♂:** ♂ / Ponce. PR.; 29.7.49 ; [unintelligible]. 9663 (NMNH). **1♂:** ♂ / Quayanilla, P.R ; Nov.8,39 / G.N.Wolcott ; L.F.Martorell ; Acc#323-39 (NMNH). **1♂:** 57 / Romana.R.P.; april.9.1913. / W.V.Tower ; Collector / Male (NMNH). **1♂:** Ramey AFB; P.R. #380 ; 7-17-58-13650 / Weed leaf ; mango tree (USNM). **1♂:** P.R. Lajas; Ext experimental; Sept 126/81; LANA ; Jorge Delgado Colect ; F Lycidae (WIBF). **1♂:** 13-ENe-87; K.ChRistian / ISAbElA ; MAIZ (WIBF). **1♂:** Santo Domingo; DISTRITO NACIONAL; Rep. Dom.; 27-VI-1984; Col. Reynoso / 30954 (MNHNSD). **1♂:** Engombe; DISTRITO NACIONAL; Rep. Dom.; 20-IX-1979; Col. Reynoso / 10181 / 15.1102-19 / MNHNSD 15.61 (MNHNSD). **1♂:** Rio Guanajuma; Valverde,PROV. ; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21600 / 15.1092-19 / MNHNSD 15.53 (MNHNSD). **1♂:** Rio Guanajuma; Valverde,PROV.; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21597 / 15.1093-19 / MNHNSD 15.54 (MNHNSD). **1♂:** Rio Guanajuma ; Valverde,PROV. ; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21603 / 15.1091-19 /

MNHNSD 15.52 (MNHNSD). **1♀:** Rio Guanajuma; Valverde,PROV.; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21598 / 15.1094-19 / MNHNSD 15.55 (MNHNSD). **1♀:** Baguacima. Potrero ; Valverde,PROV. ; VALVERDE,R.D. ; 5-IV-1980 ; Cols. Marcano-Aquino / 15901 / 15.1135-19 / MNHNSD 15.93 (MNHNSD). **1♀:** Baguacima. Potrero; Valverde,PROV. ; VALVERDE,R.D. ; 5-IV-1980 ; Cols. Marcano-Aquino / 15881 / 15.1136-19 / MNHNSD 15.94 (MNHNSD). **1♀:** La Angostusa.; Bani, PROV.; PERAVIA, R.D.; 15-IX-1979; cols. Dguez. Reynoso / 09450 / 15.1134-19 / MNHNSD 15.92 (MNHNSD). **1♀:** La Angostusa.; Bani, PROV.; PERAVIA, R.D.; 15-IX-1979; cols. Dguez. Reynoso. / 08972 / 15.1133-19 / MNHNSD 15.91(MNHNSD). **1♂:** Matanzas.; Bani, PROV.; PERAVIA, R.D.; 15-VII-1979; col. Dominguez. / 04348 / 15.1207-19 / MNHNSD 15.165 (MNHNSD). **1♂:** l Numero.; Azua, PROV.; AZUA, R. D.; 28-VI-1981; Cols. Reynoso-Aquino / 26098 / 15.1079-19 / MNHNSD 15.43 (MNHNSD). **1♂:** El Numero.; Azua, PROV.; AZUA, R. D.; 26.VI.1981; Cols. Reynoso-Aquino / 25931 / 15.1078-19 / MNHNSD 15.42 (MNHNSD). **1♀:** Aeropuerto La Union; Puerto Plata,PROV. ; PUERTO PLATA, R.D. ; 27-XII-1978. ; Col.Dominguez / 00584 / 15.1192-19 / MNHNSD 15.150 (MNHNSD). **1♂:** Cumayasa.; La Romana, PROV.; LA ROMANA, R. D.; 29-VII-1979; Col.Dominguez / 05017 / 15.1199-19 / MNHNSD 15.157 (MNHNSD). **1♂:** Isla Cabrito.; Descubierta,PROV.; INDEPENDENCIA,R.D. ; 7-VII-1979 ; col.Marcano. / 04281 / 15.1198-19 / MNHNSD 15.156 (MNHNSD). **1♂:** REPUBLICA DOMINICANA: La; Altagracia, Bayahibe,; Parque Nacional del Este,; Guaraguao: Sendero Cueva; del Puente, 12 June 2001,; coll. Josue Herinquez / 15.1144-19 / MNHNSD 15.102 (MNHNSD). **1?:** Republica Dominicana,; Prov, Barahona, Pueblo; Viejo, Espartillo, Parque; Nacional Sierra de Bahoruco.;

22.V.2003.B. Hierro / 15.1172-19 / MNHNSD 15.130 (MNHNSD). **1♂:** REPUBLICA DOMINICANA; San Cristobal, 43km; NW Sto.Dgo. Rio; Isabela, 16-VIII-; 2001 H. Takizawa / 15.1174-19 / MNHNSD 15.132 (MNHNSD). **1?:** Boca de Yoma.P.N.E ; 2-5-92 ; Felix del Monte / 36,416 / 15.1191-19 / MNHNSD 15.149 (MNHNSD). **1♂:** REP.DOM:Prov.LaAltagracia; Parque Nacional del Este; 50m E. Caseta de Boca de; Yuma. 03MAY1992. con red; de barrido en la maleza / K. A. Guerrero y; F. DelMonte colrs. (WIBF). **1♂:** DOM.REP:Prov.Hato Mayor; Sabana de la Mar. hotel; 31MAR-03APR1992. M.A.; Ivie.D.S.Sikes.W.Lanier (WIBF). **1♂:** Pto.Plata; Dom. Rep.; Hurst (MCZ). **1♂:** Valverde Prov.,; REP. DOMINICANA ; 10 X 1967 / L. H. Rolston ; Collector (TAMU). **1♂:** Prov. Sanchez Ramirez; Rep. Dominicana; Cotul, El Muro; On Foliage - 5/8/02; Gino Nearns (FSCA). **1♂:** La Moriniere; Haiti III.; 1-5. 1922. / About 125 ft. alt.; F. 4638 (AMNH). **1♂:** JuanaDiaz; PuertoRico; J.Micheli ; XI.1976 (USNM). (Appendix A).

Etymology

This species was first originally recognized by Richard S. Miller, who provided the manuscript name ‘quadrilacinius’, in allusion to the pointed (laciniated) structures that the females of this species have in the posterior margins of their abdomen. To honor Rich’s finding we are keeping the name that he chose.

Diagnosis

Thonalmus quadrilacinius is very similar to *Thonalmus bicolor* (see thorough comparison in *T. bicolor* taxonomic discussion section), but it can be separated from that species and all

other *Thonalmus* by the combination of the following characters: head vertex concave, bearing a transverse carina (Fig. 2.13O), the elytral reticulation strongly developed, with costa I free, subapically obliterated, and costae II and III seemingly fused apically, but free (Fig. 2.17O), the inner margin of male mesofemora strongly curved (Fig. 2.18O), the abdomen of females modified, with the posterior margin of ventrites III and IV medially thickened, bearing a thin prolongation at their ends and small pegs in the lateral portions of segments II-IV (Fig. 2.21F) and the male genitalia having slender asymmetrical parameres, slightly bent forward in ventral view, apically acuminated, with the tube >6.5× longer than phallobase and the median lobe bearing a long flagellum, multiple times longer than the length of the genitalia (Figs. 2.19O, 2.20).

Description

General coloration orange; head orange (Fig. 2.13O); elytra fascia metallic blue or green, present in elytral apical third (Figs. 2.10O, 2.17O); legs orange, tarsi black (Figs. 2.18O). Head: vertex bearing a transverse impression (Fig. 2.13O); labrum transverse (Fig. 2.13O). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III ca. 4× length of pedicel, distally slightly round; antennomeres IV–IX subequal, X 1/3 shorter than IX; XI ¼ longer than precedent (Fig. 2.15O). Pronotum: median cell moderately developed (Fig. 2.16O); median lobe weakly produced; anterior angles round, posterior weakly acute, divergent (Fig. 2.16O). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16O). Elytra subparallel, slightly dehiscent (Fig. 2.10O), ca. 3.2× length of pronotum, strongly reticulated, bearing irregular cells (Fig. 2.17O); elytral costae strongly

developed and visible; costa I strongly developed towards elytral apex, visible until subapical portion of fascia, apically obliterated (Fig. 2.17O); costa II and III subapically free, only apparently fused, reaching elytral apex (Fig. 2.17O). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins strongly curved (Fig. 2.18O). Abdomen of females modified, posterior margin of ventrites III and IV medially thickened, bearing a thin prolongation at their ends (Figs. 2.21F), bearing small ensiform pegs in median lateral portion of segments II-IV (Fig. 2.21F). Male genitalia: parameres slender, asymmetrical, slightly bent forward in ventral view, >6.0–6.5× longer than phallobase (Figs. 2.19O, 2.20); bearing a narrow but deep cut in dorsal portion of tube, present in apical third, covered by a thin translucid membrane (Fig. 2.19O); apex of tube acuminated, pointy, with thin folds throughout its margin (Fig. 2.19O). Median lobe rod-like, bearing a long flagellum, multiple times longer than the male genitalia but lost in most specimens examined (Figs. 2.19O, 2.20).

Length (pronotum + elytra): 5.1–12.3 mm. **Width (across humeri):** 1.3–3.2 mm.

Distribution

Puerto Rico and Hispaniola (Fig. 2.25B).

Type Locality

Isabela, Puerto Rico.

Biology

Also found in Hispaniola, *Thonalmus quadrilacinius* is the only species of *Thonalmus* found in Puerto Rico (see notes in *T. bicolor* distribution about two specimens of this species

being found in Puerto Rico). Specimens have been found in sugar-cane fields, in aggregations, in dead branches of trees in semi-desert environments, weed, mango leaves, foliage and on *Citrus* sp. (Sapindales, Citreae) and on foliage of *Lecythis elliptica* (Ericales, Lecythidaceae) (Jackson and Bauzá-Salas 1965). Specimens have been collected during flight in the day, collected by sweeping, in low vegetation and at light. Initially thought to be an introduced species in Puerto Rico (Leng and Mutchler 1922: 422; Wolcott and Martorell 1937: 535-536; Wolcott 1950: 281), our dated tree and ancestral area reconstruction supported the hypothesis that this species has colonized Puerto Rico at least ca. 2.95 Ma (Figs. 2.6 and 2.7, respectively).

Taxonomic Discussion

Thonalmus quadrilacinius is similar to *T. bicolor* (see details in the taxonomic discussion section under *T. bicolor*).

Nomenclatural Notes

Thonalmus quadrilacinius has been treated for over 100 years either as *T. dominicensis* or *T. chevrolati* (junior synonym of *T. bicolor*) (see synonimical tables above) and only recognized by us in this study as a separate species, supported by morphological and molecular data (see discussion section).

Thonalmus sinuaticostis **Leng and Mutchler, 1922**

(Figs. 2.3–2.7, 2.10P, 2.13P, 2.15P, 2.16P, 2.17P, 2.18P, 2.19P, 2.21G, 2.26B)

Thonalmus sinuaticostis Leng and Muthcler, 1922: 426, figs. 7-7a. Blackwelder 1945: 344. Chalumeau and Touroult 2005: 67. Ivie *et al*. 2008: 76

Thonalmus sinuaticollis Kleine, 1933: 19 (*Lapsus calami*).

Examined Material

Examined type material (n=9). Holotype 1♂: Type No.; 61028; U.S.N.M./ H.A. Ballou; dedit/ Ballou; No. 885/ Mntserrat; 17.XII.06 WI/ HOLO; TYPE [in a red label]/ Thonalmus; sinuaticostis; ♂ type (USNM) (Appendix B, figure 17). **Allotype 1♀:** Mntserrat' 21.3 WI./ HGHubbard; Collector/ Female/ ALLOTYPE [in a red label]/ AllotypeNo.; 61028; U.S.N.M./ Thonalmus; sinuaticostis; ♀ type (USNM) (Appendix B, figure 18). **Paratypes**: **2♀:** Mntserrat' 21.3 WI./ HGHubbard; Collector/ Female/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M. (USNM). **1♀:** Montserrat/ West Indies/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M. (USNM). **1♂:** Mntserrat' 21.3 WI./ HGHubbard; Collector/ male/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M. (USNM). **1♀:** Mntserrat; 19.3 WI/ HGHubbard; Collector/ Female/ Calopteron; bicolor/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075 (AMNH). **1♀:** HGHubbard; Collector/ Montserrat; West Indies/ Female/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075 (AMNH). **1♂:** Mntserrat; 1.3. WI/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075/ T. sinuacostis; Type (AMNH).

Material examined in addition to type specimens (n=325): Appendix A.

Diagnosis

Thonalmus sinuaticostis can be separated from all other known *Thonalmus* by the combination of the following characters: head vertex convex, not bearing a transverse impression (Fig. 2.13P), the elytral costae II present in basal third, discontinued medially and but present again the apical third, with elytral costa III and apical third of costa II sinuated (Figs. 2.10P, 2.17P), the mesofemora of males with inner margins strongly curved, with the pro- and meso coxae produced posteriorly, bearing a thorn-like appearance (Fig. 2.18P) and the abdomen of females telescoped, strongly modified, with the posterior margins of ventrites I and II thickened throughout, ventrite III medially bearing pedunculated appendages that are apically club-shaped and apically acuminated (Fig. 2.21E).

Redescription

General coloration: orange; head orange, supraregion of antennifers black (Fig. 2.13P); elytra fascia blue or greenish, metallicized, present in elytral apical half (Figs. 2.10P, 2.17P); legs orange, apical third of femora, tibiae and tarsi black (Fig. 2.18P). Head: vertex concave, not bearing any depression medially (Fig. 2.13P); labrum transverse; maxillary terminal palpomere securiform (Fig. 2.13P). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III elongate, ca. 5× length of pedicel, distally slightly round; antennomeres IV–X subequal, 1/4 longer than III; flagellomeres VI–XI slightly crenulate, with crenulations sparsely distributed, distant from each other (Fig. 2.15P); XI 1/3 longer than precedent (Fig. 2.15P). Pronotum: median cell moderately developed (Fig. 2.16P); median lobe strongly produced; anterior angles round, pronounced, posterior strongly acute, divergent, lateral

margins strongly sinuated (Figs. 2.10P, 2.16P). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16P). Elytra subparallel, dehiscent (Fig. 2.10P), ca. 3.5× length of pronotum, weakly reticulate, with small, subcircular cells on elytra (Fig. 2.10P); elytral costae strongly developed and visible; costa I present in apical half of elytron, absent or only vestigial after (Fig. 2.10P, 2.17P); costa II present in apical half of elytron, absent in 3/4 and present again apically, apex sinuate (Figs. 2.10P, 2.17P); costa III present throughout, strongly sinuate (Figs. 2.10P, 2.17P). Legs: pro- and meso coxae produced posteriorly, bearing a thorn-like appearance, mesofemora of males with inner margins strongly curved (Fig. 2.18P). Abdomen of females heavily modified, posterior margin of ventrites I and II thickened throughout, III medially bearing pedunculated appendages that are apically club-shaped (Fig. 2.18P); in certain specimens the abdomen of females is strongly telescoped. Male genitalia: parameres fusiform, slightly tapering towards apex, bearing a narrow cut in dorsal portion of tube, only present in apical half; apex of tube ventrally blunt, with a pair of lenticular accessory structures in internal lateral portion of apex (Fig. 2.19P). Median lobe rod-like, thin and sclerotized throughout, with a membranous structure located apically (Fig. 19P). No remains of a flagellum were found in the examined specimens.

Length (pronotum + elytra): 7.0–14.6 mm. **Width (across humeri):** 1.5–3.5 mm.

Distribution

Montserrat (Fig. 2.26B).

Type Locality

Montserrat.

Biology

T. sinuaticostis are found in aggregations. Specimens were collected in UV light, Malaise, and by beating vegetation, being found on *Heliconia* (Heliconiaceae), leaves, on dead standing trees, and in rotten breadfruit and logs.

Taxonomic Discussion

See taxonomic discussion under *T. hubbardi*.

***Thonalmus suavis* (Jacquelin Du Val, 1856)**

(Figs. 2.3–2.7, 2.10Q, 2.13Q, 2.15Q, 2.16Q, 2.17Q, 2.18Q, 2.19Q, 2.23A)

Charactus elegans Dejean, 1833: 99 (*nomem nudum*). Dejean 1837: 112. Bourgeois 1883: 378.

Calopteron suave Jacquelin Du Val, 1856: 80. Gemminger and Harold 1869: 1632. Chevrolat 1870: 75. Stahl 1882: 179, species 175. Gundlach 1891: 254. Leng and Mutchler 1914. 431.

Thonalmus suavis; Bourgeois 1883: 378. Mayer and Giesbrecht 1884: 254. Gorham 1898: 317. Bourgeois 1901: 51. Leng and Mutchler 1922: 423. Mutchler 1923: 2. Kleine 1933: 18. Darlington 1938: 686. Parsons 1940: 1. Blackwelder 1945: 344. Harvey 1956: 283. Linsley, Eisner and Klots 1961: 23. Peck 2005: 112. Aragón 2006: 54. Valenciaga and Mora 2009: 37. Padilla *et al*. 2019: article 105.

Thonalmus sauvis. Myers 1927: 292 (*Lapsus calami*).

Examined Material

Type material examined (n=1). *Calopteron suave*: Lectotype (designated to preserve stability of nomenclature, in accordance with ICZN (1999) Art. 74.7). **Lectotype 1♀:** Calopteron; suavis J.D. [Jacquelin du Val handwriting]/♀/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur/ LECTOTYPE; Calopteron; suave Jac. Duval; det. V.S. Ferreira 2019 (MNHN) (Appendix B, figure 19).

Material examined in addition to type specimens (n=151): Appendix A.

Diagnosis

Thonalmus suavis can be readily identified from all other *Thonalmus* species by the combination of head vertex concave, bearing a transverse impression (Fig. 2.13Q), antennae in both sexes subserrate (Fig. 2.10Q, 2.15Q), the elytra bearing small, subcircular cells, weakly reticulate (Fig. 2.17Q), the elytral costae moderately developed, but with costa II and III distinctly fused and expanded apically (Fig. 2.10Q, 2.17Q), with the inner margin of male mesofemora strongly curved and pro- and meso coxae produced posteriorly, bearing a thorn-like appearance (Fig. 2.18Q) and the male genitalia with the apex of parameres strongly acuminated, blunt apically, without folds in the inner margins of parameres (Fig. 2.19Q).

Redescription

General coloration: orange; head orange (Fig. 2.13Q); antennae black; elytra fascia metallic blue, rarely green, reaching apical half of elytral length, in certain specimens, blue portion of elytra slightly extending fascia region (Fig. 2.10Q, 2.17Q); legs black, except base of

femora and trochanters, which are orange (Fig. 2.10Q, 2.18Q). Head: vertex convex, bearing a transverse impression (Fig. 2.13Q); labrum transverse. Antennae of males and females serrate; scape conical, weakly developed, antennomere III 4–6× length of pedicel; antennomeres IV and V subequal, XI ¼ longer than precedent, (Fig. 2.15Q). Pronotum: median cell weakly developed (Fig. 2.16Q); median lobe weakly produced; anterior angles round, posterior angles acute, divergent (Fig. 2.16Q). Scutellar shield rectangular, apically shallowly emarginate (Fig. 2.16Q). Elytra subparallel, slightly dehiscent (Fig. 2.10Q), 3.2× the length of pronotum, weakly reticulate, with small, subcircular cells on elytra (Fig. 2.17Q); elytral costae moderately developed and visible; costa I fading towards elytral apex, visible until 2/3 of fascia (Fig. 2.17Q); costa II and III subapically fused, expanded apically (Fig. 2.17Q). Legs: mesofemora of males with inner margins strongly curved (Fig. 2.18Q). Abdomen of females simple, not bearing any modifications. Male genitalia: parameres tubiform, slightly tapering towards apex, bearing a narrow and shallow cut in dorsal portion of tube, only present in apical region (Fig. 2.19Q); apex of tube strongly acuminated, ventrally blunt, without folds in inner margins of parameres (Fig. 2.19Q). Median lobe rod-like, strongly developed and visible not surpassing the apex of parameres, with apical third slightly expanded (Fig. 2.19Q). No remains of a flagellum were found in the examined specimens.

Length (pronotum + elytra): 6.0–13.0 mm. **Width (across humeri):** 1.6–3.4 mm.

Distribution

The Bahamas and Cuba (Fig. 2.23A). Two females (WIBF 042047 and WIBF 042046) have been intercepted in Miami, FL, in 1954 in an airplane coming from Cuba. These specimens

collected also with *T. nigritarsis* specimens (see distribution notes in that species), have also not been included in our distribution maps because they are another clear case of intercepted specimens.

Type Locality

Cuba.

Biology

We found a preponderance of night collections, indicating that *T. suavis* might have a preference for the night, although specimens were also found flying during the day. Specimens have been collected at light, in disturbed beaches on palm trees at night, in mango trees, *Leucaena glauca* (Fabales, Fabaceae), *Ficus* sp. (Rosales, Moraceae) leaves resting at night, sugar cane leaves and on trees and other plants. The species has been recorded to occur in garbanzo and tobacco crops (Valenciaga and Mora 2009; Padilla *et al*. 2019).

Nomenclatural Notes

See nomenclatural notes under *T. aulicus* for an explanation on the status of the Dejean's name.

Taxonomic Discussion

Thonalmus suavis is very similar to *T. amabilis*. A thorough discussion and comparative distinction between both species is presented in the taxonomic discussion section under *T. amabilis*.

Thonalmus subquadratus **Leng and Mutchler, 1922**

(Figs. 2.4, 2.5, 2.7, 2.10R, 2.13R, 2.15R, 2.16R, 2.17R, 2.18R, 2.19R, 2.26A)

Thonalmus subquadratus Leng and Mutchler, 1922: 420, fig. 4. Kleine 1933:19. Blackwelder 1945: 344.

Examined Material

Examined Type material examined (n=3). Holotype 1♂: Thonalmus; subquadratus; L&M/ HGHubbard; Collector/ Jamaica; W.I./ HOLO;TYPE [in red]/ Type No.; 61025; U.S.N.M. (USNM) (Appendix B, figure 21). **Paratypes 1♀, 1♂:** Jamaica; W.I./ HGHubbard; Collector/ Female/ PARATYPE/ Paratype; 61025; U.S.N.M. (USNM, AMNH).

Material examined in addition to type specimens (n=3): Appendix A.

Diagnosis

Thonalmus subquadratus can be separated from all other known *Thonalmus* by the combination of a head completely black and an epistoma transverse, nearly as long as wide (Fig. 2.13R), the concave head vertex, bearing a transverse impression (Fig. 2.13R), the scutellar shield subquadrate, notched apically (Fig. 2.16R), the elytral costa I not reaching elytral apex, with costae II and III reaching the apex, weakly fused apically (Figs. 2.10R, 2.17R), with similar costae appearance in both sexes, and by the apex of parameres of the parameres of the male genitalia strongly acuminated apically, spear-like, with the median lobe carrying remains of a long flagellum (Fig. 2.19R).

Description

General coloration orange; head black (Fig. 2.13R); elytra fascia metallic blue, present in elytral apical half (Figs. 2.10R, 2.17R); legs, black, coxae, trochanters and basal 2/3 of femora orange (Figs. 2.18R). Head: vertex concave, bearing a transverse impression (Fig. 2.13R); labrum longer than wide (Fig. 2.13R). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, strongly developed, antennomere III ca. 4× length of pedicel, distally slightly round; antennomere IV twice length of III, with a small, developed tooth in basal portion of the inner margin of antenna; antennomeres V–X subequal, XI ¼ longer than precedent (Fig. 2.15R). Pronotum: median cell moderately developed (Fig. 2.16R); median lobe weakly produced; anterior angles round, posterior weakly acute, divergent, posterior margin weakly sinuated (Figs. 2.16R). Scutellar shield rectangular, notched apically (Fig. 2.15R). Elytra subparallel, slightly dehiscent (Fig. 2.10R), ca. 3.5× length of pronotum, moderately reticulated, bearing irregular shaped cells (Fig. 2.17R); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until subapical portion of fascia (Fig. 2.17R); costa II and III subapically weakly fused, sometimes apparently not fused; fusion converging towards inner margin of elytra (Fig. 2.17R). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins strongly curved (Fig. 2.18R). Abdomen of females simple, not bearing any modifications. Male genitalia: parameres slender, symmetrical, ca. 6× longer than phallobase (Fig. 2.19R); bearing a narrow and deep cut in dorsal portion of tube, present in apical third; apex of male genitalia strongly acuminated apically, spearlike, with apex slightly blunt (Fig. 2.19H). Median lobe rod-like, apically bearing remains of a flagellum (Fig. 2.19R).

Length (pronotum + elytra): 7.2–7.9 mm. **Width (across humeri):** 1.9–2.1 mm.

Distribution

Jamaica (Fig. 2.26B).

Type Locality

Jamaica.

Biology

T. subquadratus are only known from a very small type series and three additional specimens. Having a sympatric distribution with *T. militaris*, we expect both species to have similar preferences for plant hosts and biology.

Taxonomic Discussion

T. subquadratus is very similar to *T. militaris*, but the former is a much rarer species. *T. subquadratus* can be easily separated from *T. militaris* by the scutellar shield subquadrate, with a notch on anterior median margin (Fig. 2.16R) (vs. scutellar shield triangular in *T. militaris*, Fig. 2.16M), the scape not enlarged, similar to other *Thonalmus* species (Fig. 2.15R) (vs. greatly enlarged in *T. militaris*, Fig. 2.15M), the elytral costae arrangement and appearance similar in both sexes (Fig. 2.10R) (vs. sexually dimorphic in *T. militaris*, elytral costa strongly developed in females, with erected setae on it, Fig. 2.11B) and the apex of the parameres in *T. subquadratus* strongly acuminated, spearlike (Fig. 2.19R) (vs. apex of parameres in *T. militaris* only slightly developed, with apex blunt, Fig. 2.19M).

***Thonalmus thomasi* new species**

(Figs. 2.4, 2.5, 2.7, 2.10S, 2.13S, 2.15S, 2.16S, 2.17S, 2.18S, 2.19S, 2.23B)

Examined Material

Examined Type material (n= 17). Holotype: 1♂: DOM.REP: Barahona Prov.; 4.5km S Barahona; 23-V-1992 M.C. Thomas; tropical almond blooms / Michael Thomas [WIBF 043017] (FSCA). **Paratypes: 1♀:** Dominican Republic; Prov. La Ramana; Higueral, 7MAY1978; R.E.Woodruff. & G.B.; Fairchild (FSCA). **1♀:** DOMINICAN REPUBLIC:PR. ; LA ROMANA, RUTA HIGUEY ; SANTONI, 2KM. S.W. OF ; RIO CHAVON, X-85 ; WOODRUFF & STANGE (FSCA). **1♀:** Acc 116-24 I[Unintelligible] ; Gona [Unintelligible]ve[Unintelligible], Haiti. ; Aug. 23, 1924 / A.E. Vinson ; Collector / (USNM). **1♀:** DOM.REP: Barahona Prov.; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms / Michael Thomas (FSCA). **1♂:**DOM.REP: Barahona Prov. ; 4.5km S Barahona ; 18-V-1992 M.C. Thomas ; on flowers of ; tropical almond (FSCA). **1♂:** Las Abejas; Oviedo,PROV.; PEDERNALES,R.D. ; 27-VI-1989 ; cols.; Matusik.-Guerrero / 34989 (MNHNSD). **1♂:** La Cumbre.; Puerto Plata,PROV.; PUERTO PLATA,R.D. ; 16-VI-1976 ; Col.Dominguez. ; Luz. / 08222 / 15.1132-19 / MNHNSD 15.90 (MNHNSD). **1♀:** La Cumbre.; Puerto Plata, PROV.; PUERTO PLATA, R.D.; 16-VI-1976; Col.Dominguez.; Luz. / 08263 / 15.1131-19 / MNHNSD 15.89 (MNHNSD). **1♂:** Bayahibe; La Romana, PROV.; LA ROMANA, R. D; 9-VIII-1979; Cols.; Marcano-Mota-Reyoso / 05362 / 15.1189-19; MNHNSD 15.147 (MNHNSD). **1♂:** REPUBLICA DOMINICANA; Santo Domingo,Parque ; Mirador del Norte ; 17-VI-2001 ; H. Takizawa / 15.1170-19 / MNHNSD 15.128 (MNHNSD). **1♀:** Dominican

Republic; RD-156 Azua Prov.,; Barreras, La Furnia,; 18°19.289'N 70°54.755'W,; 18.vii.2003, D. Perez, R.; Bastardo, B. Hierro. (n) / 15.1184-19 / MNHNSD 15.142 (MNHNSD). **1♀:** REPUBLICA DOMINICANA; Pedernales; Oviedo, stream side; 5-8-VI-2001; H. Takizawa / 15.1152-19 / MNHNSD 15.110 (MNHNSD). **1♂:** Dominican Republic; RD-141 Independencia ; Prov.,Rio Las Damas, 1 km S ; Duverge, Parque Nacional / Sierra de Bahoruco, ; 18°22.284'N 71°31.940'W, ; 5.vii.2003,D.Perez, R. ; Bastardo, B. Hierro. (d) / 15.1183-19 / MNHNSD 15.141 (MNHNSD). **1♂:** DOM.REP:Independencia; Prov..ESE Jimani; S. LagoLimon.13APR1992; M.A. & R.O. Ivie (WIBF). **1♂:** DOM REP: Barahona Prov.; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms (WIBF). **1♂:** DOM REP: Barahona Prov.; 4.5km S Barahona; 18-V-1992 M.C. Thomas; on flowers of; tropical almond (WIBF). (Appendix A).

Etymology

This species is named in honor of Michael Charles Thomas (1948–2019), the collector of several specimens of the species that takes his name.

Diagnosis

Thonalmus thomasi can be readily separated from all other *Thonalmus* by the combination of the following characters: the head vertex with a transverse impression (Fig. 2.13S), the simple elytra, without mammiform projections, with all elytral costae strongly developed and visible, free and reaching the apex (Fig. 2.17), the elytra bearing small, subcircular cells (Fig. 2.17S), the inner margin of mesofemora of males strongly curved (Fig. 2.18S), the female ventrites III and IV medially thickened and strongly produced posteriorly,

laterally strongly produced in ventrites II-V (Fig. 2.21H) and the male genitalia having slender asymmetrical parameres, slightly bent forward in ventral view, the tube >10× longer than phallobase, with median lobe bearing remains of a long flagellum (Fig. 2.19S).

Description

General coloration orange; head orange (Fig. 2.13S); elytra fascia black, in some specimens metallic blue, present in elytral apical third (Figs. 2.10S, 2.17S); pronotum of one specimen with lateral margins black; legs, trochanter and femora orange, in one specimen black, sometimes tarsi and apex of tibiae black (Figs. 2.18S). Head: vertex bearing a transverse impression (Fig. 2.13S); labrum transverse (Fig. 2.13S). Antennae subserrate in both sexes, densely setose, setae decumbent; scape conical, weakly developed, antennomere III ca. 5× length of pedicel, distally slightly round; antennomeres IV and X subequal, XI ¼ longer than precedent (Fig. 2.15S). Pronotum: median cell moderately developed (Fig. 2.16S); median lobe weakly produced; anterior angles round, posterior weakly acute, divergent (Figs. 2.16S). Scutellar shield rectangular, apically medially emarginate (Fig. 2.16S). Elytra subparallel, slightly dehiscent (Fig. 2.10S), ca. 4.2–4.4× length of pronotum, weakly reticulated, bearing small subcircular cells (Fig. 2.17S); elytral costae strongly developed and visible; costa I fading towards elytral apex, visible until subapical portion of fascia (Fig. 2.17S); costa II and III free, subapically converging towards the inner margin of elytra, faded apically (Fig. 2.17S). Legs: pro- and mesocoxae angle posteriorly blunt, mesofemora of males with inner margins strongly curved, with a small notch in the apical inner margin (Fig. 2.18S). Abdomen of females modified, posterior margin of ventrites III and IV medially thickened and strongly produced (Fig. 2.21H), laterally strongly produced (Fig. 2.21H). Male genitalia:

parameres slender, asymmetrical, slightly bent forward in ventral view, >6.5× longer than phallobase (Fig. 2.19S); bearing a narrow but deep cut in dorsal portion of tube, present from apical 2/3 through apex, covered by a thin translucid membrane (Fig. 2.19S); apex of tube acuminated, but not pointy, with thin folds throughout its margin, more prominently visible towards apex (Fig. 2.19S). Median lobe rod-like, bearing remains of a long flagellum (Figs. 2.19S).

Length (pronotum + elytra): 8.4–12.8 mm. **Width (across humeri):** 2.2–3.4 mm.

Distribution

Hispaniola (Fig. 2.23B).

Type Locality

Barahona, Dominican Republic.

Biology

Thonalmus thomasi is only known for a small series. Labels indicate that some specimens were collected on flowers of tropical almond blooms, near streams and at lights.

Taxonomic Discussion

Thonalmus thomasi is most similar to *T. bicolor* and *T. centralis* (see taxonomic discussion under *T. bicolor*).

An identification key to the adult species of *Thonalmus*

1. Epistoma nearly as long as wide; head completely black (Figs. 2.13M, 2.13R)... **2**

1'. Epistoma transverse; head color variable, but not completely black (Fig. 2.13, except 13M and 13R)... **3**

2. Posterior median margin of pronotum sinuate (Fig. 2.16M), scutellar shield triangular (Fig. 2.16M); scape enlarged, pear-like, at least twice the width of succeeding flagellomeres (Figs. 2.15M, 2.16M)... ***Thonalmus militaris*** **(Jamaica)**

2'. Posterior median margin of pronotum straight (Fig. 2.16R), scutellar shield subquadrate, posteriorly notched (Fig. 2.16R); scape subequal to succeeding flagellomeres (Figs. 2.15S, 2.16S)... ***Thonalmus subquadratus*** **(Jamaica)**

3. Vertex concave, bearing a transverse impression (Figs. 2.13B–2.13I, 2.13L, 2.13N, 2.13O, 2.13Q, 2.13S) ...**4**

3'. Vertex without transverse impression, convex (Figs. 2.13A, 2.13J, 2.13K, 2.13P) ...**16**

4. Preapical mammiform tubercles present on elytra (Figs. 2.17F, 2.17H); elytral costae very distinct…5

4.' Preapical mammiform tubercles absent on elytra; elytral costae distinct or indistinct…**6**

5. Elytral costa I meeting the inner elytral margin in 2/3 of elytra, strongly visible (Fig. 2.17F); elytral costae II and III fused apically; legs usually black, inner margin of male mesofemora flat (Fig. 2.18F); abdomen of females simple, not bearing prolongations (Fig. 2.21A); blue portion of elytra usually half of its length… ***Thonalmus darlingtoni*** **(Hispaniola)**

5'. Elytral costa I fading towards apex of elytra; elytral costae II and III free apically, not fused (apparently fused in some females); color of legs variable, inner margin of male mesofemora curved (Fig. 2.18H), when viewed dorsally with a notch in the apex of males metafemora; females posterior margin of ventrite III medially thickened, bearing a thin prolongation at their ends (Fig. 2.21D); blue portion of elytra usually restricted to apical third… ***Thonalmus dominicensis*** **(Hispaniola)**

6. Reticulation on portion of elytra weakly developed, composed of small, subcircular cells (Figs. 2.17B, 2.17C, 2.17G, 2.17N, 2.17S); elytral costae weakly or moderately developed...**7**

6'. Reticulation on blue portion of elytra moderately to strongly developed, cells subquadrate or rectangular-shaped (Figs. 2.17D, 2.17E, 2.17I, 2.17L, 2.17O); elytral costae strongly developed… **12**

7. Species endemic to Hispaniola. Elytral costa II and III reaching apex of elytra (Fig. 2.17S); inner margins of meso and meta-femora curved (Fig. 2.18S); female ventrites III and IV medially thickened and strongly produced posteriorly, laterally strongly produced in ventrites II-V (Fig.

2.21H); median lobe bearing remains of a long flagellum (Fig. 2.19S)… ***Thonalmus thomasi* (Hispaniola)**

7'. Species endemic to Cuba and/or Bahamas. Characters variable, female abdomen simple, not modified…**8**

8. Inner margins of male mesolegs strongly curved (Fig. 2.18B, 2.18C, 2.18Q); elytral fascia strongly metalized, displaying an iridescent coloration… **9**

8'. Inner margins of male mesolegs flat, not curved (Figs. 2.18G, 2.18N); elytral fascia weakly metallicized, almost matte, not iridescent (Figs. 2.17G, 2.17N)… **11**

9. Pro and mesocoxae outer angle not strongly produced posteriorly (Fig. 2.18C); pronotal cell strongly developed (Fig. 2.16C); elytral costae free, obliterated and not fused apically (Fig. 2.17C); parameres of the male genitalia basally expanded and globose, tapering medially but slightly expanded apically, bearing a blunt, apically sub square apex (Fig. 2.19C)… ***Thonalmus aulicus* (Cuba and Bahamas)**

9. Pro and mesocoxae outer angle strongly produced posteriorly, bearing a thorn-like appearance (Figs. 2.18B, 2.18Q); pronotal cell weakly developed (Fig. 2.16B, 2.16Q); elytral costae II and III apically fused (Fig. 2.17Q) or apparently fused (Fig. 2.17B); male genitalia not as above…**10**

10. Male antennae pectinate (Fig. 2.14B), female subserrate; elytral costae II and III apically only apparently fused (Fig. 2.17B); parameres apically blunt, with the lateral margins of the apex in dorsal view folded (Fig. 2.19B)… ***Thonalmus amabilis*** **(Cuba and Bahamas)**

10'. Antennae in both sexes subserrate (Fig. 2.15Q); elytral costae II and III apically distinctly fused (Fig. 2.17Q); parameres apically ensiform, without visible folds in the apical margins (Fig. 2.19Q)… ***Thonalmus suavis*** **(Cuba and Bahamas)**

11. Scutellar shield entire, not notched apically (Fig. 2.16G); posterior margins of pronotum strongly sinuate (Fig. 2.16G); male genitalia with parameres tapering towards apex, with a deep and wide dorsal cut present in apical third (Fig. 2.19G)… ***Thonalmus distinguendus*** **(Cuba)**

11'. Scutellar shield apically notched (Fig. 2.16N); posterior margins of pronotum flat (Fig. 2.16N); male genitalia with parameres tubiform, slightly tapering towards apex, bearing a narrow and shallow cut in dorsal portion of the tube, only present in the apical region (Fig. 2.19N)… ***Thonalmus nigritarsis*** **(Cuba and Bahamas)**

12. Costae II and III fused apically (Figs. 2.17D, 2.17E), fusion strongly visible… **13**

12'. Costae II and III free apically (Figs. 2.17I, 2.17L, 2.17O), not fused or only apparently fused… **14**

13. Legs generally orange, tarsi black; inner margin of mesofemora of males strongly curved (Fig. 2.18D); female elytral costae I strongly produced at the base of elytra; females bearing a prolongation in the abdominal segment III (Fig. 2.21B) … ***Thonalmus bicolor*** **(Hispaniola)**

13'. Legs generally black and orange, tarsi black; inner margin of mesofemora of males straight, not curved (Fig. 2.18E); female elytral costae I not produced; females with posterior margin of abdominal segments II-IV thickened (Fig. 2.21C) … ***Thonalmus centralis*** **(Hispaniola)**

14. Inner margins of meso and metafemora strongly curved (Figs. 2.18O); elytral costa I not reaching apex of elytron, apically discontinued, obliterated (Figs. 2.17O); abdomen of females strongly modified, with posterior margin of ventrites III and IV medially thickened, bearing a thin prolongation at their ends (Fig. 2.21F), bearing small pegs in the median lateral portion of segments II-IV (Fig. 2.21F)…***Thonalmus quadrilacinius*** **(Puerto Rico and Hispaniola)**

14'. Inner margin of meso- and metafemora of males subparallel, straight (Fig. 2.18I, 2.18L); elytral costa I variable; abdomen of female simples or unknown… **15**

15. Elytral costa I fused to the inner margin of elytron in elytral middle third (Fig. 2.17I); pronotal cell weakly developed (Fig. 2.17I); medium sized specimens (6.3–8 mm)… ***Thonalmus guerreiroi*** **(Hispaniola)**

15'. Elytral costa I not reaching apex of elytron, apically discontinued, obliterated (Fig. 2.17L); pronotal cell strongly developed (Fig. 2.16L); large sized specimens (9.6–15.1 mm)… ***Thonalmus mariani*** **(Cuba)**

16. Mammiform tubercles present on apices of elytra (Figs. 2.17A, 2.17K); elytral costa I fused to the inner margin of elytron in elytral middle third (Figs. 2.17A, 2.17K); inner margins of male mesolegs flat (Figs. 2.18A, 2.18K); abdomen of females simple, not bearing any appendages or modifications… **17**

16'. Mammiform tubercles on elytra absent; elytral costa I not reaching apex of elytron, apically discontinued, obliterated (Figs. 2.17J, 2.17P); inner margins of male mesolegs strongly curved (Figs. 2.18J, 2.18P); abdomen of females strongly modified, bearing uniquely developed appendages (Figs. 2.21E, 2.21G)… **18**

17. Maxillary palpomere IV enlarged, strongly developed; elytral cells sub square and small (Fig. 17K); humeral region strongly developed (Fig. 2.10K) …***Thonalmus humeralis*** **(Hispaniola)**

17'. Maxillary palpomere IV not broadened apically; elytral cells irregular, usually more oblong and trapezoidal (Fig. 2.17A); humeral region not strongly developed … ***Thonalmus abejaensis*** **(Hispaniola)**

18. Elytral costa II and III straight, not sinuate (Fig. 2.17J), fused apically; pedunculated appendages arising from ventrite III of females club-shaped and anteriorly acuminated (Fig. 2.21E)… ***Thonalmus hubbardi*** **(Montserrat)**

18'. Elytral costae III strongly sinuate throughout elytral middle and apex (Fig. 2.17P), apically free; pedunculated appendages arising from ventrite III of females reniform, posteriorly acuminated (Fig. 2.21G)… ***Thonalmus sinuaticostis*** **(Montserrat)**

Discussion

Competing Phylogenetic Hypotheses for *Thonalmus* Species

We have used a variety of reconstruction methods and different sources of data to test the hypotheses of relationships of the species of *Thonalmus*. Regardless of the reconstruction method or source of data utilized, *Thonalmus* was consistently recovered monophyletic in all of our tests. These results have been extensively detailed and reported in the results section of each performed analysis, Appendix D and summarized in Table 2.2. On the other hand, the relationships of the *Thonalmus* species varied significantly depending on the type of data and reconstruction method utilized (see details in result section). Even though phylogenetic trees produced by molecular and morphological analyses are thought to be approximations of a common underlying phylogeny (Pisani *et al*. 2007), limitations of our datasets could explain some of the discrepancies found in our results. Among these, we would like to highlight the amount of missing data of our molecular dataset and the probably weak hypotheses of homology for some of the morphological characters in our dataset.

For our DNA-only analyses, we were able to obtain molecular data for 9 out of 19 species of *Thonalmus*. All phylogenetic analyses based on this dataset (DNA only) recovered the islands species-groups as monophyletic (see compositions of the groups in results section), and

our BI and ML approaches resulted in identical tree topologies, whilst our MP approach rendered an unresolved polytomy with the Cuban + Bahamian, Montserratian and Jamaican clades (Fig. 2.3; Appendix D, figures 1–3). In all three reconstruction methods, the support levels for islands species-group was high, corroborating a strong phylogenetic signal in the obtained sequences for those groups of species.

Our morphology-only based dataset resulted in trees that were highly discordant across the different methods utilized (see results for a full description of these relationships). Notably, the repeated recovery of *T. suavis* (part of the Cuban+Bahamian clade in the DNA-only analyses) as sister to the Montserratian clade when using the BI and ML reconstruction methods. In these two hypotheses, especifically, we suspect that this relationship was recovered as an artifact of our apparent inappropriate coding of characters of elytral venation, which seem to be convergent in *T. suavis*, *T. hubbardi* and *T. sinuaticostis*. Unsurprisingly, this relationship is only moderately to weakly supported in the BI (PP 81) (Appendix D, Figure 4) and in the ML (SH-aLRT support and ultrafast bootstrap of 98.2/78) (Appendix D, Figure 3) approaches, whilst in the MP approach *T. suavis* was recovered in a large unresolved polytomy at the base of the *Thonalmus*, along with several other Hispaniolan and Cuban/Bahamian species (Appendix D, Figure 6).

In spite of the weak and inconclusive results of our morphology-only dataset, when combining and concatenating it with our DNA dataset (Total-evidence dataset) we were able to obtain weak to moderate support for several of the clades that were also recovered in our DNA-only results, depending on the reconstruction method utilized (see full descriptions of

relationships in the results section, under Total-evidence phylogenies). We are well aware of the limitations of extrapolations that can be made based on the results of our Total-evidence approach analyses, which yielded phylogenetic hypotheses with low confidence levels for most of the internal relationships of *Thonalmus* (Fig. 2.4).

However, we believe that the benefits of the Total-evidence approach surpass its disadvantages. The greatest advantages of using the Total-evidence approach as implemented in our study is that it allows the tentative phylogenetic placement by anyone with access to a reasonably good dissecting microscope, even in the absence of DNA data. With the *Thonalmus*, for example, over 50% of the known species in of *Thonalmus* there is no DNA data available, and without this combined approach, the placement (even if provisional) of all of taxa would not be possible. In addition to that, this approach, when combined with a character state reconstruction method (Fig. 2.5; see full description of synapomorphic characters in Character State Reconstruction section under results), allows the plotting of tentative morphological synapomorphies that can be mapped in the phylogenetic hypotheses and visually displayed in the tree, increasing the identification of features of diagnostic relevance for the natural groups of species within the genus.

Extensive Sampling of Specimens in Scientific Collections

Recent work on the New World Lycidae fauna have been mostly focused on alpha-taxonomy and revisionary works of smaller, less diverse groups (e.g., Kazantsev 2013, 2017; Ferreira and Ivie 2018; Ferreira 2020; Ferreira and Silveira 2020), with not a single species-level phylogeny published for the group in the region. Whilst these alpha-taxonomy works are

important contributions to the knowledge of the group, the majority of these publications are characterized by a remarkably low number of examined specimens from an even smaller number of institutions. This small number of examined specimens can be explained by several factors, including the lack of specialized collecting methods (FITs, Malaises traps, pitfalls, etc.), high local endemism rates combined with the latter and the loss of habitats that no longer exist. Add to this the lack of broad inclusion of materials from non-historical and non-type holding natural history collections in some of these studies.

These factors combined end up reducing the number of examined specimens included in such studies, diminishing the breadth of these publications and lowering the quality of the study of the New World Lycidae, in the end, affecting our ability to identify the limits of each species and our understanding of the intraspecific variability within the groups. These also limit the availability of material for in-depth morphological studies (preventing the generation of morphology-based phylogenetics studies) and of material suitable for molecular-based studies, preventing the development of evolutionary or ecological projects that are directly dependent of the results of the taxonomic research. Whilst the increase in the number of New World Lycidae studies is overall positive, slowly but steadily contributing for a better understanding of the diversity of this family in the region, lycid groups that are more commonly collected and common in insect collections, such as *Calopteron*, and *Plateros* Bourgeois, 1879, to name two emblematic cases with hundreds of species in the region, remain largely untouched and virtually impossible to be identified.

Thonalmus, while not nearly as large in number of described species as the genera mentioned above, has been included in the same category of abundant and commonly collected specimens of difficult identification. Despite the group's relatively small diversity and geographic range, considerable attention has been given to *Thonalmus* from several authors on different time periods (see introduction for a general overview of the group and synonimical tables). This level of attention can be explained because of the genus' overall conspicuousness and appealing color patterns (orange, yellow or red combined with a metallic blue or green color, Fig. 2.1), their compelling biology, with accounts of species aggregations, mimicry-ring and aposematism relationships with other insects and beetles (*e.g.*, Mutchler 1938; Darlington 1936; Linsley 1959; Lingafelter and Micheli 2004; Lingafelter 2013) and their abundance throughout the majority of places where these species occur.

These factors strongly contributed to the availability of the high number of specimens for our study (nearly 3,000 specimens from 27 collections from museums and field work). The high volume of material available for study was gathered over 40 years, and it was particularly useful in allowing us to obtain a better understanding of the intraspecific variability within each species, geographical distribution patterns and even biology insights (see discussions under each species in results section). Additionally, the continuous collecting efforts focusing on *Thonalmus* allowed to us the opportunity of obtaining DNA-grade specimens, which ultimately resulted in the successful amplification of the loci used in our molecular-based phylogenies and biogeographic study, and enough material was assembled that some exemplars could be disarticulated and dissected, which contributed for the generation of the morphology dataset. The

assembly of this high volume of specimens also allowed the descriptions of seven new *Thonalmus* species, of which the majority of the examined specimens (now part of each species' type series) came from non-historical natural history collections, including important local collections from countries in the West Indies.

It is evident to us that *Thonalmus*' limited distribution range and conspicuousness contributed to its relative abundance and presence in natural history collections, which is not always the case for some of the genera mentioned above (e.g., *Plateros*, a genus widely distributed in the Nearctic and Neotropical regions and worldwide, for which most specimens are small-sized and dull black). However, our extensive collecting efforts and intense networking with institutions from all over the Western hemisphere allowed us access to a large sampling of specimens, which contributed to this study to being the largest and most comprehensive taxonomic study ever on a New World Lycidae genus. With this work, we hope to have provided an example that the extensive use of materials from natural history collections can improve the scope and quality of taxonomic works, ultimately resulting in a product that will contribute to diminish the taxonomic impediment and the gap of knowledge of this beetle family in the Americas.

While the use of specimens deposited in historical collections holding type specimens are of utmost necessity and importance, especially to mitigate and diminish the effects of the taxonomic impediment in the New World fauna, we hope to incentivize the scientific community to further expand the usage of natural history collections that are not known for possessing historically used materials (*i.e.*, types), but that still possess important and valuable specimens

that are as important as type specimens deposited in historical collections. With the accelerated decline and dramatic changes of natural environments caused by anthropic actions, natural history collections remain as one of the most important sources of data for understanding biodiversity patterns of habitats that no longer exist or that have been heavily modified over the years. Such non-historical and usually smaller institutions are constantly facing defunding actions, and as primary users of the resources in such collections, it is our duty to utilize and explore these institutions as much as possible, and to highlight their importance and relevance to a broader audience and to stakeholders and decision-makers of such institutions.

Ancestral Area Reconstruction and Divergence Time Estimations of *Thonalmus*

The divergence time estimation carried out in MrBayes and based on *coi* sequences utilizing a fixed rate clock, indicated that the most recent common ancestor (MRCA) of *Thonalmus* probably originated in the lower Eocene, at 48.85 Ma (Fig. 2.6), with the hypothetical ancestral area of the group being Hispaniola and/or Hispaniola and Cuba (Fig. 2.7) (Appendix C, Table S7 and Appendix D. 12, node 43). As indicated in our analyses, a major split occurred relatively early, soon after the colonization of the Greater Antilles by Thonalmus' ancestor, sometime between 37.31–61.95 Ma, with one these populations colonizing Hispaniola and later Puerto Rico, and another population colonizing Cuba, and later Jamaica and Montserrat (see results section for detailed description of split events for each island and taxon). These analyses, combined with other observations, yielded interesting insights in the evolution and distribution patterns of some of the *Thonalmus* species, namely *T. quadrilacinius* (Puerto Rico and Hispaniola) and *T. hubbardi* and *T. sinuaticostis* (Montserrat).

Our analyses shed light on the distribution patterns of *T. quadrilacinius*, the only *Thonalmus* species known to occur on two distinct islands, Hispaniola and Puerto Rico. This species, treated for several years in the literature either as *T. bicolor* or *T. dominicensis* (see taxonomic discussion under these species) has been considered to be an invasive species in Puerto Rico, and believed to have been introduced by anthropic action in the last few centuries. After our taxonomic revision and phylogenies corroborated the identity of this species as a unique biological entity from the other species, the questions about its presence in Puerto Rico remained unanswered. However, our divergence time estimation combined with our ancestral area reconstruction results provided evidence to corroborate that the origin of *T. quadrilacinius* is, indeed Hispaniola, with 100% confidence (Appendix D, Figure 13), and that the colonization of Puerto Rico by *Thonalmus* occurred only very recently, during the Holocene, at 2.3 Ma through a dispersal event during the Pleistocene, possibly during sea level changes in the period (see Nguyen 2019 for a review). Additionally, the presence of *Thonalmus* mimics in the Puerto Rican bank (Guerrero 2001; Michelli 2010; Vlasak and Ivie 2018) support the long occurrence of this species there.

The same level of resolution cannot be said about the distribution patterns of the Montserratian *Thonalmus* species, which remain unresolved and poorly understood. With the exception of *T. sinuaticostis* and *T. hubbardi*, all other *Thonalmus* species are distributed in the Greater Antilles and the Bahamas. The two major unanswered questions regarding the distribution patterns of these two species are related with the mysteries of how these species colonized and arrived in Montserrat, and why there are no other *Thonalmus* species between

Puerto Rico and Montserrat. Recent and comprehensive studies support that the oldest date on which Montserrat could be hospitable is 2.6 Ma (Harford *et al*, 2002; Hatter *et al*. 2018), and because of this, we assumed that the evolution of *T*. *sinuaticostis* and *T*. *hubbardi* had to have happened fairly recently during the Pleistocene. It is intriguing that our preferred phylogenies (Figs. 3 and 4) (and even our morphology-based phylogenies) recovered the Montserratian clade as sister to the Jamaican clade, considering that these islands are very distant from each other (in a straight line over 1,500 km apart), and that the ancestral area reconstructions indicated both vicariance and dispersal events between the MRCA of both clades (Appendix D, Figs. 13 and 14). While the dispersal event possibility could have happened in a variety of ways, the suggestion of a vicariance event seems controversial, especially because Jamaica has never been connected to any other island in the West Indies, nor has Montserrat. While the distribution patterns of the Montserratian species are going to be discussed in a stand-alone publication (Ivie and Ferreira, In prep), we'd like to point out that the existence of mimics of *Thonalmus* in the Virgin Islands (*Cyanomethia pseudothonalmus*, a Cerambycidae, Fig. 2L) (Fig. 2L), on which no *Thonalmus* species is known, could be indication of extinction events.

Our biogeographic scenarios are not in conflict with other geological data regarding the availability and existence of such islands for colonization by *Thonalmus*. However, without the expansion of our dataset, the inclusion of more sequences from different populations, whole genomics data from all *Thonalmus* species and further calibration points, our results should be taken with a grain of salt, and we recommend these to be treated as preliminary results. Despite these caveats, our analyses combined with other observations yielded interesting insights in the

evolution and dispersal patterns of some of the species, which we hope will further contribute to the understanding not only of the evolution of *Thonalmus* and other Lycidae, but other invertebrate's distribution patterns in the West Indies.

Concluding remarks

No comprehensive taxonomic studies or phylogenetic hypotheses have ever been produced for the genus *Thonalmus*. Here, with the use of several widely used tools, we provided the first taxonomic revision of the group, biogeographical dispersal patterns hypotheses and a character state reconstruction for the species of *Thonalmus*. In our revision, we examined the type specimens of all previously described species and provided modern redescriptions and diagnosis for all species in the genus, including a diagnosis of the larvae of the group. We described seven new species for the genus, provided illustrations of all major diagnostic characters, clarified the taxonomic and nomenclatural confusion of several of the species, and produced distribution maps and identification keys for all species.

We also provided the first and only phylogenetic hypotheses for the species of *Thonalmus*, using DNA and morphology data utilizing a variety of reconstruction methods. Based on the results of these analyses, we were able to propose a time-calibrated phylogeny of *Thonalmus*, which indicated that the genus evolved at 48.85 Ma, during the Palaeogene, the ancestral area reconstruction, which shed light on the distribution patterns of some of the species in the group, and the character state reconstruction, which allowed the visualization of tentative synapomorphic characters for all clades in the group.

While significant progress was made on the knowledge of the group, much work remains to be done. Whilst we consider the taxonomy of the group to be resolved, we would like to further investigate and examine more specimens of *T. subquadratus* (Jamaica) and *T. mariani* (Cuba) and *T. guerreiroi* and *T. abejaensis* (both from Hispaniola), for which only a handful of specimens were available for our study. From the phylogenetics components of our research, we want to implement a reductive coding scheme for complex characters and states until homoplasies are exposed or characters cannot be further reduced (Torres-Montúfar *et al*. 2018) for our morphology-based dataset and expand it with the inclusion of female genitalia characters, metendosternite, wing venation and internal musculature data. We also would like to expand our sampling for the molecular phylogenies and produce Sanger-based sequences for all species of *Thonalmus*, as well as NGS data compatible (Douglas *et al*. 2021) with the most up-to-date datasets in the Elateroidea. Biogeography distribution patterns are still poorly understood, especially concerning the distribution of the two Montserratian species (see discussion section), and a plausible hypothesis to explain the group's overall distribution remains to be provided. Since the actual relationships of *Thonalmus* with other Lycidae remain poorly understood, to the point where the sister-group of the tribe is currently unknown, in-depth biogeography and evolutionary studies are currently extremely constrained.

The overall knowledge of the biology of *Thonalmus* is still incipient, mostly based on information provided in the labels of specimens and by a few publications, and direct observations by MAI. Data regarding the feeding and aggregation habits are scarce to non-existent. Lastly, while we provided brief diagnosis of the tentative larvae of *Thonalmus*, these are

only indirect associations, and a confirmed association (either reared specimens, DNA-based or geography-based association) remains elusive. We hope that the contributions made here will draw attention to the genus, promoting the inclusion of specimens of this genus to large-scale phylogenies of the family Lycidae, the continued collection of specimens (adults and immatures), especially DNA-quality, and further biological studies.

Acknowledgments

This project is the culmination of more than 40 years of field work and assembling museum specimens. The collaborators all across the world are too numerous to list here, and we are grateful for all of their efforts, but special thanks are due to Richard S. Miller, which provided the foundation to this research when he first started to work in his master's project in the early 1980's. Miller's access to his notes, early assembly of material and overall help during the development of this research project are greatly appreciated by the authors. VSF is grateful to the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq) of Brazil for his PhD scholarship (process 202559/2015-7) and to the Ernst Mayr Travel Grants in Animal Systematics, the Systematics, Evolution, and Biodiversity (SysEB) Student Research Travel Award and the various Montana State University Graduate School and College of Agriculture travel awards that allowed the visit to several collections and field expedition to Puerto Rico; to the Idea Wild Project for providing resources that allowed the acquisition of part of the photographic equipment used in this project; to Felipe Francisco Barbosa (Universidade Federal do Rio de Janeiro, Brazil) for his willingness in always discuss and debate beetles and for his

help and discussions about phylogenetic methods and for critical review and support during the development of this project; to all current and former members of Ivie lab, especial to Frank E. Etzler (Montana Department of Agriculture) and Casey Delphia, for their comments and suggestions of improvements, especially in the figures; to Thamires Gonçalves, for years of tirelessly hearing about *Thonalmus* and other weird looking beetles, and for providing critical emotional and moral support during the development of this research, as well as assistance with data management and organization; to Ormaily Madruga, Luis F. de Armas, Maria Teresa Diaz, Elier Fonseca and René Alberto Barba Díaz for their help and assistance with the first author trip to Cuba and for the critical help and access to the Lycidae types deposited in the Instituto de Ecología y Sistemática. Authors are grateful to the respective curators and collections managers of each collection who provided material for this study and to the many persons who collaborated either with specimens or other valuable information, in special to Pedro Genaro Rodrigues, Carlos de Soto Molinari, Francisco Alba Suriel, Francisco Paz, Wayne Fidler and Ruth Bastardo for providing photos of live *Thonalmus*. VSF is also very grateful to We are thankful to Nathan P. Lord (Louisiana State University) for providing photos of the lectotype of *Thonalmus dominicensis* in his 2019 trip to the MNHN, and Lazaro Viñola (University of Florida) for his translation of the abstract from English to Spanish and for providing some of the specimens used in our molecular analyses.

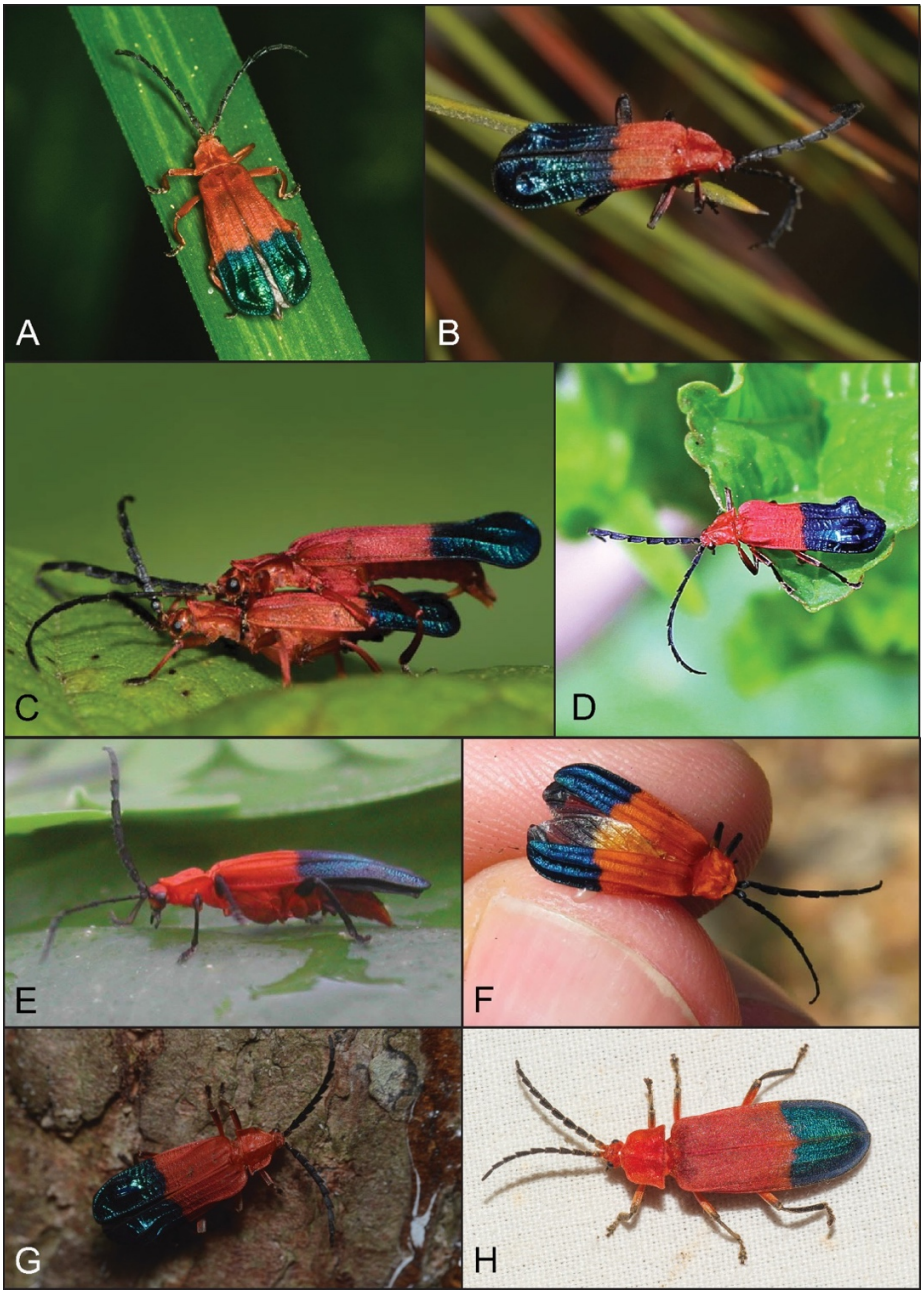


Figure 2.1. *Thonalmus* species diversity. **A**. *Thonalmus quadrilacinius*, Dominican Republic (Photo: Pedro Genaro Rodrigues). **B**. *Thonalmus abejaensis*, Constanza, La Vega, Dominican Republic (Photo: Ruth Bastardo) (CC BY-NC 4.0). **C**. *Thonalmus bicolor*, Dominican Republic (Photo: Carlos de Soto Molinari). **D**. *Thonalmus darlingtoni*, Cordillera Central, Dominican Republic (Photo: Francisco Alba Suriel). **E**. *Thonalmus hubbardi*, Montserrat (Photo: Michael A. Ivie). **F**. *Thonalmus militaris,* Jamaica (Photo: Birdernaturalist). **G**. *Thonalmus darlingtoni*?, National Botanical Garden of Santo Domingo, Dominican Republic (Photo: Francisco Paz). **H**. *Thonalmus aulicus*, Caimanera, Cuba (Photo: Wayne Fidler) (CC BY-NC 4.0).

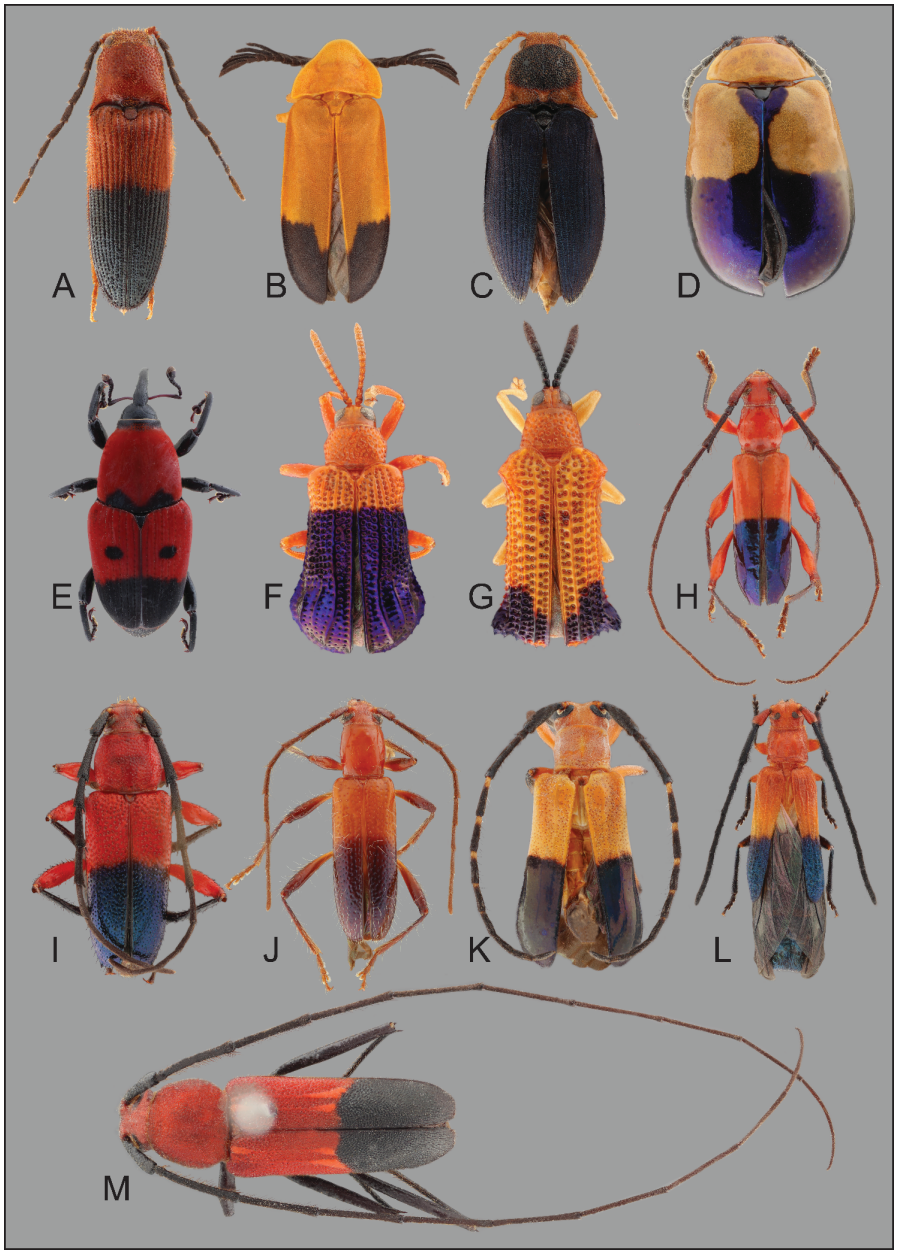


Figure 2.2. *Thonalmus* tentative mimics. **A.** *Anoplischius* sp., Elateridae (Cuba). **B**. *Callopisma lamellicornis*, Lampyridae (Dominican Republic). **C**. *Platycrepidius trinitatis*, Elateridae (Cuba). **D.** *Alagoata fasciata*, Chrysomelidae (Dominican Republic). **E.** *Metamasius mosieri*, Curculionidae (Cuba). **F.** *Agathispa dimidiata*, Chrysomelidae (Dominican Republic). **G.** *Achotispa* sp., Chrysomelidae (Dominican Republic). **H.** *Plectrocerum spinicorne*, Cerambycidae (Dominican Republic). **I.** *Trichrous prasinus* Bahamas (Cerambycidae). **J.** *Trichrous pilipenne*, Cerambycidae (Dominican Republic). **K.** *Calocosmus hispaniolae*, Cerambycidae (Dominican Republic). **L.** *Cyanomethia pseudothonalmus*, Cerambycidae (British Virgin Islands). **M.** *Heterops dimidiatus*, Cerambycidae (Cuba).

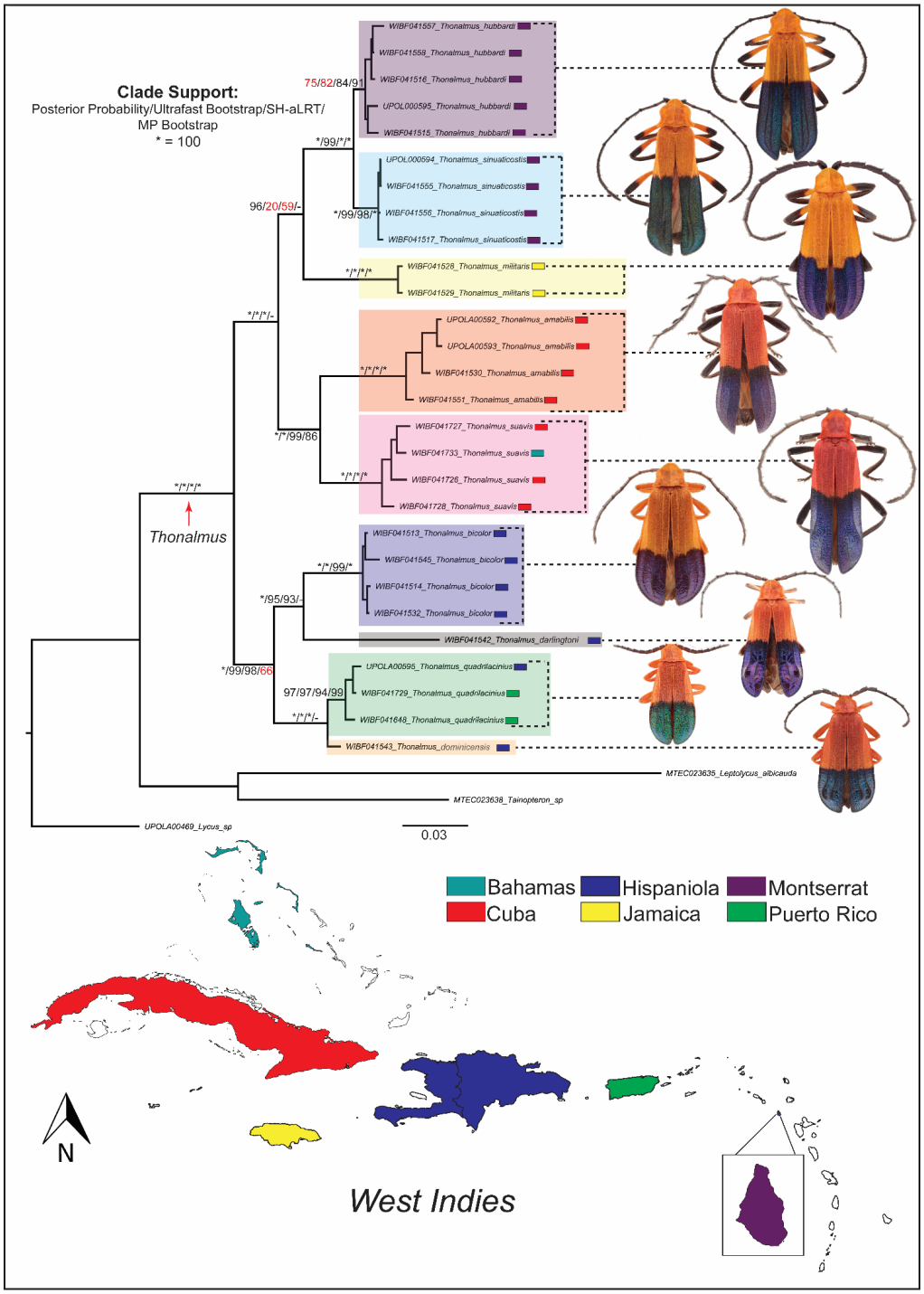


Figure 2.3. Phylogenetic hypothesis of the placement of *Thonalmus* relationships resulting from the Bayesian Inference (BI), maximum likelihood (ML) and maximum parsimony (MP) analyses of the concatenated MAFFT alignment of four molecular markers (18S rRNA, 28S rRNA, rrnL mitochondrial DNA and cox1).

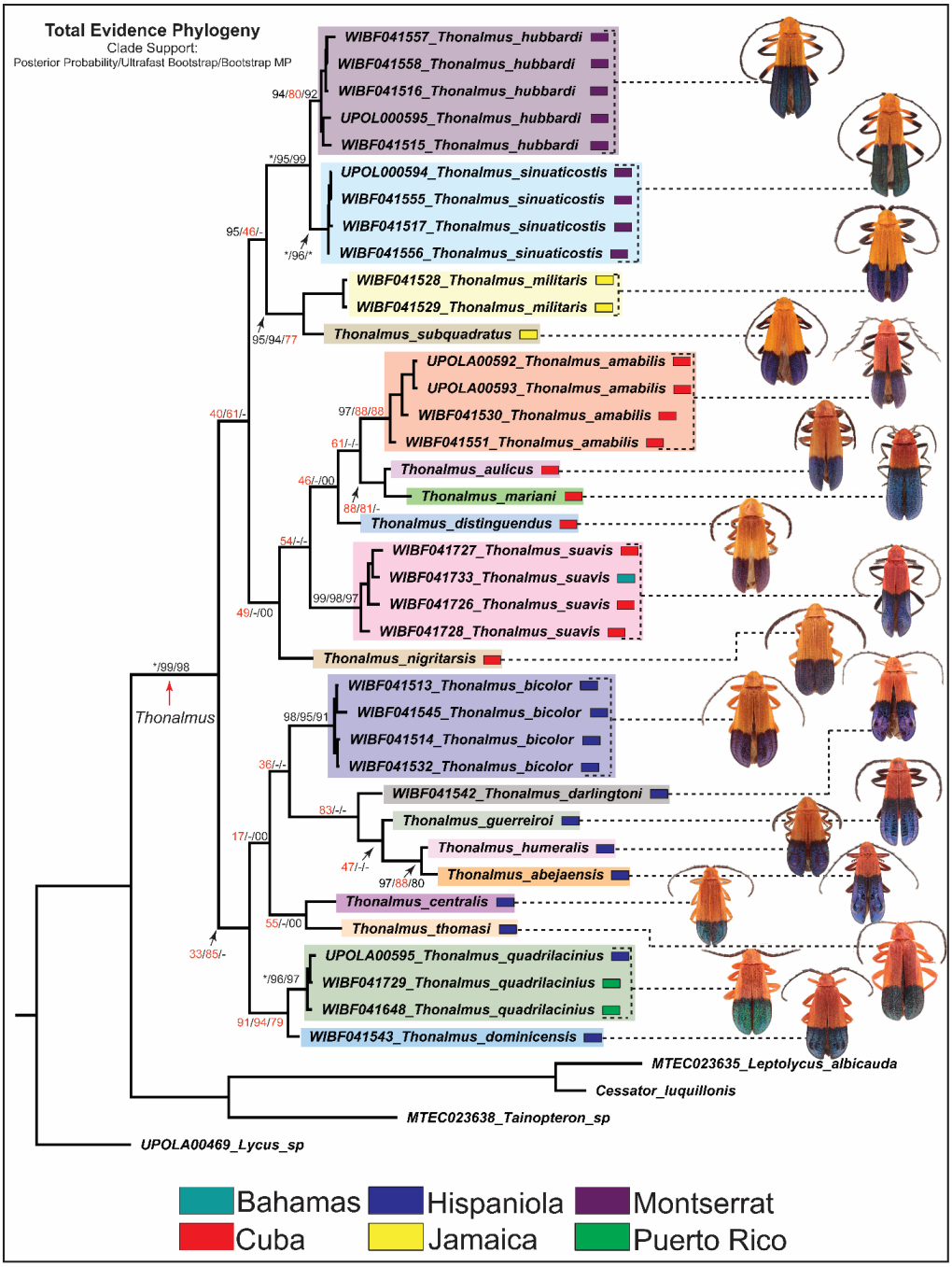


Figure 2.4. Phylogenetic hypothesis of the placement of *Thonalmus* relationships resulting from the Bayesian Inference (BI) and maximum likelihood (ML) analysis of the 'Total-evidence' dataset (four molecular markers and 77 morphology characters). Taxa without a collection code are only represented by morphology data. Right number represents Posterior Probability (PP), middle number represents Ultrafast Bootstrap (UFBoot) and right number represent Maximum Parsimony Bootstrap (BS).

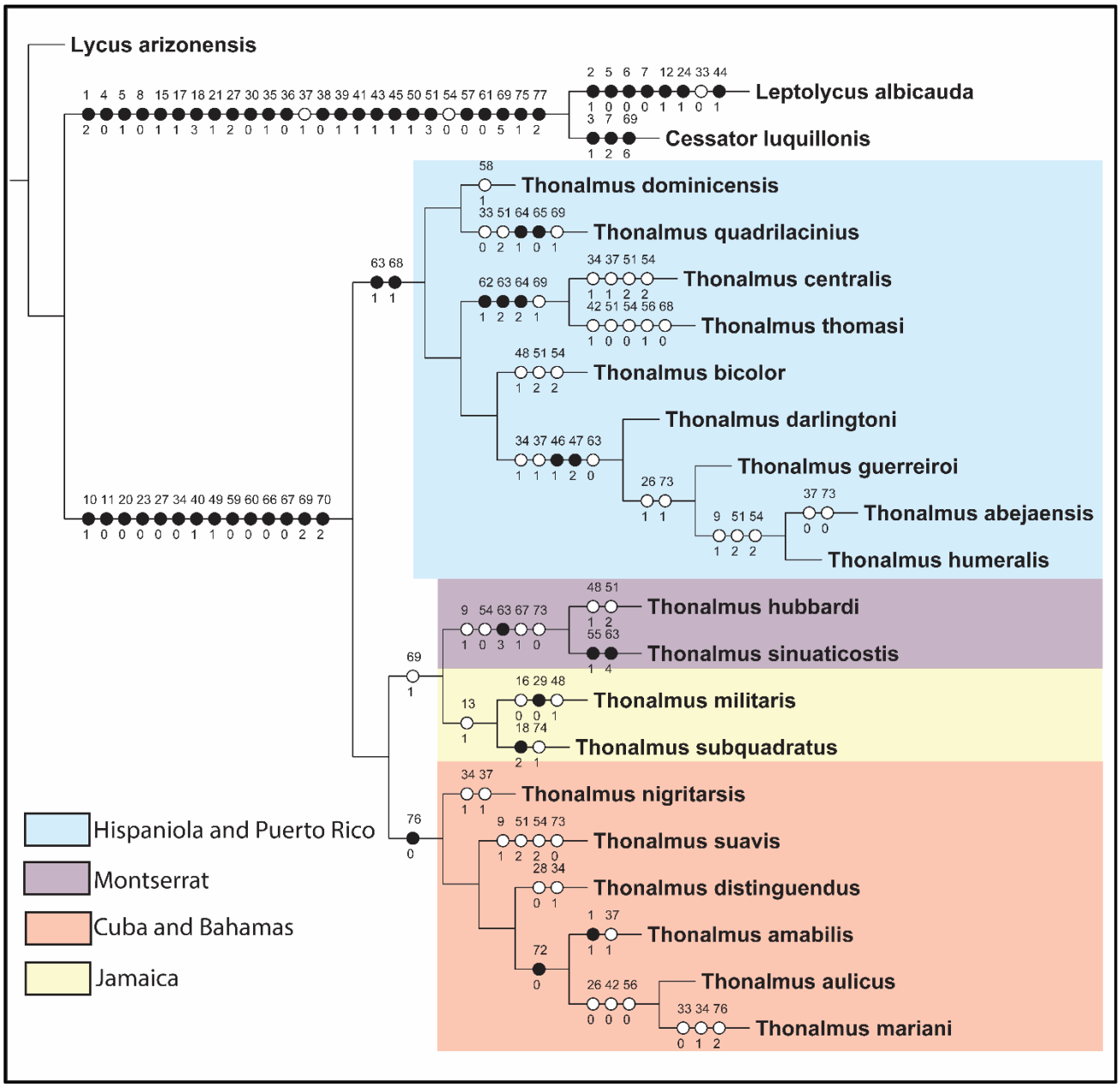


Figure 2.5. Character evolution of *Thonalmus*. Character and character states were mapped on a modified version of the total-evidence tree analysis performed under a BI approach. Only one terminal per species was included in the tree. All character states were treated as unordered and equally weighted. Circles in the branches depict unambiguously optimized apomorphies: black circles are synapomorphies and white circles, homoplastic traits. The numbers above the circles indicate characters, and below their states.

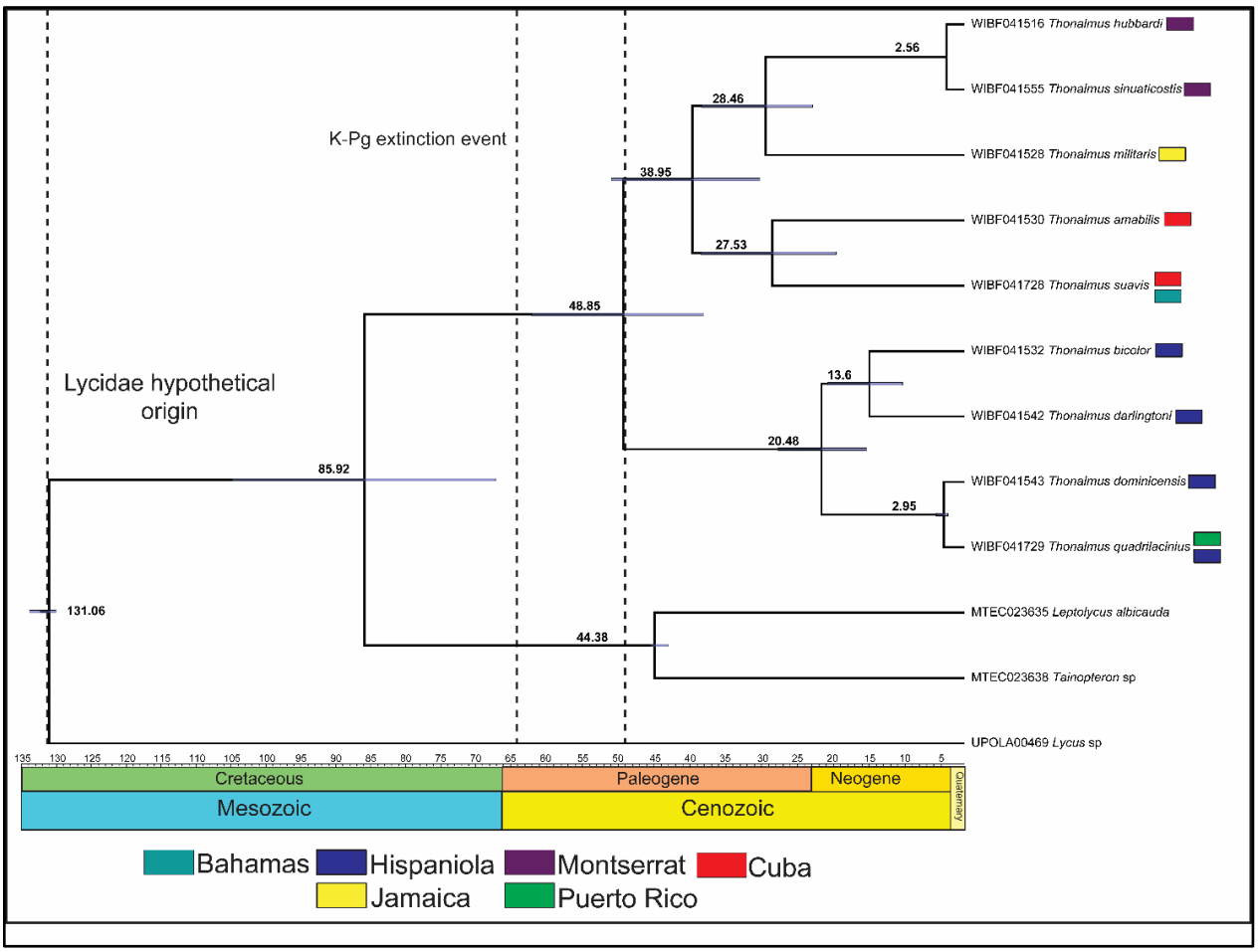


Figure 2.6. Dated phylogenetic tree hypothesis based on a BI reconstruction made in MrBayes based on *coi* sequences. A fixed rate clock was used based on the evolution rate of *coi* (0.0115 substitutions per site per million years). Three datings and constraints were set in this analysis: origin of Leptolycini (30–45 Ma), Origin of Lycidae (130–160 Ma) and the geological origin of Montserrat (2.3–2.6 Ma). In this analysis, we assumed that the Montserrat species (*T. hubbardi* and *T. sinuaticostis*) evolved within the island, therefore a constraint for the age of these species was set to match with the origin of it. Blue bars represent the range confidence intervals of the dating (95% highest posterior density region (HPD)). Numbers above the branches represent the node age.

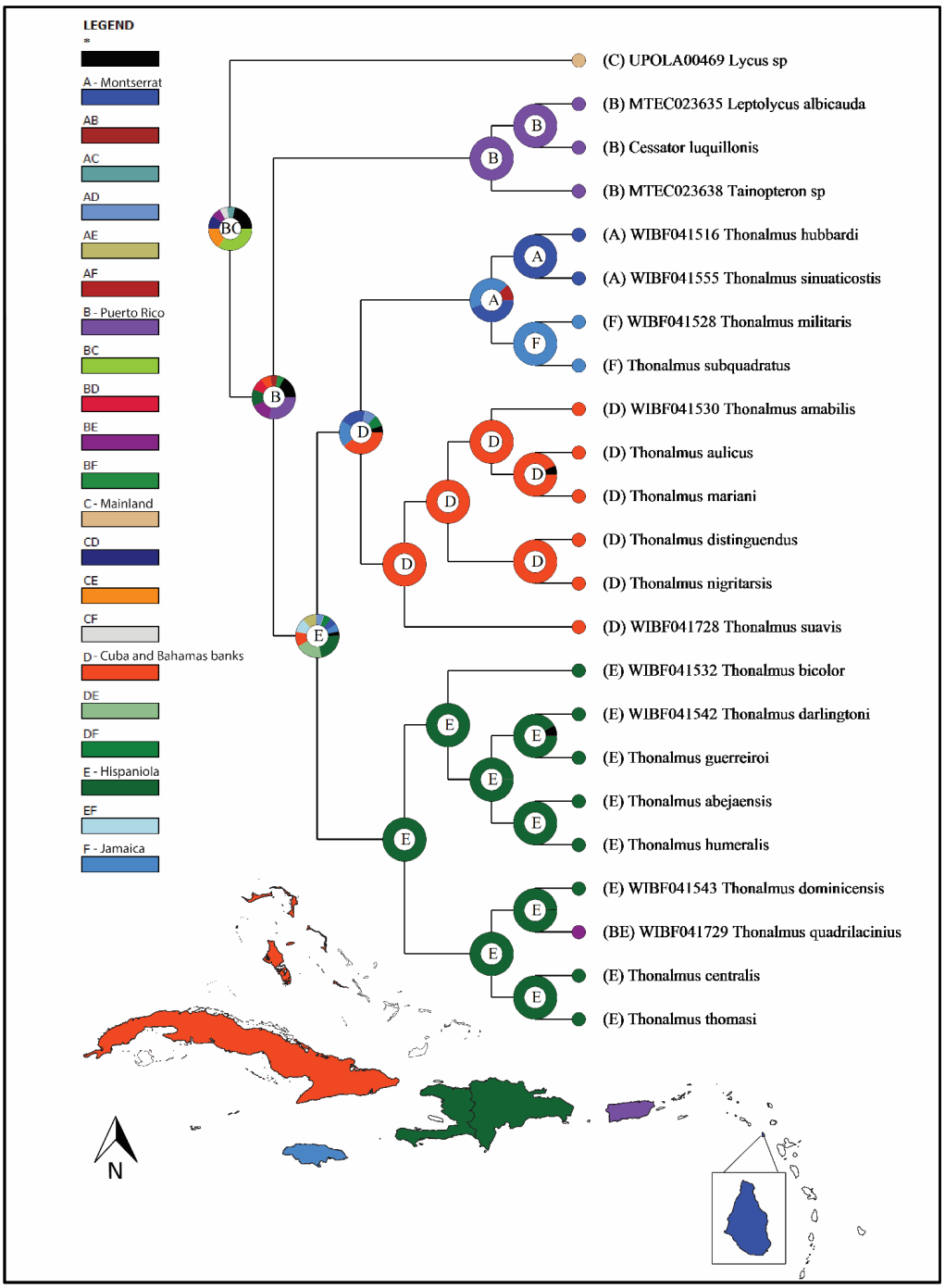


Figure 2.7. Ancestral Area Reconstruction in RASP under the model DIVALIKE+J based on the tree topology of a MrBayes analysis using morphology data and *coi* sequences. Only one representative of each species was included in this analysis. Legend for color keys to possible ancestral ranges at nodes. Letters in the center of the circles represent the Most Likely States (MLS). The charts indicate probabilities of ancestral areas.

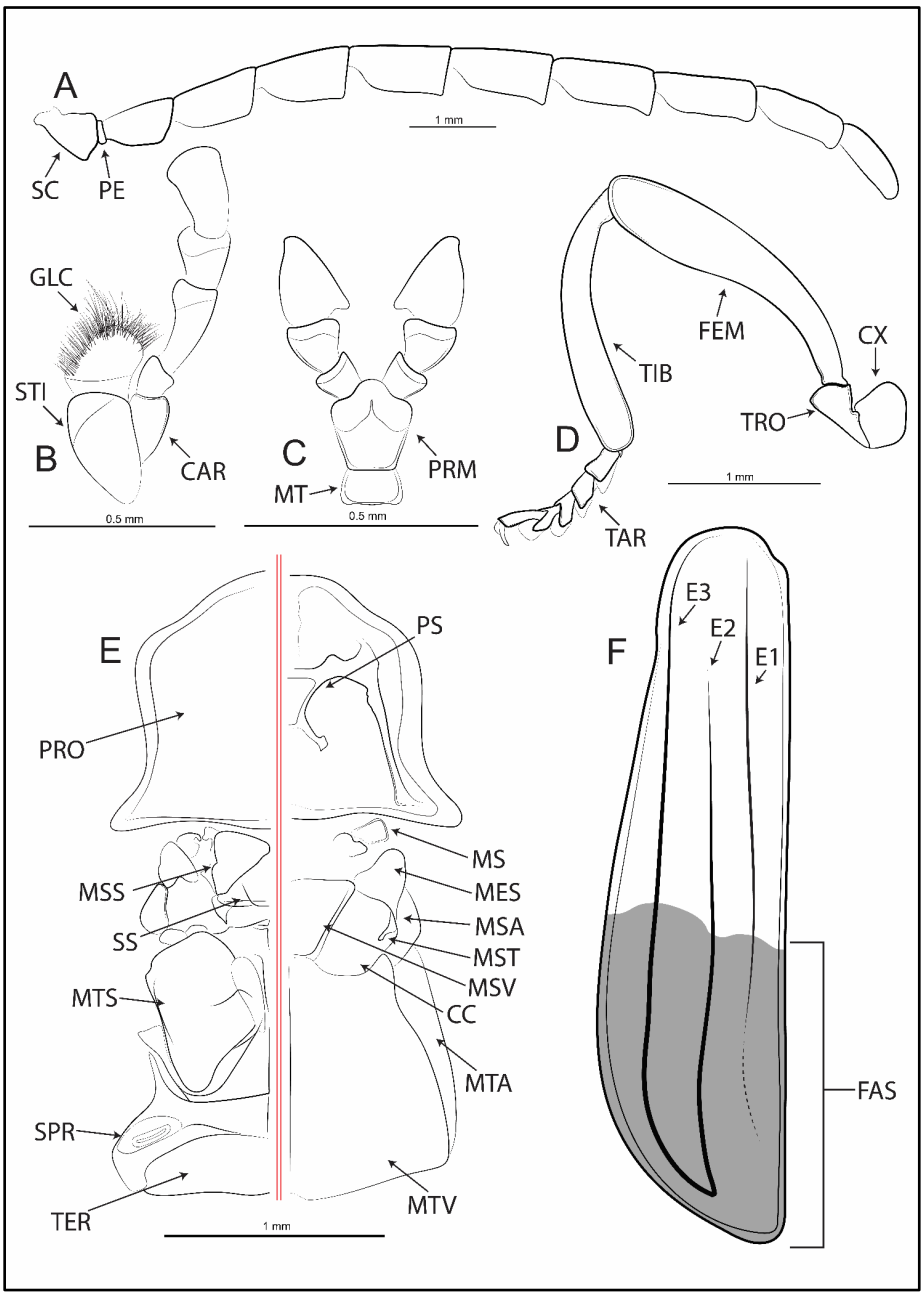


Figure 2.8. Morphology of *Thonalmus bicolor*. **A**. Male antenna. **B**. Maxilla. **C**. Labium. **D**. Male mesoleg. **E**. Thorax: left side represents the dorsal view; right side represents the ventral view. **F**. Elytron. Abbreviations: SC: Scape; PE: Pedicel; GLC: Galea+Lacinia; CAR: Cardo; STI: Stipe; PRM: Prementum; MT: Mentum; TAR: Tarsus; TIB: Tibia; FEM: Femur; TRO: Trochanter; COX: Coxae; FAS: Elytral fascia; E1: Elytral costa I; E2: Elytral costa II; E3: Elytral costa III; PRO: Pronotum; PS: Prosternum; MSP: Mesospiracle; MES: Mesepimeron; MSA: Mesanepisternum; MTV: Mesoventrite; MTA: Metanepisternum; CC: Coxal cavity; MSS: Mesoscutum; SS: Scutellar shield; TER: Tergite I; SPR: Spiracle; MTS: Metascutum

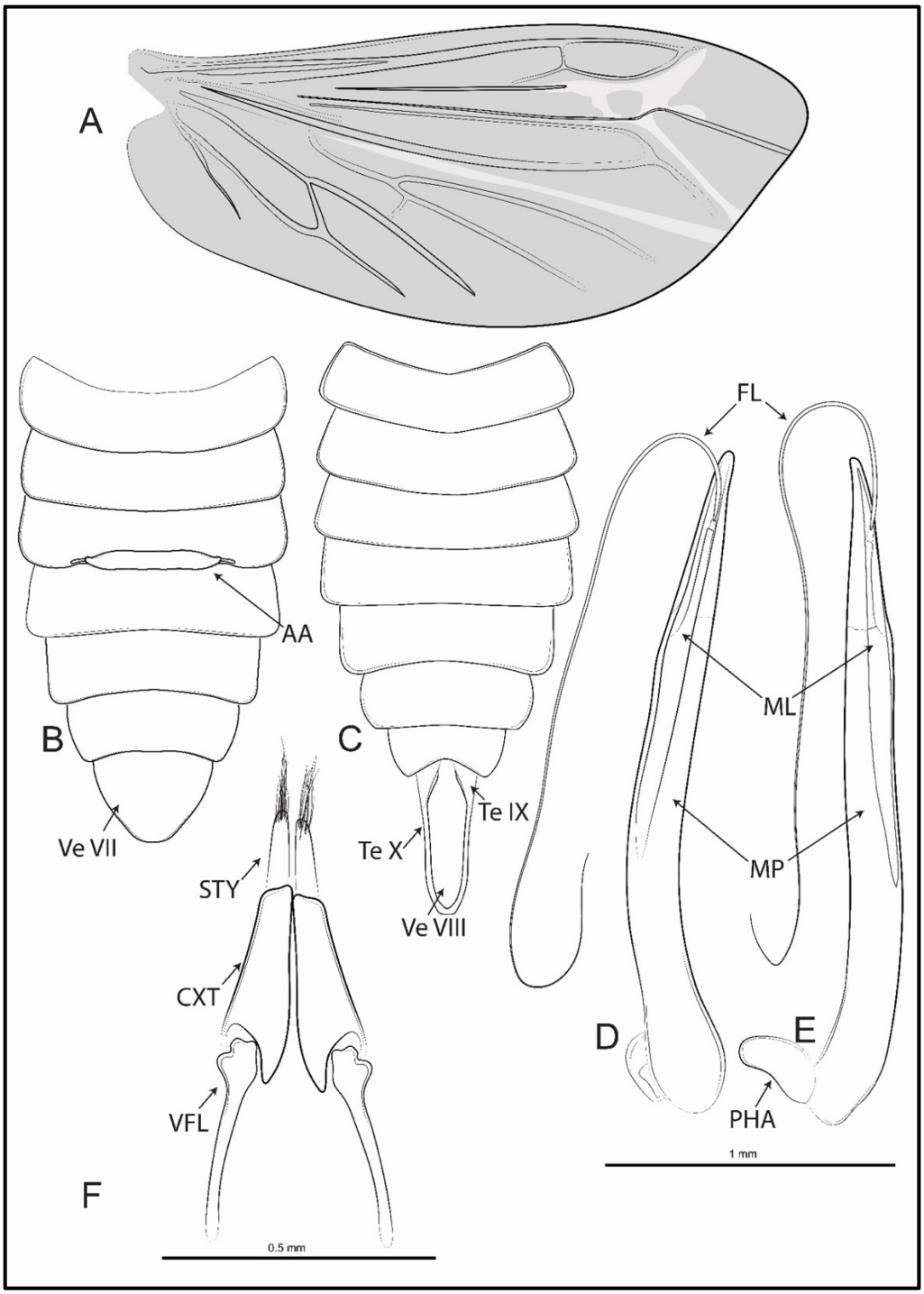


Figure 2.9. Morphology of *Thonalmus bicolor*. **A**. Membranous wing. **B**. Female abdomen. **C**. Male abdomen. **D**. Male genitalia dorsal view. **E**. Male genitalia ventral view. **F**. Female genitalia. AA: Female abdominal appendage; PHA: Phallobase; ML: Median lobe; MP: Modified parameres; Ve: Ventrite; Te: Tergite; STY: Styli; CXT: Coxite; VFL: Valvifer.

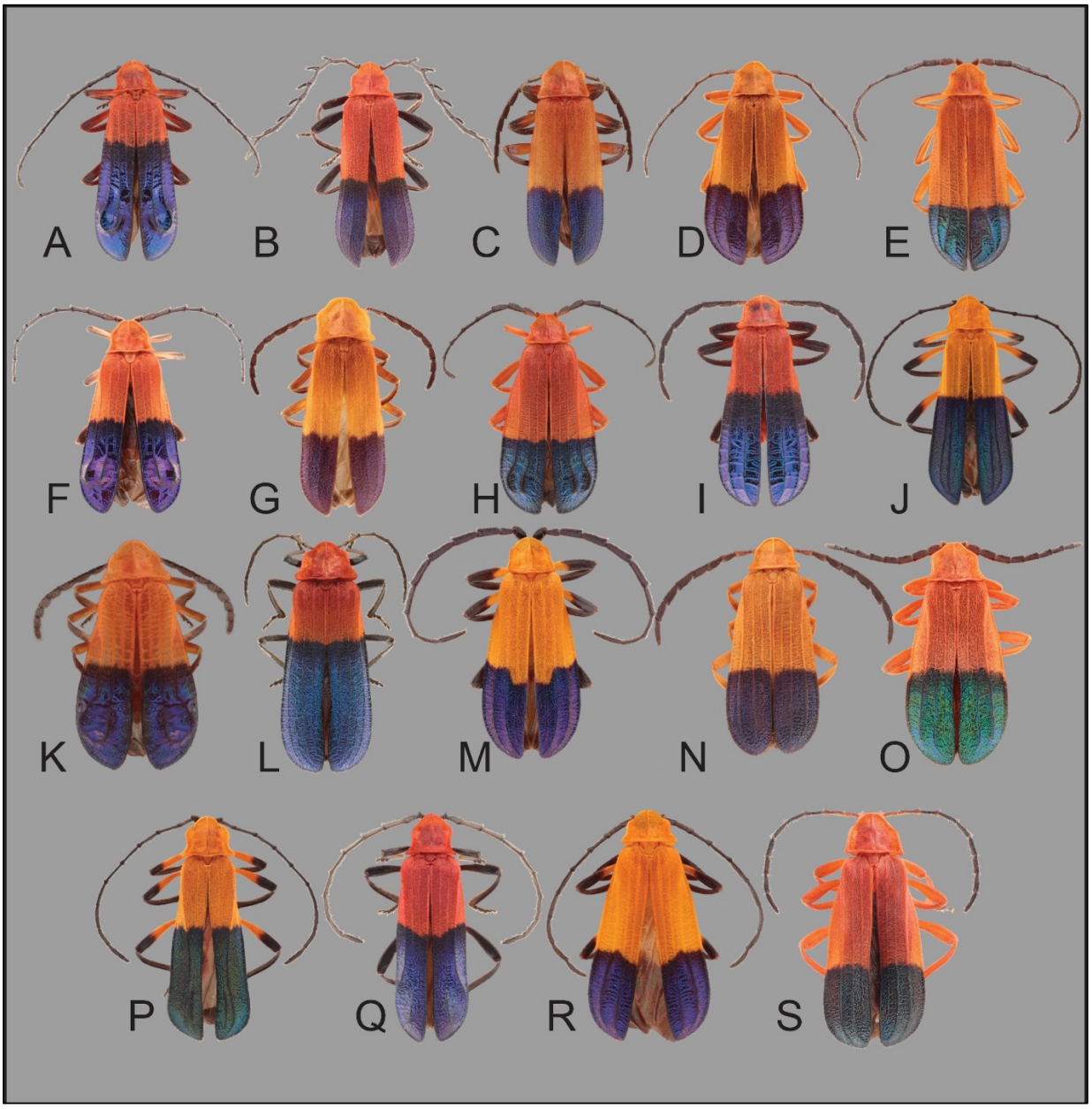


Figure 2.10. Male adult habitus of *Thonalmus* species and their distribution. **A.** *Thonalmus abejaensis*, Hispaniola. **B.** *Thonalmus amabilis*, Cuba. **C.** *Thonalmus aulicus*, Cuba and Bahamas. **D.** *Thonalmus bicolor*, Hispaniola. **E.** *Thonalmus centralis*, Hispaniola. **F.** *Thonalmus darlingtoni*, Hispaniola. **G.** *Thonalmus distinguendus*, Cuba. **H.** *Thonalmus dominicensis*, Hispaniola. **I.** *Thonalmus guerreiroi*, Hispaniola. **J.** *Thonalmus hubbardi*, Montserrat. **K.** *Thonalmus humeralis*, Hispaniola. **L.** *Thonalmus mariani*, Cuba. **M.** *Thonalmus militaris*, Jamaica. **N.** *Thonalmus nigritarsis*, Cuba and Bahamas. **O.** *Thonalmus quadrilacinius*, Puerto Rico and Dominican Republic. **P.** *Thonalmus sinuaticostis*, Montserrat. **Q.** *Thonalmus suavis*, Cuba and Bahamas. **R.** *Thonalmus subquadratus*, Jamaica. **S.** *Thonalmus thomasi*, Hispaniola.

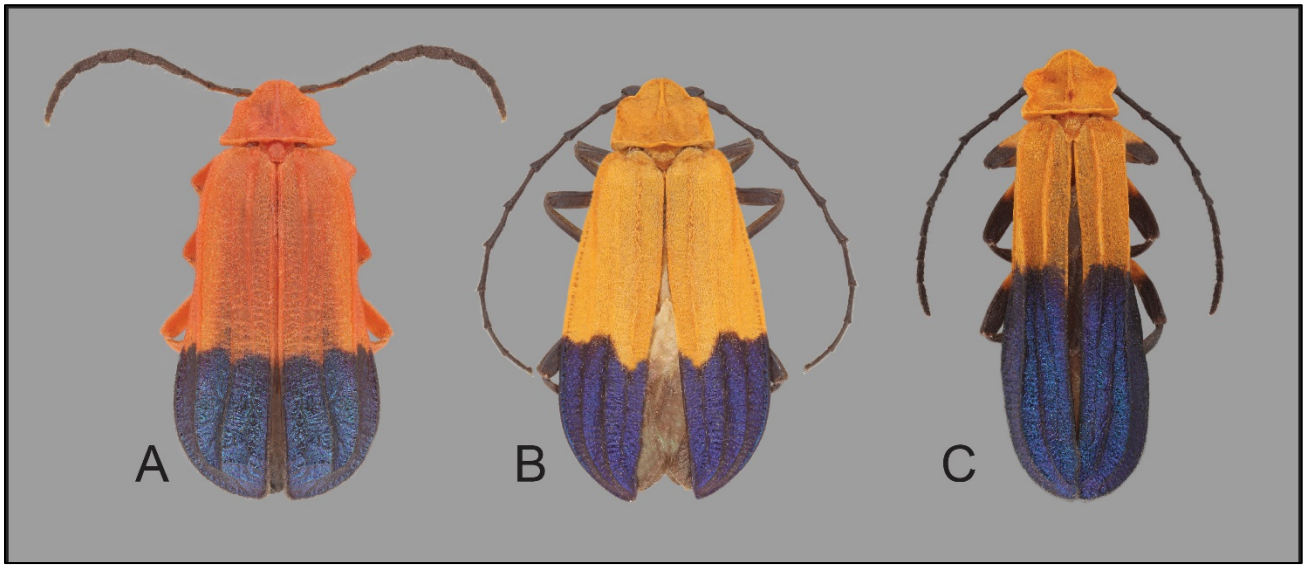


Figure 2.11. Sexually dimorphic *Thonalmus* females. **A.** *Thonalmus bicolor*. **B.** *Thonalmus militaris*. **C.** *Thonalmus hubbardi.*

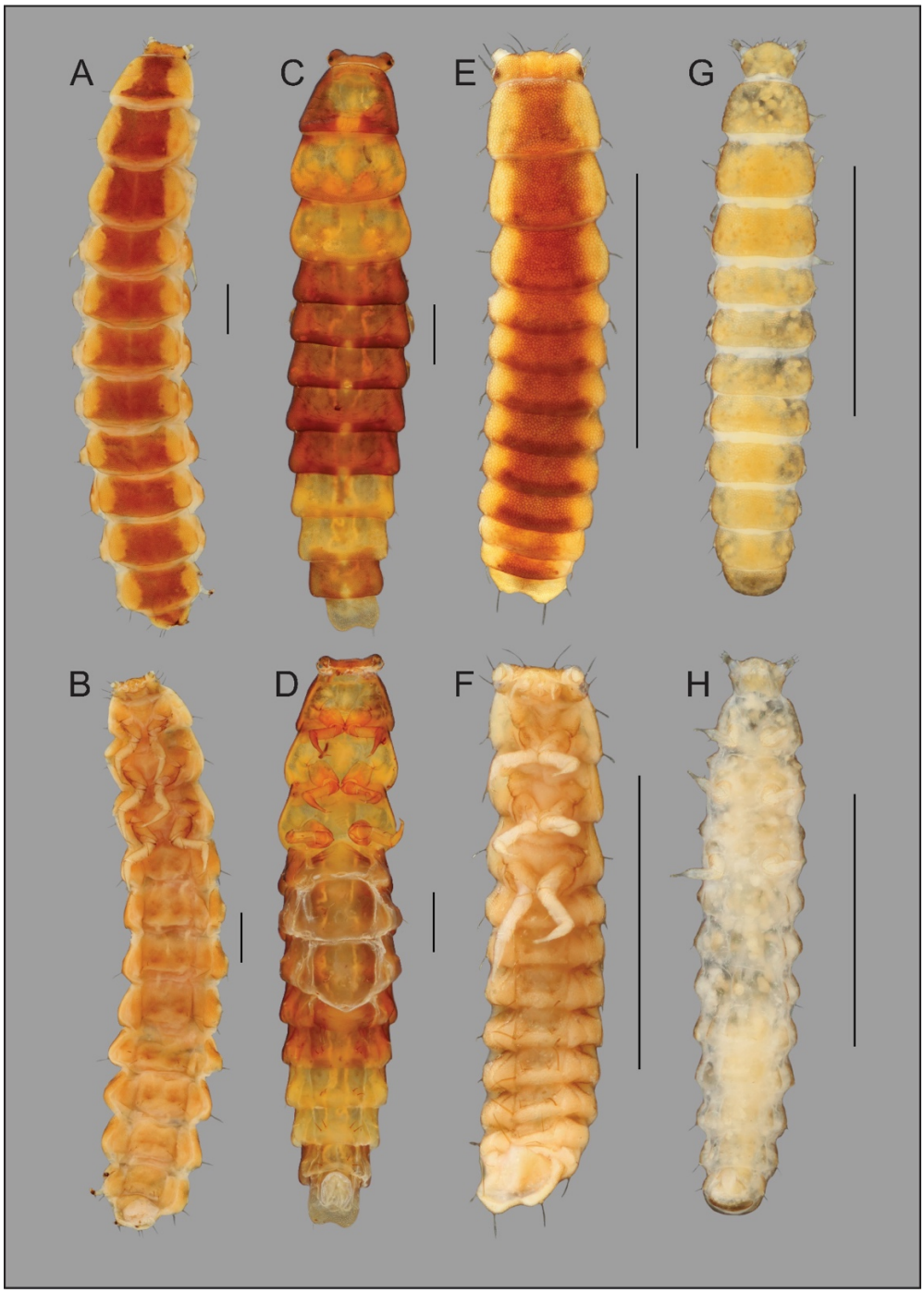


Figure 2.12. *Thonalmus* larvae from different stages and localities. **A**. Late stage of a *Thonalmus* sp. from Montserrat, dorsal view. **B**. Idem A, ventral view. **C**. Late stage of a *Thonalmus* sp. from Dominican Republic, dorsal view. **D**. Idem C, ventral view. **E**. Early stage of a *Thonalmus* sp. from Montserrat, dorsal view. **F**. Idem E, ventral view. **G**. Early stage of *Thonalmus quadrilacinius* from Puerto Rico, dorsal view. **H**. Idem G, ventral view.

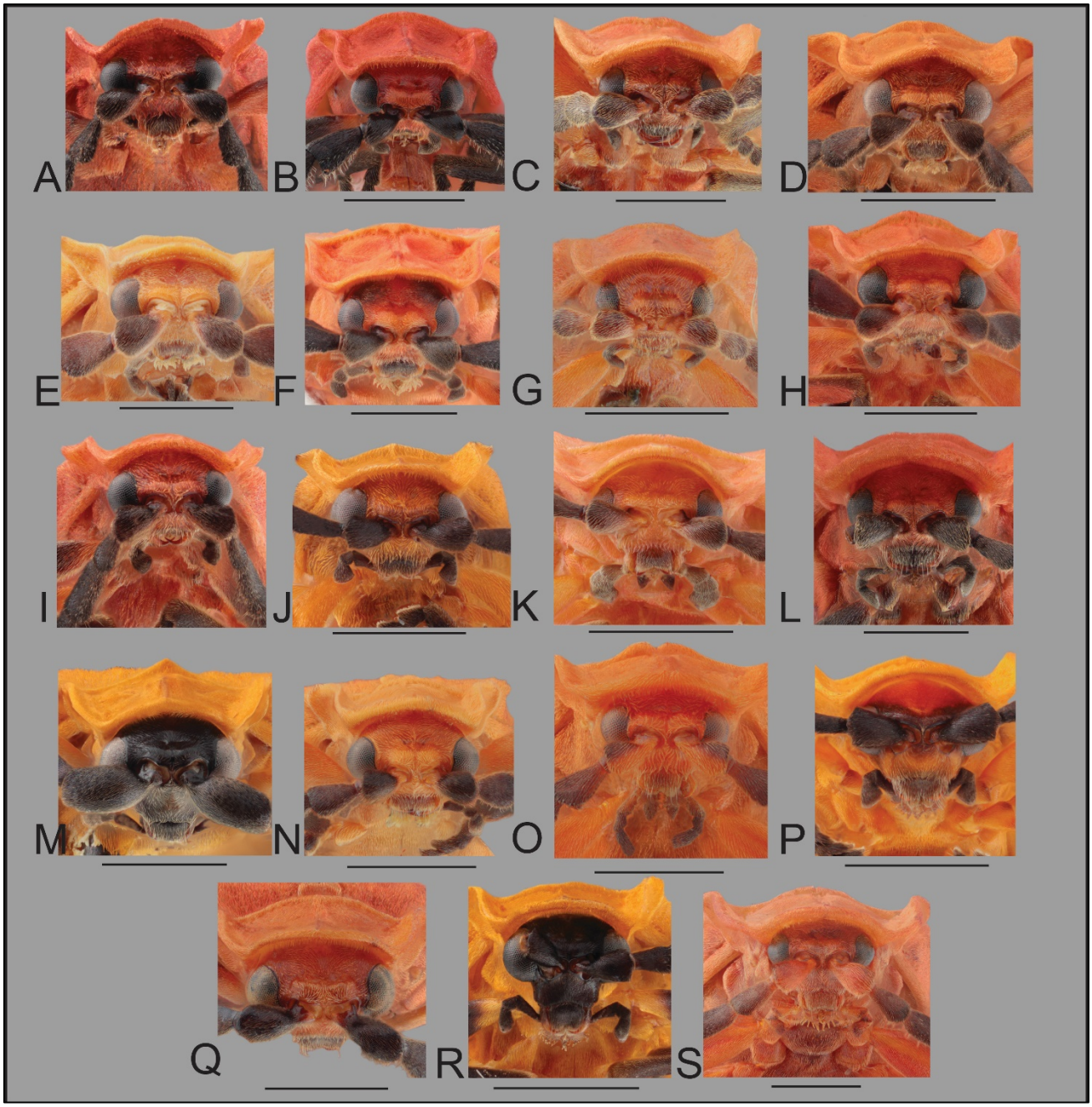


Figure 2.13. Head detail of *Thonalmus* species. **A.** *Thonalmus abejaensis*. **B.** *Thonalmus amabilis*. **C.** *Thonalmus aulicus*. **D.** *Thonalmus bicolor*. **E.** *Thonalmus centralis*. **F.** *Thonalmus darlingtoni*. **G.** *Thonalmus distinguendus*. **H.** *Thonalmus dominicensis*. **I.** *Thonalmus guerreiroi*. **J.** *Thonalmus hubbardi*. **K.** *Thonalmus humeralis*. **L.** *Thonalmus mariani*. **M.** *Thonalmus militaris*. **N.** *Thonalmus nigritarsis*. **O.** *Thonalmus quadrilacinius*. **P.** *Thonalmus sinuaticostis*. **Q.** *Thonalmus suavis*. **R.** *Thonalmus subquadratus*. **S.** *Thonalmus thomasi*. Scale bars= 1mm.

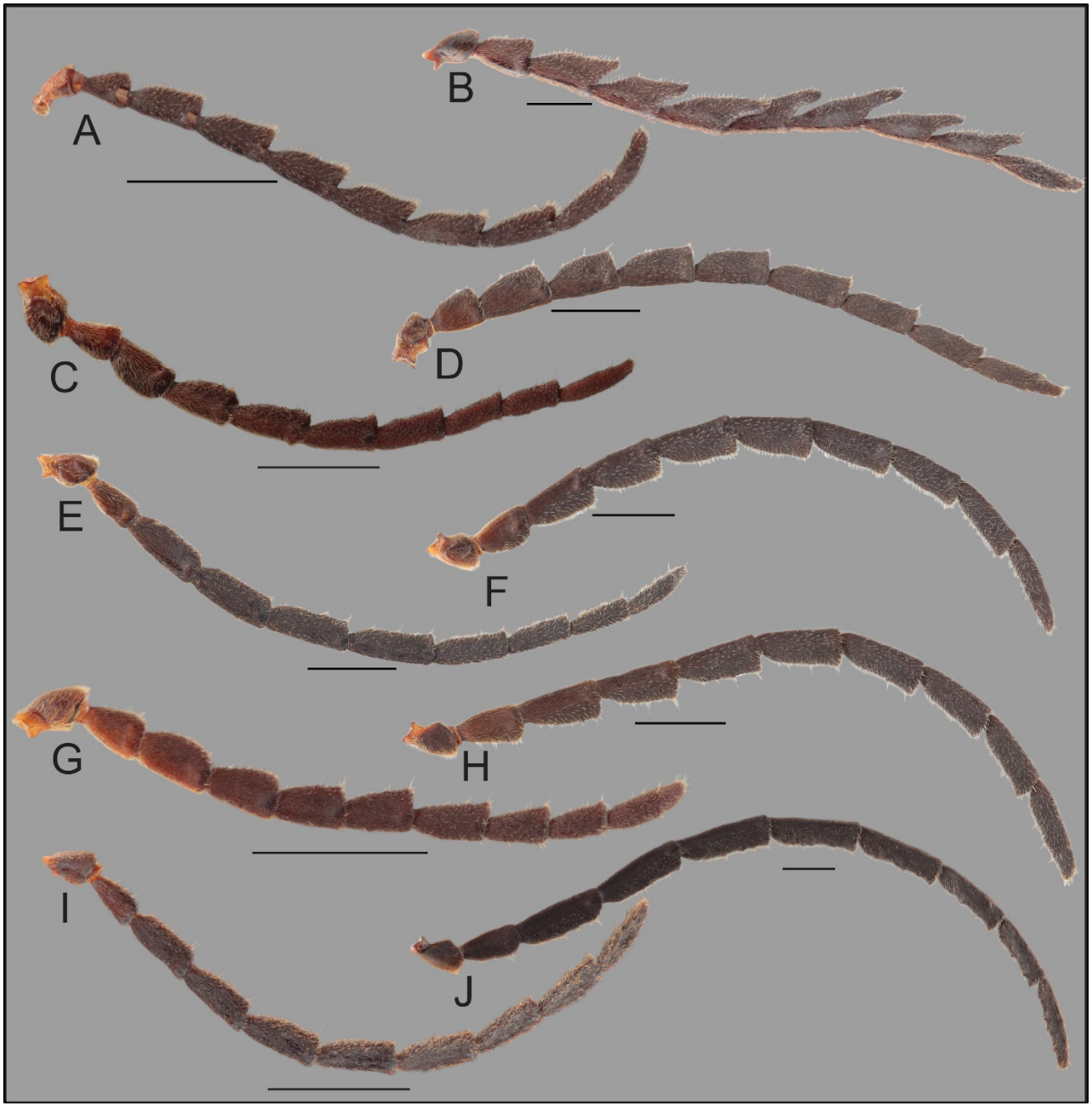


Figure 2.14. Male antennae of *Thonalmus* species. **A.** *Thonalmus abejaensis*. **B.** *Thonalmus amabilis*. **C.** *Thonalmus aulicus*. **D.** *Thonalmus bicolor*. **E.** *Thonalmus centralis*. **F.** *Thonalmus darlingtoni*. **G.** *Thonalmus distinguendus*. **H.** *Thonalmus dominicensis*. **I.** *Thonalmus guerreiroi*. **J.** *Thonalmus hubbardi*. Scale bars= 1mm.

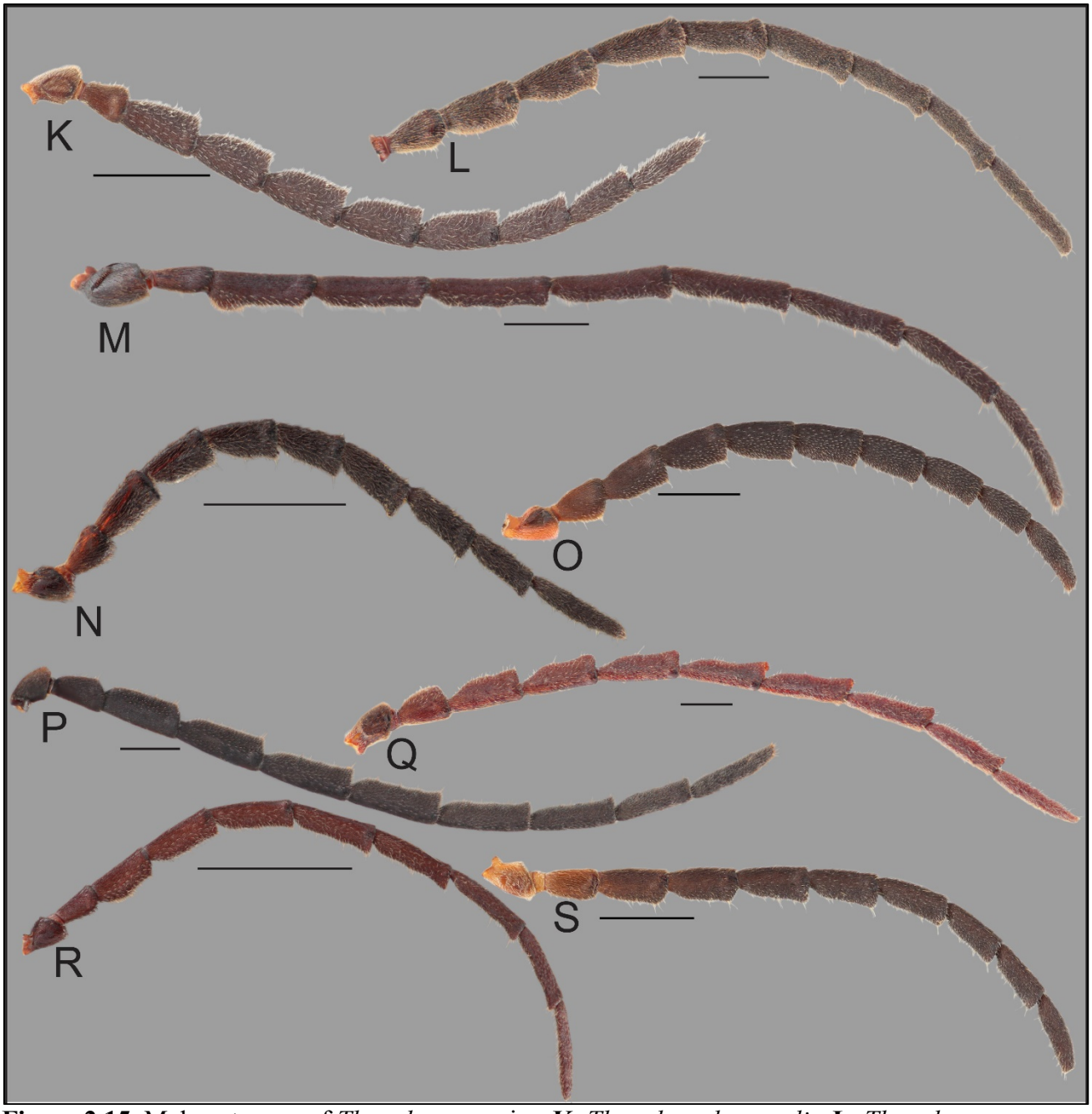


Figure 2.15. Male antennae of *Thonalmus* species. **K.** *Thonalmus humeralis*. **L.** *Thonalmus mariani*. **M.** *Thonalmus militaris*. **N.** *Thonalmus nigritarsis*. **O.** *Thonalmus quadrilacinius*. **P.** *Thonalmus sinuaticostis*. **Q.** *Thonalmus suavis*. **R.** *Thonalmus subquadratus*. **S.** *Thonalmus thomasi*. Scale bars= 1mm.

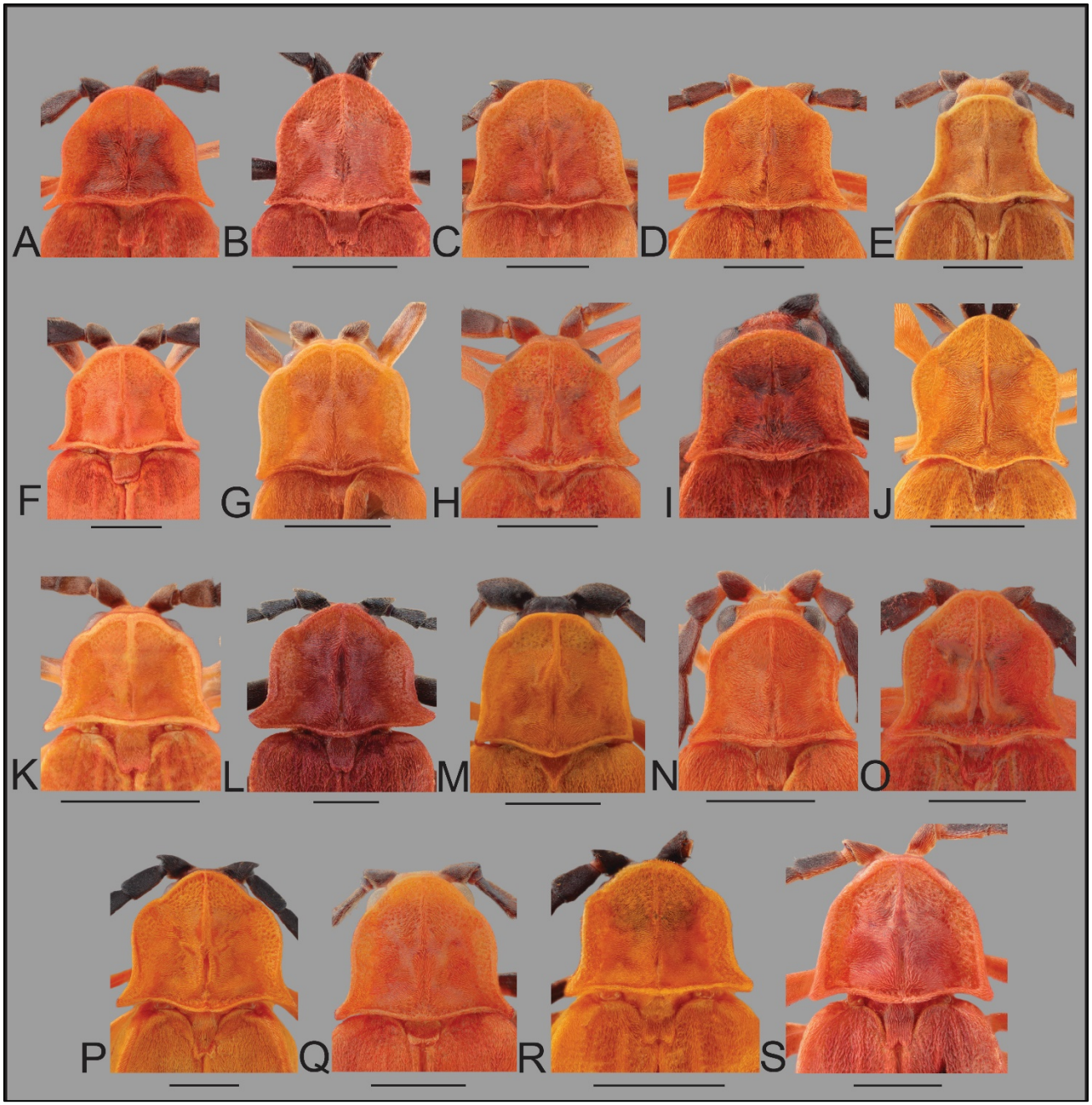


Figure 2.16. Pronotum and scutellar shield of *Thonalmus* species. **A.** *Thonalmus abejaensis*. **B.** *Thonalmus amabilis*. **C.** *Thonalmus aulicus*. **D.** *Thonalmus bicolor*. **E.** *Thonalmus centralis*. **F.** *Thonalmus darlingtoni*. **G.** *Thonalmus distinguendus*. **H.** *Thonalmus dominicensis*. **I.** *Thonalmus guerreiroi*. **J.** *Thonalmus hubbardi*. **K.** *Thonalmus humeralis*. **L.** *Thonalmus mariani*. **M.** *Thonalmus militaris*. **N.** *Thonalmus nigritarsis*. **O.** *Thonalmus quadrilacinius*. **P.** *Thonalmus sinuaticostis*. **Q.** *Thonalmus suavis*. **R.** *Thonalmus subquadratus*. **S.** *Thonalmus thomasi*. Scale bars= 1mm.

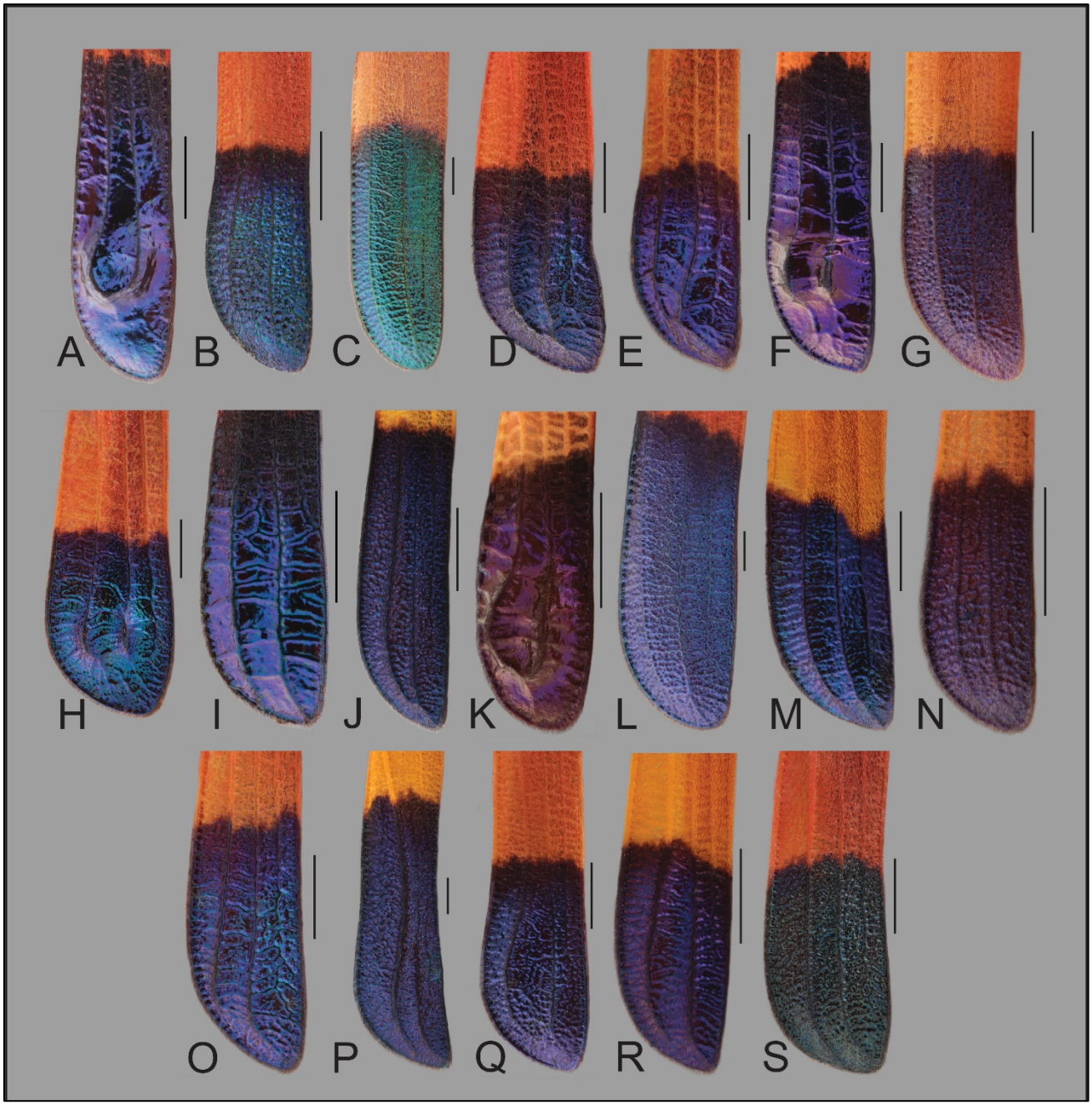


Figure 2.17. Elytron of *Thonalmus* species. **A.** *Thonalmus abejaensis*. **B.** *Thonalmus amabilis*. **C.** *Thonalmus aulicus*. **D.** *Thonalmus bicolor*. **E.** *Thonalmus centralis*. **F.** *Thonalmus darlingtoni*. **G.** *Thonalmus distinguendus*. **H.** *Thonalmus dominicensis*. **I.** *Thonalmus guerreiroi*. **J.** *Thonalmus hubbardi*. **K.** *Thonalmus humeralis*. **L.** *Thonalmus mariani*. **M.** *Thonalmus militaris*. **N.** *Thonalmus nigritarsis*. **O.** *Thonalmus quadrilacinius*. **P.** *Thonalmus sinuaticostis*. **Q.** *Thonalmus suavis*. **R.** *Thonalmus subquadratus*. **S.** *Thonalmus thomasi*. Scale bars= 1mm.

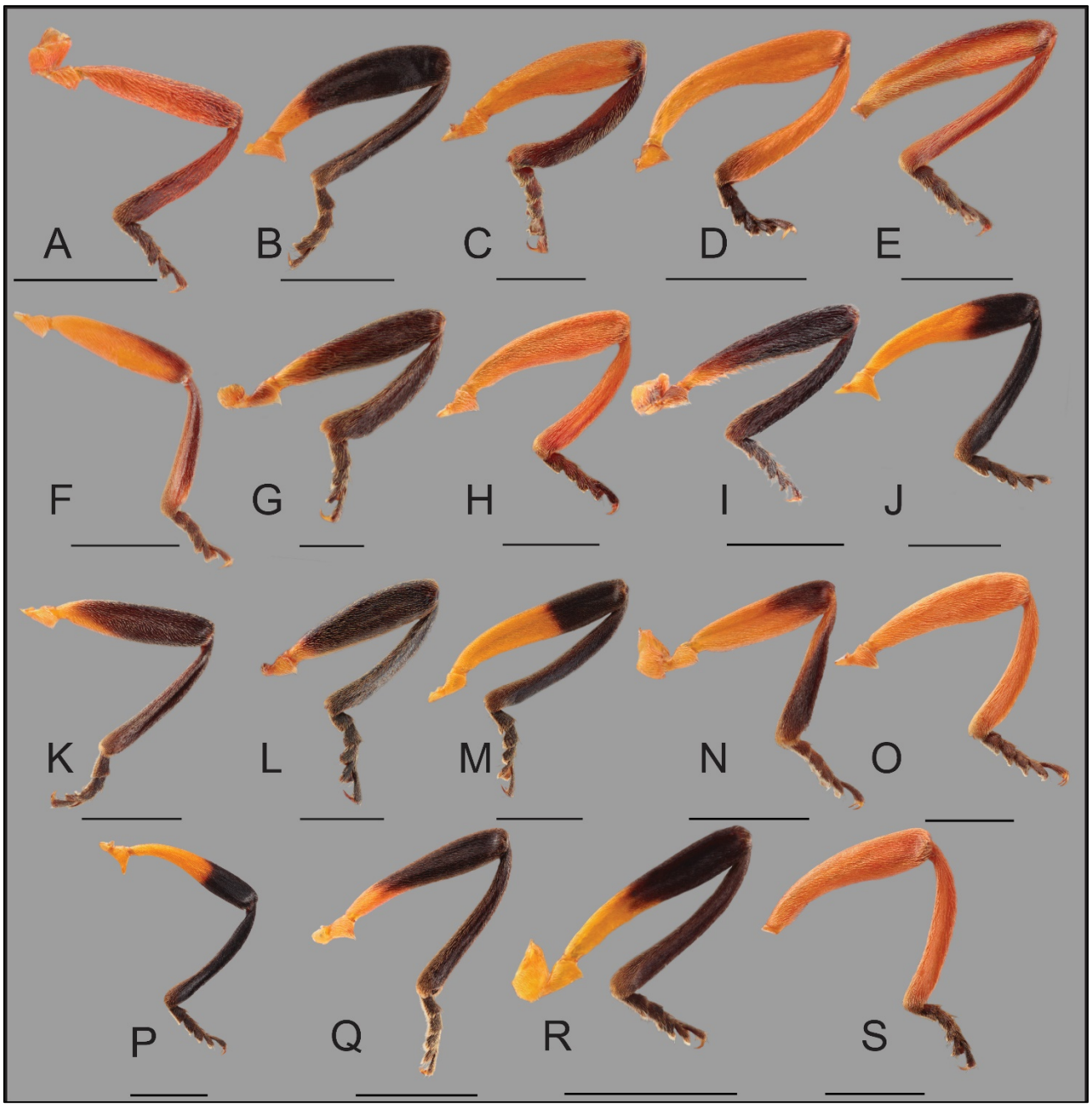


Figure 2.18. Male mesolegs of *Thonalmus* species. **A.** *Thonalmus abejaensis*. **B.** *Thonalmus amabilis*. **C.** *Thonalmus aulicus*. **D.** *Thonalmus bicolor*. **E.** *Thonalmus centralis*. **F.** *Thonalmus darlingtoni*. **G.** *Thonalmus distinguendus*. **H.** *Thonalmus dominicensis*. **I.** *Thonalmus guerreiroi*. **J.** *Thonalmus hubbardi*. **K.** *Thonalmus humeralis*. **L.** *Thonalmus mariani*. **M.** *Thonalmus militaris*. **N.** *Thonalmus nigritarsis*. **O.** *Thonalmus quadrilacinius*. **P.** *Thonalmus sinuaticostis*. **Q.** *Thonalmus suavis*. **R.** *Thonalmus subquadratus*. **S.** *Thonalmus thomasi*. Scale bars= 1mm.

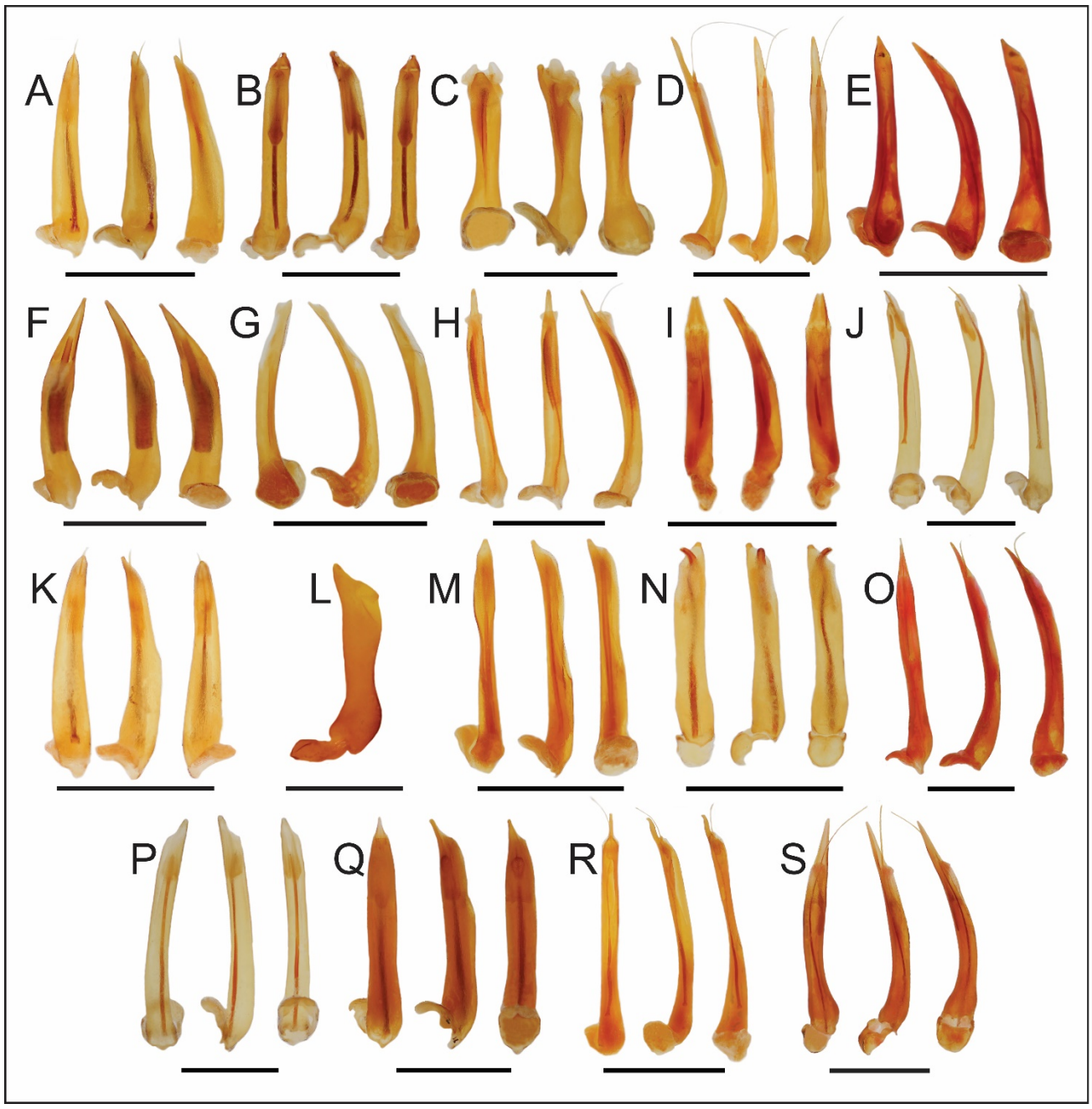


Figure 2.19. Male genitalia of *Thonalmus* species. Dorsal, lateral and ventral view, respectively. **A.** *Thonalmus abejaensis*, Hispaniola. **B.** *Thonalmus amabilis*. **C.** *Thonalmus aulicus*. **D.** *Thonalmus bicolor*. **E.** *Thonalmus centralis*. **F.** *Thonalmus darlingtoni*. **G.** *Thonalmus distinguendus*. **H.** *Thonalmus dominicensis*. **I.** *Thonalmus guerreiroi*. **J.** *Thonalmus hubbardi*. **K.** *Thonalmus humeralis*. **L.** *Thonalmus mariani* (lateral view only). **M.** *Thonalmus militaris*. **N.** *Thonalmus nigritarsis*. **O.** *Thonalmus quadrilacinius*. **P.** *Thonalmus sinuaticostis*. **Q.** *Thonalmus suavis*. **R.** *Thonalmus subquadratus*. **S.** *Thonalmus thomasi*. Scale bars= 1mm.



Figure 2.20. Male genitalia of *Thonalmus quadrilacinius* displaying the long flagellum present in some of the species of the genus.

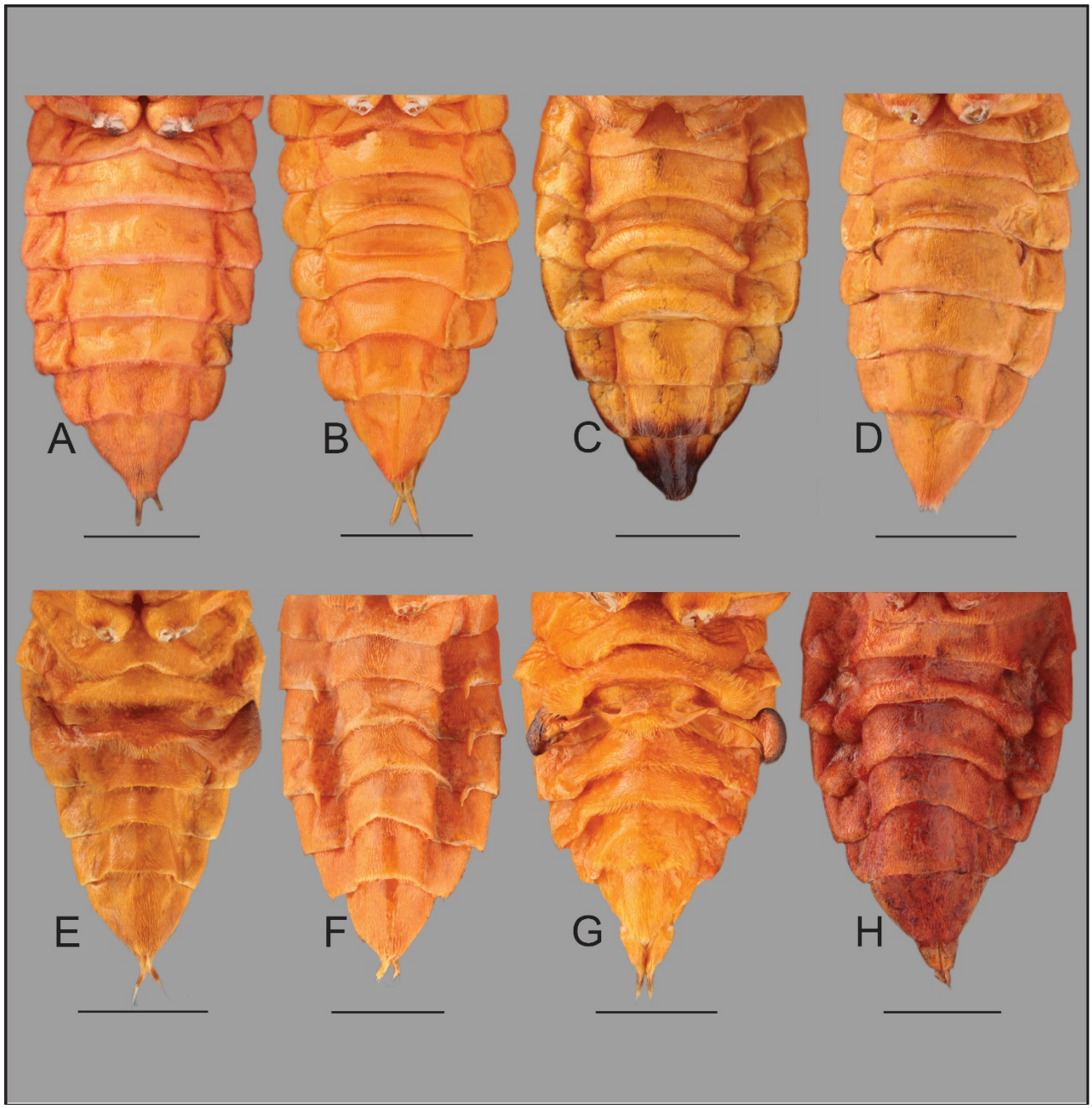


Figure 2.21. Female abdominal modifications of *Thonalmus*. **A.** *Thonalmus darlingtoni* **B.** *Thonalmus bicolor*. **C.** *Thonalmus centralis*. **D.** *Thonalmus dominicensis*. **E.** *Thonalmus hubbardi*. **F.** *Thonalmus quadrilacinius*. **G.** *Thonalmus sinuaticostis.* **H.** *Thonalmus thomasi*. Scale bars= 1mm.

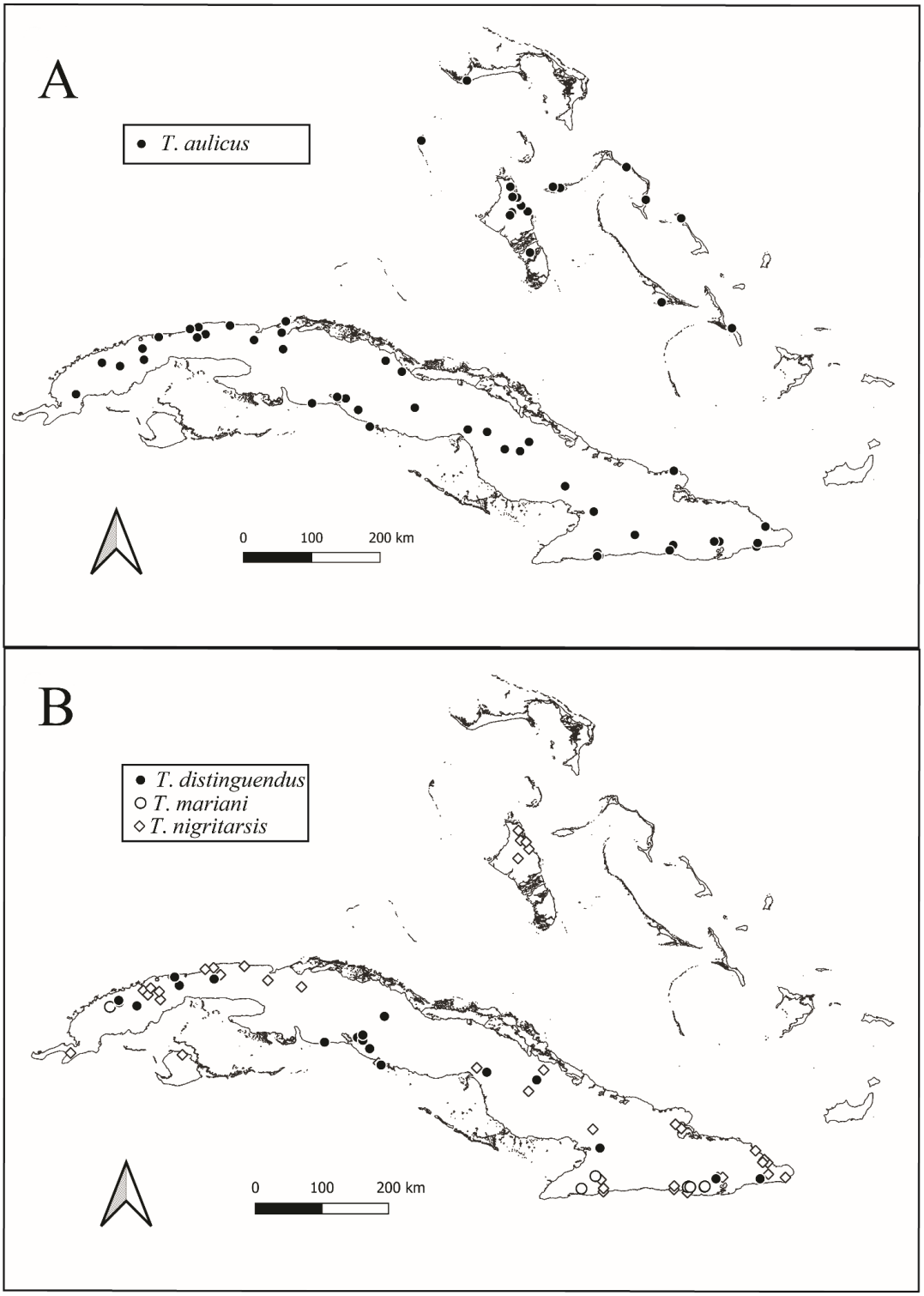


Figure 2.22. A. Distribution map of *T. aulicus* in Cuba and in the Bahamas. **B.** Distribution maps of *T. distinguendus*, *T. mariani* and *T. nigritarsis* in Cuba and the Bahamas.

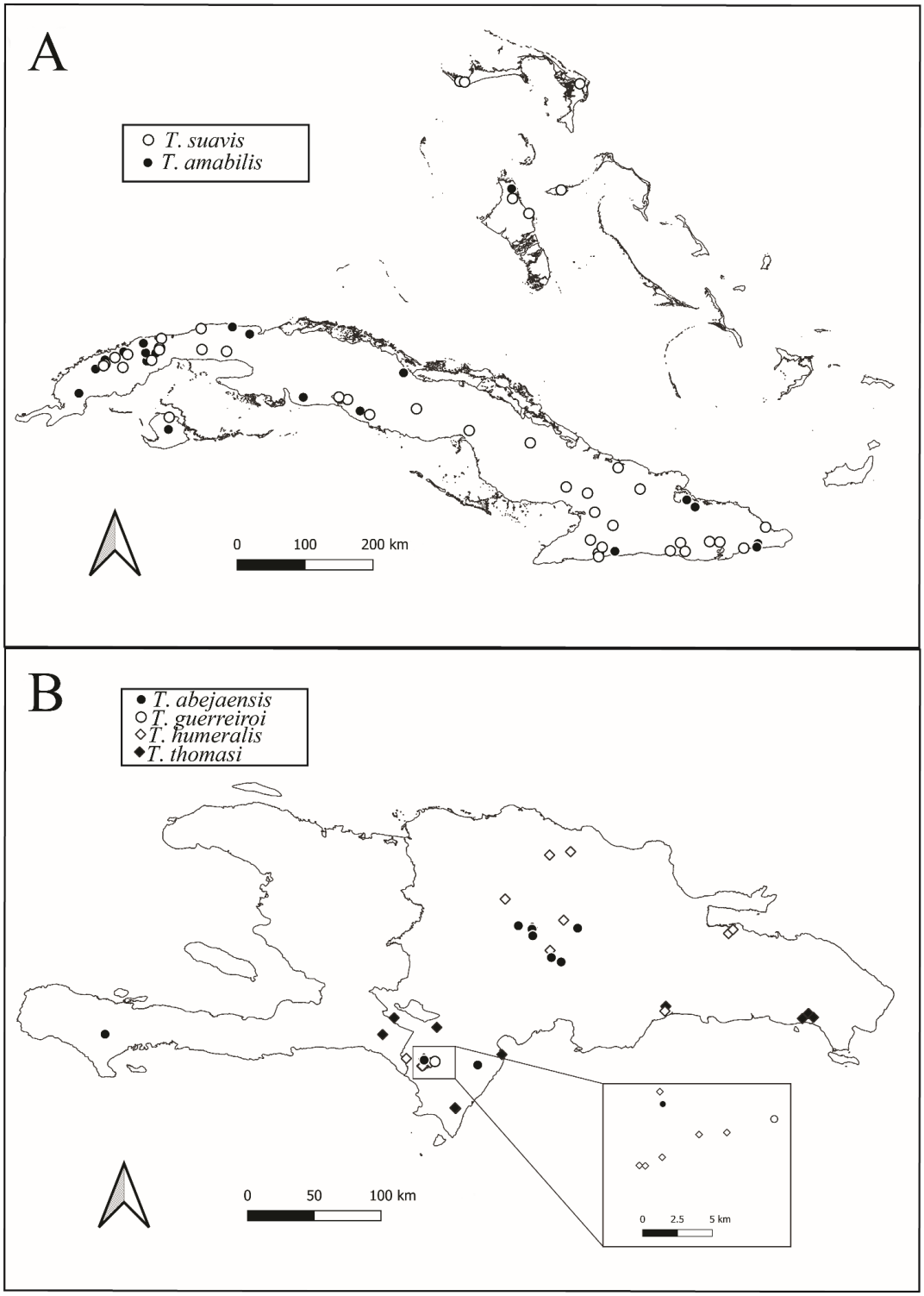


Figure 2.23. A. Distribution map of *T. suavis* and *T. amabilis* in Cuba and in the Bahamas. **B.** Distribution maps of *T. abejaensis*, *T. guerreiroi, T. humeralis* and *T. thomasi* in Hispaniola.

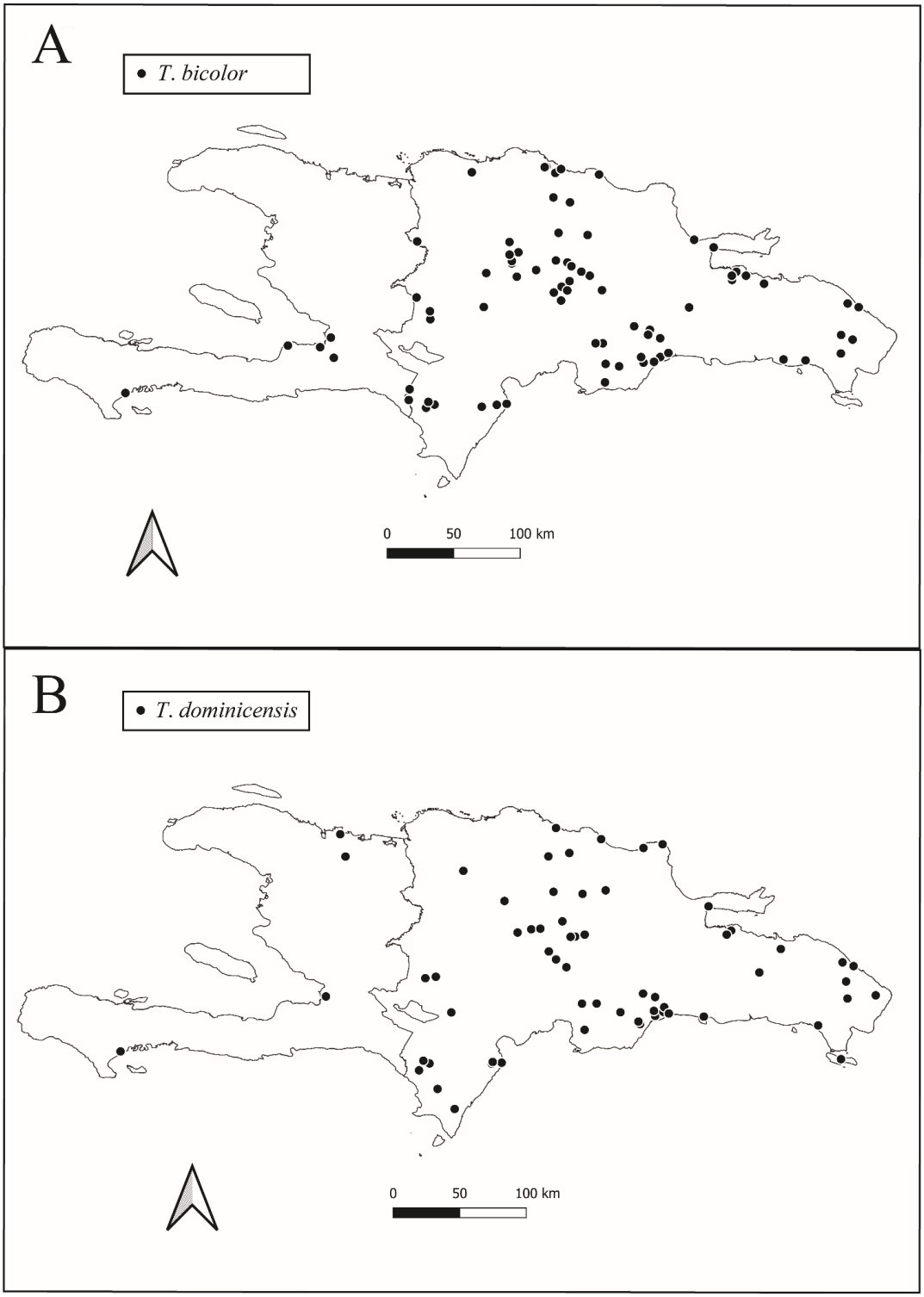


Figure 2.24. A. Distribution map of *T. bicolor* in Hispaniola. **B.** Distribution maps of *T. dominicensis* in Hispaniola.

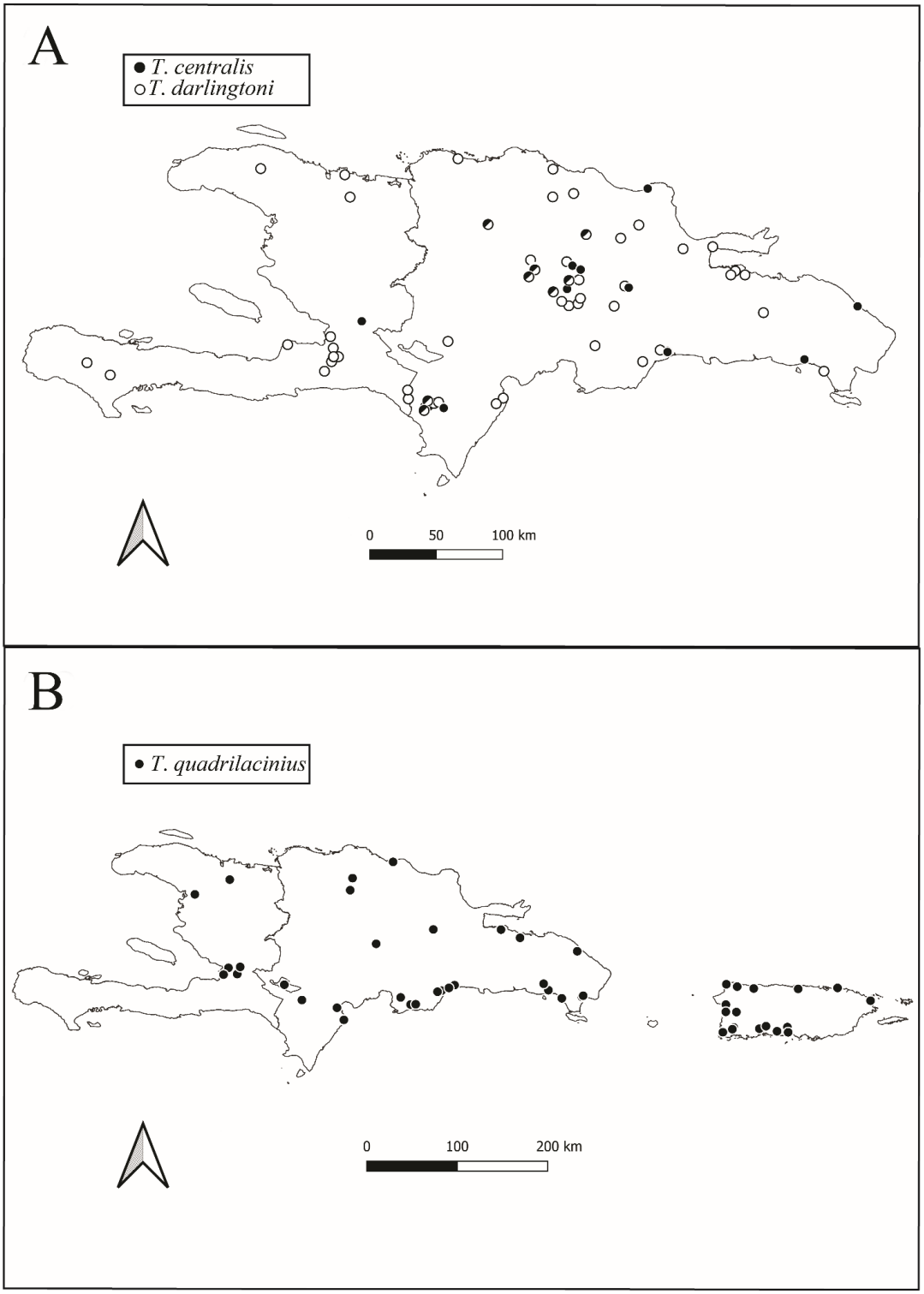


Figure 2.25. A. Distribution map of *T. centralis* and *T. darlingtoni* in Hispaniola. **B.** Distribution map of *T. quadrilacinius* in Hispaniola and Puerto Rico.

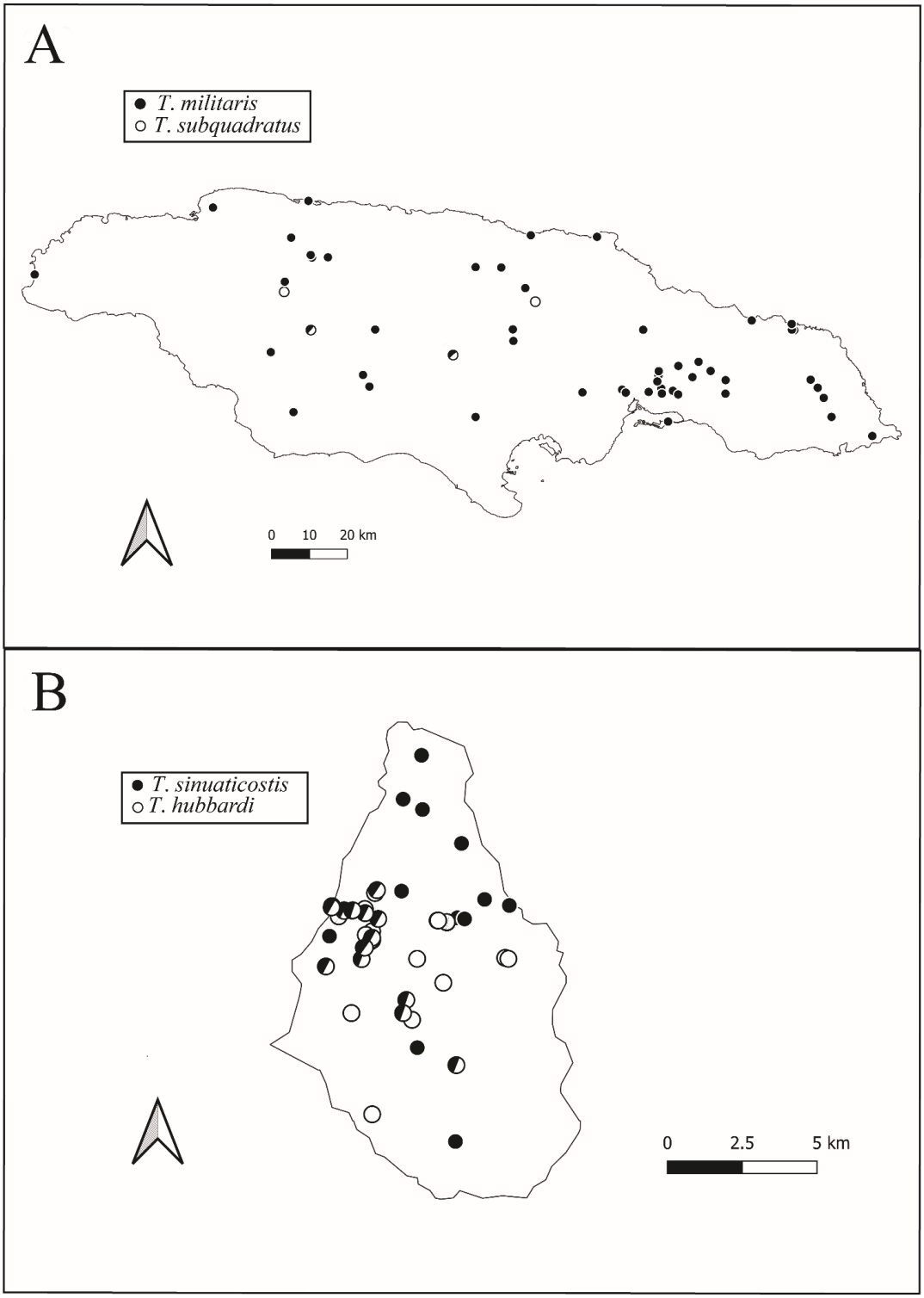


Figure 2.26. A. Distribution map of *T. militaris* and *T. subquadratus* in Jamaica. **B.** Distribution map of *T. sinuaticostis* and *T. hubbardi* in Montserrat.

References Cited

Abadi S., Azouri D., Pupko T., Mayrose I. 2019. Model selection may not be a mandatory step for phylogeny reconstruction. Nature Communications, 10(934):1–11.

Aragón, A.R. 2006. Estudios de diversidad de insectos en la región Jibacoa-Hanabanilla. Macizo Guamuhaya. Centro Agrícola 33(2): 49–56.

Aragón, A.R., Ravelo, H.G., O´Farril, S.R. and Pérez, P.A. 2003. Lista de insectos conocidos, de los cayos Majá y Español de Adentro, Cayería Norte de Villa Clara. Centro Agricola, 30(2): 71–75.

Barbosa, F. F. 2016. Revision and phylogeny of the genus *Balgus* Fleutiaux, 1920 (Coleoptera, Elateridae, Thylacosterninae). Zootaxa 4083(4): 451–482.

Barceló, A. M. and Diéguez, A. R. 2005. Entomofauna asociada al cultivo del tabaco al sol en la unidad administrativa Jesús Menéndez en la provicina de Las Tunas. Fitosanidad, 9(1): 9-14.

BEAST Tutorial. 2013. Divergence Time Estimation using BEAST v1.7.5. Available at: http://treethinkers.org/wp-content/uploads/2013/04/DivTime_BEAST_tutorial_2013.pdf. Last access at: Sep. 29, 2020.

Blackwelder, R. E. 1945. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America, pt. 3. Bulletin of the United States National Museum. i–iv: 343–550.

Bocak, L. and Bocakova, M. 2008. Phylogeny and classification of the family Lycidae (Insecta: Coleoptera). Annales Zoologici. 58(4):695–720. https://doi.org/10.3161/000345408X396639

Bocak, L., Bocakova, M., Hunt, T. and Vogler, A.P., 2008. Multiple ancient origins of neoteny in Lycidae (Coleoptera): consequences for ecology and macroevolution. Proceedings of the Royal Society B: Biological Sciences 275, 2015–2023.

Bocakova, M. 2003. Revision of the tribe Calopterini (Coleoptera, Lycidae). Stud Neotrop Fauna Environ. 38:207–234. doi:10.1076/snfe.38.3.207.28169

Bourgeois, J. 1883. Synopsis du genre *Thonalmus*. Annales de la Société entomologique de France, (6) 3: 375–380.

Bourgeois, J. 1901. Les Lycides du Muséum d'Histoire Naturelle de Paris. Annales de la Société entomologique de France, 70:31–51.

Bousquet, Y. and Bouchard, P. 2013. The genera in the second catalogue (1833–1836) of Dejean's Coleoptera collection. Zookeys, 282: 1–219.

Brower A. V. Z. 1994. Rapid morphological radiation and convergence among races of the butterfly Heliconius erato Inferred from patterns of mitochondrial DNA Evolution. Proceedings of the National Academy of Sciences of the United States of America, 91:6491–6495.

Castelnau [Laporte], F. L. N. 1840. Histoire Naturelle des Insectes Coléoptères. Tome I. Paris. 324 pp.

Chalumeau, F. and Touroult, J. 2005. Les longicornes des Petites Antilles (Coleoptera, Cerambycidae). Taxonomie, éthologie, biogéographie. Edition: Pensoft Series Faunistica n°51. Publisher: Pensoft Publishers, 241 pp.

Chevrolat, A. 1870. Coléoptères de l'ile de Cuba. Notes, synonymies et descriptions d'espèces nouvelles. Annales de la Société entomologique de France (4) 10:67–78.

Coquebert, A.J. 1804. Illustratio Iconographica Insectorum. Paris. 142 pp, 30 plates.

Dalman, J. W. 1817. In: Schönherr, C. J. 1817. Appendix ad C.J. Schönherr Synonymiam Insectorum. Tom. I, Part. 3., Appendix. Stockholm. 266 pp + 2 plates.

Darlington, P. J. 1936. A new oedemerid beetle from Cuba. Psyche, 43: 102-103.

Darlington, P. J. 1938. Experiments on mimicry in Cuba, with suggestions for future study. Transactions of the Royal Entomological Society of London, 87(23):681–695.

Dejean, P.F.M.A. 1833. Catalogue des Coléoptères de la collection de M. le Comte Dejean. [Livraisons 1-2]. Méquignon-Marvis, Paris, 1–176.

Dejean, P.F.M.A. 1836b-1837. Catalogue des coléoptères de la collection de M. le comte Dejean. Troisième édition, revue, corrigée et augmentée. Méquignon-Marvis Père et Fils, Paris. xiv + 503 pp. [Livraisons 1–4 (1836b): pp. 1–384; Livraison 5 (1837): pp. i–xiv + 385–503].

Douglas, H.B., Kundrata, R., Brunke, A.J., Escalona, H.E., Chapados, J.T., Eyres, J., Richter, R., Savard, K., Ślipiński, A., McKenna, D. and Dettman, J.R. 2021. Anchored Phylogenomics, Evolution and Systematics of Elateridae: Are All Bioluminescent Elateroidea Derived Click Beetles? Biology 2021, 10, 451. https://doi.org/10.3390/biology10060451

Drummond, A.J., Ho, S.Y.W., Phillips, M.J. and Rambaut, A. 2006. Relaxed phylogenetics and dating with confidence. PLOS Biology, 4, e88.

Eisner, T., Schroeder, F.C., Snyder, N., Grant, J.B., Aneshansley, D.J., Utterback, D., Meinwald, J. and Eisner, M. 2008. Defensive chemistry of lycid beetles and of mimetic cerambycid beetles that feed on them. Chemoecology, 18: 109–119.

Fabricius, J. C. 1775. Systema Entomologiae. Lipsiae [Leipzig]. 832 pp.

Fabricius, J. C. 1787. Mantissa Insectorum. Tome I. Hafniae. 348 pp.

Fabricius, J. C. 1781. Species Insectorum. Tome I. Kilonii [Kiel]. 552 pp.

Fabricius, J. C. 1792. Entomologiae Systematicae Emendata et Auctae. Tom. I. Pars II. Hafniae. 538 pp.

Fabricius, J. C. 1801. Systema Eleutheratorvm secvndvm, ordines, genera, species: Adiectis, Synonymis, Locis, Observationibvsm Descriptionibvs. Tomvs II. Kiliae. 687 pp.

Fernández García, I., Reyes Sánchez, E.E. and Daniel Álvarez, A. 2010. Colección entomológica "Juan C. Gundlach": Serie Elateriformia (Coleoptera). Poeyana, 499:5–12.

Ferreira, V. S. 2016. A revision of the genus *Macrolygistopterus* Pic, 1929 (Coleoptera, Lycidae, Calochromini). Zootaxa. 4105: 321–338.

Ferreira, V.S. 2020. Revision of *Acroleptus* Bourgeois, 1886 and Descriptions of New *Aporrhipis* Species (Lycidae, Calopterini, Acroleptina). Journal of Natural History. 53: 2739−2756. https://doi.org/10.1080/00222933.2020.1733120

Ferreira, V.S. and Ivie, M.A. 2017. The first fossil species of the extant genus *Cessator* Kazantsev (Coleoptera: Lycidae): a new leptolycini from Dominican Amber. The Coleopterists Bulletin 71, 57–60.

Ferreira, V.S. and Ivie, M.A. 2018. A revision of Lycinella Gorham, 1884 with the description of six new species (Coleoptera, Lycidae, Calopterini). ZooKeys. 792:69–89. doi:10.3897/zookeys.792.28034

Ferreira, V.S. and Silveira, L.F.L. 2020. A New Paedomorphic Genus of Net-Winged Beetles from the Atlantic Rainforest (Coleoptera, Elateroidea, Lycidae). Papéis Avulsos de Zoologia. v.60.special-issue: e202060(s.i.).35. http://doi.org/10.11606/1807-0205/2020.60.special-issue.35

Ferreira, V. S., O. Keller, M. A. Branham, and M. A. Ivie. 2019. Molecular data support the placement of the enigmatic *Cheguevaria* as a subfamily of Lampyridae (Insecta: Coleoptera). Zool. J. Linn. Soc. 187: 1253–1258.

Fleutiaux, E. and A. Sallé. 1889. Liste des coléoptères de la Guadeloupe et descriptions d'espèces nouvelles. Annales de la Société entomologique de France (6) 9:351–484.

García, I.F. and Favila, M.E. 2007. Evaluación de dos métodos de captura para inventariar coleópteros terrestres. Poeyana, 495:23-28.

García, I.F., Castillo, M.E.F. and Iborra, G.L. 2014. Composición, riqueza y abundancia de coleópteros (Coleoptera) asociados a bosques semideciduos y vegetaciones ruderales en la Siera del Rosario, Cuba. Boletín de la Sociedad Entomológica Aragonesa (S.E.A.), 54: 329–339.

Gemminger, M. and E. Harold. 1869. Catalogus coleopterorum hucusque descriptorum synonymicus et systematicus. Monachii, 6: 1690-1800. Paris.

Gorham, H. S. 1898. 2. On the serricorn Coleoptera of St. Vincent, Grenada, and the Grenadines (Malacodermata, Ptinidae, Bostrychidae), with descriptions of new species. Proceedings of the Zoological Society of London, 1898:315–333, pl. XXVII.

Gosse, P.H. 1848. XXVI. - On the Insects of Jamaica. Annals of Natural History, 1(2): 268-270.

Gowdey, C. C. 1926. Catalogus Insectorum Jamaicensis. Department of Agriculture Jamaica Entomological Bulletin 4(1): 1–114.

Guerrero, K. A. 2001. A Revision and Phylogenetic Analysis of *Trichrous* Chevrolat 1858, and a Review of *Plectocerum* Dejean 1835 (Coleoptera: Cerambycidae: Elaphidiini). Masters of Science Thesis, Montana State University. 71 pp.

Gundlach, J. 1891. Contribución a la entomología cubana. Parque Quinta. Coleopteros. 3(5), 404 pp. Havana.

Harford, C.L., Pringle, M.S., Sparks, R.S.J. and Young, S.R. 2002. The volcanic evolution of Montserrat using 40Ar/39Ar geochronology. Geological Society, London, Memoirs, 21: 93–113.

Harvey, N. 1956. Evolution and Bioluminescence. The Quarterly Review of Biology, 31(4): 270-287.

Hatter, S. J., Palmer, M. R., Gernon, T. M., Taylor, R. N., Cole, P. D., Barfod, D. N. and Coussens, M. 2018. The evolution of the Silver Hills volcanic center, and revised 40Ar/39Ar geochronology of Montserrat, Lesser Antilles, with implications for island arc volcanism. Geochemistry, Geophysics, Geosystems, 19, 427–452. https://doi.org/10.1002/2017GC007053

Heath, T.A., Huelsenbeck, J.P. and Stadler, T. 2014. The fossilized birth-death process for coherent calibration of divergence-time estimates. Proceedings of the National Academy of Sciences of the United States of America, 111, E2957–E2966.

Hillis, D.M. and Huelsenbeck, J.P. 1992. Signal noise and reliability in molecular phylogenetic analyses. Journal of Heredity, 83:189–195.

Hoang, D. T., A. Chernomor, A. von Haeseler, B. Q. Minh, and L. S. Vinh. 2018. UFBoot2: improving the ultrafast bootstrap approximation. Molecular Biology and Evolution, 35: 518–522.

Holland, W.J. 1917. VII. List of the Coleoptera Collected on the Isle of Pines by Gustav A. Link, Sr., 1912-1913. Annals of the Carnegie Museum, 11(3-4):333–345.

Ivie, M. A. 1991. Taxonomic Notes on a Little Known Publication: Zayas, 1988, Entomofauna Cubana. Orden Coleoptera. The Coleopterists Bulletin, 45(4): 399–401.

Ivie, M.A. 1985. Nomenclatural notes on West Indian Elaphidiini (Coleoptera: Cerambycidae). Pan-Pacicif Entomologist, 61(4):303–314.

Ivie, M.A., Marske, K. A., Foley, I. A., Guerrero, K. A. and Ivie, L. L. 2008. 4. Invertebrates of the Centre Hills and Montserrat, with an emphasis on beetles, pp. 56-89. In: Young, R. P. (ed.) (2008). A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No. 1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.

Jackson, G.C. and Bauzá-Salas, J. 1965. Insect Visitors of *Lecythis elliptica* H.B.K. The Journal of Agriculture of the University of Puerto Rico, 49(1): 133–141.

Jacqueline du Val, P.N.C. 1856. Insectes. Ordre de Coléoptères, Lin. (1) In: Sagra, Ramon de (ed.). Histoire physique, politique et naturelle de l'ile de Cuba, vol 7, pp. 1–136 Paris. 328 p.

Kalyaanamoorthy, S., B. Q. Minh, T. K. F. Wong, A. von Haeseler, and L. S. Jermiin. 2017. ModelFinder: fast model selection for accurate phylogenetic estimates. Nature Methods, 14: 577–589.

Kazantsev, S. V. 2003. Morphology of Lycidae with some considerations on evolution of the Coleoptera. Elytron. 17:49–226.

Kazantsev, S. V. 2013. New and little-known taxa of "neotenic" Lycidae (Coleoptera), with discussion of their phylogeny. Russian Entomological Journal. 22:9–31.

Kazantsev, S. V. 2017. New leptolycines from Ecuador and Peru (Coleoptera: Lycidae). Russ Entomol J.26: 127–146.

Kleine, R. 1933. Lycidae Pars 128. In: Junk W, Schenkling S. (Eds.). Coleopterorum Catalogueus auspiciis et auxilio, Berlin, 145 pp.

Kundrata, R., M. Bocakova, and L. Bocak. 2014. The comprehensive phylogeny of the superfamily Elateroidea (Coleoptera: Elateriformia). Molecular Phylogenetics and Evolution, 76: 162–171.

Kusy, D., Motyka, M., Bocek, M., Masek, M. and Bocak, L., 2019. Phylogenomic analysis resolves the relationships among net-winged beetles (Coleoptera: Lycidae) and reveals the parallel evolution of morphological traits. Systematic Entomology, 44, 911–925.

Lacordaire, J. T. 1857. Histoire naturelle des insectes. Genera des coléoptères, ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet ordre d'insectes. Tome IV. Paris. 579 pp.

Lanfear, R., B. Calcott, S. Y. Ho, and S. Guindon. 2012. PartitionFinder: combined selection of partitioning schemes and substitution models for phylogenetic analyses. Molecular Biology and Evolution, 29: 1695–1701.

Lanfear. R., P. B. Frandsen, A. M. Wright, T. Senfeld, and B. Calcott. 2016. PartitionFinder 2: New Methods for Selecting Partitioned Models of Evolution for Molecular and Morphological Phylogenetic Analyses. Molecular Biology and Evolution, 34: 772–773.

Leng, C. W. and A. J. Mutchler. 1914. Article XXX.- A preliminary list of the Coleoptera of the West Indies as recorded to Jan. 1, 1914. Bulletin American Museum of Natural History, 33:391–493.

Leng, C. W. and A. J. Mutchler. 1922. Article VIII.- The Lycidae, Lampyridae and Cantharidae (Telephoridae) of the West Indies. Bull. Bulletin American Museum of Natural History, 46:413–499.

Letunic, I, and Bork, P. 2019. Interactive Tree Of Life (iTOL) v4: recent updates and new developments. Nucleic Acids Research 47(W1): W256–W259.

Lewis P.O. 2001. A likelihood approach to estimating phylogeny from discrete morphological character data. Systematic Biology, 50(6):913–925.

Lingafelter, S.W. 2013. Hispaniolan Hemilophini (Coleoptera, Cerambycidae, Lamiinae). Zookeys, 258: 53-83.

Lingafelter, S.W. and Micheli, C.J. 2004. New species of Cerambycidae (Coleoptera) from Puerto Rico with records and notes for other species. Journal of the New York Entomological Society, 112(1):37-55.

Linnaeus, C. 1763. Amoenitates Academicae. VI: 508 pp.

Linneaus, C. 1767. Systema Naturae. 12 ed. Tome I, part 2: 646 pp.

Linsley, E.G. 1959. Mimetic Form and Coloration in the Cerambycidae (Coleoptera). Annals of the Entomological Society of America, 52: 125-131.

Linsley, E.G., Eisner, T. and Klots, A.B. 1961. Mimetic Assemblages of Sibling Species of Lycid Beetles. Evolution, 15(1): 15–29.

Maddison, W. P. and D.R. Maddison. 2019. Mesquite: a modular system for evolutionary analysis. Version 3.61. http://www.mesquiteproject.org

Martorell, L. F. 1976. Annotated Food Catalogue of the Insects of Puerto Rico. Agricultural Experiment Station, University of Puerto Rico, Rio Pedras, Puerto Rico, USA, 303 pp.

Masek, M., Motyka, M., Kusy, D., Bocek, M., Li, Y. and Bocak, L., 2018. Molecular phylogeny, diversity and zoogeography of net-winged beetles (Coleoptera: Lycidae). Insects 9, 154.

Matzke, N.J. 2014. Model selection in historical biogeography reveals that founder-event speciation is a crucial process in island clades. Systematic Biology 63(6): 951–970.

Mayer, P. and Giesbrecht, W. 1884. Zoologischer Jahresbericht. Herausgegeben von der Zoologischen Station Zu Neapel. II. ABTHEILUNG: ARTHROPODA. MIT REGISTER. Leipzig. 550 pp.

McKenna, D.D., Shin, S., Ahrens, D., Balke, M., Beza-Beza, C., Clarke, D.J., Donath, A., Escalona, H.E., Friedrich, F., Letsch, H., Liu, S., Maddison, D., Mayer, C., Misof, B., Murin, P.J., Niehuis, O., Peters, R.S., Podsiadlowski, L., Pohl, H., Scully, E.D., Yan,

E.V., Zhou, X., Slipinski, A., Beutel, R.G. 2019. The evolution and genomic basis of beetle diversity. Proceedings of the National Academy of Sciences, 116, 24729–24737.

Micheli, J. A. 2010. Longicornios de Puerto Rico. 2010. Pensoft, Publishers, Sofia. ISBN 978954642562.

Minh, B. Q., M. A. T. Nguyen, and A. von Haeseler. 2013. Ultrafast approximation for phylogenetic bootstrap. Molecular Biology and Evolution, 30: 1188–1195.

Mutchler, A. J. 1923. Notes on West Indian Lycidae and Lampyridae (Coleoptera) with descriptions of new forms. American Museum Novitates, 60:1–13.

Mutchler, A. J. 1937. Three new species of *Tytthonyx* from Cuba. American Museum Novitates, 924: 1-2.

Myers, J.G. 1927. Ethological Observations on Some Pyrrhocoridae of Cuba (Hemiptera-Heteroptera). Annals of The Entomological Society of America, 20(3): 279–300.

Nguyen, A. 2019. The Effect of Pleistocene Glacial - Interglacial Cycles on Patterns of Genetic Diversity and Differentiation of Populations of *Leptodactylus Albilabris* (White-Lipped Frog) in the Puerto Rican Bank/ UNLV Theses, Dissertations, Professional Papers, and Capstones. 3830. http://dx.doi.org/10.34917/18608737

Nixon, K.C. 2002. WinClada. Published by the author, Ithaca, New York.

Olivier, A. G. 1790. Entomologie, ou Histoire Naturelle des insectes, avec leurs caractères génériques et spécifiques, leur description, leur synonymie, et leur figure enluminée. Coléoptères. Tome Second. Paris: de Baudouin, 485 pp., 63 pls. [2. Nr. 29, p.9].

Padilla, C., Valenciaga, N., Rodríguez, I., Herrera, M. and Fraga, N. 2019. Efecto de la frecuencia y altura de corte en los indicadores morfo-agronómicos y la producción de biomasa de Moringa oleifera vc Criolla de Cuba. Livestock Research for Rural Development, 31, article 105.

Pagel, M. 1994. Detecting correlated evolution on phylogenies: A general method for the comparative analysis of discrete characters. Proceedings of the Royal Society B, 255:37–45.

Parsons, C.T. 1940. Observations in Cuba on Insect Mimicry and Warning Coloration. Psyche 47(1): 1–7.

Paulian, R. 1947. Malacodermata, 154-164. In: Fleutiaux, E., Legros, C., Lepesme, P. and Paulian, R. Faune de L'Empire Français VII. COLÉOPTÈRES DES ANTILLES (Volume I). Muséum National d'Histoire naturelle, Paris. 239 pp.

Peck, S.B. 2005. A Checklist of the Beetles of Cuba with Data on Distributions and Bionomics (Insecta: Coleoptera). Arthropods of Florida and Neighboring Land Areas, vol. 18., Gainesville, FL, 241 pp.

Peck, S.B., Thomas, M.C. and Turnbow Jr., R.H. 2014. The diversity and distributions of the beetles (Insecta: Coleoptera) of the Guadeloupe Archipelago (Grande-Terre, Basse-Terre, La Désirade, Marie-Galante, Les Saintes, and PetiteTerre), Lesser Antilles. Insecta Mundi 0352: 1–156.

Peck, S.W., Perez-Gelabert, D.E. 2012. A summary of the endemic beetle genera of the West Indies (Insecta: Coleoptera); bioindicators of the evolutionary richness of this Neotropical archipelago. Insecta Mundi 0212: 1–29.

Perez-Gelabert, D. E. 2008. Arthropods of Hispaniola (Dominican Republic and Haiti): A checklist and bibliography. Zootaxa 1831: 1–530.

Perez-Gelabert, D. E. 2015. Entomofauna de La Reserva Científica Ébano Verde, Cordillera Central, República Dominicana. Novitates Caribaea, 8: 62–81.

Perez-Gelabert, D. E. 2020. Checklist, Bibliography and Quantitative Data of the Arthropods of Hispaniola. Zootaxa 4749 (1): 1–668.

Pisani, D., Benton, M.J. and Wilkinson, M. 2007. Congruence of Morphological and Molecular Phylogenies. Acta Biotheoretica, 55(3): 269–81.

Price, M.N., Dehal, P.S., Arkin, A.P. 2010. FastTree 2 – Approximately Maximum-Likelihood Trees for Large Alignments. PLOS ONE 5(3): e9490.

Ronquist F., Teslenko M., van der Mark P., Ayres D.L., Darling A., Höhna S., Larget B., Liu L., Suchard M.A., Huelsenbeck J.P. 2012. MRBAYES 3.2: Efficient Bayesian phylogenetic inference and model selection across a large model space. Systematic Biology, 61:539–542.

Schönherr, C. J. 1817. Synonymia insectorum, oder: Versuch einer Synonymie aller bisher bekannten Insecten; nach Fabricii Systema eleutheratorum &c. geordnet. Tome I, Part 3. Upsala. 508 pp.

Sereno P.C. 2007. Logical basis for morphological characters in phylogenetics. Cladistics, 23(6):565–587.

Stahl, A. 1882. Fauna de Puerto-Rico. Clasificación sistemática de los animales que corresponden a esta fauna y Catálogo del gabinete zoológico del doctor A. Stahl en Bayamón. Puerto-Rico. Bayamon. 248 pp.

Suchard, M. A., & Rambaut, A. 2009. Many-core algorithms for statistical phylogenetics. Bioinformatics, 25(11): 1370–1376. https://doi.org/10.1093/bioinformatics/btp244

Swofford D.L. 2003. PAUP*. Phylogenetic Analysis Using Parsimony (*and Other Methods). Version 4.0a. Sinauer Associates Sunderland Massachusetts.

Talavera, G. and J. Castresana. 2007. Improvement of phylogenies after removing divergent and ambiguously aligned blocks from protein sequence alignments. Systematic Biology, 56: 564–577.

Torres-Montúfar, A., Borsch, T. and Ochoterena, H. 2018. When homoplasy is not homoplasy: dissecting trait evolution by contrasting composite and reductive coding. Systematic biology, 67(3): 543–551.

Toussaint, E.F.A., Seidel, M., Arriaga-Varela, E., Hajek, J., Kral, D., Sekerka, L., Short, A.E.Z. and Fikacek, M. 2016. The peril of dating beetles. Systematic Entomology, 42, 1–10.

Trifinopoulos, J., L. T. Nguyen, A. von Haeseler, and B. Q. Minh. 2016. IQ-TREE web server: fast and accurate phylogenetic trees under maximum likelihood. Nucleic Acids Res. 44: W232–W235.

Turnbow Jr, R. G. and Thomas, M.C. 2008. An annotated checklist of the Coleoptera (Insecta) of the Bahamas. Insecta Mundi 0034: 1–64.

Turner, J.R.G. 1970. Mimicry: a study in behaviour, genetics, ecology and biochemistry. Science Progress, 58(230): 219-227, 229-235.

Vaidya, G., D. J. Lohman, and R. Meier. 2011. SequenceMatrix: concatenation software for the fast assembly of multi-gene datasets with character set and codon information. Cladistics, 27: 171–180.

Valenciaga, N. and Mora, C.A. 2009. Papel de la artropodofauna asociada a la estabilidad del sistema silvopastoril Leucaenaea-Guinea en Cuba pp. 36-40. In: Lopez, N.A., Pérez, M.S., González, A.O. Wencomo and H., Pérez, N.P. 2009. VIII Taller Internacional Silvopastoril

"Los Árboles Y Arbustos En La Ganadería" Memorias. Estación Experimental "Indio Hatuey", Universidad de Matanzas. 402 pp.

Virkki, N. 1978. Pre-reduction of the X chromosome in Lycidae (Coleoptera: Cantharoidea). Genetica 49 (2): 229–232.

Vlasak, J., T. K. Philips, and M. A. Ivie. 2018. Notes on the Methiini of the West Indies (Coleoptera: Cerambycidae). The Coleopterists Bulletin, 72: 691–699.

Waterhouse, C. O. 1878. VII. On the different forms occurring in the coleopterous family Lycidae, with descriptions of new genera and species. Transactions of the Entomological Society of London, 95–118.

Williams, L. and Blackmer, J.L. 1991. A Mating Aggregation of *Thonalmus bicolor* (L.) (Coleoptera: Lycidae) Feeding at Morindasp. (Rubiales: Rubiaceae) Nectaries in Jamaica. The Coleopterists Bulletin, 45(4): 358–359.

Wojciechowska, A. and S. A. Ślipiński. 1985. Notes on the *Thonalmus* Bourgeois (Coleoptera, Lycidae) of Cuba with description of a new species. Polskie Pismo Entomologiczne, 55: 265–270.

Wolcott, G. N. 1923 (1924). "Insectae Portoricensis" a preliminary annotated check-list of the insects of Porto Rico, with descriptions of some new species. Coleoptera. The Journal of Agriculture of the University of Puerto Rico 7(1): 71–137.

Wolcott, G. N. 1936. "Insectae Boriquenses" A Revision of "'Insectae Portoricensis' A Preliminary Annotated Check-List of the Insects of Porto Rico, with Descriptions of some News Species". The Journal of Agriculture of the University of Puerto Rico 20(1): 1–627.

Wolcott, G. N. 1943. The Seasonal Cycle of Insect Abundance inf Puerto Rican Cane Fields. The Journal of Agriculture of the University of Puerto Rico, 27(2): 85–104.

Wolcott, G.N. 1950 [1948]. The Insects of Puerto Rico, Coleoptera. The Journal of Agriculture of the University of Puerto Rico 32(2): 225–416.

Wolcott, G.N. and Martorell, L.F. 1937. Two Insects New to Puerto Rico: The Lycid Beetle, *Thonalmus chevrolati* Bourgeois, and the Ephydrid Fly, *Ephydra gracilis* Packard. The Journal of Agriculture of the University of Puerto Rico 21: 545–538.

Yu, Y., Blair, C., He, X.J. 2020. RASP 4: Ancestral State Reconstruction Tool for Multiple Genes and Characters. Molecular Biology and Evolution, 37(2):604–606.

Zaldivar, J.C.P, Campos, M.S. and Aguillar, A.T. 2018. Comportamiento de insectos asociados al cultivo del garbanzo en áreas agrícolas de las Tunas, Cuba. Revista digital de Medio Ambiente "Ojeando la agenda", 54:1-14.

Zayas, F. de. 1988. Entomofauna Cubana. Orden Coleoptera. Separata. Descripcion de Nuevas Especies. Editorial Científico-Tecnica. 212 pp.

Zhang, C. 2017. Molecular clock dating using MrBayes. arXiv:1603.05707.

Zhang, S.Q., Che, L.H., Li, Y., Dan, L., Pang, H., Slipinski, A., Zhang, P. 2018. Evolutionary history of Coleoptera revealed by extensive sampling of genes and species. Nature Communications, 9, 205.

CHAPTER THREE

DNA BARCODING AND COLLECTIONS-BASED LIFE STAGE ASSOCIATIONS REVEALS A HIDDEN DIVERSITY IN THE PUERTO RICAN BANK PAEDOMORPHIC LYCIDAE (COLEOPTERA, ELATEROIDEA, LEPTOLYCINI)

Contribution of Authors and Co-Authors

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Abstract

The Leptolycini are a group of Lycidae endemic to the West Indies. The morphology of the Leptolycini adult males conforms with other groups suspected or proven to be affected by paedomorphosis, a process in which in which juvenile traits of an organism are retained into adulthood. Leptolycini adult females have been hypothesized to be extreme paedomorphic (i.e., larviform), but both females and larvae of the group are currently unknown. In this study we provided for the first time DNA barcoding life stages associations based on partial cytochrome c oxidase subunit 1 (COI) of winged males and immature stages of specimens from Puerto Rico, altogether with collections-based associations of Leptolycini immatures and one extreme paedomorphic female from the Virgin Islands. To carry out these life-stage associations we prepared an in-depth review of the Leptolycini fauna of the Puerto Rican bank (Puerto Rico and Virgin Islands). We provided morphological diagnosis of the larvae and female that were found, diagnostic redescriptions of the already know adult males and full descriptions of the new ones. Discussions on the taxonomy, nomenclature and intraspecific variation of many taxa are also provided, and several new taxa and taxonomic arrangements are proposed: *Cessator crypticus* **new species**, *Cessator tortolensis* **new species**, *Cessator obrienni* **new species**; *Dracolycus chupacabra* **new genus and species**, *Dracolycus marshalli* **new genus and species**; *Leptolycus falsoheterocornis* **new species** and *Leptolycus viensis* **new species**. *Nanolycus gnomus* Kazantsev, 2013 is moved to *Cessator gnomus* (Kazantsev, 2013) **new combination,** rendering *Nanolycus* Kazantsev 2013 a **new junior synonym** of *Cessator* Kazantsev 2009. The subgenus

Baholycus Bocak, 2001 is a **new junior synonym** of *Leptolycus* Leng and Mutchler, 1922. *Leptolycus heterocornis* var. *flavicollis* Leng and Mutchler, 1922 is elevated to *Leptolycus flavicollis* Leng and Mutchler, 1922 **new status**; *Leptolycus* (*Leptolycus*) *albicauda* Kazantsev, 2009 is a **new junior synonym** of it *Leptolycus flavicollis* Leng and Mutchler, 1922. The larvae of *Leptolycus*, *Cessator* and *Dracolycus* are described for the first time, and larva diagnosis of the following species is given: *L. heterocornis*, *L. viensis*, *Cessator luquillonis*, *C. tortolensis*, *C. crypticus*. The first female of a Leptolycini, *L. viensis*, is diagnosed and illustrated. An updated key to the adults and immature forms of Leptolycini from the Puerto Rican bank and a discussion on the importance of scientific collections in biodiversity studies is also provided.

Keywords: COI, Cantharoidea, Neotropical region, neoteny, West Indies.

Introduction

The Leptolycini are a group of Lycidae endemic to the West Indies for which only the males are known and described. The morphology of the Leptolycini adult males conforms with other groups suspected or proven to be affected by paedomorphosis processes, and females of this tribe are hypothesized to be larviform. Throughout the years, many different classifications proposed various taxonomic rank combinations and tribal and generic arrangements for the members of the Leptolycini (see competing classification systems in Bocak and Bocakova 1990; Kazantsev 2003 Bocak *et al*. 2008; Bocakova 2014; Kazantsev 2013, 2017). Despite the controversial classification status of the Leptolycini, the most recent molecular-based phylogenies hypotheses for the Lycidae supported the tribe as an independent lineage endemic to the West Indies (Masek *et al*. 2018; Kusy *et al*. 2019).

The Leptolycini, as currently understood, is comprised by six described genera: *Cessator* Kazantsev, 2009, *Dominopteron* Kazantsev, 2013, *Electropteron* Kazantsev, 2012, *Leptolycus* Leng & Mutchler 1922, *Nanolycus* Kazantsev, 2013 and *Tainopteron* Kazantsev 2009, and a total of 20 described species (Leng and Mutchler 1922; Zayas 1988; Bocak 2001; Kazantsev 2013, 2017; Ferreira and Ivie 2017). The tribe contains many other undescribed genera and species, and a revision of the group is currently in preparation by Ferreira and Ivie (in prep).

Many of the taxa previously placed in the Leptolycini are now understood as belonging to the mainly mainland Calopterini (Lycinae) (such as *Lycinella* Gorham, 1884, *Cephalolycus* Pic, 1926 and *Aporrhipis* Pascoe, 1887 and all other Neotropical lycids suspected to be

paedomorphic) (e.g., Bocakova 2003, 2005; Kazantsev 2005, 2013, 2017; Ferreira and Ivie 2016, 2017, 2018; Ferreira 2020; Ferreira and Silveira 2020) and dispersed in other Lycidae subfamilies, such as the Ateliinae, Dexorinae and Lyropaeinae (Fig. 3.1A), most of which are only distributed in the Old World (Fig. 3.1B) (see additional references below).

Paedomorphosis (PDM) is a type of heterochrony in which the development of certain traits is truncated relative to an organisms' ancestral form (Reilly *et al*. 1997; McNamara 2012). In animals, PDM is a phenomenon in which juvenile traits of an organism are retained into adulthood (Reilly *et al*. 1997; McNamara 2012). In beetles, paedomorphic modifications are generally associated with a reduction of sclerotization, flight ability, miniaturization of morphological structures, the predominance of a K-reproductive strategy and a tendency for rapid diversification (Bocak *et al*. 2008; McMahon and Hayward 2016; Bray and Bocak 2016; Vea and Minakuchi 2021).

In certain beetle lineages, individuals possess a mosaic of combinations between fully developed adult individual and immature features. These can be expressed by an adult-like head and prothorax and a distended abdomen (Lampyridae, Elateridae: Omalisinae, Plastocerinae and Drilinae) (Cicero 1988; Bocek *et al*. 2017; Kusy *et al*. 2018), or distended abdomen with reduced elytra and less sclerotized (soft) bodies (e.g., Dermestidade, Staphylinidae, Micromalthidae, Lampyridae, Elateridae: Cebrionini, Staphylinidae) (Mertins 1981; Cicero 1988; Perotti *et al*. 2016; Kusy *et al*. 2018; Rattu 2020; Zilberman 2020). To the extreme, certain adult females strongly resemble their immature stages, and these forms are in the literature usually referred to

as ‘larviform females’ (Dermestidae, Lycidae, Phengodidae) (*e.g*., Mertins 1981; Masek and Bocak 2014; Roza *et al*. 2017).

In Coleoptera, PDM occurred independently multiple times in several unrelated lineages (McMahon and Hayward 2016; Vea and Minakuchi 2021), with a higher preponderance of cases within the superfamily Elateroidea (Crowson 1972; Cicero 1988; Bocakova *et al*. 2007; Kundrata *et al*. 2014; Kusy *et al*. 2018), which includes some of the most popular and charismatic beetle groups, such as fireflies (Lampyridae) (e.g., Martin *et al*. 2017, 2019; Ferreira *et al*. 2019, 2020), click-beetles (Elateridae) (e.g., Rattu 2016; Kundrata *et al*. 2019; Zapata de la Vega *et al*. 2020), rail-road worms (Phengodidae) (e.g., Roza *et al*. 2017) and the so called ‘trilobite-larvae’ and other Net-winged beetles (Lycidae) (e.g., Masek and Bocak 2014; Kazantsev 2017; Ferreira and Silveira 2020), to mention a few known or suspected cases of paedomorphic lineages in this superfamily. Within the Elateroidea, PDM has evolved multiple times, and recent molecular-based phylogenetic hypotheses indicate that PDM has happened at least four times independently in the Lycidae, in the Lyropaeinae, Ateliinae, Lycinae and Dexorinae (Fig. 3.1A) (*sensu* Kusy *et al*. 2019) (Bocak and Bocakova 2008; Masek *et al*. 2018; Kusy *et al*. 2019).

In Lycidae, paedomorphic modifications in the adult male’s morphology are characterized by: a general miniaturization process, an overall less sclerotized integument with an overall reduction in size of mouthparts (either completely absent or strongly reduced) and number of antennomeres; simplification of wing venation, shortening and simplification of the elytra (*i.e*., reduction or absence of elytral costae, cells or transversal costae), which are non-

coadapted with the abdomen and thorax and are frequently dehiscent, physogastric abdomen and a simplified genitalia (Mjöberg 1925; Wong 1996; Miller 1991; Bocakova 2003, 2005; Bocak *et al*. 2008; Kazantsev 2009, 2013, 2017; Masek and Bocak 2014; Masek *et al*. 2014; Bocakova 2014; Bocak 2018; Ferreira and Ivie 2018; Ferreira 2020).

Several lycid groups for which the males normally present different degrees of the above-mentioned characteristics, females are unknown and are only presumed to be extreme paedomorphic (*i.e*., 'larviform'). This include several Calopterini and Leptolycini (Lycinae) and the Dexorinae and Ateliini (Ateliinae)) (*e.g*., Kazantsev 2005; Bocakova 2014; Kazantsev 2017; Li *et al*. 2018; Ferreira and Silveira 2020). In other groups, such as the Lyropaeinae, adult females are known to be extreme paedomorphic (Mjöberg 1925; Miller 1991; Wong 1996; Masek *et al*. 2014). Even though PDM is a widely spread phenomenon in Lycidae, very little is known in the literature about the morphology of extreme paedomorphic females and other male-female associations in other Lycidae paedomorphic lineages.

In the Lyropaeinae, the extreme paedomorphic females of *Platerodrilus* spp. have been described by Wong (1996) and Bocak and Matsuda (2003), whilst DNA-based associations of males and females were made by Levkanikova and Bocak (2009) and Masek and Bocak (2014). Adult-larvae and male-female associations were also provided in Masek *et al*. (2014) for *Lyropaeus* sp. DNA-based associations of adults and larvae were also provided by Levkanikova and Bocak (2009) for *Macrolibnetis depressus* Pic, 1938. In the Lycinae, with the exception of the descriptions and the tentative association of larval/extreme paedomorphic female stages of *Pseudacroleptus lamellifer* Kazantsev and Zaitzev, 2008 and *Ceratoprion ignavum* Kazantsev

and Zaitzev, 2008 (Calopterini), nothing else has been published on this for any other New World Lycidae lineage affected by PDM.

To further contribute to the knowledge of PDM morphology and biology of the Lycidae, in this study we document the first proven associations of extreme paedomorphic female individuals with their immature stages and respective males in beetles of the tribe Leptolycini. VSF's recent collection trip to Puerto Rico and MAI's extensive collection of specimens and biological observations of beetles from the West Indies allowed the authors to provide first-hand DNA barcoding associations based on partial cytochrome c oxidase subunit 1 (COI) of winged males and immature stages of specimens from Puerto Rico, together with collections-based associations of Leptolycini immatures and one extreme paedomorphic female from the Virgin Islands. We provide morphological diagnosis of the larvae and female that were found, diagnostic redescriptions of the already know adult males and full descriptions of the new ones. An updated key to the adults and immature forms of Leptolycini from the Puerto Rican bank and a discussion on the importance of scientific collections in biodiversity studies, especially regarding understudied groups, like the Leptolycini, is also provided.

Material and Methods

Study Areas

The material used in this study is the collective efforts of dozens of collectors and sampling efforts from collection expeditions to Puerto Rico and to the Virgin Islands (Fig. 3.2), with the majority of the specimens coming from the El Verde Field Station (EVFS) in Puerto

Rico. Puerto Rico (PR) is the locality with the highest known diversity of Leptolycini in a single locality, with seven species of three genera known from the males (Leng and Mutchler, 1922; Kazantsev 2009, 2013) and several morphotypes of larvae/females occurring at the EVFS the El Yunque National Forest in the Luquillo Mountains and/or the surrounding Caribbean National Forest in Puerto Rico (Fig. 3.2B, 3.2C), with another two species known from males elsewhere in PR. The EVFS is located 10 Km south of Rio Grande at 500 m above the sea level, with mean monthly temperatures ranging from 21º C in January to 25º C in September, and an annual precipitation average of 370 cm, with 35–40 cm per month in the wet season (May–December) (Brown *et al*. 1983; McDowell *et al*. 2012; Schowalter *et al*. 2014 and references therein). The area is co-jointly administered by the Department of Environmental Sciences, University of Puerto Rico, Río Piedras and the United States Department of Agriculture (USDA) Forest Service, and is the only location within the United States, other than Hawaii, with a tropical rain forest ecosystem (EVFS 2020).

Specimens Sampling, Identification, Photographs, Maps and Illustrations

Sampling of DNA grade specimens was conducted in June of 2016 in Puerto Rico by Martin Fikáček and collaborators (Národní Museum, Czechia), in June and July of 2017 in the EVFS by VSF and Erich Spiessberger and in July of 2018 by T. Sanchez & K. Noa Reyes and other students in a project coordinated by Donald Yee (University of Southern Mississippi). Additional non-DNA-grade specimens from the EVFS were collected by Eduardo Nazaro between May and November of 1996, whilst material from other places in the Virgin Islands have been collected by MAI and collaborators throughout the past 40 years from many collecting

expeditions. Specimens were collected using a variety of methods: sweep-netting (adult males), by hand (males, females and larvae), Malaise-traps and Flight Intercept Traps (FIT) (males, females and larvae) (Fig. 3.3), soil washing, Berlese/Winkler extractions from leaf litter and moss-leaf-litter samples and pitfalls (females and larvae). Transcription of label data from specimens is as follows: the end of each line on a label is indicated by a ";" (semicolon); the individual labels are separated by a "/" (slash). Examined specimens are deposited in the following collections:

AMNH - American Museum of Natural History, New York, New York, USA (Lee Herman Jr.).

CNC - Canadian National Collection of Insects, Ottawa, Ontario, Canada (Hume Douglas).

DEBU - University of Guelph, Guelph, Ontario, Canada (Steve Marshall).

EPRL - University of Puerto Rico, Mayaguez, Puerto Rico (Rafael Ingles).

MLGC - Matthew L. Gimmel Private Collection, Santa Barbara, California, USA.

MCZ - Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (Crystal Maier).

NCSU - North Carolina State University Insect Collection, Raleigh, North Carolina, USA (Bob Blinn).

NMNH - National Museum of Natural History, Washington D.C., USA (currently at the Montana Entomology Collection, Montana State University, Michael A. Ivie).

NMPC - National Museum, Prague, Czech Republic (Lukáš Sekerka).

WIBF - West Indian Beetle Fauna Project Collection, Montana State University, Bozeman, Montana, USA (Michael A. Ivie).

Specimens were sorted to morphospecies under a Leica® Wild M3C stereoscopic microscope with magnification up to 40× and identified using available literature (Leng and Mutchler 1922; Kazantsev 2009, 2013, 2017) and by comparison of material with type specimens. Individuals were grouped based on similarity and a temporary numeric code was assigned to each morphotype for which representative specimens were imaged. Adult morphological terminology followed Bocak and Bocakova (1990), Kazantsev (2003) and Lawrence *et al*. (2011) and immatures and larviform female terminology follows Bocak and Matsuda (2001), Levkanikova and Bocak (2009) and Ferreira and Costa (2015).

Lycidae larvae and extreme paedomorphic females (lacking compound eyes, bifid tarsal claws, a multi-piece antennal flagellum and elytra) can be usually distinguished from other Elateroidea by the non-opposable mandibles that are each divided longitudinally, and the circular, weakly developed pygopodium in Lycidae (vs. several finger-like, strongly developed structure in the Lampyridae).

Photos of specimens for illustrations were taken using a Canon T3i or 6D DSLR with the lens MP-E 65 mm and using a Stackshot ™ - automated macro rail for focus stacking and a JVC (DC Ky-F75U) digital camera mounted on a Leica® MS5 stereoscope. Specimens preserved in ethanol were first placed in a container with dH2O for at least five minutes and posteriorly positioned for images in a lubricating water-based gel that was fulfilled with dH2O. Images were then stacked using Zerene Stacker® version 1.04 and enhancements to digital images were made in Adobe Photoshop® CC 2020 and Adobe Photoshop® CC for iPad, while plates preparation were made in Adobe Illustrator® CC 2020.

The distribution maps were prepared using the software Quantum Gis 3.16. The distribution points were based on label information of examined specimens and georeferenced using Google Earth, exported to the format .kml and imported to Quantum Gis. The used raster files were downloaded from the following repositories: https://data.humdata.org/, https://data.fs.usda.gov/geodata/edw/datasets.php and https://luq.lter.network/data/luqmetadata9/5872.

DNA Extraction and Amplification Settings

We extracted whole genomic DNA using the Qiagen DNeasy® Blood and Tissue Kit (Qiagen, Germantown, Maryland, USA) from whole specimens (Genbank accession codes MW560932-MW560954, see full list on Appendix E, S1). Extractions were permanently deposited in the MTEC DNA collection, at - 80º C; after curation, adult specimens were either remounted and returned to the dry collection or were permanently deposited in vials in EtOH 70% in the immature beetles' collection of MTEC. PCR amplifications were performed with 25 µl reaction volume, using 12.5 µl GoTaq® Green Master Mix (Promega, Madison, WI, USA), 6.5 of UltraPure™ DNase/RNase-Free Distilled Water, 2 µl of each primer and 2 µl of template to amplify the 'barcode' region of cytochrome oxidase subunit I gene (COI). The polymerase chain reaction (PCR) and primers (LCO and HCO) conditions followed Folmer *et al*. (1994) and Raupach *et al*. (2014). PCR amplicons were sequenced in both directions by MCLAB (San Francisco, CA, USA).

Data Analyses, Genetic Distances Calculations and Biogeography-based Association

Newly produced sequences were assembled in Geneious 11.1.2 (Biomatters Ltd., Auckland, New Zealand) and individually examined for any discrepancies and irregularities. Alignments were performed using MAFFT 7 under the G-INS-i algorithm for highly conserved sequences implemented in the MAFFT server (https://mafft.cbrc.jp/alignment/server/) (Katoh *et al*., 2002). Pairwise genetic distances calculations were implemented in MEGA 10.0.8 (Kumar *et al*. 2018) and in Geneious, using the uncorrected p-distances (PD) (Fitch & Margoliash 1967), Kimura's 2-parameter (K2P) test (Kimura 1980), the Jukes-Cantor (JC) (Jukes & Cantor 1969) and the percentage identity (PC) criterion methods. We used the threshold percentages for species delimitations recommended in Ratnasingham and Hebert (2013) and followed by Raupach *et al*. (2016) for intraspecific (≤ 2.2%) and interspecific (≥ 2.3%) distances. For graphical representations of the genetic distances, we performed a maximum-likelihood analysis with 5,000 bootstraps using W-IQTREE (Trifinopoulos et al., 2016). A sequence of an individual identified as *Calopteron reticulatum* (Fabricius, 1775), a distantly related Lycidae taxa, was downloaded from Genbank (voucher JN288183) and used to root the tree.

Further life stage associations and male-female associations were made based on information from collections-based specimens and their known distribution patterns. In our study, some of the taxa in the Virgin Islands are only known to occur in specific localities, on which no other Leptolycini or even other Lycidae species are known, and scientific collection-based analyses of specimens sampled for these localities allowed us to infer associations for these organisms.

Results

Puerto Rican samples identification, COI barcode production and DNA based associations

From our sampling efforts of adult males from Puerto Rico, we identified 11 species belonging to four genera. Of these genera, three were already known and described: *Cessator*, *Leptolycus* and *Tainopteron*, whilst one (named *Dracolycus*) is herein described for the first time. Of the 11 species encountered, we were able to find and study specimens of all five previously known species for the Puerto Rican bank: *Cessator luquinollis* Kazantsev, 2009, *Leptolycus albicauda* Kazantsev, 2009, *Leptolycus puellus* Kazantsev, 2009, *Leptolycus heterocornis* Leng and Mutchler, 1922 and *Tainopteron milleri* Kazantsev, 2009; the remaining seven species are described here for the first time (three in *Cessator*, two in *Dracolycus* and two in *Leptolycus*). From our sampling of immature/females, we initially identified 12 morphotypes that were later narrowed down to nine different species (nine larval type and one extreme paedomorphic female were identified). Of this material, we were able to amplify and sequence COI sequences of five male adult species (n= 10) and five larvae (n= 13) (see table 3.1).

The length of the generated DNA barcode fragments ranged from 548 to 667 bp and our sequence data revealed a high AT-content, with mean sequence compositions of A= 35.7%, C= 18.3%, G= 12.6%, T= 33.4% (aligned sequences available in Appendix E, S2). The different methods we used for association of specimens (PD, K2P, JC, PC) rendered nearly identical results (Supplemental material S3–S6 for PD, K2P, JC, PC).

Table 3.1. Adult males and immature forms for which COI sequences were amplified.

Taxon/Morphospecies of Leptolycini	**DNA vouchers**
Males	
Cessator tortolensis	MTEC 023637
Cessator luquinollis	WIBF 051525
Cessator crypticus	MTEC 023638
Leptolycus puellus	WIBF 041665, MTEC 023635, WIBF 051534 WIBF 051533,
Leptolycus heterocornis	WIBF 041667, MTEC 023636, WIBF 051532
Immature forms	
Leptolycus heterocornis	WIBF 041693, WIBF 051506, WIBF 051507, WIBF 051537
Cessator luquillonis	WIBF 041694, WIBF 051497, WIBF 051498
Cessator crypticus	WIBF 041695, WIBF 041696, MTEC 023648
Dracolycus sp. 1	MTEC 023640, WIBF 051523
Dracolycus sp. 2	WIBF 041511

With our DNA analyses, we were able to provide matches for the following species: *C. luquillonis*, *C. crypticus* and *L. heterocornis* (Fig. 3.4) (See Appendix E, S3–S6 for PD, K2P, JC, PC). Using the PC method, intraspecific distances of 0.53% or less were found for *L. heterocornis* adult and their larvae. For *C. luquillonis* adult and larva type 2, we found intraspecific distances of 1.04%, whilst for *C. crypticus* adult male and its larvae, we found intraspecific distances of 0.17% or less were found. No matches were found for *L. puellus*, *C. tortolensis* and what we are considering to be the larvae of *Dracolycus* (see discussion under descriptions and diagnosis of that genus), for which each respective counterparts remain unknown. On the other hand, interspecific differences ranged from ~25% to ~13%, with the smallest differences found between congeneric taxa (*L. puellus* and *L. heterocornis*) (see full numbers in (Supplemental material S3–S6 for PD, K2P, JC, PC).

The graphical display of the relationships of the sequenced taxa are presented in the form of a tree topology (Fig. 3.4 and Appendix E, S7 for the support level of all included taxa). Our

ML tree recovered a cluster with males and larvae of *L. heterocornis* as sister to *L. puellus* (Fig. 4). The *Leptolycus* cluster was recovered in a polytomy that contained a cluster for *C. luquillonis* adult and larvae, *C. crypticus* and larvae, *Dracolycus* sp. 1 + *Dracolycus* sp. 2 and *C. tortolensis* by itself (Fig. 3.4).

Biogeography Life-stages Association in the Virgin Islands

Due to the well-studied beetle fauna of the Virgin Islands and the cross-matching of results with our DNA-based life stages association from Puerto Rico, we were able to confidently provide association of life stages of the Leptolycini specimens found in the Virgin Islands. From our sampling efforts of adult Leptolycini males from the Virgin Islands, we identified two species belonging to two genera. We found a new species of *Leptolycus* distributed in St. John, Guana and Tortola and two morphotypes of immature forms/larviform females associated with these samples from St. John. One new species of *Cessator* was found in Tortola together with its larval form.

The larvae and extreme paedomorphic females of *Leptolycus* collected in St. John are the results of several expeditions (see details below), while the larvae (and all known adults) of immature *Cessator* from Tortola are only known from a very specific locality in the island from a single collecting event. The two new species and their respective semaphoronts are described below and diagnostic characters to separate larvae from females are listed as well.

Taxonomic Revision of the Puerto Rican Bank Leptolycini Fauna

To carry out our life-stage associations on the Puerto Rican bank Leptolycini and to be able to correctly identify the taxa from the region, we needed to properly know the region's fauna diversity. Using published literature and with access to materials from several collections and type specimen vouchers or photographs (see material and methods section), we were able to provide an in-depth review of the Leptolycini fauna of the Puerto Rican bank.

Short diagnostic descriptions and illustrations of the previously known taxa are provided, as well as descriptions of the new ones. Diagnosis of the immature forms and of the female are provided for the first time. Identification keys for the adult male genera, the species in each genus and to the known immature and extreme paedomorphic females of Leptolycini from the Puerto Rican bank are also provided. These are provided below, presented in alphabetical order for the genera and in chronological order for the species within each genus.

***Cessator* Kazantsev, 2009**

Figs. 3.4, 3.5A–3.5D, 3.6A–3.6D, 3.9A–3.9E, 3.13A–3.13C, 3.14A–3.14B, 3.15A–3.15C, 3.17, 3.18A

Cessator Kazantsev, 2009: 93.

Nanolycus Kazantsev, 2013:18 **new junior synonym.**

Differential Diagnosis of Adult Males

Cessator can be distinguished from all other Leptolycini and other Neotropical Lycidae by the combination of following characters: the tubular, uncompressed antennae (vs. antennae

variable in other genera, but to some degree dorsoventrally compressed), with the antennomere III several times longer than the pedicel, which is minute (Figs. 3.5A–3.5D, 3.6A–3.6D) (vs. subequal in length in all other Leptolycini; shared with *Dominopteron*), the antennae densely setose, bearing abundant and decumbent setae throughout the antennae, with some species having the presence of scaliform setae (Figs. 3.5A–3.5D, 3.6A–3.6D) (vs. variable in other genera, but usually densely setose in the antennae of other groups, with bristled setae in *Tainopteron* and some of the *Leptolycus*), the remarkably transverse pronotum (Figs. 3.5A–3.5D) (vs. longer than wide in *Dominopteron*, *Dracolycus*, *Electropteron* and *Leptolycus*; shared with *Tainopteron* the transverse pronotum), the elytra bearing small subcircular cells ranging from strongly developed to weakly developed (vs. smooth elytra in *Leptolycus* and *Dracolycus,* with even smaller regularly visible cells; strongly developed in *Dominopteron* and *Electropteron*) and the short and subtriangular trochanters (vs. long and tubular in *Leptolycus*; similar shape shared with *Dominopteron*, *Dracolycus*, *Electropteron* and *Tainopteron*).

Type species. *Cessator luquillonis* Kazantsev, 2009 (by monotypy).

Differential Diagnosis of Larvae

Cessator larvae can be distinguished from other Leptolycini from the Puerto Rican bank by the following combination: head small, ca. half the length of the pronotum (Figs. 3.13A–3.13C) (vs. subequal or 2/3 of the size of pronotum in *Leptolycus*, elongate and extremely narrow in *Dracolycus*), the presence of a pair of projections ('little horns') in the anterior margin of the head, between the nasale (Figs. 3.13A–3.13C) (vs. projections absent in *Leptolycus,* weakly developed in *Dracolycus*), the presence of a distinct and strongly visible body (dorsal and

ventral) longitudinal line (Figs. 3.13A–3.13C) (vs. longitudinal line absent in *Leptolycus* and *Dracolycus*) and the presence of long erect setae arising from the tergites and pleurites (Figs. 3.14A–3.14B) (vs. setae absent in other Leptolycini).

Description of Larvae

Body subparallel, dorsoventrally flattened, ranging from creamy, to dark brown or yellow (Figs. 3.13A–3.13C, 3.14A–3.14B, 3.15A–3.15C). Membranes light yellow. Whole body strongly sclerotized, ranging from strongly to weakly punctate (Figs. 3.13A–3.13C), bearing long erect setae arising from circular cells in the tergites and pleurites (Figs. 3.13A–3.13C, 3.14A–3.14B, 3.15A–3.15C). Dorsal longitudinal line strongly visible and developed throughout (Figs. 3.13A–3.13C). **Head** hypognathous, transverse, as wide or narrower than prothorax (Figs. 3.13A–3.13C), nasale apically blunt (Figs. 3.13A–3.13C), bearing a pair strongly developed horn-like projections, one on each side of nasale (Figs. 3.13A–3.13C, 3.15A–3.15C). Antennae 2-segmented, inserted in a lateralized anterior portion of head, moderately stalked (Figs. 3.13A–3.13C); basal antennomere ring-like, very short, up to 6x shorter than antennomere II; apical antennomere apically bulbous. Eyes present, black, lateralized, positioned anteriad to antennal insertions (Figs. 3.13A–3.13C). Mandibles symmetrical, ensiform, strongly developed, approximated at base (Figs. 3.15A–3.15C). Mala transverse. Maxillary palpi slender, 4-segmented, digitiform. Labial palpi minute, seemingly 2-segmented, digitiform, diverging towards apex; prementum entire. Ventral plate medially divided, lateral and anterior angles strongly acute, posteriorly round (Figs. 3.15A–3.15C). **Thorax** shape variable: pro-, meso- and metanotum subtrapezoidal, widest at apex (Figs. 3.13A–3.13C, 3.15A–3.15C), lateral margins

ranging from round (Fig. 3.15B) to subparallel (Fig. 3.15A, 3.15C). Prosternum triangular, posteriorly round (Figs. 3.15A–3.15C). Meso- and metasternum subpentagonal (Figs. 3.15A–3.15C). Spiracle in mesothorax anteriorly located, on top of mesepisternum (Figs. 3.14A, 3.14B). Episterna and epimera strongly developed; episterna widest at base, near pleurites (Figs. 3.15A–3.15C); epimera slender throughout (Figs. 3.15A–3.15C). Legs robust, moderately long, tarsungulus distally acute. Abdomen tapering towards apex, slightly telescoped (Figs. 3.15A–3.15C); sternites wide and transverse (Fig. 3.15A, 3.15C) or subquadrate and medially less sclerotized (Fig. 3.15B); on side view, with one visible pleurite in abdominal segments I-VIII (Figs. 3.14A, 3.14B); pygopodium whitish, translucid and weakly developed (Figs. 3.15A–3.15C).

Length: 1.15–4.05 mm.

Distribution

Cessator is known to occur in Puerto Rico, Hispaniola, Cuba and the Virgin Islands. *Cessator* has species described from Puerto Rico (*Cessator luquillonis* Kazantsev 2009) Cuba (*Cessator parda* (Zayas 1988)) and of Hispaniola, from Dominican Amber (*Cessator brodzinskyi* Ferreira and Ivie 2017). Several more species are known (but currently undescribed) to occur in Hispaniola and Cuba, and one new species is herein described from the Virgin Islands.

Biology

All Leptolycini have been collected in nearly identical situations. Males have been collected in short vegetation by sweeping, in Malaise and Flight Intercept traps, indicating that

these are actually active flying beetles. Larvae have been collected in pitfalls, sifting of leaf litter, Berlese, and pans of Flight Intercept traps, suggesting a high mobility in this life-stage.

Taxonomic Notes

After examination of one of the paratypes of *Nanolycus gnomus* Kazantsev 2013 from Dominican Republic (Kazantsev 2013), we concluded that the species fits all the characteristics of a *Cessator* mentioned above in the differential diagnosis section. Because of this, we here move *Nanolycus gnomus* Kazantsev, 2013 to *Cessator gnomus* (Kazantsev, 2013) **new combination**, rendering *Nanolycus* Kazantsev 2013 a **new junior synonym** of *Cessator* Kazantsev 2009.

***Cessator luquillonis* Kazantsev, 2009**

Figs. 3.4, 3.5A, 3.6A, 3.9A, 3.13B, 3.14B, 3.15B, 3.17A

Cessator luquinollis Kazantsev 2009: 93 figs. 3, 32-43; Ferreira and Ivie 2017:58.

Examined Material

Examined type material. 1: PUERTO RICO: Sierra; de Luquillo 850-900 m; 8-IV-2005; S. Kazantsev leg./ Paratype; Kazantsev det 200 [in red]/ *Cessator*; *luquillonis* sp. n.; S. Kazantsev det. 2009/ WIBF051557 (WIBF).

Material examined in addition to type specimens. Adults (n= 19): **1:** PUERTO RICO: Naguabo; El Yunque Nat. Forest, S Part; La Sabana recr. are 5.6km N of; Rio Blanco at rd. PR191; 18º16.1'N, 65º47.6'W, 510m; 21.vi.-2.vii.2016; Fikáček & Seidel lgt. PR03/ flight

intercept trap in a partly in; a sparse rainforest at the river; bank (NMPC). **2**: PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8183ºW; 18JUNE-8JULY2017, 1033ft; E.L. Spiessberger &; V.S. Ferreira, Malaise #4 (WIBF). 1: PUERTO RICO: El Verde Sta.; 18.3236ºN; 65.8183ºW; 20-23JUNE2017 1033 ft; V.S. Ferreira &; E.L. Spiessberger, FIT 4/ WIBF051525 (WIBF). **1**: PUERTO RICO: El Verde Sta.; 18.3236ºN; 65.8183ºW; 24JUNE2017 1033 ft; V.S. Ferreira &; E.L. Spiessberger, FIT #4 (WIBF). **1**: PUERTO RICO: El Verde Sta.; 18.3218ºN;65.8170ºW; 24JUNE-7JULY2017, 1225 ft; V.S. Ferreira &; E.L. Spiessberger, FIT 6 (WIBF). **1**: PUERTO RICO: 18.3236ºN; 65.8183ºW; 09JULY2017 1033 ft; Ferreira & Spiessberger; near FIT 4, sweeping (WIBF). **1**: PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8183ºW; 273JUNE2017 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3/ WIBF051555 (WIBF). **1**: PUERTO RICO: El Verde Sta.; 18.3230ºN, 65.8283ºW; 26JUNE2017, 1117ft; V.S. Ferreira &; E.L. Spiessberger, FIT 1(WIBF). **1**: PUERTO RICO: El Verde Sta.; 18.3218ºN,65.8270ºW; 20JUNE2017, 1225 ft; V.S. Ferreira &; E.L. Spiessberger, FIT 5 (WIBF). **1**: PUERTO RICO: El Verde Sta.; 18.3218ºN,65.8170ºW; 06JULY2017, 1225 ft; V.S. Ferreira &; E.L. Spiessberger, FIT# 6 (WIBF). **1**: PUERTO RICO: Naguabo; El Yunque Nat. Forest, S Part; 4.9 Km N iof Rio Blanco,; 18º15.8'N, 65º47.3'W, 495m; 24.vi.-2.vii.2016; Fikáček & Seidel lgt. PR11/ flight intercept trap at the margin; of the rainforest in an area with many flowering Etilingera elatior; plants (NMPC). **1**: PUERTO RICO: Ponce, PR-143; B.E. Toro Negro, Mt. Jayuya; 18.1667ºN, 66.5783ºW; 29JUNE2016, 1265 m; Deler, Fikacek & Seidel/ PR19 Sifting/ WIBF051556 (NMPC). **1**: PUERTO RICO: El Verde Sta.; 18.3215ºN, 65.8198ºW; JUNE-JULY2017; Ferreira & Spiessberger (WIBF). **1**: PUERTO RICO: El Verde St.; 18.3215ºN,65.8198ºW;1-4JULY2017,

sweeping; Ferreira & Spiessberger/ WIBF041664 (WIBF). **1**: PUERTO RICO: Rio Grande Mun.; El Verde Research Station; 18º19.376'N 65º48.997ºW; 17Jul2007 sweeping; coll. M. Gimmel (MLGC). **1**: PUERTO RICO: Rio; Grande, El Yunque, Mt.; Britton summit, 541m; 4-12AUG1999 P.W.; Kovarik, FIT (WIBF). **1**: Vista la Sierra; Luquillo Forest; P.R.VIII 9, 1969; H. & A. Howden (CNC).

Larvae (n=9): 1: PUERTO RICO: Arecibo; Bosque Estatal de Cambalache; 18°26.6'N, 66°35.8'W; 70 m 25.vi.2016; Deler, Fikáček & Seidel lgt. PR12/ WIBF 051499 (WIBF). **3**: PUERTO RICO: El Verde Field Station; July 2018; T. Sanchez & K. Noa Reyes [WIBF 041694, WIBF 051497, WIBF 051498] (WIBF). **1**: PUERTO RICO; El Verde Field Station; ridge tops in Mountain; 15 May - 04 Nov 1996; E Nazaro colr; pitfall traps (WIBF). **1**: Puerto Rico: Aguas Buenas; Forest at Aguas Buenas; cave 250m, v: 7-17: 1973; leg S. Peck - Ber #; 265. FM (HD) #73-4, Ber:; 93 Kg., 171 liters (WIBF). **1:** PUERTO RICO: San Germán; Bosque Estatal Maricao, 8.6 km N; of Sabana Grande, 18°8.0'N; 66°59.5'W; 820 m 28.vi.2016; Fikáček & Seidel lgt. PR16 (WIBF). **1:** PUERTO RICO: Guayama; W bank of Lago Carite, 9.9 km N; of Guayama; 18°4.4'N, 66°6.3'W; 550 m 23.vi.2016; Deler,Fikáček & Seidel lgt. PR10 [WIBF 051504] (WIBF). **1:** PUERTO RICO: Arecibo; Bosque Estatal Río Abajo, 1.3 km SWW of the campsite at Cueva de; las Aguas, 18°19.4'N 66°43.0'W; 330m, 27.vi.2016 Fikáček & Seidel lgt. PR14C [WIBF 051505] (WIBF).

Diagnosis of Adult Males

Cessator luquillonis can be distinguished from all other *Cessator* from the Puerto Rican bank by having the head in dorsal and lateral view and the pronotum completely black (Fig. 3.5A) (vs. variable combinations in the other species: head dark brown in *Cessator tortolensis* and *Cessator obrienni*, with the lateral margins in *C. tortolensis* and *C. obrienni* yellow or orange; the pronotum in *C. tortolensis*, *C. obrienni* and *C. crypticus* is yellow or orange); the yellow legs and the bicolored elytra (yellow and brown), the latter with the elytra basal 1/6 yellow (Fig. 3.5A) (vs. legs dark brown in all other species; elytra completely black in *C. crypticus* and only humeral region of *C. tortolensis* yellow); the scutellar shield black, with the posterior margin with a shallow median notch (Fig. 3.5A) (vs. posterior margin of scutellar shield deeply notched in *C. tortolensis* and *C. crypticus*, prong-like; yellow, orange or dark-brown in *C. obrienni* and *C. tortolensis*); the gular sutures confluents, directly touching each other (Fig. 3.6A) (vs. presence of a gular bridge between both sutures in *C. tortolensis* and *C. crypticus*); the bullet shaped genitalia, characterized by the median lobe with seemingly absent parameres, 4x shorter than the phallobase, with the presence of a median ventral sickle shaped structured that is apically acuminate in the median lobe (Fig. 3.9A) (vs. trilobate-like male genitalia in *C. tortolensis* and fusiform with parameres absent in *C. crypticus*).

Length (pronotum + elytra): 2.27–3.11 mm. **Width (across humeri):** 0.53–0.72 mm.

Diagnosis of Larvae

Cessator luquillonis can be easily separated from the other known *Cessator* larvae by its coloration dark brown (Figs. 3.13B–3.15B) (vs. yellow in *C. crypticus* and creamy in *C. tortolensis*), the densely and deeply punctation in the margins of abdominal and thoracic tergites and sternites (Figs. 3.13B, 3.15B) (vs. small and less densely punctuated in *C. crypticus* and smooth in *C. tortolensis*), the relatively longer and apically spatulate body setation (Figs. 3.13B–3.15B) (vs. shorter and not apically strongly spatulate in the other species), and by the abdominal sternites subquadrate, medially less sclerotized, leaving a big portion of the membranous part visible in ventral view of abdomen (Figs. 3.13B–3.15B) (vs. transverse in *C. crypticus*, not leaving any membranous part visible in ventral view of abdomen).

Length: 4.09–4.61 mm.

Distribution. Puerto Rico (Fig. 3.17).

Cessator tortolensis **Ferreira and Ivie new species**

Figs. 3.4, 3.5B, 3.6B, 3.9B, 3.13C, 3.15C, 3.18A

Examined Material

Examined type material. Adults (n=14): Holotype: BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. N. side; Mt. Sage, 1550 ft, steps; 13NOV-10DEC1992, T.R.; Hughes. flt. int. tr. #3 [WIBF002196]**. Paratypes: 3**: BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. N. side; Mt. Sage, 1550 ft, steps; 30OCT-13NOV1992, M.A.; Ivie, flt. inter. tr #3 [WIBF002138, WIBF02137,

WIBF02139]. **4**: BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. N. side; Mt. Sage, 1550 ft, steps; 23-30OCT1992, M.A. &; L. Ivie, flt. in. tr. #3 [WIBF002117, WIBF002114, WIBF002115, WIBF002116]. **3:** BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. N. side; Mt. Sage, 1550 ft, steps; 13NOV-10DEC1992, T.R.; Hughes. flt. int. tr. #3 [WIBF002197, WIBF002244, WIBF002245]. **1**: BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. N. side; Mt. Sage, 1550 ft, steps; 07-25JUL1994, MIvie &S; Buckling flt. int. tr. #3 [WIBF025536]. **1**: BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. S. side; Mt. Sage, 1520 ft. rest; 14DEC-08JAN1993, M. A.; Ivie flt. inter. tr. #4 [WIBF002586]. **1**: BR: VIRGIN IS: Tortola; Mt.SageNat. Pk. N. side; Mt. Sage, 1550 ft. steps; 10DEC-07JAN1993. M. A.; Ivie flt. inter. tr. #3 [WIBF002257].

Larvae (n=2): 2: BR: Virgin Is.: Tortola; Mt. Sage Nat. Park; Sage Mt.; 23 OCT 1993; M.A. & L.L. Ivie; mixed litter (WIBF).

Material examined but not included in the type series. Adults (n= 3). 1: PUERTO RICO: El Verde Sta.; 18.3218ºN, 65.8170ºW; 28-29JUNE2017 1225 ft; V.S. Ferreira &; E.L. Spiessberger, FIT 6/ WIBF051553 (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8183ºW; 27-29JUNE2017 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3 (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3230ºN, 65.8283ºW; 24JUNE2017, 1117ft; V.S. Ferreira &; E.L. Spiessberger, FIT 1/ MTEC023637 (WIBF).

Etymology

This species has been named after the locality of the majority of the collected specimens, Tortola, in the British Virgin Islands

Diagnosis of Adult Males

Cessator tortolensis can be easily recognized from all other *Cessator* from the Puerto Rican bank by having the pronotum distinctly transverse (vs. pronotum not distinctly transverse in the other *Cessator*), the scutellar shield with a deep notch in the posterior median portion, prong-like (Fig. 3.5B) (vs. scutellar shield with a shallow notch in the posterior median portion of all other *Cessator*, not prong-like in *Cessator crypticus*), the very base of the humeral region yellow (Fig. 3.5B) (vs. basal 1/6 of elytra with a different color than the remaining of the structure in *C. luquillonis* and *C. obrienni* and completely unicolored in *C. crypticus*) and the gular sutures not directly touching each other, bearing a gular bridge between both sutures (Fig. 3.6B) (vs. gular sutures confluents, touching each other, in *C. luquillonis* and *C. obrienni*).

Description of Male

General coloration: Head, antennae, legs and elytra brown; pedicel slightly lighter than remaining of antennae (Figs. 3.5B, 3.6B), antennomere XI white, rarely brown; pronotum, lateral margins of head, scutellar shield, humeral region and gular region yellow. Body moderately setose. Head: Antennae densely setose, with the presence of scaliform setae (Fig. 3.5B, 3.6B). Head strongly alveolate (Fig. 3.6B); gular sutures not confluents, connected by the presence of a gular bridge between both sutures (Fig. 3.6B). Thorax: Pronotum strongly transverse, all margins weakly developed, seemingly indistinct, side margins weakly developed, posteriorly flattened (Fig. 3.5B); scutellar shield with a deep notch in the posterior median portion, prong-like, with very acute apices (Fig. 3.5B). Elytra slightly dehiscent, strongly ligulate (Fig. 3.5B); elytral costae weakly visible and developed, with short bristle-like setae throughout elytra (Fig. 3.5B).

Male genitalia trilobate, with phallobase subequal in length with parameres; exposed portion of median lobe 1/4 longer than the sum of phallobase and parameres; phallobase posteriorly round; parameres short, 2.5x shorter than exposed portion of median lobe, apices round; median lobe fusiform, apically round, blunt (Fig. 3.9B).

Length (pronotum + elytra): 1.32–1.83 mm. **Width (across humeri):** 0.36–0.51 mm.

Diagnosis of the Larva

Cessator tortolensis is the only known *Cessator* from the Virgin Islands. The larvae can be readily identified from other Leptolycini larvae by the characteristics presented under the genus description and diagnosis, and from the other known *Cessator* larvae by its unique creamy color (Figs. 3.13C, 3.15C) (vs. dark brown in *C. luquillonis* and yellow in *C. crypticus*) and smoother overall texture (Figs. 3.13C, 3.15C) (vs. moderately to densely punctuate in the other two species).

Length: 1.15 mm.

Distribution

British Virgin Islands (Tortola) and Puerto Rico (Figs. 3.18A).

Note

Despite minor differences in color pattern in the Puerto Rican specimens (one specimen had the antennae completely brown instead of having the antennomere XI white, and the gular region of other specimen was completely brown instead of yellow), these specimens present an identical external and male genitalia morphology when compared with the specimens from

Tortola in the Virgin Islands. Our sampling of specimens from Puerto Rico remains very small, and only two of the three known specimens from the Island could be thoroughly studied (the third specimen have been permanently damaged during the DNA extraction process). Further collection efforts in Puerto Rico using FITs could potentially allow to see more in-depth variations in the Puerto Rican specimens of *C. tortolensis* and the possible establishment of the identification of more variable characters in a longer series of this species.

Cessator obrienni **Ferreira and Ivie new species**

Figs. 3.5C, 3.6C, 3.9C

Examined Material

Type material. Adult male (n=1): Holotype: 1: PUERTO; RICO 8mi; E Mayaguez; II-9-1969/ Collectors L. &; C.W. O'Brien (WIBF).

Etymology

This species is named in honor of Charles W. and Lois B. O'Brien, collectors of the only known specimen of this species.

Diagnosis of Adult Males

Cessator obrienni can be separated from its congenerics from the Puerto Rican bank by possessing the lateral margins of the head, pronotum, scutellar shield and 1/6 of the elytra yellow (Fig. 3.5C) (vs. head and scutellar shield completely black in *C. luquillonis* and *C. crypticus*, and only the very base of the humeral region yellow in *C. tortolensis*), the absence of scaliform setae

in the antennae (Fig. 3.5C, 3.6C) (vs. presence of scaliform setae in all other *Cessator*), the gular sutures confluents, directly touching each other (Fig. 3.6C) (vs. presence of a gular bridge between both sutures in *C. tortolensis* and *C. crypticus*, but shared feature with *C. luquillonis*) and the bullet shaped genitalia, characterized by the median lobe with seemingly absent parameres, 4x longer than the phallobase, with the presence of a median ventral sickle shaped structured that is apically acuminate in the median lobe (shared with *C. luquillonis*) (Fig. 3.9C) (vs. trilobate-like in *C. tortolensis*).

Description of Male

General coloration: Dorsal head, antennae (antennomeres I-X) and legs brown; pedicel slightly lighter than remaining of antennae (Figs. 3.5C, 3.9C), and antennomere XI white; lateral margins of head, pronotum, scutellar shield and ventral portion of the head orange (Fig. 3.5C); elytra bicolored, with basal 1/6 elytra yellow and remaining brown (Fig. 3.5C). Body densely setose. Head: Antennae densely setose, scaliform setae absent (Figs. 3.5C, 3.6C). Head weakly alveolate (Figs. 3.5C, 3.6C); gular sutures confluents, directly touching each other (Fig. 3.6C). Thorax: Pronotum transverse, anterior and posterior margins distinct, side margins weakly developed, posteriorly weakly bisinuated (Fig. 3.5C); scutellar shield posterior margin with shallow median notch (Fig. 3.5C). Elytra slightly dehiscent (Fig. 3.5C); elytral costae distinctly visible, with short decumbent setae throughout the elytra (Fig. 3.5C). Bullet shaped genitalia, elongate phallobase and short median lobe; median lobe with seemingly absent parameres, 4x shorter than phallobase, apically in ventral view bearing sickle-shaped structure which are apically acuminate (Fig. 3.9C).

Length (pronotum + elytra): 2.58 mm. **Width (across humeri):** 0.69 mm.

Immature forms. Unknown.

Distribution

Puerto Rico (Fig. 3.17A).

***Cessator crypticus* new species Ferreira and Ivie**

Figs. 3.4, 3.5D, 3.6D, 3.9D, 3.13A, 3.14A, 3.15A, 3.17A, 3.17B

Examined Material

Examined type material. Adults (n= 2): Holotype: PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8183ºW; 27-29JUNE2017 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3/ WIBF051552 (WIBF). **Paratype:** PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8183ºW; 30JUNE-1JULY2017 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3/ MTEC023638 (WIBF).

Examined material in addition to the type series. Larvae (n=83): 10: PUERTO RICO: El Verde Field Station; July 2018; T. Sanchez & K. Noa Reyes [WIBF 041695, WIBF 041696, WIBF 051500] (WIBF). **1:** PUERTO RICO: El Verde Field Station; 25 June 2017; V. Ferreira &; E.L. Spiessberger [MTEC 023648] (WIBF). **1:** PUERTO RICO: Naguabo; El Yunque Nat. Forest, S part; 5.9 km N of Río Blanco above rd.PR191; 18°16.1'N, 65°48.1'W; 575 m, 21.vi.2016; A. Deler-Hernández lgt. PR04/ sifting of leaf litter; accummulations on the slope in; the rainforest area (WIBF). **1:** PUERTO RICO: Orocovis; Bosque Estatal Toro Negro, sector Doña Juana; 5.6 km N of Villalba; 18°10.6'N 66°29.7'W 810 m; 29.vi.2016; Deler, Fikáček &

Seidel lgt. PR18 (WIBF). **7:** PUERTO RICO: Ciales; Bosque Estatal Tres Picachos; 10-10.1 km N of Villalba, around Hacienda Negrón; 18°12.8-12.9'N 66°30.9-31.1'W; 400-550m 26.vi.2016; Deler, Fikáček & Seidel lgt. PR13b/ sifting of leaf litter in tropical; forest on a slope above river/ sifting of small acummulations of; leaf litter and rotten palm leaves; and fruit in sparse montane; forest at the stream bank (WIBF). **12:** PUERTO RICO: Ciales; Bosque Estatal Tres Picachos; 9.8 km N of Villalba, track above Hacienda Negrón; 18°12.7'N 66°31.2'W 670 m 26.vi.2016; Deler, Fikáček & Seidel lgt. PR13a/ sifting of leaf litter in a stony tropical forest on a slope (WIBF). **1:** PUERTO RICO: Maricao; For. Res., S. side, 535m; 7.3kmN Sabana Grande; 26SEP1987, M.A. Ivie; ex forest litter (WIBF). **6:** PUERTO RICO; El Verde Research Station; ridge tops in forest; 15 MAY - 04 NOV 1996; E. Nazaro colr.; pitfall traps (WIBF). **1:** PUERTO RICO; El Verde FS; 23 June 2017; Berlese; 18.323610º N; 065.818310 W; 1033 ft.; VSF, ELS (WIBF). **43:** Puerto Rico: Aguas Buenas; Forest at Aguas Buenas; cave 250m, v: 7-17: 1973; leg S. Peck - Ber #; 265. FM (HD) #73-4, Ber:; 93 Kg., 171 liters (WIBF).

Etymology

The species name was given due to the intriguing and *cryptic* fact that only two adult specimens of this species are known to the authors, despite the fact that numerous immatures were found in many localities in Puerto Rico.

Diagnosis of Adult Males

Cessator crypticus is readily identifiable from other Cessator by the combination of a head completely black (Figs. 3.5D, 3.6D) (vs. bicolored in *C. obrienni* and *C. tortolensis*), a

yellow pronotum (Fig. 3.5D) (vs. black in *C. luquillonis*; shared with *C. obrienni* and *C. tortolensis*), the unicolored elytra (Fig. 3.5D) (vs. bicolored in all other *Cessator* from the Puerto Rican bank), the presence of a gular bridge between both gular sutures (Fig. 3.6D) (vs. gular sutures confluents, directly touching each other in *C. luquillonis* and *C. obrienni*) and the regular-shaped male genitalia, with parameres absent (Fig. 3.9D) (vs. bullet shaped in *C. luquillonis* and *C. obrienni,* with apparent reduced parameres).

Description of Male

General coloration: Head, antennae, scutellar shield and legs brown; pedicel slightly lighter than remaining of antennae (Figs. 3.5D, 3.6D); pronotum and gular region yellow. Body moderately setose. Head: Antennae densely setose, with the presence of thinner scaliform setae (Fig. 3.5D, 3.6D). Head weakly alveolate (Fig. 3.6D); gular sutures not confluents, connected by the presence of a gular bridge between both sutures (Fig. 3.6D). Thorax: Pronotum moderately transverse, anterior and posterior margins distinct, side margins weakly developed, posteriorly weakly bisinuate (Fig. 3.5D); scutellar shield posterior margin with a moderately deep median notch, prong-like (Fig. 3.5D). Elytra slightly dehiscent, ligulate (Fig. 3.5D); elytral costae more visible in the basal half, fading towards apex, with short bristle-like setae throughout elytra (Fig. 3.5D). Male genitalia elongate, fusiform; phallobase and median lobe subequal in length, parameres absent; median lobe apically round, blunt (Fig. 3.9D).

Length (pronotum + elytra): 2 mm. **Width (across humeri):** 0.59 mm.

Diagnosis of the Larva

See comparative diagnosis under *C. luquillonis*.

Length: 1.56–4.05 mm.

Distribution

Puerto Rico (Figs. 3.17A and 17B).

A Key to the Adult Male *Cessator* of the Puerto Rican Bank

1. Pronotum and head when viewed dorsally black (Fig. 3.5A); legs yellow (Fig. 3.5A) …***Cessator luquillonis*** **Kazantsev, 2009**

1.' Pronotum and head with a different color combination; legs brown…2

2. Elytra unicolored, dark brown (Fig. 3.5D)…***Cessator crypticus*** **new species**

2.' Elytra bicolored, sometimes only the base of the humeri region have a different color…3

3. Scutellar shield with a deep notch in the posterior median portion, prong-like; pronotum remarkably transverse (Fig. 3.5B); gular sutures not directly touching each other, with the presence of a gular bridge between both sutures (Fig. 3.6B)...***Cessator tortolensis*** **new species**

3.' Scutellar shield with a shallow notch in the posterior median portion (Fig. 3.5C); the gular sutures confluents, directly touching each other (Fig. 3.6C)…***Cessator obrienni*** **new species**

Dracolycus **Ferreira and Ivie new genus**

Figs. 3.5E–3.5F, 3.6E–3.6F, 3.9E–3.9F, 3.18B

Differential Diagnosis of Adult Males

Dracolycus can be readily identified from all other Leptolycini by the combination of the following characters: the filiform, dorsoventrally compressed antennae (Figs. 3.5E–3.5F) (vs. variable in other Leptolycini: tubular and not compressed in *Cessator*; flabellate, filiform and subserrate and strongly compressed in *Leptolycus*; filiform and moderately compressed in *Tainopteron*), with relatively wide antennomeres IV–XI (Figs. 3.5E–3.5F) (vs. narrowed in most Leptolycini), bearing short decumbent setae (vs. variable across the Leptolycini: with abundant decumbent setae in *Cessator*, *Dominopteron* and some *Leptolycus*; bearing long erect bristle-like setae in some *Leptolycus* and *Tainopteron*), the absence of scaliform setae (vs. presence of scaliform setae in some *Leptolycus* and *Cessator*), and the pedicel and antennomere III subequal in size (Figs. 3.5E–3.5F) (vs. pedicel much smaller than antennomere III in *Dominopteron* and *Cessator*). *Dracolycus* also possesses a pronotum that is as long as wide, with strongly developed margins (Figs. 3.5E–3.5F) (vs. pronotum shaped variable in other Leptolycini: as long as wide in most *Leptolycus*, with overall indistinct margins in this genus; as long as wide in *Dominopteron*, with strongly distinct margins; transverse and either imarginate or weakly developed in *Cessator* and *Tainopteron*), and the presence of a strongly visible median longitudinal carina (Figs. 3.5E–3.5F) (vs. no visible carina in other Leptolycini). The new genus is also unique among the other Leptolycini by possessing a cordiform scutellar shield (Fig. 3.5E–3.5F) (vs. subquadrate or

rectangular in other Leptolycini), a developed elytra, covering or surpassing the abdomen tip (Figs. 3.5E–3.5F) (vs. weakly developed in most genera, normally strongly dehiscent, sometimes ligulate in other Leptolycini, usually leaving part of the abdomen visible), smooth textured, with no apparent cells or reticulations other than the two longitudinal costae in each elytron (Fig. 3.5E–3.5F) (vs. variable across the other Leptolycini, but always presenting cells or reticulations), and a sword-like genitalia, with the exposed portion of the median lobe twice the length of parameres and phallobase (Fig. 3.9E–3.9F) (vs. highly variable in other Leptolycini, but not as described for *Dracolycus*).

Etymology

The name is an allusion to the author's hypothesis that the adult females/larvae of this new taxon (*Dracolycus* sp. 1 and sp 2) resembles the shape of a dragon or a serpent, in particular the ones depicted in popular Japanese culture. Therefore, *Draco*-, from Ancient Greek δράκων (drákōn), meaning serpent, dragon, and *Lycus*, in allusion to the type genus of the family Lycidae. Gender masculine.

Type species. *Dracolycus chupacabra* Ferreira and Ivie.

Description of Adult Males

General dorsal coloration and pubescence ranging from brown to yellow, antennomere XI yellow (Fig. 3.5E–3.5F). Body densely setose, with short, decumbent setation throughout.

Head: as long as wide, widest at eyes, posteriorly partially covered by pronotum, hypognathous, frons strongly or weakly bulgy (Figs. 3.6E–3.6F). Eyes hemispherical, projecting

anterolaterally in dorsal view, coarsely granulate (Figs. 3.6E–3.6F). **Mouthparts:** Maxillary palp four-segmented, bearing setae as long as the palp; terminal palpomeres acuminate. Labial palps and mandibles seemingly absent. Posterior margin of epistoma clearly emarginate; labrum distinct from clypeus, transverse and small, densely setose. Gular sutures confluents, directly touching each other, gular sutural bridge absent (Figs. 3.6E–3.6F). **Antennae:** filiform, densely setose, dorsoventrally flattened from IV–XI, inserted in gibbous prominence at anterior distal portion of head, 11-segmented; in resting position reaching basal third or half of elytra (Figs. 3.5E–3.5F); scape pyriform, approximated at base, subconical; pedicel and antennomere III short, subequal in size and length, pedicel pyriform, shortened; antennomere 4–5x longer than precedent; antennomere V 4/5 of size of precedent; antennomeres V–X subequal in size and shape, slightly decreasing in length towards apex, XI round apically (Figs. 3.5E–3.5F).

Thorax: Prothorax: Pronotum as long as wide, trapezoidal (Figs. 3.5E–3.5F); margins distinct and developed, side margins slightly arcuate, posteriorly subtly sinuated; angles round, posteriorly slightly acute; pronotum with a longitudinal median carina strongly visible; inner area adjacent to side margins slightly concave (Figs. 3.5E–3.5F). Hypomeron slightly concave. Prosternum Y-shaped, anteriorly developed extending over gular region or weakly developed (Figs. 3.6E–3.6F); posteriorly strongly or moderately acuminate. **Mesothorax:** Mesospiracles not visible in the examined specimens. Mesoventrite trapezoidal. Scutellar shield cordiform, protruded (Figs. 3.5E–3.5F). **Metathorax:** Metaventrite convex, posterolateral angles acute; metadiscrimen complete. **Elytra:** Ranging from slightly to distinctly dehiscent (Figs. 3.5E–3.5F), strongly developed, slightly ligulate or expanded apically, ca. 5x longer than pronotum;

smooth textured, with small, seemingly absent circular weakly developed cells (Figs. 3.5E–3.5F); bearing two elytral costae fused apically; secondary costae absent (Figs. 3.5E–3.5F). **Legs:** slender, elongate, dorsoventrally strongly flattened; protrochanthins slender and exposed (Figs. 3.5E–3.5F); pro- and mesocoxae conical, obliquely positioned; procoxae contiguous, metacoxae transverse, with posterior face weakly excavated. Trochanters subtriangular, not tubular. Femora parallel sided (Figs. 3.5E–3.5F). Tibiae clavate, slender in basal half, elongate; tibiae slightly longer than femora or subequal in length. Tarsal formula 5-5-5, all tarsomeres narrowed.

Abdomen of males with eight visible ventrites; ventrite VII medially apically notched; ventrite VIII elongate, blade like, apically acuminate. Male genitalia typical elateriformia: trilobate, symmetrical (Figs. 3.9E–3.9F); phallobase posteriorly round, median suture absent (Figs. 3.9E–3.9F); parameres short, apically round, co-adapted with median lobe; median lobe elongate, exposed portion ranging from 2–2.5x the length of parameres+phallobase, apex acuminate or round (Figs. 3.9E–3.9F).

Distribution

Specimens are known from Puerto Rico, from the El Verde Field Station (see descriptions below). One unnamed fossil specimen (apparently the same species as *Dracolycus marshalli*) is known from Dominican Amber, depicted in Wu (1997:179). Despite several attempts of contacting Wu regarding the amber specimen location (listed in his original publication as belonging to his private collection), but we were not able to locate and communicate with Wu.

Biology

The only known male specimens of this genus were collected using Malaise traps. The specimens tentatively associated with the immature forms of *Dracolycus* have been collected by sifting, Winkler and Berlese in moist leaf litter and in Flight Intercept Traps (FIT).

Larvae Tentatively Associated with *Dracolycus*

Based in our extensive sampling of Leptolycini specimens from the Puerto Rican bank, we were able to provide direct and indirect associations of the immature and their correspondent adults of two out of four genera known genera (*Cessator* and *Leptolycus*) of the region, providing the first descriptions and diagnosis of these (see association DNA and biogeography-based associations in the beginning of the results section and diagnosis and descriptions under each specific genus). To the moment, an association between adults and immature forms of *Dracolycus* and *Tainopteron* remains to be provided.

Based in our study of the immature forms of *Cessator* and *Leptolycus*, it is reasonable to extrapolate that within the Leptolycini, their immature and respective adult forms possess an overall similar size (length and width). The specimens that we are provisionally treating as *Dracolycus* are relatively large specimens, with an elongate and slender body, that have roughly the same size expected of the potential immature forms of *Dracolycus*. On the other hand, *Tainopteron* are ca. 10x smaller than *Dracolycus*, possessing a compact body type and miniaturized overall structures, and we would expect that the correspondent larva for the genus would have a more or less similar size that its adult.

We are very confident that the larvae we are tentatively treating as the immature form of *Dracolycus* is a Lycidae of the tribe Leptolycini, which is supported by their unmistakable similarity with the herein described larvae of other genera in this tribe. However, knowing of the limitations of our logical inference, and due to the fact that we were not able to provide any direct association of these specimens with their adult forms, we decided to briefly diagnose the two different larva types that we found without providing any specific names for them, with the goal of exposing and highlighting the existence of this type of larva in the formal published Lycidae literature. In addition to providing high-quality photographs and brief diagnosis of these larval type, we provided and generated COI sequences (MTEC 023640, WIBF 041511, WIBF 051523), with the hopes that in the near future a definitive test of our hypotheses can be provided. The diagnosis and brief descriptions for these larval types are provided after the descriptions of the two adult males of *Dracolycus*.

Dracolycus chupacabra **Ferreira and Ivie new species**

Figs. 3.5E, 3.6E, 3.9E, 3.18B

Examined Material

Examined Type material. Adults (n=1): Holotype: 1: PUERTO RICO: El Verde Sta.; 18.3236ºN; 65.8183ºW; 18JUNE-8JULY2017, 1033 ft; E.L. Spiessberger &; V.S. Ferreira Malaise#4/ WIBF041538 (WIBF).

Etymology

The species is named after the famous Chupacabra (‘goat-sucker’) urban legend, which originated in Puerto Rico.

Diagnosis of Adult Males

Dracolycus chupacabra can be easily separated from *Dracolycus marshalli* by its brown pronotum (Fig. 3.5E) (vs. pronotum yellow in *D. marshalli*), the strongly dehiscent and slenderer elytra (Fig. 3.5E) (vs. elytra weakly dehiscent, expanded apically in *D. marshalli*), the fusion of the elytral costae similar throughout, not expanded apically (Fig. 3.5E) (vs. elytra costae fusion expanded apically in *D. marshalli*) and by the apex of the median lobe of the male genitalia lanceolate (Fig. 3.9E) (vs. apex of median lobe round in *D. marshalli*).

Description of Male

General coloration: Head, antennae, pronotum and elytra brown (Fig. 3.5E); scutellar shield, antennomere XI, coxae, trochanters, apical third of pro- and mesofemora and metatibiae (with exception of middle third which is brown) and abdomen yellow. Head: frons weakly developed, not bulgy (Fig. 3.6E). Maxillary palps approximated at base, terminal maxillary palpomere distinctly acuminate. Prosternum anteriorly developed, extending over gular region (Fig. 3.5E); posteriorly moderately acuminate (Fig. 3.5E). Metanepisternum crescent shaped throughout. Elytra dehiscent, ligulate (Fig. 3.5E); fusion of the elytral costae similar throughout, not expanded apically (Fig. 3.5E). Male genitalia: median lobe lanceolate, apically acuminate (Fig. 3.9E); exposed portion of median lobe 2x longer than phallobase+parameres (Fig. 3.9E).

Length (pronotum + elytra): 4.88 mm. **Width (across humeri):** 0.92 mm.

Distribution

Puerto Rico, El Verde Field Station (Fig. 3.18B).

Dracolycus marshalli **Ferreira and Ivie new species**

Figs. 3.5F, 3.6F, 3.9F, 3.18B

Examined Material

Type material. Adults (n=1): Holotype: 1: P.R.: El Verde; malaise trap; in forest; 1-2. ii. 1989; S.A. Marshall/ WIBF051558 (DEBU).

Etymology

This species is named in honor of Steve A. Marshall, collector of this species.

Diagnosis of Adult Males

See diagnosis under *Dracolycus chupacabra*.

Description of Male

General coloration: Head, antennae, elytra, antennae and legs (with exception of the very apex of femora and base of tibiae yellow) brown (Fig. 3.5F); pronotum, scutellar shield, antennomere XI, coxae, trochanters, thorax and middle region of ventrites yellow. Head: frons strongly bulgy. Maxillary palps separated at base, palpomeres terminal maxillary palpomere acuminate, apex not strongly acute. Prosternum anteriorly weakly developed, posteriorly

strongly acuminate. Metanepisternum crescent shaped, basal half anteriorly blunt, with outer margin in ventral view abruptly acute, strongly acuminate. Elytra only slightly dehiscent, expanding towards apex (Fig. 3.5F); fusion of the elytral costae expanding towards apex, widest in the elytral 3/4 (Fig. 3.5F). Male genitalia: median lobe lanceolate, apex round; exposed portion of median lobe 2.5x longer than phallobase+parameres (Fig. 3.9F).

Length (pronotum + elytra): 6.64 mm. **Width (across humeri):** 1.12 mm.

Distribution

Puerto Rico, El Verde Field Station (Fig. 3.18B).

A Key to the Adult Males of *Dracolycus* of the Puerto Rican Bank

1. Pronotum and elytra dark brown; fusion of elytral costae similar throughout (Fig. 3.5E); elytra strongly dehiscent, slendered, not expanded apically (Fig. 3.5E)… ***Dracolycus chupacabra*** **Ferreira and Ivie new species**

1.' Pronotum yellow, elytra dark brown (Fig. 3.5E); fusion of elytral costae distinctly expanded in mid elytra; elytra weakly dehiscent, expanded apically (Fig. 3.5E)… ***Dracolycus marshalli*** **Ferreira and Ivie new species**

Larvae tentatively associated with *Dracolycus*

Figs. 3.4, 3.13D–3.13F, 3.14C–E, 3.15D–3.15F, 3.18B

Description of Larvae

Body parallel-sided, dorsoventrally flattened, ranging from pale yellow to dark brown (Figs. 3.13D–3.13F, 3.14C–3.14E, 3.15D–3.15F), legs pale yellow (Figs. 3.13D–3.13F). Membranes color matching overall color of the body. Whole body strongly sclerotized and compact, dorsally presenting two longitudinal median parallel rows of punctations throughout (Figs. 3.13D–3.13F, 3.14C–E, 3.15D–15F), punctations depth and arrangement variable in the different species; presence of short, sparsely distributed trichoid setation in tergites (Figs. 3.13D–3.13F, 3.14C–3.14E). **Head** hypognathous, transverse, posteriorly as wide as prothorax (Figs. 3.13D–3.13F), anteriorly strongly wide (Fig. 3.13D–3.13F); nasale not angulate, bearing a pair of weakly developed and short setae-like projections, one on each side of nasale (Fig. 3.13D–3.13F). Antennae 2-segmented, inserted in a lateralized anterior portion of head, strongly stalked (Figs. 3.13D–3.13F); antennomere I encapsulating the basal half of the second one; antennomere II apically round, plug-like. Eyes present, black, lateralized, positioned anteriad to antennal insertions (Figs. 3.13D–3.13F). Mandibles symmetrical, ensiform, weakly to moderately developed, approximated at base (Figs. 3.14C–3.14E). Mala transverse. Maxillary palpi slender, digitiform, 4-segmented. Labial palpi minute, seemingly 2-segmented; prementum entire. Ventral plate medially divided, lateral and anterior angles strongly acute, posteriorly medially angulate, round or shallowly notched. **Thorax** distinctly longer than wide, elongate and strongly narrowed (Figs. 3.13D–3.13F), marginate, angles round, subparallel (Figs. 3.14C–3.14E). Prosternum triangular, elongate, apically widest (Figs. 3.14C–3.14E), anterior angles moderately acute, posterior angle round, blunt or acute (Figs. 3.14C–3.14E). Meso- and metasternum

heptagonal, elongate, anterior and posterior angles acute (Figs. 3.14C–3.14E). Spiracle in mesothorax anteriorly located on top of mesepisternum (Fig. 3.14C–3.14E). Episterna and epimera strongly developed; episterna shorter, half the size of epimeron, widest at base (Figs. 3.14C–3.14E); epimera slender throughout (Figs. 3.14C–3.14E). Legs robust, moderately long, tarsungulus distally acute (Figs. 3.15D–3.15F). Abdomen tapering towards apex (Figs. 3.15D–3.15F); sternites elongate, longer than wide and transverse. Spiracle plate (upper pleurite) strongly developed and elongate (Fig. 3.14C–3.14E); lower pleurite strongly reduced, lobed, a third of the length and half the width of the upper, on side view located in posterior ventral portion of upper pleurite, in ventral view of abdomen, located posterolaterad of abdominal sternites (Figs. 3.14C–3.14E). Pygopodium round, whitish and translucid, weakly developed (Figs. 3.15D–3.15F).

Length: 3.44–4.21 mm.

***Dracolycus* sp. 1**

Figs. 3.13D, 3.14C, 3.15D

Examined Material

Larvae (n= 22). 1: PUERTO RICO: El Verde Field Station; Mixed forest, 500m; M500G; July 10, 2017; J. Nelsen and N. Scavo colrs./ M500g/ July 10; 17 (WIBF). **1:** PUERTO RICO: El Verde Field Station; Mixed forest, 1000m; MFT1000G; June 26, 2017; J. Nelsen and N. Scavo colrs./ 06.26.2017/ MFT 1000G [MTEC 023640] (WIBF). **1:** PUERTO RICO: El

Verde Sta.; 18.3236ºN,65.8183ºW; 1JUL2017 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3 [MTEC 023642] (WIBF). **1:** PUERTO RICO: Guayama; W bank of Lago Carite, 9.9 km N; of Guayama; 18°4.4'N, 66°6.3'W; 550 m; 23.vi.2016; Deler,Fikáček & Seidel lgt. PR10 [WIBF 051523] (WIBF). **4:** PUERTO RICO: San Germán; Bosque Estatal Maricao, 8.6 km N of Sabana Grande; 18°8.0'N 66°59.5'W; 820 m 28.vi.2016; Fikáček & Seidel lgt. PR16 (WIBF). **14:** PUERTO RICO; El Verde Research Station; ridge tops in forest; 15 MAY - 04 NOV 1996; E. Nazaro colr.; pitfall traps (WIBF).

Differential Diagnosis

Dracolycus larva sp 1 can be separated from *Dracolycus* larva sp 2 by the antennal insertion projections not strongly stalked (Fig. 3.13D, 3.14C) (vs. strongly stalked in *Dracolycus* sp. 2), the two dorsal longitudinal parallel rows of punctations distinctly strongly impressed and demarcated throughout (Fig. 3.13D) (vs. not strongly impressed in *Dracolycus* sp. 2), which are distinctly connected apically by a transversal row in the thorax (Fig. 3.13D) (vs. not distinctly *Dracolycus* sp. 2), by possessing the apex of the posterior portion of ventral plate of the head medially acuminate and round (Fig. 3.15D) (vs. posterior portion of ventral plate of the head notched apically in *Dracolycus* sp. 2), and by the yellow coloration (Fig. 3.15D) (vs. pale yellow or brown in *Dracolycus* sp. 2).

Length: 3.69 mm.

***Dracolycus* sp. 2**

Figs. 3.13E–3.13F, 3.14D–3.14E, 3.15E–3.15F

Examined Material

Yellow larvae (n= 10). 1: PUERTO RICO: Arecibo; Bosque Estatal Río Abajo, 1.3 km SWW of the campsite at Cueva de las Aguas, 18°19.4'N; 66°43.0'W; 330m, 27.vi.2016; Fikáček & Seidel lgt./ sifting of leaf litter and mosses; on trunks and stones in sparse; lowland forest on limestone bedrock/ side pools of a stony stream with many decaying leaves (WIBF). **1:** M400J [WIBF 041511] (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3230ºN,65.8183ºW; JULY 2017, 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3 [MTEC 023641] (WIBF). **1:** Puerto Rico, El Verde Field Station; 22 Jun-2017; leaf litter; VSF, ELS [WIBF 051502] (WIBF). **1:** Puerto Rico: Aguas Buenas; Forest at Aguas Buenas; cave 250m, v: 7-17: 1973; leg S. Peck - Ber #; 265. FM (HD) #73-4, Ber:; 93 Kg., 171 liters (WIBF). **5:** PUERTO RICO; El Verde Research Station; ridge tops in forest; 15 MAY - 04 NOV 1996; E. Nazaro colr.; pitfall traps (WIBF).

Grey larvae (n= 4). 1: PUERTO RICO: Guayama; W bank of Lago Carite, 9.9 km N; of Guayama 18°4.4'N, 66°6.3'W; 550 m; 23.vi.2016; Deler,Fikáček & Seidel lgt. PR10 [WIBF 051522] (WIBF). **1:** PUERTO RICO: Ciales; Bosque Estatal Tres Picachos; 10-10.1 km N of Villalba, around Hacienda Negrón; 18°12.8-12.9'N 66°30.9-31.1'W; 400-550m; 26.vi.2016; Deler, Fikáček & Seidel lgt. PR13b (WIBF). **1:** PUERTO RICO: Río Grande; El Yunque Nat. Forest, N part; 9.45 km SE of Río Grande at rd. PR-191; 18°18.6'N, 65°46.7'W; 595 m,

22.vi.2016; Deler, Fikáček & Seidel PR07/ sifting of small accummulations; of moist leaf litter in a high; sparse rainforest at the bank of; a small stony river [WIBF 051501] (WIBF). **1:** PUERTO RICO: El Verde Field Station; July 2018; T. Sanchez & K. Noa Reyes (WIBF).

Differential Diagnosis

See diagnosis under *Dracolycus* sp. 1.

Length: 3.44–4.21 mm.

***Leptolycus* Leng and Mutchler, 1922**

Figs. 4, 7A–7H, 8A-8H, 9H–9M, 10A–10F, 11A–11F, 12A–12F, 16A–16E, 19A, 20

Leptolycus Leng and Mutchler, 1922: 430; Kleine 1933: 18; Blackwelder 1945: 343; Bocak and Bocakova 1990: 639; Bocak 2001: 204; Bocak and Bocakova 2008: 714; Kazantsev 2009: 88, 91.

Leptolycus (*Baholycus*) Bocak, 2001: 206; Kazantsev 2009: 95. **New junior synonym**.

Type species. *Leptolycus heterocornis* Leng and Mutchler, 1922 (by monotypy)

Differential Diagnosis of Adult Males

Leptolycus is one of the more easily recognizable Lycidae in the New World. The genus can be easily recognized among other Lycidae by the following combination of characters: the head longer than wide, widest at middle where the eyes are positioned (Figs. 73.A–3.7H) (vs. variable in other Leptolycini, but not as distinct as in Leptolycus), the pedicel and antennomere III subequal in size (Figs. 3.7A–3.7H) (vs. pedicel much smaller than antennomere III in

Dominopteron and *Cessator*) and the pronotum as long as wide, distinctly constricted medially, with side margins indistinct, seemingly absent (Figs. 3.7A–3.7H) (vs. pronotum shaped variable in other Leptolycini: as long as wide in *Dracolycus* and *Dominopteron*, with margins distinctly visible and not constricted medially; transverse and either imarginate or weakly developed in *Cessator* and *Tainopteron*). The antennae in *Leptolycus* is quite variable in the different species (Figs. 7A–7H), surpassing mid-elytra when in resting position in most species, ranging from filiform (in *L. heterocornis* with the inner margins irregularly shaped, almost crenulate), subserrate (in *L. puellus*) or flabellate, possessing either short, decumbent setae, bristle-like setae or a combination of short decumbent setae and scaliform cells.

Leptolycus also have the elytra remarkably dehiscent and ligulate, tapered towards apex, always exposing part of the abdomen and the membranous wings underneath (Figs. 3.7A–3.7H) (vs. variable in the other Leptolycini, usually not strongly dehiscent, exposed portions of abdomen and wings not as in *Leptolycus*), the elytra with a smooth texture, with cells weakly developed or seemingly absent (Figs. 3.7A–3.7H) (vs. strongly developed cells in *Dominopteron* and *Electropteron*), and very long and slender legs with the metatrochanters distinctly elongate and tubular (vs. variable in other Leptolycini, metatrochanters never tubular nor elongate). The male genitalia is strongly simplified and highly undifferentiated throughout the different species in the genus, characterized by a lanceolate median lobe, apically acuminate, and by the absence of parameres (Figs. 3.9H–3.9M), with the median lobe 0.5–2x the length of phallobase (vs. variable in other Leptolycini: regular trilobate shape in *Dominopteron*, *Tainopteron* and some

Cessator; *C. crypticus* have absent parameres whilst *C. obrienni* and *C. luquillonis* have seemingly absent parameres).

Differential Diagnosis of Larvae

Leptolycus larvae can be distinguished from the other two Leptolycini genera from the Puerto Rican bank by the long and wide head, subequal or 2/3 the size of the pronotum (Figs. 3.11A–3.11F) (vs. head ca. half the size of the pronotum in *Cessator* and strongly narrow in *Dracolycus*), the absence of a median longitudinal line in dorsal and ventral view (Figs. 3.11A–3.11F, 3.12A–3.12F) (vs. presence of a median longitudinal line in *Cessator*), the strongly alveolate and glabrous body (Figs. 3.11A–3.11F, 3.12A–3.12F) (vs. non alveolate body in *Cessator* and *Dracolycus*; body possessing long erect setae in *Cessator*) and the subpentagonal shape of the meso- and metasternum (Figs. 3.12A–3.12F) (vs. subcircular and elongate in *Cessator*, kite-like, heptagonal in *Dracolycus*).

Description of Larvae

Body subparallel, dorsoventrally flattened, ranging from creamy, to black or dark brown (Figs. 3.10A–3.10F); metathorax entirely or partially yellow or black; tergites IV-VI variable in color, entire black, creamy or partially yellow (Figs. 3.10A–3.10F). Membranes light brown. Whole body weakly sclerotized, strongly alveolate (Figs. 3.10A–3.10F). **Head** hypognathous, transverse, as wide or wider than prothorax, nasale apically bisinuate or straight (Figs. 3.10A–3.10F). Antennae 2-segmented, inserted in lateralized anterior portion of head, moderately to distinctly stalked (Figs. 3.10A–3.10F); basal antennomere ring-like, very short, up to 6x shorter

than antennomere II; apical antennomere apically bulbous. Eyes present, black, lateralized, positioned anteriad to antennal insertions (Figs. 3.10A–3.10F). Mandibles symmetrical, falciform, inner margin sharpen, ranging from small to and strongly developed (Figs. 3.11A–3.11F), approximated at base. Mala transverse. Maxillary palpi slender, digitiform, 4-segmented. Labial palpi minute, seemingly 2-segmented or absent; prementum entire, not medially divided. Ventral plate entire, lateral and anterior angles strongly to moderately acute, posteriorly round (Figs. 3.11A–3.11F). **Thorax** shape variable: pro-, meso- and metanotum ranging from square to rectangular, moderately to distinctly transverse (Figs. 3.11A–3.11F). Prosternum triangular, posteriorly round (Figs. 3.13A–3.13F). Meso- and metasternum subpentagonal (Figs. 3.13A–3.13F). Spiracle in mesothorax anteriorly located on top of mesepisternum (Figs. 3.11A–3.11F). Episterna and epimera strongly developed; episterna widest at base, near pleura, epimera slender throughout (Figs. 3.13A–3.13F). Legs robust, moderately long, tarsungulus distally acute (Figs. 3.10A–3.10F). **Abdomen** tapering towards apex, slightly telescoped (Figs. 3.13A–3.13F), with two pleurites from abdominal segments I-VIII (Figs. 3.13A–3.13F), pygopodium whithish, translucid and strongly developed (Figs. 3.13A–3.13F).

Differential Diagnosis of Extreme Paedomorphic Female

See diagnosis under *Leptolycus viensis*.

Distribution

Cuba, Hispaniola and the Puerto Rican Bank (Figs. 3.19A, 3.20A, 3.20B).

Biology

Similar to *Cessator* and *Dracolycus*, males have been collected in short vegetation by sweeping, in Malaise and Flight Intercept traps, indicating that these are actually active flying beetles. Larvae were collected in pitfalls, sifting on leaf litter, Berlese, and pans of Flight Intercept traps, suggesting a high mobility in this life-stage. Adult females were collected in the same conditions as the larvae.

Note on the Interspecific Variations of *Leptolycus*

After the examination and study of several type specimens of Hispaniolan species placed in *Baholycus* (a revision of *Leptolycus* is in preparation by the authors) and the examination of the paratype of *L. puellus* from Puerto Rico, we concluded that all of these taxa fit the characteristics mentioned above for *Leptolycus strictu sensu*, with the only variations being in the shape of the antennae (mentioned as flabellate in *Baholycus* and *L. puellus*, but truly subserrate in the latter) and the presence of scaliform setae and the mammiform tubercles in the pronotum of some of the Hispaniolan *Baholycus* specimens.

We have identified intrageneric variations in the antennae shape, type of setation, coloration and even in the male genitalia of several other Leptolycini genera, which supports our statement above that the variation in the antennae and the pronotal mammiform tubercles in *Baholycus* are simply part of the intrageneric variation within *Leptolycus*. In *Cessator*, for example, whilst most specimens from the Puerto Rican bank have scaliform setae in the antennae, *C. crypticus* lacks this feature (Fig. 3.6D), and some of the specimens have the male

genitalia with a phallobase several times longer than the median lobe (Figs. 3.9A, 3.9C) (*C. obrienni* and *C. luquillonis*) whilst other present the median lobe and the phallobase similar in shape and length (Fig. 3.9D) (*C. crypticus*). The newly described *Dracolycus* have one of the species with the presence of mammiform tubercles in the pronotum (*D. chupacabra*), whilst the other species does not have these structures (*D. marshalli*). In the *Leptolycus* of the Puerto Rican bank, there is big variation in color patterns of pronota, thorax and antennae shapes, in both adult males and their immature forms (see detailed discussion under *L. heterocornis*).

Even leaving the taxa originally described in *Baholycus* from Hispaniola out of our examples, there is great variation in the antennae shape just in the Puerto Rican bank *Leptolycus*: *L. heterocornis* possesses a filiform antennae, with the inner margins crenulate (Fig. 3.7E–3.7H), whilst *L. viensis*, and *L. flavicollis* possess their antennae parallel-sided with no or only weakly crenulated (Figs. 3.7A, 3.7B), *L. falsoheterocornis* have a tubular antenna and *L. puellus* have a subserrate antennae (Figs. 3.7C, 3.7D, respectively); all mentioned species have bristle-like setation on their antennae, with the exception of *L. puellus*, which possesses a short decumbent setation throughout. On the other hand, all *Leptolycus* and *Baholycus* possess similar genitalia (see differential diagnosis section above in *Leptolycus*).

Therefore, to allow the existence of *Baholycus* as a separate subgenus in the *Leptolycus* we would have to describe a new subgenus for each of the variations found in the shape of the antennae and pronotum in the other different genera, for which we are also considering them to be part of the intrageneric variation of these genera. Therefore, we synonymize the subgenus *Baholycus* Bocak, 2001 **new junior synonym** with *Leptolycus* Leng and Mutchler, 1922.

Leptolycus heterocornis **Leng and Mutchler, 1922**

Figs. 3.4, 3.7E–3.7H, 3.8E–3.8H, 3.9L–3.9N, 3.10A–3.10D, 3.11A–3.11D, 3.12A–3.12D, 3.20A

Leptolycus heterocornis Leng and Mutchler, 1922: 430 fig.12 (in part, male of Leng and Mutchler); Kleine 1933: 18; Blackwelder 1945: 343.

Leptolycus heterocornis var. *flavicollis* Leng and Mutchler, 1922:430 (in part); Blackwelder 1945: 343; Kazantsev 2009: 88.

Leptolycus (*Leptolycus*) *heterocornis;* Kazantsev 2009: 89, 91 figs. 1, 4-17.

Examined Material

Examined type material (n=2). Holotype: 1: Aibonito, Porto Rico/ July 14-17, 1914/H. G. Barber/ Holotype/ Am. Mus. Nat. Hist./ Dept. Zool./ No. 24525 (AMNH) [Photography]. **Paratype:** 1: Caveym P. R.; May30, 31, 1915/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Zool.; No. 24528/ Paratype; 61029; USNM/ Leptolycus; heterocornis; Leng & Mutchler; Paratype (NMNH).

Material examined in addition to type specimens. Adults (n=34). Color morph 1: 3: PUERTO RICO; GuilarteFor. Res.; Hwy.131&158, July; 23, 1979LB.O'Brien (WIBF). **4:** PUERTO RICO; GuilarteFor. Res.; Hwy. 131&158, July; 23, 1979GBMarshall (WIBF). **1:** PUERTO RICO, Hwy.; 120, K13H8, Maricao; For. Res., July 26,; 1979 G.B. Marshall (WIBF). **1:** PUERTO RICO, Carib.; N.F., ElToroNegroD.; K19H9, Hwy. 143, July; 22. 1979GB. Marshall (WIBF). **2:** ToroNegro; PuertoRico; VII.1977 (NMNH). **1:** PUERTO RICO: El Verde

St.; 18.3218ºN, 65.8270ºW; 05JULY2017, 1225 ft; Ferreira & Spiessberger; near FIT#5, sweeping/ WIBF 051532 (WIBF). **1:** Insular Forest; Maricao, P.R.; III-29-1947/ J. A. Ramos; Collector (WIBF). **1:** Adjuntas, P.R.; June 8-13, 1915 (AMNH). **1:** PUERTO; Rico 8mi; E Mayaguez; II-9-1969/ Collectors: L&; C.W.O'Brien (WIBF). **1:** Puerto Rico, Carib.; N.F., ElToroNegroD.,; Hwy.143, K18H6, 7-;22-1979CW. O'Brien (WIBF). **1:** PUERTO RICO; GuajatacaFor.Res.; July 27, 1979; C.W.O'Brien (WIBF). **1:** PUERTO RICO. Hwy.; 120. K13H8, Maricao; For.Res., July25,; 1979 L.B. O'Brien/ WIBF 051541 (WIBF). **1:** Maricao Forest; 2-3,000 ft. P.R.; May 30-June 2, '38; Darlington (MCZ). **1:** Acc # 203-47; Toro Negro, P.R.; Nov. 14, 1947 (UNIVERSITY OF PR). **1:** slip says; Sandos [illegible]; #4845; vial label; 13 II 669/ Villalba PR; 26. Oct. 33; RGOakley/ Unknown Host; I.G. Finca; Villalba, P.R.; Cp;;/ 26 Oct. 33; R.G. Oakley; 669 (NHNM). **Color morph 2: 4:** PUERTO RICO: Rio Grande Mun.; El Verde Research Station; 18º19.376'N 65º48.997'W; 17JuL2007 sweeping; coll. M. Gimmel [one specimen WIBF 051540] (WIBF). **1:** PUERTO RICO: Rio Grande Mun.; El Verde Research Station; 18º19.376'N 65º48.997'W; 16JuL2007 sweeping; coll. M. Gimmel (WIBF). **1:** PUERTO RICO: El Verde Sta; 18.3218ºN, 65.8270ºW; 1-4JULY - 2017, 1225 ft; Ferreira & Spiessberger; near FIT 5, sweeping (WIBF). **1:** PUERTO RICO: El Verde St.; 18.3218ºN, 65.8270ºW; 05JULY2017, 1225 ft; Ferreira & Spiessberger; near FIT#5, sweeping/ MTEC 023636 (WIBF). **1:** PUERTO RICO: El Verde Sta; 18.3218ºN, 65.8270ºW; 19JUNE-08JULY2017, 1225 ft; E.L. Spiessberger &; V.S. Ferreira & Spiessberger Malaise#5 (WIBF). **Color morph 3: 4:** El Yunque; c. 3,000 ft, P.R., May 1938; Darlington (MCZ). **1:** El Yunque Sta.,; Luquillo Forest,; P.R. VII 10-16, 1969; H. & A. Howden/ WIBF 051539 (CNC). **1:** El

Yunque P.R.; Mar. 20-22, 1954/ J. Maldonado; S. Medina Colls. (AMNH). **1:** El Yunque P.R.; Feb. 17-1925/ H.L. Dozier; Collector (NHMN). **Color morph 4: Yellow pronotum: 1:** PUERTO RICO. Carib.; N.F., Mt.Britton.; Trail, July19 1979; G.B. Marshall/ WIBF 051538 (WIBF).

Larvae (n= 20). Color morph 1: 1: PUERTO RICO: El Verde Field Station; July 2018; T. Sanchez & K. Noa Reyes (WIBF). **3:** Puerto Rico: Aguas Buenas; Forest at Aguas Buenas; cave 250m, v: 7-17: 1973; leg S. Peck - Ber #; 265. FM (HD) #73-4, Ber:; 93 Kg., 171 liters (WIBF). **12:** PUERTO RICO; El Verde Research Station; ridge tops in forest; 15 MAY - 04 NOV 1996; E. Nazaro colr.; pitfall traps (WIBF). 1: PUERTO RICO: El Verde Field Station; July 2018; T. Sanchez & K. Noa Reyes/ WIBF 041693 (WIBF). **Color morph 2: 1:** PUERTO RICO: Naguabo; El Yunque Nat. Forest, S part; La Sabana recr. area 5.6km N of Río Blanco at rd.PR191; 18°16.1'N, 65°47.6'W, 510 m, 21.vi.-2.vii.2016; Deler,Fikáček & Seidel lgt. PR03 [WIBF 051506] (WIBF). **Color morph 3: 1:** PUERTO RICO: Naguabo; El Yunque Nat. Forest, S part; 5.4 km N of Río Blanco, rd.PR191; at the gate,18°15.9'N,65°48.1'W; 510 m, 20-24.vi.2016; Deler, Fikáček & Seidel lgt. PR01 [WIBF 051507] (WIBF). **1:** PUERTO RICO: Río Grande; El Yunque Nat. Forest, N part; 9.1 km SSE of Río Grande, tk. from Mt. Britton; to Mt. El Yunque 18°18.4'N, 65°47.53'W; 925 m, 22.vi.2016; Deler, Fikáček & Seidel PR06 [WIBF 051537] (WIBF).

Diagnosis of Adult Males

Leptolycus heterocornis is one of the most distinctive Leptolycini species in Puerto Rico. *Leptolycus heterocornis* has a wide color variation in both adult males and immature forms (see

color variability discussion after diagnosis), but the species can be easily separated from all other *Leptolycus* from the Puerto Rican bank by the following characters: the pronotum distinctly constricted medially, with lateral margins indistinct and only weakly carinated, seemingly absent (Figs. 3.7E–3.7H) (vs. pronotum not distinctly constricted in other *Leptolycus* species, with lateral margins ranging from strongly to weakly developed in other species of the genus), the absence of a pronotal median posterior fovea (Figs. 3.7E–3.7H) (vs. shallow median pronotal fovea present in *L. puellus*, *L. viensis* and *L. flavicollis*), the very long antennae and legs, with an overall slender distinct body type (Figs. 3.7E–3.7H) (vs. variable in other species, if slender not as distinctive as in *L. heterocornis* and not possessing the same combination of characters as mentioned here), the antennae dorsoventrally strongly compressed and filiform (Figs. 3.7E–3.7H) (vs. tubular in *L. falsoheterocornis*, subserrate in *L. puellus*), the inner margins of the antennae irregularly crenulate, sometimes strongly crenulate (Figs. 3.7E–3.7H) (vs. weakly crenulate in *L. flavicollis* and *L. viensis*; entire in *L. puellus* and *L. falsoheterocornis*), and the interconnecting membranes in the apex of antennomere IV to the base of XI yellow, translucid, distinctly visible (Fig. 3.7E–3.7H) (vs. membranes not conspicuous in *L. viensis* and *L. puellus*).

Length (pronotum + elytra): 2.68–3.80 mm. **Width (across humeri):** 0.78–0.93 mm.

Diagnosis of Larvae

Leptolycus heterocornis larvae can be easily separated from the other species of *Leptolycus* from the Puerto Rican bank by the subquadrate shape of its thoracic segments (Figs. 3.11A–3.11C) (vs. transverse, subtrapezoidal or anteriorly round in sother species), the unique color pattern, with metanotum yellow or dark brown and abdominal segment V dorsally predominantly yellow (Figs.

3.11A–3.11C) (vs. different color combination in other species) and by the strongly developed mandibles (Figs. 3.12A–3.12C) (vs. weakly or moderately developed in other species).

Length: 1.85–3.18 mm.

Distribution

Puerto Rico (Fig. 3.20A).

Intraspecific Variation in *L. heterocornis*

Color patterns, when used as a main diagnostic characteristic, can be misleading in the taxonomy of aposematic beetles, especially in the Lycidae. The case with *L. heterocornis* is an example of this, and very well represents the limitations of a color-based taxonomy system, which was widely used as the main diagnostic character for several Neotropical Lycidae in the past. After our thorough and exhaustive examination of the external and male genitalia morphology of several specimens possessing the diagnostic characteristics mentioned above, we did not find any characteristics, other than the color variation, to support the separation of these color morphs in different species.

In addition to color patterns, minor variations were observed in the proportion of antennomeres, pronotum shape, angles of the gular sutures and mouth-cavity region, and in the shapes of the tips and proportions of the median lobe of the male genitalia. However, these variations were found in a non-consistent manner across the different color variants, and they seemed more related to the ways that the specimens were preserved (pinned or pointed) and how old they were rather than constante and consistent morphological features differences. Our

findings and conclusions that color variations should not be used for defining species concepts were further corroborated by our DNA barcoding methods, in which larvae morphotypes 1–3, (Figs. 3.10A–3.10C) matched together with maximum support level to our adults of *Leptolycus heterocornis* (Fig. 3.4).

In the adult males of *L. heterocornis*, color varied in the following structures: prothorax being completely brown (Figs. 3.7E, 3.7F, 3.7H) or golden-yellow (Fig. 3.7G); the scutellar shield being yellow (Fig. 3.7F), golden-yellow (Fig. 3.7G) or brown (Fig. 3.7E, 3.7H), the meso- and metathorax brown (Figs. 3.7E, 3.7H), yellow (Fig. 3.7F) or golden-yellow (Fig. 3.7G). In the larvae, the variation ranged from the thorax and abdomen completely dark brown, with abdominal segment V mostly yellow, only medially dark brown (Figs. 3.10A–3.10C), to a color pattern of metathorax and abdominal segment yellow, with the remaining of the thorax and abdomen brown or dark brown (Figs. 3.10A, 3.10B).

Since color has been traditionally used for separating species in the Lycidae, we opted to present the examined material section to illustrate these color variants to avoid further misunderstanding in the taxonomy of the group and to better represent the diversity in this species complex.

Nomenclatural and taxonomic notes on the identity of *L. heterocornis* and other Puerto Rican *Leptolycus* species

On the occasion of *Leptolycus heterocornis'* original description by Leng and Mutchler (1922), the authors inadvertently had in their type series three distinct species, which are nowadays referred to as *Leptolycus heterocornis*, *Leptolycus puellus* and *Leptolycus albicauda*.

The specimen determined as the holotype of *Leptolycus heterocornis* by Leng and Mutchler (1922: 431: "*Holotype male, No. 24525*"), remains the sole name-bearer of that species (ICZN 1999, Art. 73.1). Following that, in our study, we re-diagnosed and validated that species concept based on the study of the morphology of the photograph of the holotype at the AMNH and several other specimens we had available at hand (see differential diagnosis section under this species).

The specimen that was identified by Leng and Mutchler as the allotype of *L. heterocornis* (Leng and Mutchler 1922: 431: *"...allotype female, No. 24526*") was examined by Miller (1991: 242) in his PhD dissertation, on which he compared the allotype No. 24526 with other AMNH specimens, including the holotype of *L. heterocornis*. At the time of his dissertation, Miller concluded that some of the the specimens that have been historically included in the *L. heterocornis* type series should be rendered a separate species from *L. heterocornis*, due to variations in the antennae shape and pronotum (see differential diagnosis under *L. puellus*). Unfortunately, Miller's dissertation was never published, and despite the existence of specimens identified with the name that he proposed for that species in certain scientific collections (*Leptolycus effeminatus* Miller *in litteris*), his proposed name remains not valid.

Kazantsev (2009), in his publication on the Leptolycini of Puerto Rico, described a new *Leptolycus* species – *Leptolycus puellus* – that fits the species concept proposed by Miller in his dissertation (*Leptolycus effeminatus*). Kazantsev donated one of the paratypes of *L. puellus* to VSF, and the authors were able to compare the specimen with Leng and Mutchler's *L. heterocornis* paratypes Nos. 24527 and 24528, which have been originally compared with Leng

and Mutchler's allotype of *L. heterocornis* (specimen No. 24526 in the AMNH). Even though we have never examined the allotype of *L. heterocornis*, based on these cross-comparisons of specimens, we concluded that the allotype fits the characteristics of *L. puellus*, the species named by Kazantsev in 2009, and for which the actual name of this species should be addressed by.

Still in the original description of *L. heterocornis*, Leng and Mutchler mentioned the existence of a variety in their examined series, which they named *Leptolycus heterocornis* var. *flavicollis*. They described the variety as follows: "*This variety agrees with the typical form* [of *Leptolycus heterocornis*]*, except that the color of the thorax and scutellum is yellow. Holotype female, No. 24529.*" (1922: 431). Just like the above case with *L. puellus*, Miller (1991) studied the holotype of *L. heterocornis* var. *flavicollis* altogether with several other specimens and concluded that the variety should be treated as a separate species from *L. heterocornis*, proposing to elevate the variety to the level of species, which was never concretized because his dissertation remains unpublished. In Kazantsev's (2009) publication, to the moment the most comprehensive study on the Leptolycini of Puerto Rico, under the synonimical table of *L. heterocornis*, Kazantsev mentioned the examination of the holotypes of *L. heterocornis* (specimen No. 24525) and *L. heterocornis* var. *flavicollis* (specimen No. 24529), and concluded that the latter was simply a color variant of *L. heterocornis*, rendering it the junior synonym of the latter, as follows: (page 88) "*A specimen with yellow ochre pronotum was designated Holotype of L. heterocornis var. flavicollis Leng et Mutchler, 1922, which is hereby put in synonymy of L. heterocornis Leng et Mutchler, 1922*".

Immediately after the taxonomic treatment of *L. heterocornis* in Kazantsev's 2009 paper, the author described and named the new species *Leptolycus albicauda*. The description of that species was only based in a singleton deposited in Kazantsev's personal collection, and no photos of the habitus of the species have being provided in formal literature. Even though no photographs of *L. albicauda* were available, the description and diagnosis of the species are very distinctive and precise, and a comparison of these with the photograph of the damaged holotype of *L. heterocornis* var. *flavicollis* in the AMNH on-line database allowed the immediate association of *L. albicauda* with *L. heterocornis* var. *flavicollis* by us. Miller also had the opportunity to study *L. heterocornis* var. *flavicollis* specimens (including the holotype, specimen No. 24529), discussing his findings in his dissertation. Of the three specimens of *L. heterocornis* var. *flavicollis* studied by Miller (1991), we had firsthand access to two of them and access to the photograph of the holotype in the AMNH website (specimen No. 24529). After comparing our findings with Miller's notes, we agreed with Miller's opinion that *L. heterocornis* var. *flavicollis* should be treated as a separate species from *L. heterocornis* (see differential diagnostic under *L. flavicollis*), and we were inclined to think that *L. albicauda* was indeed a synonym of *L. flavicollis*. However, since the type specimen of *L. albicauda* has never been studied by any researchers other than its original author, we were unsure of our conclusions.

To mitigate our doubts regarding the true identities of *L. flavicollis* and *L. albicauda* and to finally determine which was the oldest name available for that species, VSF contacted S. Kazantsev and provided him dorsal and ventral photographs of one of the specimens in-hand which have been identified as *L. albicauda* and cross-identified with *L. heterocornis* var.

flavicollis holotype in the AMNH website. Upon examination of the shared photographs, Kazantsev (pers. communication) confirmed that the specimen that we imaged and sent to him matched with his holotype of *L. albicauda*. Therefore, based on this series of events and multiple direct and indirect comparisons and confirmations, we can confidently conclude that *Leptolycus albicauda* Kazantsev, 2009 is indeed a **new junior synonym** of *Leptolycus* var. *flavicollis* Leng and Mutchler, 1922, which is herein elevated to *Leptolycus flavicollis* Leng and Mutchler, 1922 **new status** (see differential diagnosis under this species). *Leptolycus* var. *flavicollis* is a valid subspecific rank following a binomen, since it follows the ICZN (1999) provisions described in Articles 10 and 45.6.4.

***Leptolycus flavicollis* Leng and Mutchler, 1922 new status**

Figs. 3.7A, 3.8A, 3.9H, 3.19A

Leptolycus heterocornis var. *flavicollis* Leng and Mutchler, 1922: 430 fig.12 (in part, female of Leng and Mutchler); Kleine 1933: 18; Blackwelder 1945: 343.

Leptolycus (*Leptolycus*) *heterocornis;* Kazantsev 2009: 89, 91 figs. 1, 4-17.

Leptolycus (*Leptolycus*) *albicauda* Kazantsev, 2009: 88, 91 figs. 18, 19. **New junior synonym**.

Examined Material

Examined type material. Holotype: 1: PUERTO RICO: Aibonito, July 1914, H. G. Barber (AMNH) [Photography].

Material examined in addition to type specimen. Adults (n=4). 1: PUERTO RICO; GuilarteFor.Res.; Hwy.131&158, July; 23, 1979LB. O'Brien/ WIBF051543 (WIBF). **1:**

Consumo P.R.; 12-Oct.-1937; J.A. Ramos; Collector/ WIBF051542 (EPRL). **1:** PUERTO RICO: Rio; Grande, El Yunque, Mt.; Britton summit. 941m; 4-12.VIII.1999, P.W.; Kovarik, collector FIT (WIBF). **1:** PUERTO RICO: Rio Grande Mun.; El Verde Research Station; 18º19.376'N 65º48.997'W; 17Jul2007 sweeping; coll M. Gimmel (MLGC).

Diagnosis of Adult Males

Leptolycus flavicollis can be easily separated from all other *Leptolycus* in the Puerto Rican bank by its unique color pattern, with its prothorax, mesothorax and humeral region of elytra yellow (Fig. 3.7A) (vs. variable in other species, but never with the present combination), the terminal segments of the abdomen (ventrite VIII and tergites IX and X) white (vs. terminal segments of the abdomen of other *Leptolycus* brown or black), the pronotum with a posterior median fovea weakly developed (Fig. 3.7A) (vs. fovea absent in *L. heterocornis*), the scutellar shield notched apically, with angles distinctly acute (Fig. 3.7A) (vs. scutellar shield entire in *L. heterocornis*, *L. puellus*), and the male genitalia with the median lobe 0.5x longer than the phallobase, which is oval (Fig. 3.9H) (vs. variable in other *Leptolycus*).

Length (pronotum + elytra): 3.02–3.30 mm. **Width (across humeri):** 0.76 mm.

Distribution

Puerto Rico (Fig. 3.19A).

Immature and Females

Unknown.

Taxonomic Note

See “Nomenclatural and taxonomic notes on the identity of *L. heterocornis* and other Puerto Rican *Leptolycus* species” under *L. heterocornis*.

***Leptolycus puellus* Kazantsev, 2009**

Figs. 3.4, 3.7D, 3.8D, 3.9K, 3.19A

Leptolycus heterocornis Leng and Mutchler, 1922: 430 fig.12 (in part, male of Leng and Mutchler); Kleine 1933: 18; Blackwelder 1945: 343.

Leptolycus (*Leptolycus*) *heterocornis;* Kazantsev 2009: 89, 91 figs. 1, 4-17.

Leptolycus (*Baholycus*) *puellus* Kazantsev, 2009: 91 figs 20-23.

Examined Material

Examined type material. *Leptolycus puellus*: Paratype: 1: PUERTO RICO: Sierra; de Luquillo 600 m; 3 5.IV.2005; S. Kazantsev leg./ [in red] Paratype; Kazantsev 2009/ WIBF 051546 (WIBF).

***Leptolycus heterocornis*: Paratypes**: **1:** Aibonito, P.R.; July 14-17, '14/ [in red] PARATYPE/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24528/ WIBF 051547 (AMNH). **1:** Aibonito, P.R.; July 14-17, '14/ [in red] PARATYPE/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24527/ [handwriting] Leptolycus; heterocornis; type L&M/ WIBF 051548 (AMNH).

Material examined in addition to type specimens. Adults (n=20). 11: PUERTO RICO; El Verde; statopm road; 2.ii.1989; S.A. Marshall (DEBU). **1:** Maricao P.R.; 2-8 1936; Coll: J.A. Ramos (EPRL). **1:** PUERTO RICO,; GuajatacaFor. Res.; July 27, 1979; C.W. O'Brien (WIBF).

2: PUERTO RICO; GuilarteFor. Res.; Hwy. 131&158, July; 23, 1979GBMarshall [one specimen WIBF 051549] (WIBF). **1:** PUERTO RICO; CambalacheForest; Res., July28, 1979; C.W. O'Brien (WIBF). **1:** PUERTO RICO: El Verde Field Station; sweeping; V.S. Ferreira colr.; 1-4 July/ WIBF 041665 (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3218ºN,65.8270ºW; 30JUNE2017, 1225 ft; Ferreira & Spiessberger; near FIT 5, sweeping/ WIBF 051545 (WIBF). **5:** PUERTO RICO: El Verde Sta; 18.3218ºN,65.8270ºW; 1-4JULY-2017, 1225 ft; Ferreira & Spiessberger; near FIT 5, sweeping [one specimen WIBF 051544] (WIBF). **3:** PUERTO RICO: El Verde Sta; 18.3218ºN,65.8270ºW; 05JULY2017, 1225 ft; Ferreira & Spiessberger; near FIT#5, sweeping [WIBF 051534, WIBF051533, MTEC023635] (WIBF). **3:** PUERTO RICO: Rio Grande Mun.; El Verde Research Station; 18º19.376'N 65º48.997'W; 17JuL2007 sweeping; coll. M. Gimmel (WIBF). **1:** PUERTO RICO: Rio Grande Mun.; El Verde Research Station; 18º19.376'N 65º48.997'W; 16JuL2007 sweeping; coll. M. Gimmel (MLGC).

Diagnosis of Adult Males

Leptolycus puellus can be separated from all *Leptolycus* from Puerto Rico by the following combination of characters: pronotum with lateral margins distinct, not constricted medially (Fig. 3.7D) (vs. lateral margins indistinct and strongly constricted medially in *L. heterocornis*), the presence of a shallow posterior median fovea in the pronotum (Fig. 3.7D) (vs. absent in *L. heterocornis*), the subserrate antennae, with the margins entire (Fig. 3.7D) (vs. tubular in *L. falsoheterocornis* and filiform in *L. heterocornis* and *L. flavicollis*, weakly crenulate in the first and moderately to strongly in the last two), the antennae in resting position surpassing the elytral apex (vs. not surpassing elytral apex in *L. falsoheterocornis*), the scutellar shield

entire (Fig. 3.7D) (vs. scutellar shield apically notched in *L. flavicollis* and *L. falsoheterocornis*) and the male genitalia with the median lobe subequal in length with the phallobase (Fig. 3.9K) (vs. variable in other *Leptolycus*).

Length (pronotum + elytra): 2.24–2.78 mm. **Width (across humeri):** 0.54–0.61 mm.

Distribution

Puerto Rico (Figs. 3.19A).

Immature and Females

Unknown.

Note on the Intraspecific Variation of *L. puellus*

We observed that most specimens that have been collected in the past 10 years window (2011–2021) presented a more vibrant coloration, with their pronota, head, antennae and scutellar shield black instead of dark brown (as observed in the paratypes and in older specimens) and a predominance of elongate scaliform setae in their antennae (which was seemingly absent in older specimens). Some specimens presented variation in the coloration of gular region (black or dark brown or yellow) and coloration of coxae (entirely black or partially yellow). These variations were present in specimens of different locations and collected in different moments and times by different collectors. After study of their external morphology, male genitalia and their COI sequences, the latter with 99% similarity or more in the sampled specimens (see Appendix E, S3–S6) (specimens WIBF 041665 and MTEC 023635 have brown antennae whilst specimens WIBF 05133 and WIBF051534 have black antennae, being one of

each with their coxae with different colors) we are simply considering these to be in the spectrum of intraspecific variability for this species.

Taxonomic Note

See "Nomenclatural and taxonomic notes on the identity of *L. heterocornis* and other Puerto Rican *Leptolycus* species" under *L. heterocornis*.

***Leptolycus falsoheterocornis* Ferreira and Ivie new species**

Figs. 3.7C, 3.8C, 3.9J, 3.19A

Examined Material

Type material. Adults (n=1): Holotype: 1: PUERTO RICO; GuilarteFor.Res.; Hwy.131&158, July; 23, 1979LB. O'Brien (WIBF).

Etymology

The species has been given this name due to its superficial resemblance with *L. heterocornis*. The word *falso* comes from Latin and means false, deceitful.

Diagnosis of Adult Males

Leptolycus falsoheterocornis can be separated from its congenerics from the Puerto Rican bank by the pronotum with lateral margins distinct, not constricted medially, and the presence of a shallow posterior median fovea in the pronotum (Fig. 3.7C) (vs. lateral margins indistinct and strongly constricted medially in *L. heterocornis*, fovea absent), the tubular antennae, not

dorsoventrally compressed (Fig. 3.7C) (vs. variable in other *Leptolycus*, but always dorsoventrally flattened; filiform in *L. heterocornis*, *L. viensis* and *L. flavicollis*, subserrate in *L. puellus*), and the scutellar shield notched apically (Fig. 3.7C) (vs. absent in *L. heterocornis*).]

Description of Male

General coloration: Head, pronotum, scutellar shield, antennae, legs and abdomen brown (Fig. 3.7C); antennomeres XI and metatrochanters yellow; elytra bicolored, basal fourth yellow, remaining brown (Fig. 3.7C). Head: frons weakly developed, not bulgy (Fig. 3.7C). Maxillary palpomere IV acuminate. Gular sutures basally connected by a bridge (Fig. 3.8C). Antennae tubular, not dorsoventrally compressed, bearing bristle-like erect setae, in resting position reaching elytral apical fourth (Fig. 3.7C); antennomere IV elongate, 3x the length of the sum of scape+pedicel (Fig. 3.7C). Pronotum transverse, not medially constricted, margins distinct, apical and basal margins developed; bearing weakly developed posterior median fovea (Fig. 3.7C). Scutellar shield posteriorly medially notched (Fig. 3.7C). Metatrochanters tubular, elongate, Median lobe of the male genitalia acuminate, 0.5x longer than phallobase, which is oval and posteriorly round (Fig. 3.9J).

Length (pronotum + elytra): 2.86 mm. **Width (across humeri):** 0.64 mm.

Distribution

The only known specimen is from Puerto Rico, from the Bosque Estatal de Monte Guilarte (Fig. 3.19A).

Immature and Females

Unknown.

Leptolycus viensis **Ferreira and Ivie new species**

Figs. 3.7B, 3.8B, 3.9I, 3.10F, 3.11F, 3.12F, 3.16, 3.20B

Examined Material

Examined type material. Adults (n=41): Holotype: 1: BR. VIRGIN IS: Guana; 02 NOV 1990, 0-80m; S. E. Miller colr.; at u.v. light [WIBF 051560] (BPBM). **Paratypes: 3:** BR: VIRGIN IS: Guana Is; Quail Dove Ghut; 13NOV-15DEC1992, 400ft; Lio Wei Peng colr.; flight inter. trap #5 [WIBF 000720-722] (WIBF). **6:** BR: VIRGIN IS: Guana Is; Quail Dove Ghut; 13NOV-15DEC1992, 600ft; Lio Wei Peng colr.; flight inter. trap #5 [WIBF 000955-000960] (WIBF). **1:** BR: VIRGIN IS: Guana Is; Quail Dove Ghut; 25DEC-25JAN1993, 600ft; Lio Wei Peng colr.; flight inter. trap #13 [WIBF 000980] (WIBF). **1:** BR: VIRGIN IS: Guana Is; Quail Dove Ghut; 24JULY- 09 OCT 1994; M.A. & L.L. Ivie; flight intercept #5 [WIBF 021888] (WIBF). **1:** BR: VIRGIN IS: Guana Is; Quail Dove Ghut; 12JULY- 09 OCT 1994; flight intercept #13; M.A. & L.L. Ivie colr. [WIBF 021595] (WIBF). **2:** BR: VIRGIN IS: GuanaIs; Quail Dove Ghut; 24-31OCT1992, 400ft.; M.A. & L.L. Ivie colr.; flight inter. trap #5 (WIBF 000680, WIBF 000681) (WIBF). **1:** BRITISH VIRGIN IS:; Guana I; 13.vii.1988/ S.E. Miller & C.; O'Connell cols. (WIBF 013271) (WIBF). **2:** BRITISH VIRGIN; ISLANDS; Guana Island/ 26-X-1997/ C.R. Bartlett; beating/sweeping (WIBF). **3:** BRITISH VIRGIN IS:; Guana I: x.1989; V.O. Becker, Coll.; BISHOP Museum [WIBF 013272](BISHOP MUSEUM). **2:** BRITISH

VIRGIN IS:; Guana 'beetletrap'; (flight intercept)/ July-Oct.1993; C. Bartlett &; J. Cryan [WIBF 018244, WIBF 018245](NCSU). **1:** BR. VIRGIN IS: Guana; 02 NOV 1990, 0-80m; S. E. Miller colr.; at u.v. light (BPBM). **1:** BR. VIRGIN IS: Tortola; Mt. SageNat. Pk. N. side; Mt.Sage, 1550 ft, steps; 25 JULY - 10 OCT 1994; M.A. Ivie & S.A. Bucklin [WIBF 023147](WIBF). **1:** BR. VIRGIN IS: Tortola; Mt. SageNat. Pk. N. side; Mt.Sage, 1550 ft, steps; 25 JULY - 10 OCT 1994; flt. int. tr.#3 VIBFP [WIBF 022045] (WIBF). **3:** VIRGIN IS: St. John; Est. Caneel Bay, Caneell; Hill. 240ft. 17DEC1992; 02JAN1993, VIBFP colrs; flight inter. trap #6 [WIBF 003780-003782, WIBF 004227] (WIBF). **1:** VIRGIN IS: St. John; Est. Caneel Bay, Caneell; Hill. 240ft. 02-14NOV; 1992. M.A. Ivie colr.; flight inter. trap #6 [WIBF 004173] (WIBF). **1:** VIRGIN IS: St. Thomas; Est. Botany Bay; 29 JULY - 15 OCT 1994; M.A. & L.L. Ivie [WIBF 022609] (WIBF). **1:** VIRGIN IS: St. John; Est. Lameshur Bay; Reef Bay Trail, 5ft; 27JUL-14OCT1994; M.A.& L.L. Ivie colrs. [WIBF 022735] (WIBF). **1:** VIRGIN IS: St. John; Est. Lameshur Bay; Reef Bay Trail, 5ft; 03JAN1993-06JULY1994; flight intercept #11 [WIBF 021998] (WIBF). **6:** BRIT VIRGIN ISLS; Guana Island; July-October 1993; "Beetle-trap"/ Collected by; C. Bartlett &; J. Cryan [WIBF 017741, WIBF 017974, WIBF 017971, WIBF 017768, WIBF 017772, WIBF 017769] (NCSU). **1:** VIRGIN IS: St. John; Est. Carolina, 250 ft; N.W. of Coral Bay; 18 MAY 1984; W.B. Muchmore colr.; ex ground litter [WIBF 051520] (WIBF). **1:** on grass; St. John, V.I.; V. 29’40; D. Deleon/ Hopk. US; 33162.9 (NHNM).

Females (n=2): 1: VIRGIN IS: St. John; Est. Carolina, 250 ft; N.W. of Coral Bay; 18 MAY 1984; W.B. Muchmore colr.; ex ground litter [WIBF 051520] (WIBF). **1:** VIRGIN IS: St. John; Lameshor Bay UPERS; 07MAY1984; W.B. Muchmore; base of roadside kapok (WIBF).

Larvae (n=24): 1: VI: St. John; Caneel Bay Est.; flight intercept #6, 73m; 17DEC-02JAN1993; VIBFP colrs. (WIBF). **2:** VIRGIN IS: St. John; Francis Bay pond; 29Feb1989; W.B.Muchmore; base of lg. tree; on shore of pond (WIBF). **2:** VIRGIN ISLANDS: St. John; Brown Bay, 11 March 1984; W.B. Muchmore colr.; litter and Calabash tree (WIBF). **1:** VIRGIN IS: St. John; Hermitage; 03 MAY 1984; under donkey dung; W.B. Muchmore (WIBF). **1:** VIRGIN IS: St. John; Catherineberg; 14MAY1984; litter between rocks; W.B. Muchmore (WIBF). **1:** VIRGIN IS: St. John; Mahe Bay; 12MAR1984; W.B. Muchmore; under lg Seagrape; along road (WIBF). **2:** VIRGIN IS: St. John; Bordeaux Mt.; 15MAY1984; ground litter among; trees & boulders; W.B. Muchmore (WIBF). **1:** VIRGIN IS: St. John; Lameshur Bay UPERS; 07MAY1984; W.B. Muchmore; base of roadside kapok (WIBF). **1:** VIRGIN IS: St. John; Kingshill, south; 08MAY1984; W.B. Muchmore; ground litter (WIBF). **6:** VIRGIN IS: St. John; Est. Hermitage,; ruins; 20 JUN 1980/ base of giant; dildo cactus; Cephalocereus (WIBF). **1:** VIRGIN IS: St. John; Trunk Bay; 09 JUN 1980; W.B. Muchmore/ at base of tree; and anthirium (WIBF). **2:** VIRGIN IS: St. John; Lameshur Bay; Gray Gut; 12 JAN 1980; base of large; tamarind (WIBF). **1:** VIRGIN IS: St. John; Cinnamon Bay Nature Trail; 06 JUN 1980; ex kapok buttreases; W.B. Muchmore (WIBF). **1:** VIRGIN IS: St. John; Hawknest Bay; 28 FEB 1984, W.B. Muchmore; on and around huge boulder; in gut (WIBF). **1:** VIRGIN IS: St. John; Windberg ruins; 08 OCT 1979; ex litter; W.B. Muchmore (WIBF).

Etymology

This species has been given the name *viensis* after its distribution in the Virgin Islands, where it is apparently endemic.

Diagnosis of Adult Males

Leptolycus viensis is the only *Leptolycus* species in the Virgin Islands. This species can be immediately recognized among the other *Leptolycus* from the Puerto Rican bank by its transverse pronotum bearing a median posterior fovea (Fig. 3.7B) (vs. pronotum longer than wide in other *Leptolycus* species; median posterior fovea absent in *L. heterocornis*, *L. flavicollis* and *L. puellus*), the relatively short antennae, in rest position not surpassing the mid-elytral portion (Fig. 3.7B) (vs. long antennae, surpassing mid-elytra in all other species), the overall shortened antennomeres IV–XI (Fig. 3.7B) (vs. antennomeres IV–XI longer in other species), the metatrochanters shortened, semi triangular (vs. metatrochanters elongate and tubular in all other species) and the scutellar shield posteriorly medially notched (Fig. 3.7B) (vs. posterior margin of scutellar shield entire in *L. heterocornis* and *L. puellus*).

Description of Male

General coloration: Head, pronotum, scutellar shield, antennae, legs and abdomen brown (Figs. 3.7B, 3.8B); antennomeres XI yellow; elytra bicolored, basal third yellow, remaining brown (Fig. 3.8B). Head: frons weakly developed, not bulgy (Fig. 3.8B). Maxillary palpomere IV acuminate. Gular sutures basally connected by a bridge (Fig. 3.8B). Antennae filiform, dorsoventrally compressed, bearing bristle-like erect setae (Fig. 3.7B); in resting position not surpassing mid-elytral (Fig. 3.7B); antennomere IV elongate, ca. 2.5x the length of the sum of scape+pedicel (Fig. 3.7B). Pronotum transverse, not medially constricted, margins distinct, apical and basal margins developed; bearing weakly developed posterior median fovea (Fig. 3.7B). Scutellar shield posteriorly medially notched (Fig. 3.7B). Metatrochanters subtriangular,

short. Median lobe of the male genitalia acuminate, 1/3longer than phallobase, which is shortened and posteriorly irregularly shaped, roundish (Fig. 3.9I).

Length (pronotum + elytra): 2.78–3.62 mm. **Width (across humeri):** 0.73–0.85 mm.

Diagnosis of Larvae

Leptolycus viensis larvae can separated from the other species of *Leptolycus* from the Puerto Rican bank by the subtrapezoidal shape of its pronotum, widest at the apex (Fig. 3.10F) (vs. subquadrate in *L. heterocornis* or transverse in other species), the nasale apically straight (Fig. 3.10F) (vs. bisinuate in *L. heterocornis* and other species), the weakly developed mandibles (Fig. 3.11F) (vs. strongly developed in *L. heterocornis*, variable in other species), the apparent absence of labial palps (Fig. 3.11F) (vs. labial palps minute, but clearly visible in *L. heterocornis* and other species) the unique color pattern, with the metanotum and abdominal segments IV and V predominantly yellow, but medially light brown and the abdominal segment IX yellow (vs. variable in other species).

Diagnosis of Adult Female

The extreme paedomorphic adult female of *Leptolycus viensis* can be separated from the larva by its coloration uniform throughout, pale yellow (Figs. 3.16A) (vs. bicolored body in the larvae), the completely modified head, characterized by the nasale in dorsal view clearly bisinuate (Fig. 3.16D, 3.16E) (weakly bisinuate in the larva), the wide ventral plate of the head medially bearing a deep and wide V-shaped notch, with apices apically divergent (Fig. 3.16E) (vs. ventral plate narrowing medially towards apex, apically bearing a shallow v-shaped notch),

the absence of maxillae and labial palpi (Fig. 3.16C, 3.16E) (vs. presence of maxillae in the larvae), the presence of only one pleurite (Fig. 3.16B) (vs. two pleurites in the larvae) and the absence of a pygopodium in abdominal tergite X (Fig. 3.16B, 3.16C) (vs. pygopodium present in the larvae).

Distribution

This species is apparently endemic to the Virgin Islands, being found in St. John, St. Thomas, Guana and Tortola (Fig. 3.20B).

Diagnosis of Unidentified *Leptolycus* Larvae

***Leptolycus* sp. 1**

Figs. 3.10D, 3.11D, 3.12D

Examined Material

Larvae (n= 7). 7: PUERTO RICO; El Verde Research Station; ridge tops in forest; 15 MAY - 04 NOV 1996; E. Nazaro colr.; pitfall traps (WIBF).

Differential Diagnosis

Leptolycus sp. 1 can be distinguished from other *Leptolycus* from Puerto Rico by the thoracic segments being transverse (Fig. 3.10D) (vs. subquadrate in *L. heterocornis* and subtrapezoidal in *L. viensis*), the prominent antennal insertions (Fig. 3.10D) (vs. less conspicuous

in other species) and by its creamy coloration (Figs. 3.10D, 3.11D, 3.12D) (vs. predominantly brown or dark brown in other species, with yellow patches throughout the body).

Length: 2.41 mm.

***Leptolycus* sp. 2**

Figs. 3.10D, 3.11D, 3.12D

Examined Material

Larvae (n= 2). 1: PUERTO RICO: Patillas, Bosque Estatal Carite 9.6 km N of Patillas; Charco Azul tourist area; 18°5.5'N 66°1.9'W; 600 m; 23.vi.2016; Deler, Fikáček & Seidel PR09/ sifting of small accummuklations; of leaf litter and thin layer of leaf; litter with lots of fungal mycelia; in a secondary forest on the slope above the dam [WIBF 051519] (WIBF). **1:** PUERTO RICO: Arecibo; Bosque Estatal Río Abajo, 1.3 km SWW of the campsite at Cueva de las Aguas, 18°19.4'N; 66°43.0'W; 330m, 27.vi.2016; Fikáček & Seidel lgt./sifting of leaf litter and mosses; on trunks and stones in sparse; lowland forest on limestone bedrock/ side pools of a stony stream with many decaying leaves (WIBF).

Differential Diagnosis

Leptolycus sp. 2 is unique among the other Leptolycus larvae by having its body onisciform (Fig. 3.10D) (vs. parallel sided in other *Leptolycus*, with exception of *Leptolycus* sp. 3), the transverse thoracic segments (Figs. 3.10D, 3.11D) (vs. subquadrate in *L. heterocornis* and subpentagonal in *L. viensis*), the prominent antennal insertions, which are strongly developed in

this species (Figs. 3.10D, 3.11D, 3.12D) (vs. variable in other species), and by the unicolored body, which is dark brown (Figs. 3.10D, 3.11D, 3.12D) (vs. bicolored in all other species, with the exception of *Leptolycus* sp. 1).

Length: 2.72 mm.

***Leptolycus* sp. 3**

Figs. 3.10E, 3.11E, 3.12E

Examined Material

Larvae (n= 2). 2: PUERTO RICO: San Germán; Bosque Estatal Maricao, 8.6 km N of Sabana Grande; 18°8.0'N 66°59.5'W; 820 m 28.vi.2016; Fikáček & Seidel lgt. PR16 [WIBF 051503] (WIBF).

Differential Diagnosis

Leptolycus sp. 3 is very similar to *Leptolycus* sp. 2, being readily separated from the former by its unique color pattern, with the side margins of the metathorax and the abdominal segment IV laterally yellow (Figs. 3.10E, 3.11E, 3.12E) (vs. specimen completely dark brown in *Leptolycus* sp. 2).

Length: 4.29 mm.

A key to the adult male of *Leptolycus* of the Puerto Rican Bank

1. Pronotum distinctly constricted medially, with lateral margins indistinct and only weakly carinated, never bearing a median posterior fovea. Overall slender individuals, with relative long legs, antennae, and elytra… ***Leptolycus heterocornis*** **Leng and Mutchler, 1922 complex**

1.' Pronotum with lateral margins distinct, not constricted medially, posteriorly bearing a median shallow fovea or fovea absent. Overall body types variable, ranging from slender to stout, short bodied individuals…2

2. Prothorax, mesothorax and humeral region yellow. Terminal segments of the abdomen entirely whitish. Scutellar shield notched apically, angles distinctly acute…***Leptolycus flavicollis*** **Leng and Mutchler, 1922**

2.' Prothorax and mesothorax black, elytral apical third yellow. Terminal segments of the abdomen dark brown. Scutellar shield entire or shallowly notched apically, if notched, angles not acute…3

3. Antennae serrate bearing short decumbent setae; pronotum not bearing a median posterior fovea…***Leptolycus puellus*** **Kazantsev, 2009**

3.' Antennae filiform, bearing long bristle setae; pronotum bearing a median posterior fovea, sometimes weakly developed…**4**

4. Antennomeres IV–X tubular; antennomere IV nearly twice the length of the precedent combined; elytral costa I only distinctly visible in basal third of elytra; pre-antennal gibbosity pits weakly developed …***Leptolycus falsoheterocornis*** **Ferreira and Ivie new species**

4.' Antennomeres IV–X flat and wide, dorsoventrally strongly flattened; antennomere IV 1/3 longer than the sum of the precedent combined; elytral costa I only distinctly visible in up until middle third of elytra, fused apically with costa II; pre-antennal gibbosity pits strongly developed … ***Leptolycus viensis*** **Ferreira and Ivie new species**

Tainopteron **Kazantsev, 2009**

Figs. 3.5G, 3.6G, 3.9N, 3.19B

Tainopteron Kazantsev, 2009: 88, 92.

Differential Diagnosis of Adult Males

Tainopteron can be distinguished from all other Leptolycini by the following characters: the pedicel and antennomere III subequal in length (Fig. 3.5G, 3.6G) (vs. antennomere III multiple times longer than pedicel in *Cessator*), the dorsoventrally compressed antennae bearing bristle-like erect setae (vs. variable across the different genera, but tubular in *Cessator* and no bristle-like setae), the strongly transverse pronotum (Fig. 3.5G) (vs. longer than wide in *Dracolycus*, *Dominopteron* and some *Leptolycus*), with bisinuate posterior angles and a strongly demarcated median fovea (Fig. 3.5G) (vs. posterior angles with variable combination in other Leptolycini), the scutellar shield subquadrate, apically notched (Fig. 3.5G) (vs. shape and presence of notch highly variable in other genera) and a trilobate male genitalia, with a sword-

like median lobe, which is apically blunt, the co-adapted small and apically acuminate parameres and a phallobase with the posterior margin round (Fig. 3.9N).

Type species. *Tainopteron milleri* Kazantsev, 2009 (by monotypy).

Distribution

Tainopteron is only known to occur in Puerto Rico, in the El Yunque National Forest region (Fig. 3.19B).

Biology

With the exception of the type series, all other *Tainopteron* specimens were collected using Flying Intercept Traps, indicating that this is a highly active species. Specimens from the type series were collected in low strata foliage and grass (Kazantsev 2009) in a very similar manner that several other Leptolycini.

***Tainopteron milleri* Kazantsev, 2009**

Figs. 3.5G, 3.6G, 3.9N, 3.19B

Tainopteron Kazantsev, 2009: 88, 92.

Examined Material

Adult males (n= 12): 3: PUERTO RICO: El Verde Sta.; 18.3218ºN,65.8170ºW; 28-29JUNE2017, 1225 ft; V.S. Ferreira &; E.L. Spiessberger, FIT6 (WIBF) [WIBF051550, WIBF051551]. **3:** PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8183ºW; 18JUNE-8JULY2017, 1033ft; E.L. Spiessberger &; V.S. Ferreira, Malaise #4 (WIBF). **1:** PUERTO RICO: El Verde

Sta.; 18.3218ºN,65.8170ºW;19JUNE-08JULY2017 1225ft; E.L. Spiessberger &; V.S. Ferreira, Malaise #5 (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3236ºN,65.8170ºW;20-23JUNE2017 1033ft; V.S. Ferreira &; E.L. Spiessberger, FIT4/ WIBF051524 (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3230ºN,65.8183ºW; 23JUNE2017, 1010ft; V.S. Ferreira &; E.L. Spiessberger, FIT 3 (WIBF). **1:** PUERTO RICO: El Verde Sta.; 18.3230ºN,65.8183ºW; 14JUNE-07JULY2017 117ft; V.S. Ferreira &; E.L. Spiessberger, Malaise1 (WIBF). **1:** PUERTO RICO: Rio; Grande, El Yunque, Mt; Britton summit, 541m; 4-12AUG1999 P.W.; Kovarik, FIT (WIBF). **1:** PUERTO RICO: Naguabo; El Yunque Nat. Forest, S Part; 4.9 Km N iof Rio Blanco,; 18º15.8'N, 65º47.3'W, 495m; 24.vi.-2.vii.2016; Fikáček & Seidel lgt. PR11/ flight intercept trap at the margin; of the rainforest in an area with many flowering Etilingera elatior; plants (NMPC).

Rediagnosis, Distribution and Biology of Adult Males

This is a monospecific genus, and this information is redundant with the presented under the genus.

Length (pronotum + elytra): 1.45–1.75 mm. **Width (across humeri):** 0.46–0.58 mm.

An identification key to the Puerto Rican bank Leptolycini adult genera

1. Pedicel small, multiple times shorter than antennomere III... ***Cessator*** **Kazantsev, 2009**

1.' Pedicel and antennomere III small, subequal in length...**2**

2. Elytra remarkably dehiscent, ligulate, tapered towards apex; metatrochanters distinctly elongate and tubular; long legs and slender body…***Leptolycus*** **Leng and Mutchler, 1922**

2.'Elytra moderately or weakly dehiscent, not ligulate, similar throughout; metatrochanters short, semi triangular; legs and body type variable, but not as slender as above…**3**

3. Pronotum strongly transverse, laterally imarginated; elytral costae weakly developed, disappearing towards apex; antennae bearing long-bristle like setae; scutellar shield subquadrate, apically notched; short and small-sized specimens (<1.75 mm long) …***Tainopteron*** **Kazantsev, 2009**

3.' Pronotum longer than wide, all margins distinct; elytral costae strongly developed and visible throughout, fused apically; antennae bearing short decumbent setae; scutellar shield cordiform; long and big-sized specimens (>4.88 mm long) …***Dracolycus*** **Ferreira and Ivie, 2021 new genus**

An identification key to the known Puerto Rican bank Leptolycini larvae and female

1. Anterior portion of the head bearing a pair of facing forward projections; body unicolored...2

1. Anterior portion of the head not bearing projections; body unicolored or bicolored...3. ***Leptolycus***

2. Anterolateral portions of the head strongly stalked (Figs. 3.13D–3.13F); body longitudinal line absent (Figs. 3.3D–3.13F); long erect setae absent...***Dracolycus***

2'. Anterolateral portions of the head weakly stalked (Figs. 3.13A–3.13C); presence of a distinct and strongly visible body longitudinal line (Figs. 3.13A–3.13C); presence of long erect setae arising from the tergites and pleurites...***Cessator***

3. Abdomen only bearing one pleurite (Fig. 3.16B); maxillae and labial palps seemingly absent (Figs. 3.16C, 3.16E); absence of a pygopodium (Fig. 3.16A, 3.16B, 3.16C) ... ***Leptolycus*** **female**

3'. Abdomen bearing two pleurites (Figs. 3.11A–3.11F); maxillae and labial palps present (Figs. 3.10A–3.10F); pygopodium present (Figs. 3.12A–3.12F) ... ***Leptolycus*** **larva**

Discussion

DNA barcoding is a powerful tool in biodiversity studies. The versatility and relative low cost of this approach allows its use in a variety of contexts, ranging from biodiversity inventories (*e.g*., Telfer *et al*. 2015), identification and delimitations of cryptic species (*e.g*., Etzler *et al*. 2013), phylogenetic analyses (*e.g*., Sikes and Mullen 2021) and life-stages associations (e.g., Levkanikova and Bocak 2009; Etzler *et al*. 2014; Zhai *et al*. 2017). While the limitations of the method have been the subject of various debates (see references below in Lycidae), this approach continues to be widely accepted and used by the academic community, especially because of its extensive documentation and relative ease of interpreting results. In Lycidae, the implementation of this method has been used in a variety of studies in the past two decades, with different levels of success. Some studies reported very little differences in DNA sequences of taxa that were morphologically distinct (Kusy *et al*. 2017), mixed results (Bocek *et al*. 2019) or a high level of congruence between barcodes and morphology (Jiruskova and Bocak 2015; Li *et al*. 2018). On the other hand, this approach works fairly well in providing the identification and association of immatures with their adult forms (see Lekvanikova and Bocak 2009), allowing the development

of a framework to quickly enhance the taxonomic knowledge on the immature forms of beetles of groups that are poorly known and rarely collected, as are most Lycidae groups in the New World.

While life-stage association through comparison of DNA sequences through barcoding has become increasingly popular in the past 25 years, and newer alternative methods are promising even faster, cheaper and more efficient results than Sanger-based barcoding (MinION) (Srivathsan *et al*. 2018, 2019), such methods require the sample materials to be freshly collected or that it have been preserved in ethanol 95% and kept at low temperatures (-20 Cº or colder). Such requirements rule out the majority of the specimens in most scientific collections, especially historical material and immatures of beetles, which are many times boiled prior their final preservation in Ethanol 70% or other preserving agents that have a degrading action on genetic material (Costa *et al*. 1988; Reiss *et al*. 1995; Ferreira and Costa 2017).

For understudied groups like the Leptolycini, the availability of material for traditional taxonomic and systematic research in scientific collections is small, and the existence of DNA grade material is even smaller. In our study, the majority of the available specimens came from legacy material deposited in scientific collections, and nearly all larvae came from a single institution, with the only two known *L. viensis* females coming from two distinct collecting events, despite extensive collecting efforts in that region (see examined material under that species). On the other hand, the DNA quality specimens of the immature forms of Leptolycini were the result of thousands of dollars and months of combined fieldwork in Puerto Rico from

VSF and collaborators, and networking with other researchers from other institutions, yielding very few viable specimens (we were only able to obtain sequences of 13 immature individuals).

The development of this project and the implementation of barcoding methods was only able to occur thanks to the availability of dozens of specimens that have been collected, sorted, labeled, tentatively identified as a Lycidae and finally permanently deposited in a scientific collection that we have access to. The availability of these specimens, in particular the *L. viensis* larvae and adults from the Virgin Islands – the only known Lycidae species from St. John, St. Thomas and Guana Island (Fig. 3.20B) – provided to us a north as to what to look for in Puerto Rico, which resulted in the successful cross-matching and life-stage associations based on biogeography and DNA data of species of *Leptolycus* in Puerto Rico. Utilizing the same biogeography-based rationale with *C. tortolensis* in Tortola and combining it with our findings and observations on *T. viensis*, we were able to predict the overall phenotype of other species of *Leptolycus* and *Cessator* also present in Puerto Rico, which was later corroborated by our DNA-based analyses.

Concluding Remarks

Our study is the first to provide first-hand life-stage associations of Leptolycini based on the use of biogeography and DNA-based data. Whilst the main goal of our study was to provide such associations, these could not have been done without the extensive clarifications in the taxonomy of the group in the Puerto Rican bank. The taxonomic work herein presented resulted in important changes in the classification of the group, with consequences that go beyond the

simple description of new taxa in the tribe. We provided a review of the Leptolycini taxa in the Puerto Rican bank, a key to the genera and all species of adults of the region, as well as an extensive debate on the intraspecific variability in the group, resulting in the descriptions of six new species and one genus and the synonymy of one genus, one subgenus and one species. As consequences of our life-stage associations, we also provided the first illustrations, diagnosis and identification keys of the immature forms and extreme paedomorphic females of the Leptolycini.

Even though our results significantly expand the knowledge of the group and provided evidence of extreme color polymorphism in both the larvae and adults in *Leptolycus*, several questions remain unresolved. Among these, we would like to further investigate the intraspecific variability of the several color morphs found in *L. heterocornis* and to obtain DNA grade specimens from all of the morphs of this species to compare and confront them with our proposed morphological limits. We also would like to build a COI library of all Leptolycini adults and larvae of the Puerto Rican bank, provide a definitive match of *Dracolycus* and their respective immature forms, and identify the immature forms and extreme paedomorphic females of all other species and genera in the region. For these, the identification of further material in scientific collections and further collecting efforts are necessary, and we hope that with the publication of this study we can capture the attention of entomologists and collectors. At last, we hope to have provided another example of the importance of natural history collections in taxonomic, systematic and evolutionary works. While the utilization of modern and more sophisticated DNA-based techniques significantly increases our taxonomic and systematic

knowledge of the groups, without the historical material of both adult males and larvae deposited in collections, these conclusions would not have been possible.

Acknowledgments

The collaborators all across the world are too numerous to list here, and we are grateful for all of their efforts. VSF is grateful to the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) of Brazil for his PhD scholarship (process 202559/2015-7) and to the Ernst Mayr Travel Grants in Animal Systematics; the Systematics, Evolution, and Biodiversity (SysEB) Student Research Travel Award from the Entomological Society of America and the several Montana State University Graduate School and College of Agriculture travel awards that allowed the visit to several collections and the field expedition to Puerto Rico; to the Idea Wild Project for providing resources that allowed the acquisition of part of the photographic equipment used in this project; to Erich L. Spiessberger for his assistance and pleasant company and friendship during VSF fieldwork in Puerto Rico. Authors are grateful to the respective curators and collections managers of each collection who provided material for this study and to the many persons who collaborated either with specimens or other valuable information, in special to Sergey Kazantsev (Insect Centre) and Matt Gimmel (Santa Barbara Museum of Natural History) for tips for collecting adult males Leptolycini in the El Verde Field Station and to Donald Yee (University of Southern Mississippi) for the donation of several critical larvae specimens that were used in this study. We thank Richard S. Miller for the critical donation of his Lycidae collection to the WIBF and for his valuable suggestions and discussions during the

development of this and several other studies with other soft-bodied Elateroidea. Several larvae specimens were collected by students funded by a grant to Donald Yee from the National Science Foundation (DEB-1806122). Research in the El Verde Field Station was possible due to the support grants BSR-8811902, DEB 9411973, DEB 0080538, DEB 0218039, DEB 0620910, DEB 0963447, and DEB-1546686 from NSF to the Institute for Tropical Ecosystem Studies, University of Puerto Rico, and to the International Institute of Tropical Forestry USDA Forest Service, as part of the Luquillo Long-Term Ecological Research Program, with additional support from the U.S. Forest Service (Dept. of Agriculture) and the University of Puerto Rico. This is a contribution of the Montana Agricultural Experiment Station.

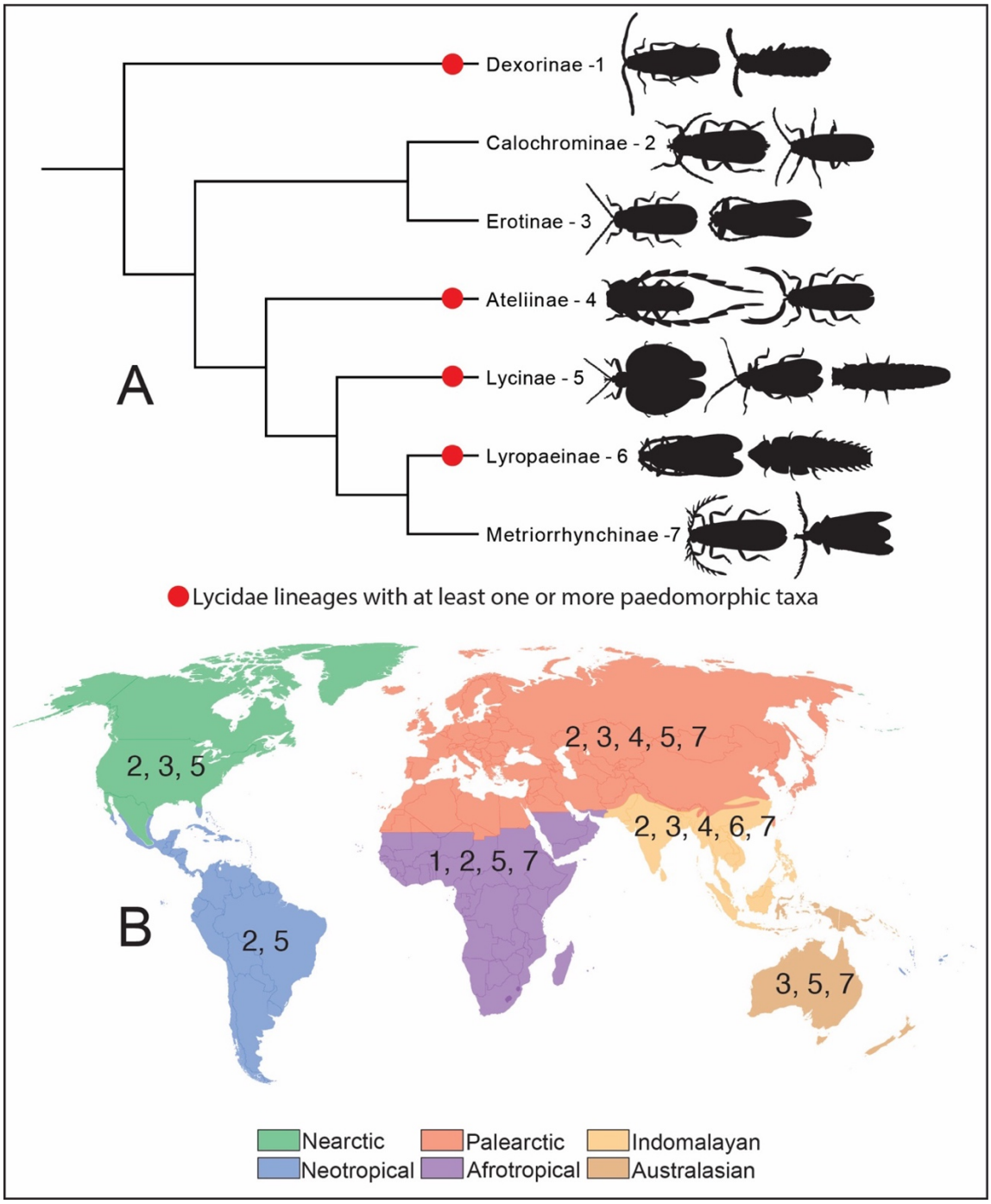


Figure 3.1. A. A scheme showing the hypothesized evolutionary relationships of Lycidae (modified from Kusy *et al*. 2019). Red circles indicate groups in which paedomorphosis has developed at least once in the subfamilies. **B.** Distribution of Lycidae lineages across the different zoogeographical zones. Map of the different ecozones modified from Wikimedia commons. Originally made by carol and used under a CC BY-SA 3.0.

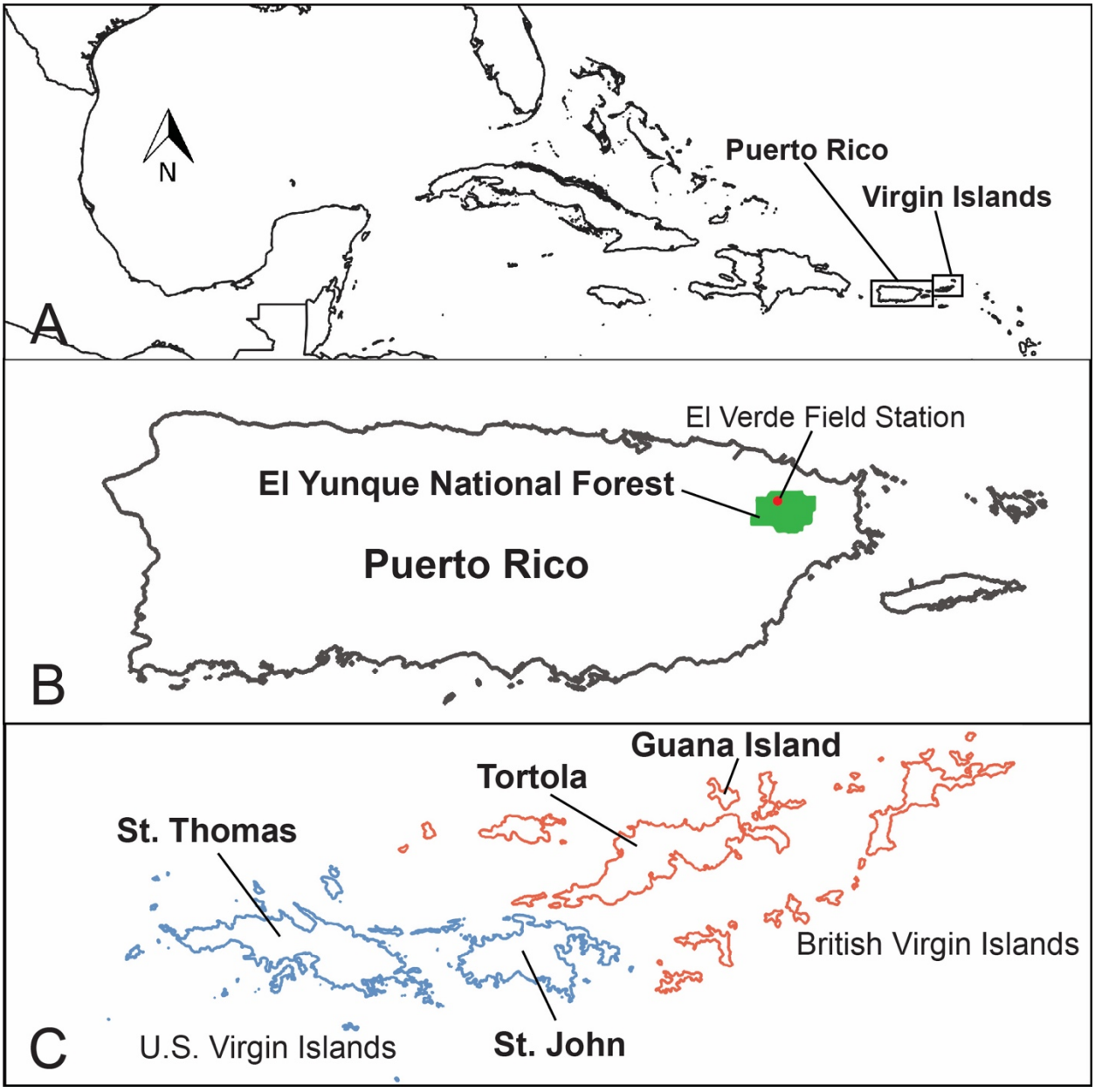


Figure 3.2. Study areas of the sampled material. **A.** Position of the Puerto Rican bank in the West Indies. **B.** Locality of the El Verde Field Station in the El Yunque National Forest in Puerto Rico. **C.** The Virgin Islands in detail; named islands are the ones in which Leptolycini specimens were collected.

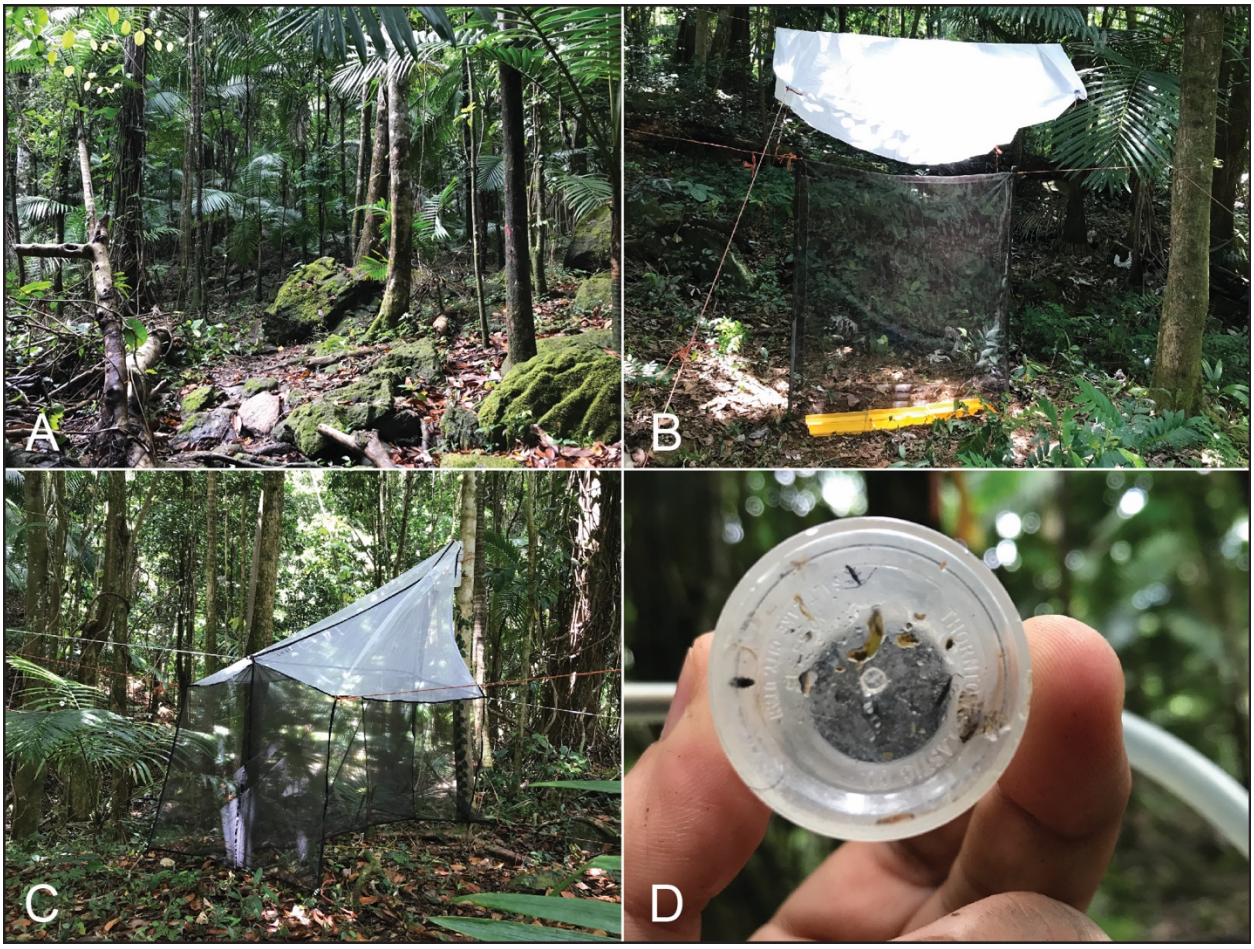


Figure 3.3. Puerto Rico collection site and some of the used collecting methods. **A.** Tropical rainforest in the El Verde Field Station. **B.** Flight interception trap (FIT). **C.** Malaise trap. **D.** Leptolycini specimens (above a *Leptolycus puellus* and to the right a *Cessator luquillonis*) first collected by net-sweeping and then with an aspirator.

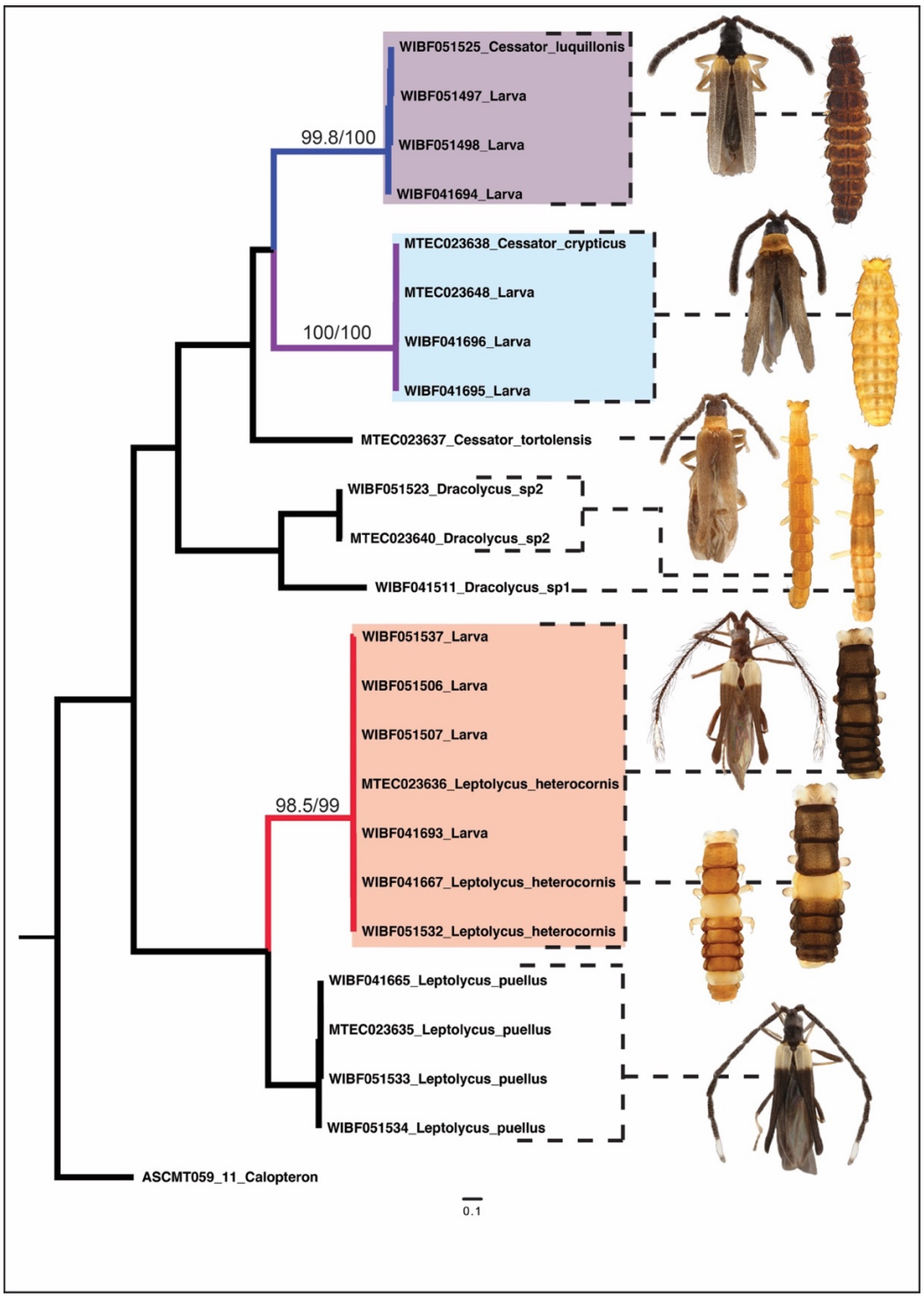


Figure 3.4. Maximum-likelihood topology of the generated COI sequences and a mainland *Calopteron* Branches in color represent matches between adult males and larvae. Number represents SH-aLRT (left) and Ultrafast Bootstrap (UFboot) (right).

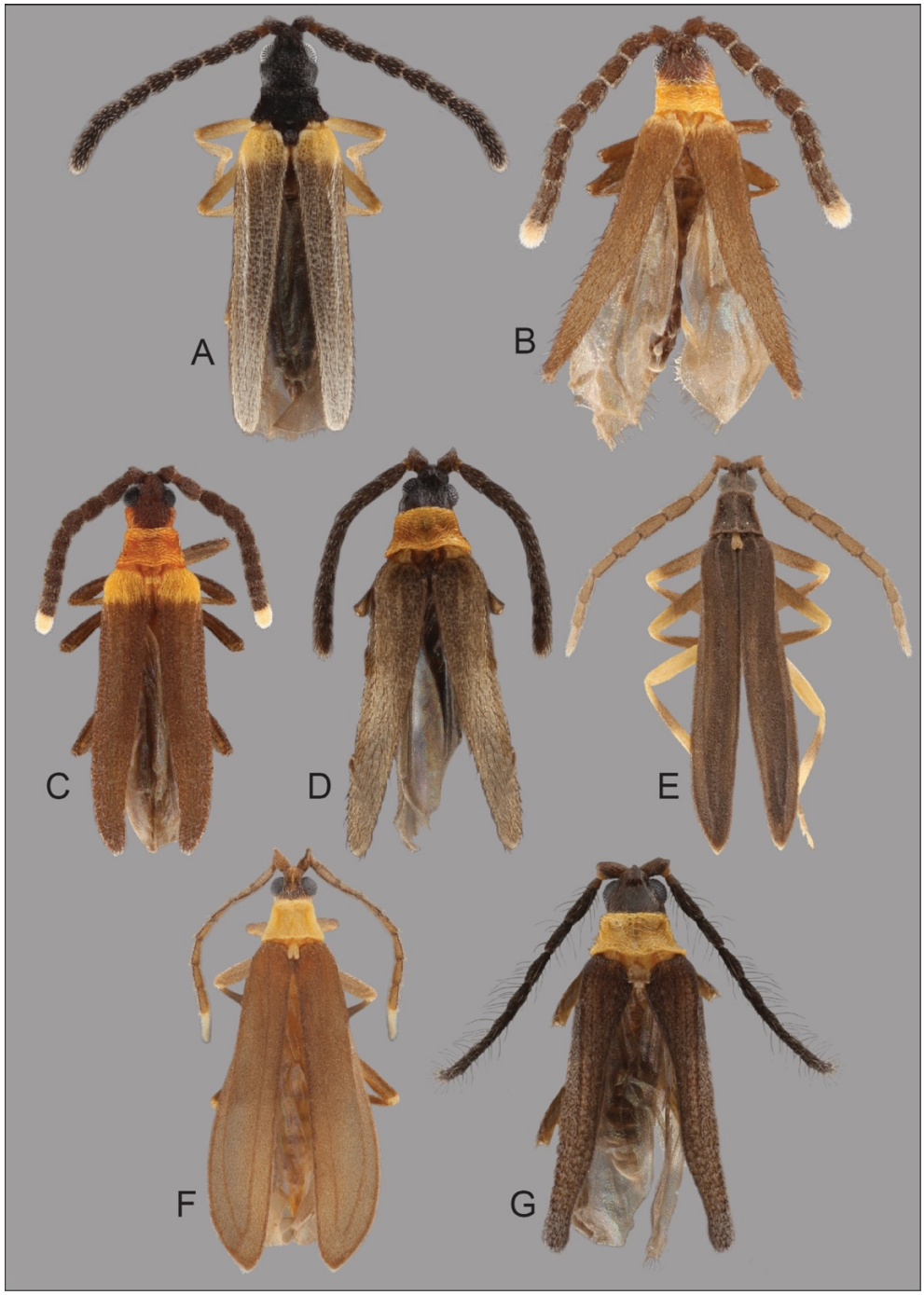


Figure 3.5. Male adult habitus of the Puerto Rican bank Leptolycini - *Cessator*, *Dracolycus* and *Tainopteron*. **A.** *Cessator luquillonis* Kazantsev, 2009. **B.** *Cessator tortolensis* **new species** (new species C_VI and D). **C.** *Cessator obrienni* **new species** *(newspecies* B). **D.** *Cessator crypticus* **new species** (new species A). VI. **E.** *Dracolycus chupacabra* **new genus** and **new species**. **F.** *Dracolycus marshalli* **new genus** and **new species**. **G.** *Tainopteron milleri* Kazantsev, 2009.



Figure 3.6. Head ventral detail of the adult male Puerto Rican bank Leptolycini - *Cessator*, *Dracolycus* and *Tainopteron*. **A.** *C. luquillonis*. **B.** *C. tortolensis* (new species C_VI and D). **C.** *C. obrienni (newspecies* B). **D.** *C. crypticus* (new species A). VI. **E.** *D. chupacabra*. **F.** *D. marshalli*. **G.** *T. milleri*.

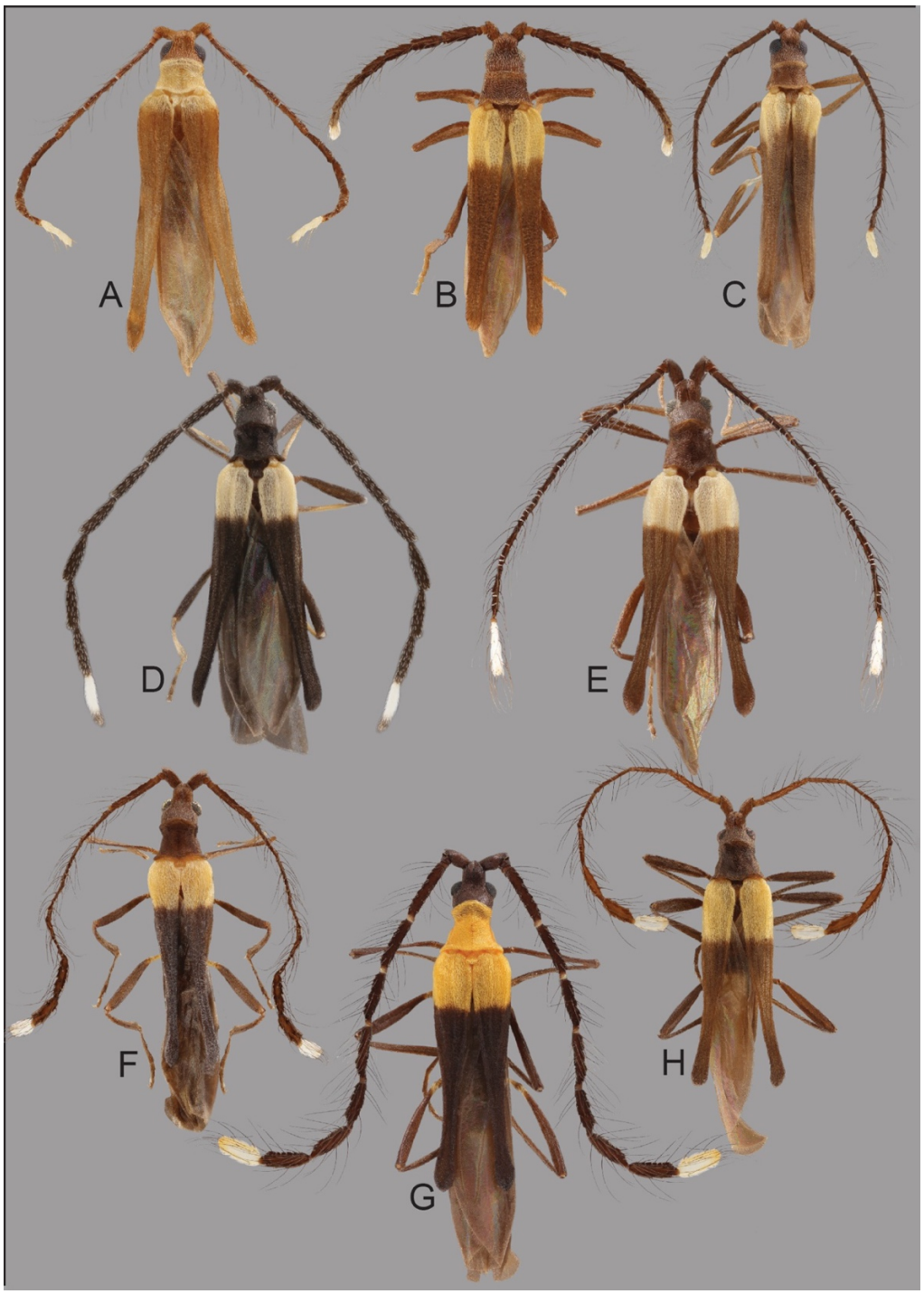


Figure 3.7. Male adult habitus of the Puerto Rican bank Leptolycini - *Leptolycus*. **A.** *Leptolycus albicauda.* **B.** *Leptolycus newspecies VI.* **C.** *Leptolycus falsoheterocornis* new species. **D.** *Leptolycus puellus*. **E-G.** *Leptolycus heterocornis* species complex. **E.** Color morph 1. **F.** Color morph 2. **G.** Color morph 3. **H.** Color morph 4.

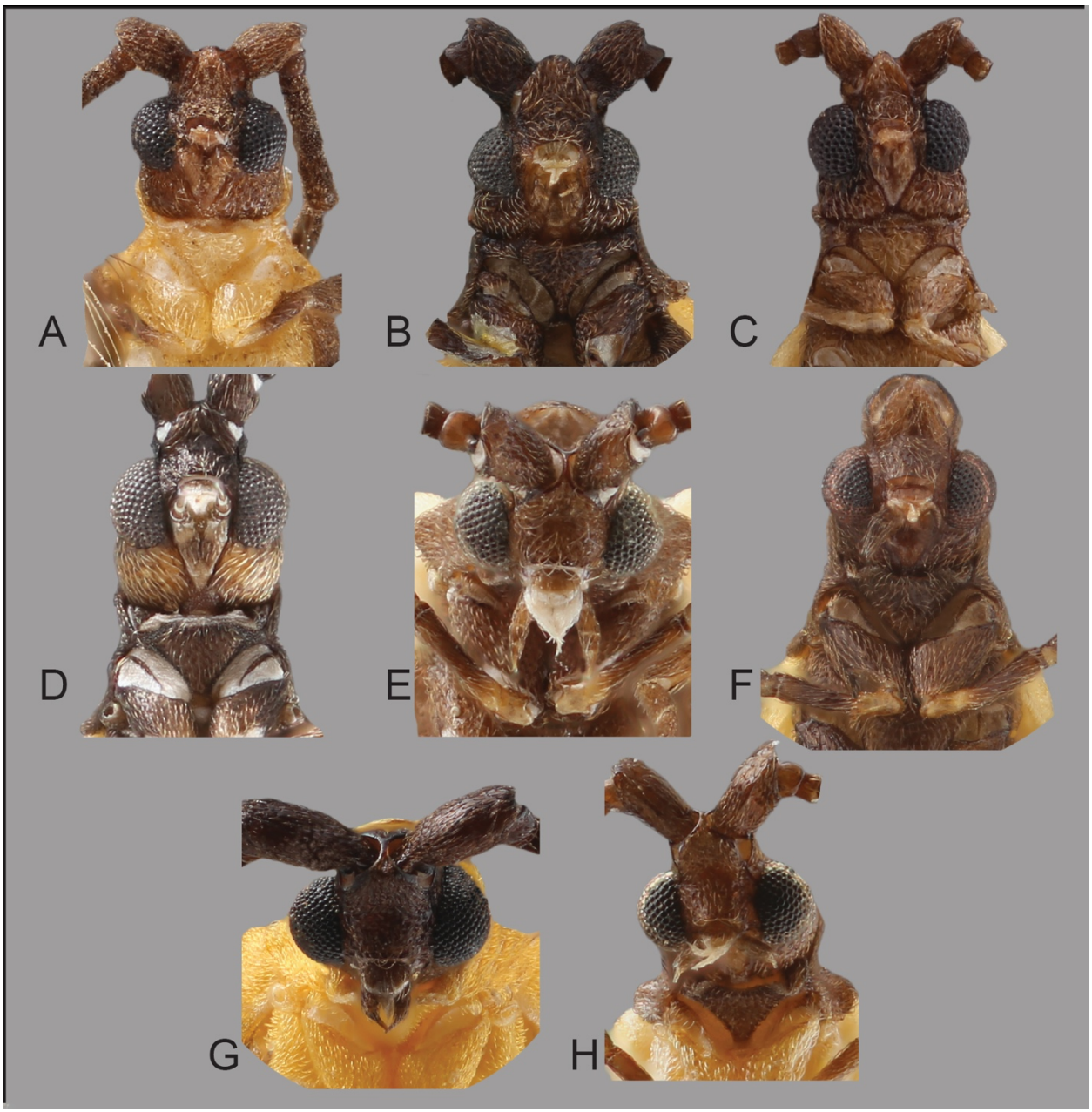


Figure 3.8. Head ventral detail of the adult male Puerto Rican bank Leptolycini - *Leptolycus*. **A.** *Leptolycus albicauda.* **B.** *Leptolycus viensis* new species. **C.** *Leptolycus falsoheterocornis* new species. **D.** *Leptolycus puellus*. **E-H.** *Leptolycus heterocornis* color morphs.

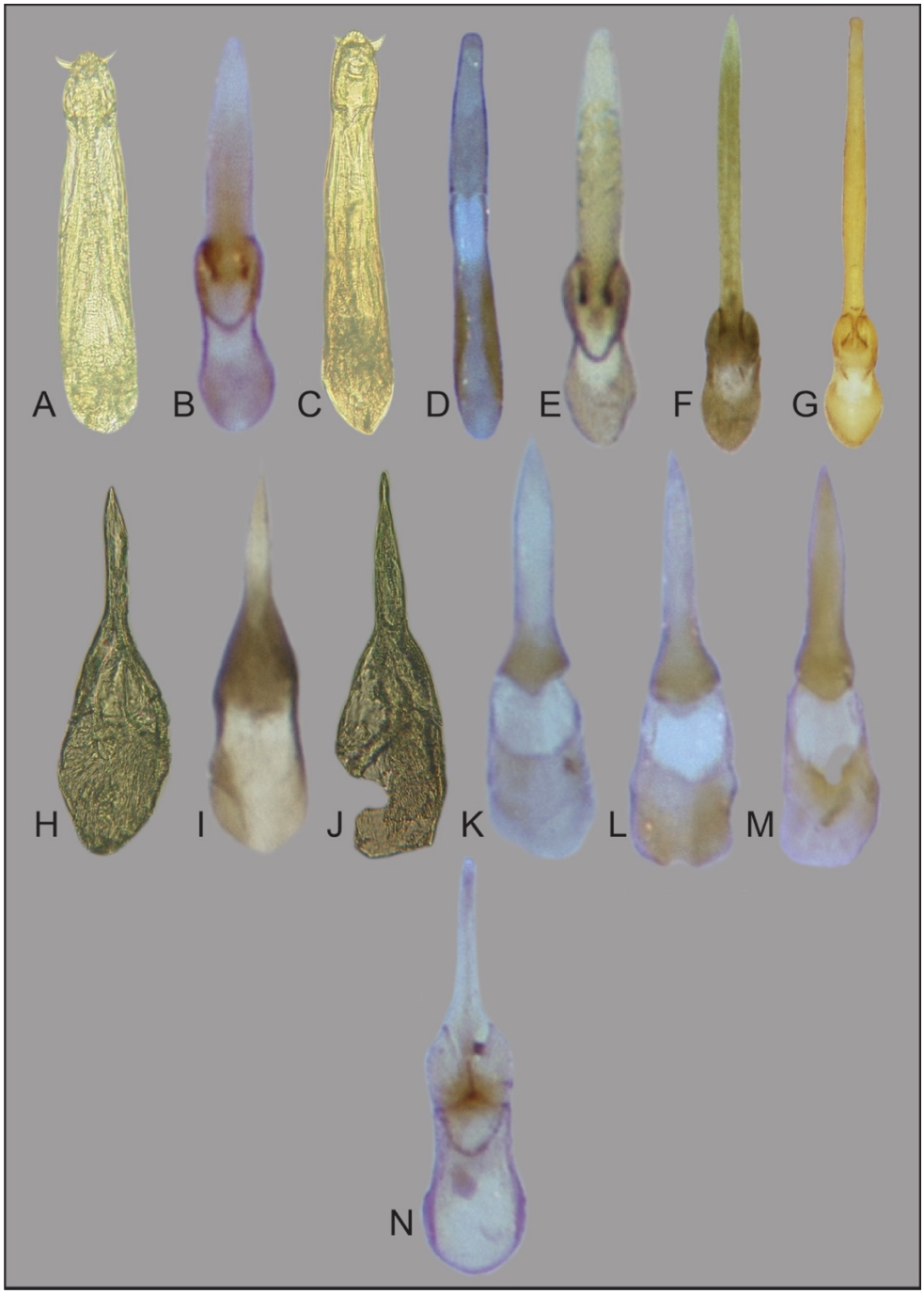


Figure 3.9. Male genitalia of Leptolycini species, dorsal view. *Cessator* spp. **A-D**. **A.** *C. luquillonis*. **B.** *C. tortolensis*. **C.** *C. obrienni*. **D.** *C. crypticus*. *Dracolycus* spp. **E-F. E.** *D. chupacabra*. **F.** *D. marshalli*. **G.** *T. milleri*. *Leptolycus* spp. **H-N. H.** *L. flavicollis*. **I.** *L. viensis*. **J.** *L. falsoheterocornis*. **K.** *L. puellus*. *Leptolycus heterocornis* color morphs **L-N**. **L.** Color morph 1. **M.** Color morph 2. **N.** Color morph 4. **O.** *Tainopteron milleri*.



Figure 3.10. Dorsal view of the immature forms of the Puerto Rican bank Leptolycini. *Leptolycus* larvae spp. **A-C.** *L. heterocornis* color morphs. **D.** *Leptolycus* sp. 1. **E.** *Leptolycus* sp. 2. **F.** *L. viensis*.

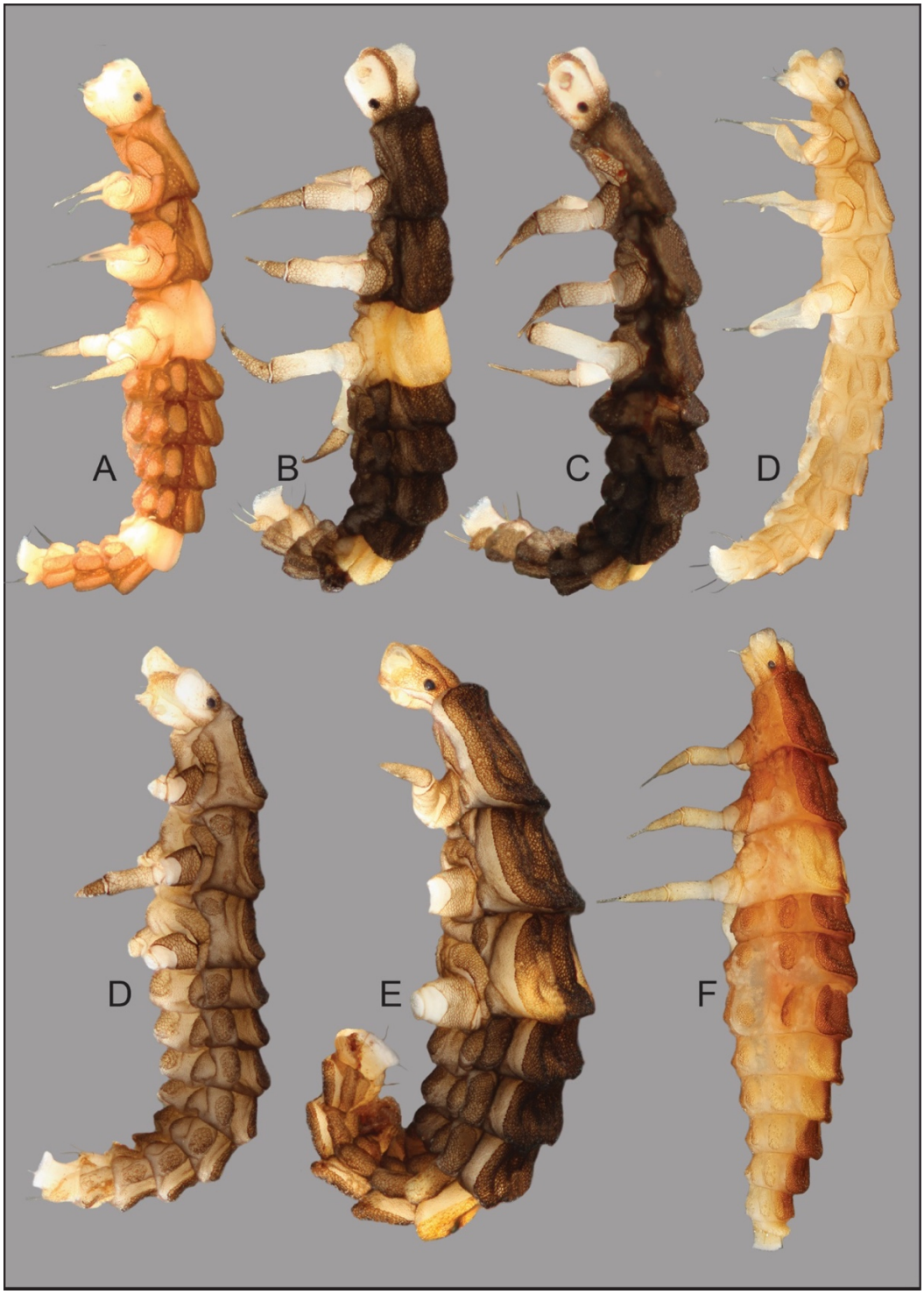


Figure 3.11. Lateral view of the immature forms of the Puerto Rican bank Leptolycini. *Leptolycus* larvae spp. **A-C.** *L. heterocornis* color morphs. **D.** *Leptolycus* sp. 1. **E.** *Leptolycus* sp. 2. **F.** *L. viensis*.



Figure 3.12. Ventral view of the immature forms of the Puerto Rican bank Leptolycini. *Leptolycus* larvae spp. **A-C.** *L. heterocornis* color morphs. **D.** *Leptolycus* sp. 1. **E.** *Leptolycus* sp. 2. **F.** *L. viensis*.

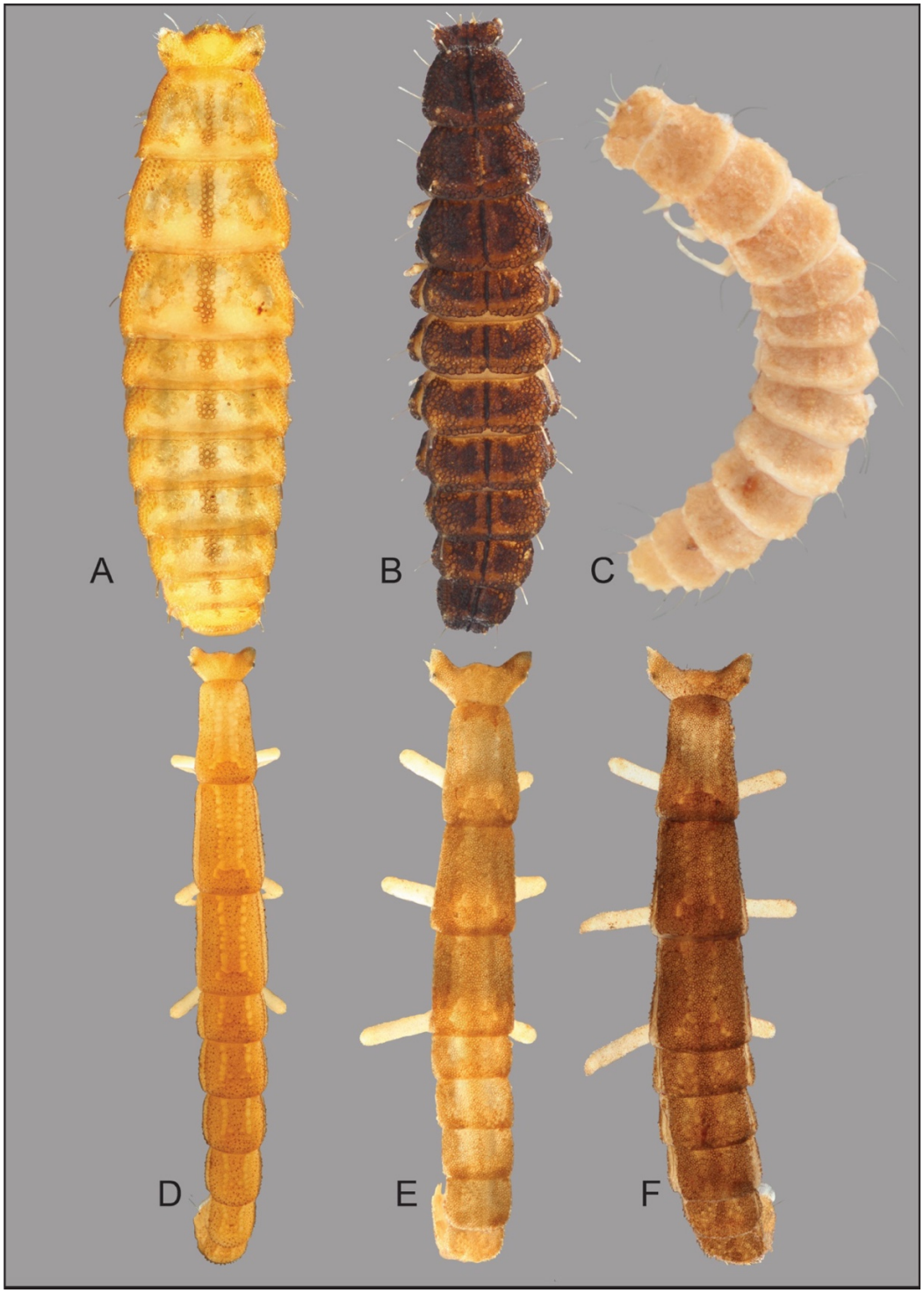


Figure 3.13. Dorsal view of the immature forms of the Puerto Rican bank Leptolycini. *Cessator* and *Dracolycus* larvae spp. **A-C.** *Cessator* spp. **A.** *C. crypticus*. **B.** *C. luquillonis*. **C.** *C. tortolensis*. **D-F.** *Dracolycus* larvae spp. **D.** *Dracolycus* sp. 1. **E-F.** *Dracolycus* sp. 2.



Figure 3.14. Lateral view of the immature forms of the Puerto Rican bank Leptolycini. *Cessator* and *Dracolycus* larvae spp. **A-C.** *Cessator* spp. **A.** *C. crypticus*. **B.** *C. luquillonis*. **C-E.** *Dracolycus* larvae spp. **C.** *Dracolycus* sp. 1. **D-E.** *Dracolycus* sp. 2.

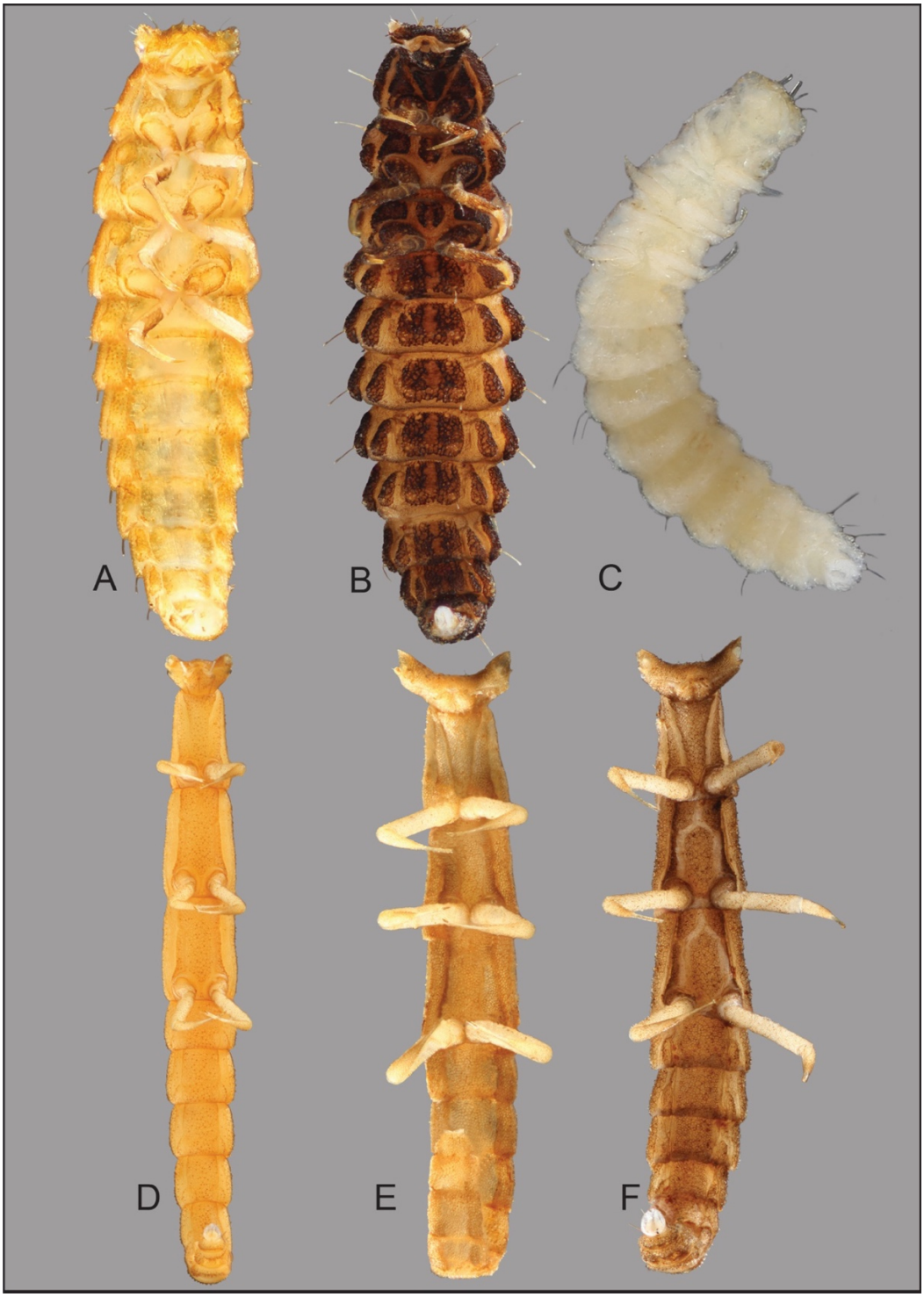


Figure 3.15. Ventral view of the immature forms of the Puerto Rican bank Leptolycini. *Cessator* and *Dracolycus* larvae spp. **A-C.** *Cessator* spp. **A.** *C. crypticus*. **B.** *C. luquillonis*. **C.** *C. tortolensis*. **D-F.** *Dracolycus* larvae spp. **D.** *Dracolycus* sp. 1. **E-F.** *Dracolycus* sp. 2.

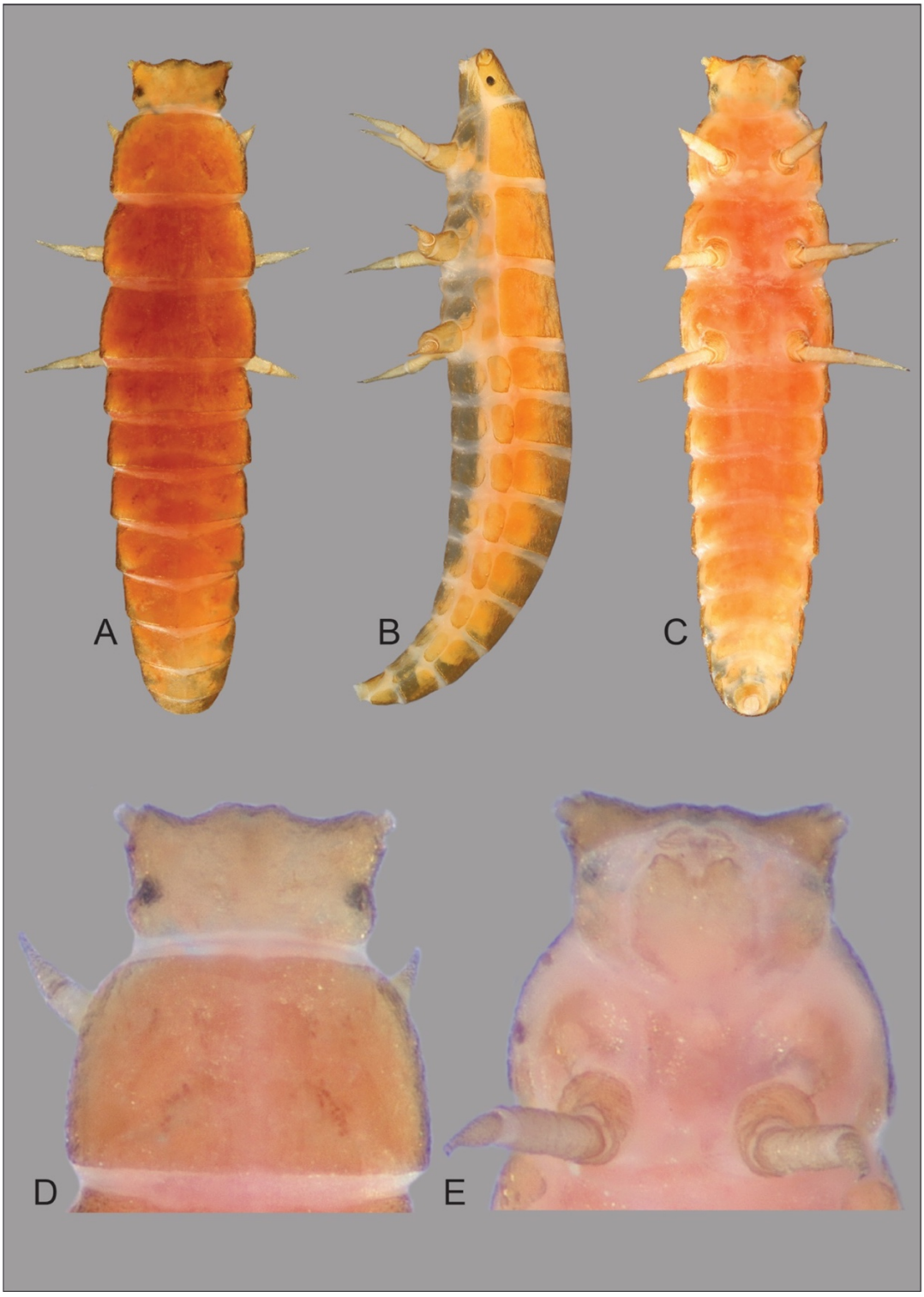


Figure 3.16. Extreme paedomorphic adult female of *Leptolycus viensis*. **A.** Dorsal habitus. **B.** Lateral habitus. **C.** Ventral habitus. **D.** Head detail, dorsal view. **E.** Head detail, ventral view.

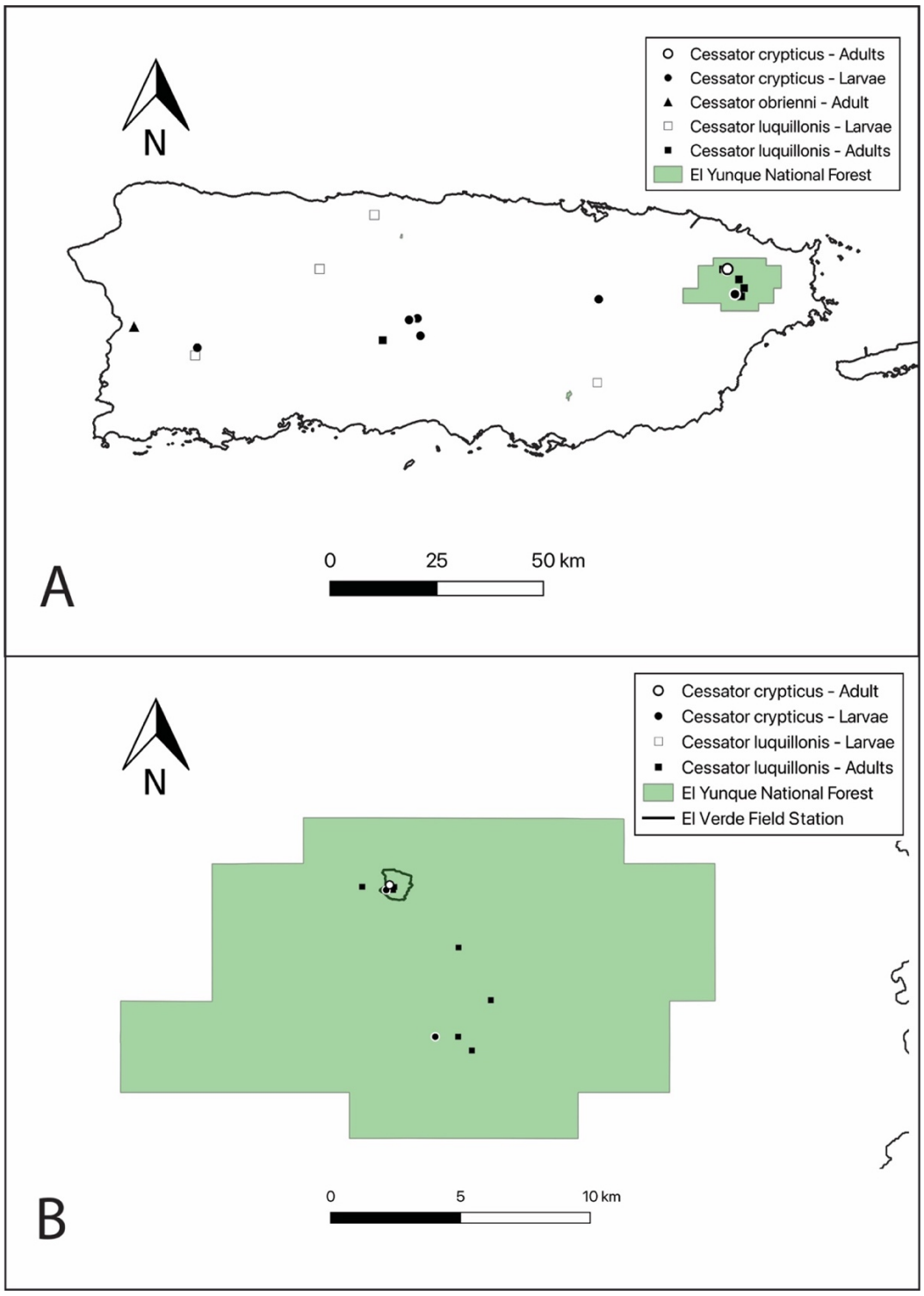


Figure 3.17. Distribution map of adult and larvae *Cessator* in Puerto Rico. **A.** Distribution of *C. crypticus*, *C. obrienni*, *C. luquillonis*. **B.** Distribution of *C. crypticus* in the El Yunque National Forest.

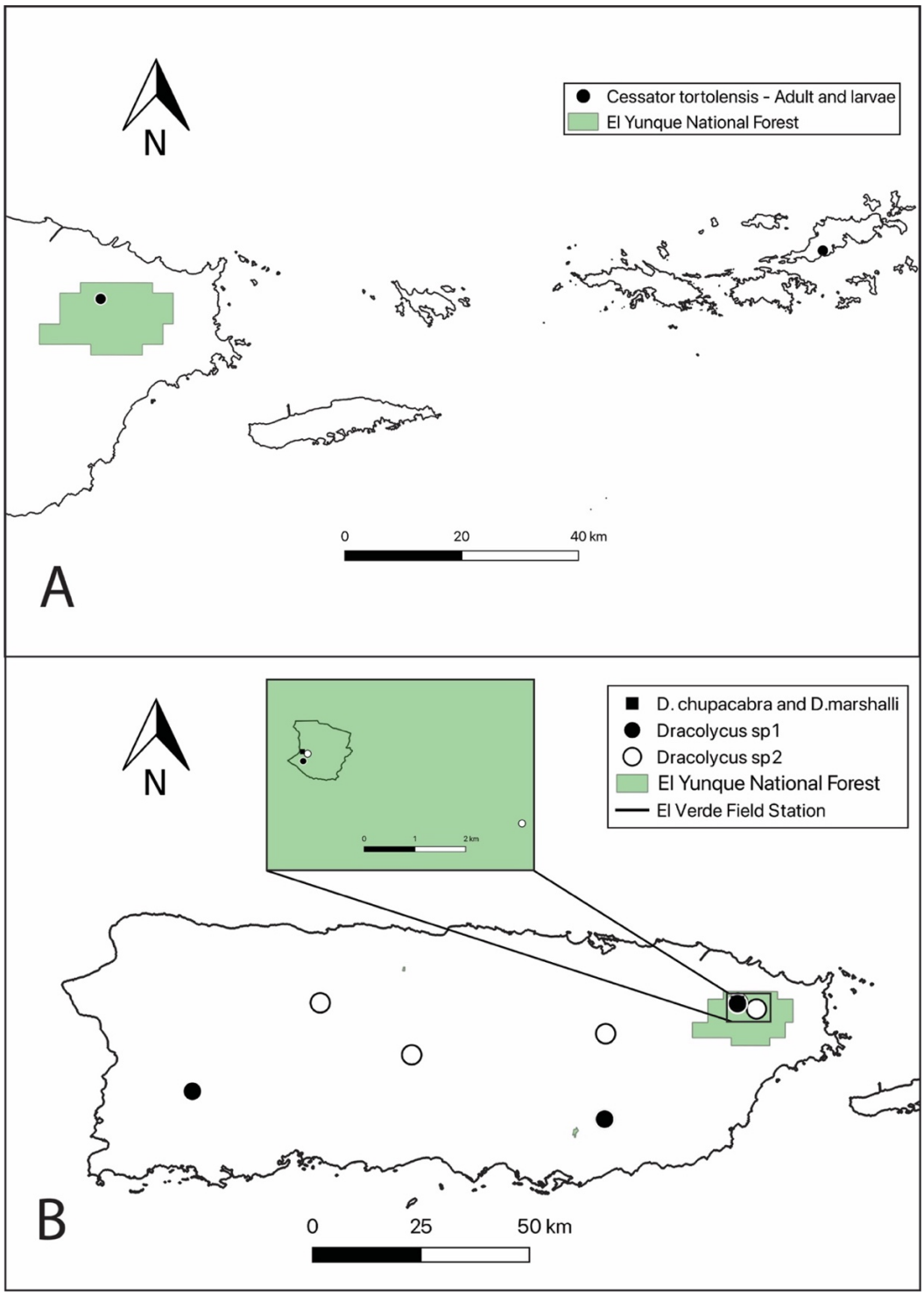


Figure 3.18. Distribution map of adult and larvae *Cessator tortolensis* and *Dracolycus*. **A.** Distribution of *C. tortolensis* in Puerto Rico and Tortola. **B.** Distribution of *D. chupacabra*, *D. marshalli* and *Dracolycus* sp 1 and *Dracolycus* sp 2.

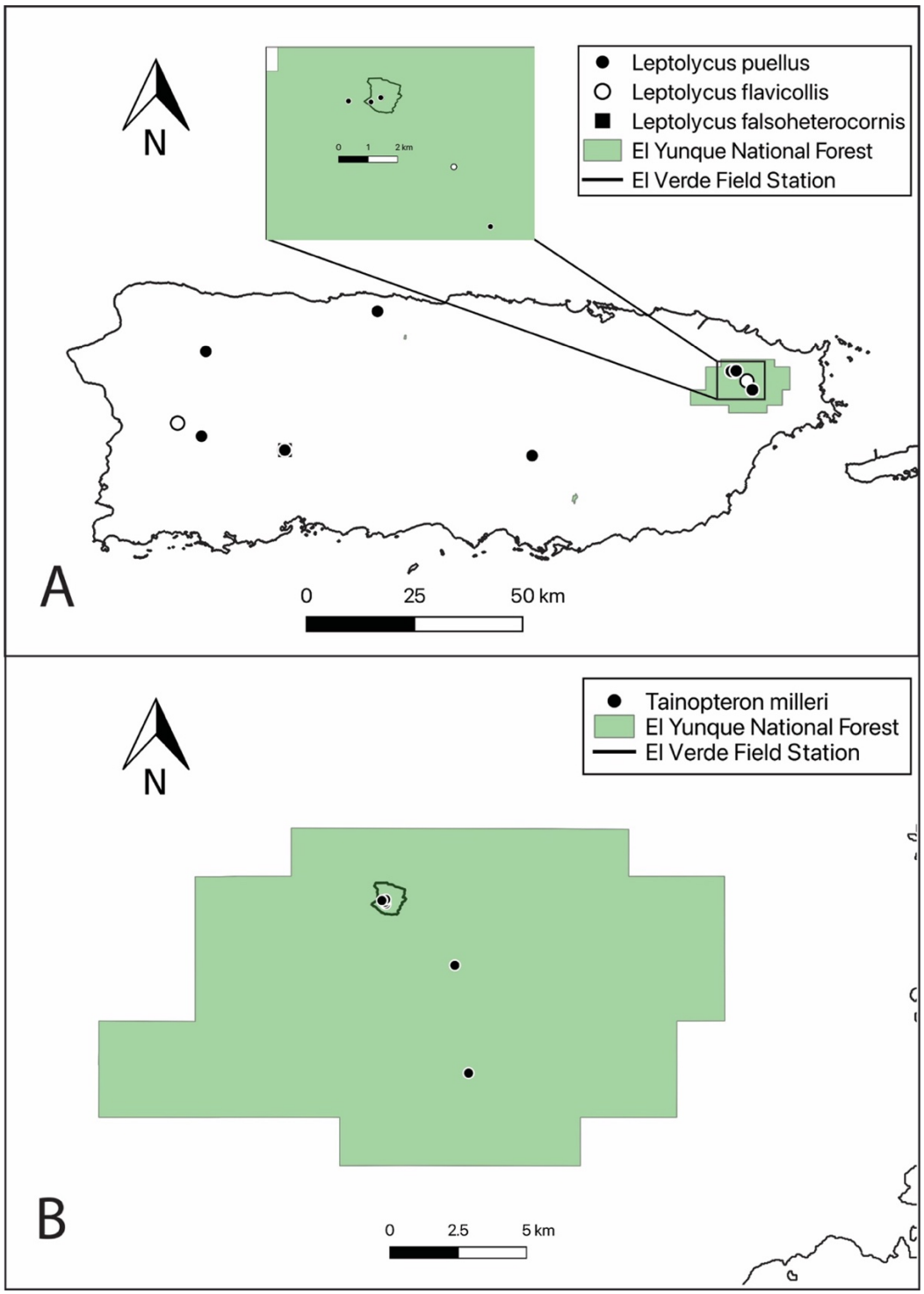


Figure 3.19. Distribution map of adult *Leptolycus* and *Tainopteron* species in Puerto Rico. **A.** Distribution of *L. puellus, L. flavicollis, L. falsoheterocornis*. **B.** Distribution of *Tainopteron milleri*.

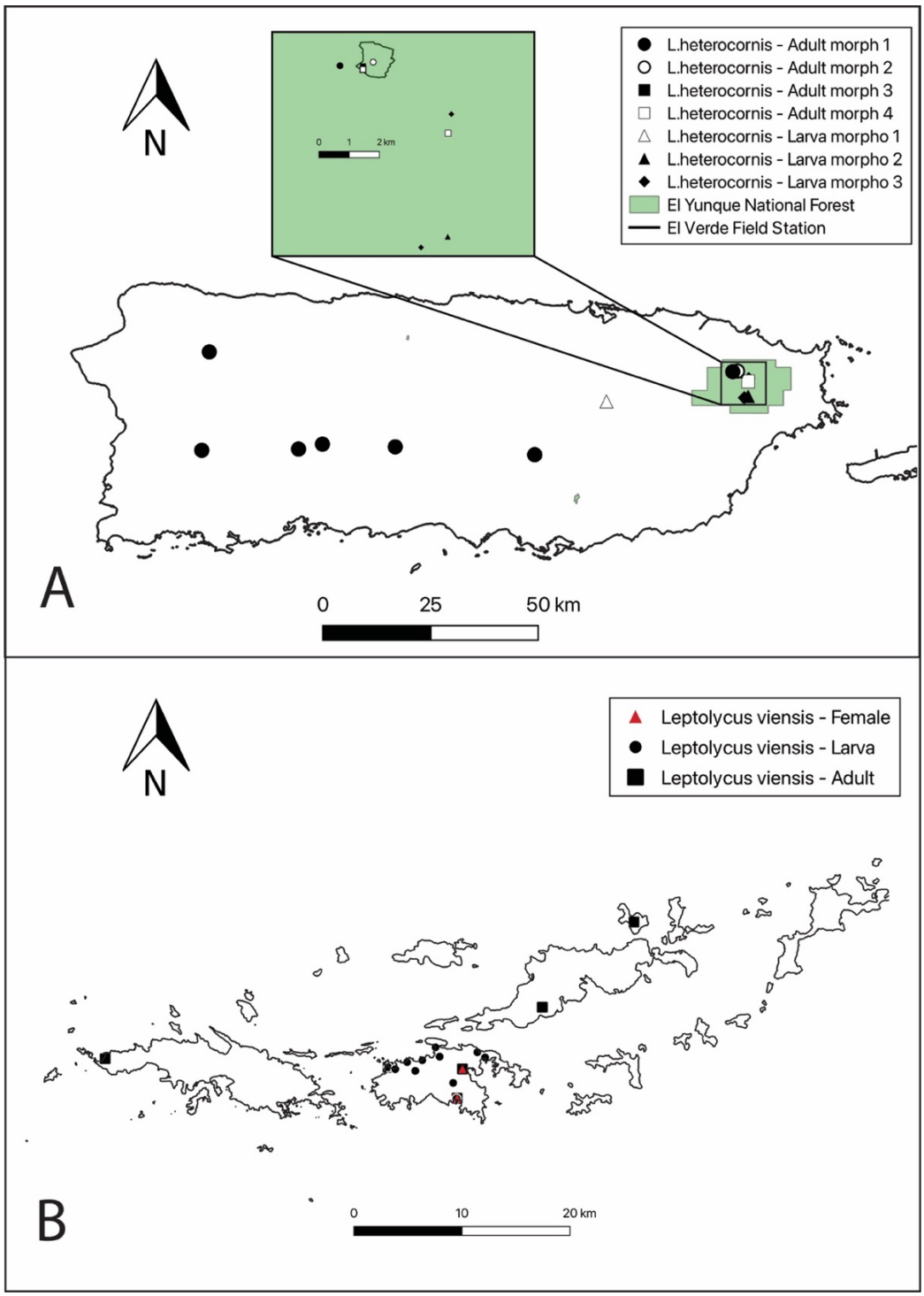


Figure 3.20. Distribution map of adult *Leptolycus heterocornis* and *Leptolycus viensis*. **A.** *Leptolycus heterocornis* (adult males and larvae morphs) distribution in Puerto Rico. **B.** *Leptolycus viensis* (adults males and females, larvae) distribution in the Virgin Island

References cited

Bocak, L. 2001. New taxa of *Leptolycus* (Coleoptera: Lycidae) from the Dominican Republic. Folia Heyrovkyana 9(3-4): 203-210.

Bocák, L. and Bocákova, M. 1990. Revision of the suprageneric classification of the family Lycidae (Coleoptera). Polskie Pismo Entomologiczne, 59, 623–676.

Bocak, L. and Bocakova, M. 2008. Phylogeny and classification of the family Lycidae (Insecta: Coleoptera). Annales Zoologici. 58(4):695–720. doi:10.3161/000345408X396639

Bocak, L. and Matsuda, K. 2010. Review of the immature stages of the family Lycidae (Insecta: Coleoptera). Journal of Natural History, 37:12, 1463-1507.

Bocak, L., Bocakova, M., Hunt, T., Vogler, A.P., 2008. Multiple ancient origins of neoteny in Lycidae (Coleoptera): consequences for ecology and macroevolution. Proceedings of the Royal Society B: Biological Sciences 275, 2015–2023.

Bocakova M. 2003. Revision of the tribe Calopterini (Coleoptera, Lycidae). Studies on Neotropical Fauna and Environment, 38:207–234. doi:10.1076/snfe.38.3.207.28169

Bocakova M. 2005. Phylogeny and classification of the tribe Calopterini (Coleoptera, Lycidae). Insect Sys Evol. 35:437–447. doi:10.1163/187631204788912472

Bocakova, M. 2014. *Lolodorfus*, a new genus of net-winged beetles (Coleoptera: Lycidae: Dexorinae) from Cameroon. Zootaxa 3811 (3): 374-380.

Bocakova, M., Bocak, L., Hunt, T., Teravainen, M. & Vogler, A. P. 2007. Molecular phylogenetics of Elateriformia (Coleoptera): evolution of bioluminescence and neoteny. Cladistics 23, 477–496. doi:10.1111/j.1096-0031.2007.00164.x

Bocek, M., Fancello, L., Motyka, M., Bocakova, M. and Bocak, L. 2017. The molecular phylogeny of Omalisidae (Coleoptera) defines the family limits and demonstrates low dispersal propensity and ancient vicariance patterns. Systematic Entomology DOI: 10.1111/syen.12271

Bocek, M., Motyka, M., Kusy, D. and Bocak, L. 2019. Genomic and Mitochondrial Data Identify Different Species Boundaries in Aposematically Polymorphic Eniclases Net-Winged Beetles (Coleoptera: Lycidae). Insects, 10, 295. https://doi.org/10.3390/insects10090295

Bray, T.C. and Bocak, L. 2016. Slowly dispersing neotenic beetles can speciate on a penny coin and generate space-limited diversity in the tropical mountains. *Scientific Reports*, 6:33579.

Brown, S., Lugo, A.E., Silander, S., and Liegel, L. 1983. Research History and Communities in the Luquillo Experimental Forest. U.S. Department of Agriculture, Forest Service, General Technical Report SO-44, New Orleans, Louisiana: Southern Forest Experiment Station., New Orleans, Louisiana.

Cicero, J.M. 1988. Ontophylogenetics of Cantharoid Larviforms (Coleoptera: Cantharoidea). The Coleopterists Bulletin, 42(2):105-151.

Costa C, Casari-Chen SA, Vanin SA .1988. Larvas de Coleoptera do Brasil. 1. Museu de Zoologia, Universidade de São Paulo, 282 + 65 plates pp. [In Portuguese]. https://doi.org/10.5962/bhl.title.100233

Crowson, R.A. 1981. *The biology of the Coleoptera*. Academic Press, London, 802 pp.

Etzler, F.E., Huether, J., Johnson, P.J., Skillman Jr., F.W., Ivie, M.A. 2013. Use of Morphology and CO1 Barcoding to Test the Validity of *Tetraopes huetheri* Skillman (Coleoptera: Cerambycidae). The Coleopterists Bulletin, 67(1):46-49 (2013). https://doi.org/10.1649/072.067.0110

Etzler, F.E., Wanner, K.W., Morales-Rodriguez, A., Ivie, M.A. 2014. DNA Barcoding to Improve the Species-Level Management of Wireworms (Coleoptera: Elateridae). Journal of Economic Entomology 107(4): 1476-1485. 10.1603/EC13312

Ferreira, V. S., O. Keller, M. A. and Branham, M.A. 2020. Multilocus Phylogeny Support the Nonbioluminescent Firefly *Chespirito* as a New Subfamily in the Lampyridae (Coleoptera: Elateroidea). Insect Systematics and Diversity, (2020) 4(6): 2; 1–13. doi: 10.1093/isd/ixaa014

Ferreira, V. S., O. Keller, M. A. Branham, and M. A. Ivie. 2019. Molecular data support the placement of the enigmatic *Cheguevaria* as a subfamily of Lampyridae (Insecta: Coleoptera). Zool. J. Linn. Soc. 187: 1253–1258.

Ferreira, V.S. & Costa, C. 2015. A description of the Larva of *Metapteron xanthomelas* (Lucas, 1857) from the Restinga Forest of Southeastern Brazil (Coleoptera: Lycidae, Calopterini). Zootaxa, 3915: 295−300. http://dx.doi.org/10.11646/zootaxa.3915.2.9

Ferreira, V.S. & Ivie, M.A. 2016. Redescription of *Cephalolycus* Pic, 1926 (Coleoptera: Elateroidea: Lycidae) and a Discussion on Its Taxonomic Position. The Coleopterists Bulletin, 70(3): 663−666

Ferreira, V.S. 2020. Revision of *Acroleptus* Bourgeois, 1886 and Descriptions of New *Aporrhipis* Species (Lycidae, Calopterini, Acroleptina). Journal of Natural History. 53: 2739−2756. https://doi.org/10.1080/00222933.2020.1733120

Ferreira, V.S. and Ivie, M.A. 2017. The first fossil species of the extant genus *Cessator* Kazantsev (Coleoptera: Lycidae): a new leptolycini from Dominican Amber. The Coleopterists Bulletin 71, 57–60.

Ferreira, V.S. and Ivie, M.A. 2018. A revision of *Lycinella* Gorham, 1884 with the description of six new species (Coleoptera, Lycidae, Calopterini). ZooKeys. 792:69–89. doi:10.3897/zookeys.792.28034

Ferreira, V.S. and Silveira, L.F.L. 2020. A New Paedomorphic Genus of Net-Winged Beetles from the Atlantic Rainforest (Coleoptera, Elateroidea, Lycidae). Papéis Avulsos de Zoologia. v.60.special-issue: e202060(s.i.).35. http://doi.org/10.11606/1807-0205/2020.60.special-issue.35

Ferreira, V.S. and Costa, C. 2017. An Online Database of the Immatures of Coleoptera (Arthopoda, Insecta) Described from Brazil. Biodiversity Data Journal 5: e12252 doi: 10.3897/BDJ.5.e12252

Fitch, W.M. and Margoliash, E. 1967. Construction of phylogenetic trees. Science 155: 279-284.

Folmer, O., Black, M., Hoeh, W., Lutz, R. and Vrijenhoek, R. 1994. DNA primers for amplification of mitochondrial cytochrome *c* oxidase subunit I from diverse metazoan invertebrates. Molecular Marine Biology and Biotechnology 3: 294–299.

Gould SJ. 1977. Ontogeny and phylogeny. Cambridge, MA: Harvard University Press.

Jiruskova, A., Bocak, L. 2015. Species Delimitation in *Cautires* (Coleoptera: Lycidae) from Peninsular Malaysia Using DNA Data and Morphology. Annales Zoologici, 65(2), 239-248.

Jukes T.H., Cantor C.R. 1969. Evolution of Protein Molecules. In: Munro H.N. editor. Mammalian Protein Metabolism. New York: Academic Press. p. 21–132.

Katoh, K., K. Misawa, K.I. Kuma, and T. Miyata. 2002. MAFFT: a novel method for rapid multiple sequence alignment based on fast Fourier transform. Nucleic Acids Res. 30: 3059–3066.

Kazantsev, S. V. 2003. Morphology of Lycidae with some considerations on evolution of the Coleoptera. Elytron. 17:49–226.

Kazantsev, S. V. 2009. Leptolycini of Puerto Rico (Coleoptera: Lycidae). Russian Entomological Journal, 18(2):87-95.

Kazantsev, S. V. 2013. New and little-known taxa of "neotenic" Lycidae (Coleoptera), with discussion of their phylogeny. Russian Entomological Journal. 22:9–31.

Kazantsev, S. V. 2017. New leptolycines from Ecuador and Peru (Coleoptera: Lycidae). Russ Entomol J.26: 127–146.

Kazantsev, S.V. 2005. *Neolyrium* gen. n., first South American genus of net-winged beetles with 10-segmented antennae (Coleoptera: Lycidae). Zootaxa 1064: 51–64.

Kimura M. 1980. A simple method for estimating evolutionary rates of base substitutions through comparative studies of nucleotide sequences. Journal of Molecular Evolution, 16(2): 111–20.

Kumar S, Stecher G, Li M, Knyaz C, and Tamura, K. 2018. MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. Molecular Biology and Evolution 35:1547-1549.

Kundrata, R. and Bocak, L. 2019. Molecular phylogeny reveals the gradual evolutionary transition to soft-bodiedness in click-beetles and identifies Sub-Saharan Africa as a cradle of diversity for Drilini. Zoological Journal of the Linnean Society, 187 (2): 413–452. https://doi.org/10.1093/zoolinnean/zlz033

Kundrata, R., Bocakova, M., Bocak, L. 2014. The comprehensive phylogeny of the superfamily Elateroidea (Coleoptera: Elateriformia). *Molecular Phylogenetics and Evolution*, 76: 162–171.

Kusy, D., Motyka, M., Bocek, M., Masek, M., and Bocak, L. 2019. Phylogenomic analysis resolves the relationships among net-winged beetles (Coleoptera: Lycidae) and reveals the parallel evolution of morphological traits. Systematic Entomology 44, 911–925.

Kusy, D., Motyka, M., Bocek, M., Vogler, A. P. and Bocak, L. 2018. Genome sequences identify three families of Coleoptera as morphologically derived click beetles (Elateridae). Scientific Reports volume 8, Article number: 17084 (2018).

Kusy, D., Sklenarova, K., and Bocak, L. 2018. The effectiveness of DNA-based delimitation in *Synchonnus* net-winged beetles (Coleoptera: Lycidae) assessed, and description of 11 new species. Austral Entomology, 57: 25– 39. doi: 10.1111/aen.12266.

Lawrence, J.F., Slipinski, A., Seago, A.E., Thayer, M.K., Newton, A.F., Marvaldi, A.E., 2011. Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annales Zoologici*, 61: 1–217.

Leng, C. W. and A. J. Mutchler. 1922. Article VIII.- The Lycidae, Lampyridae and Cantharidae (Telephoridae) of the West Indies. Bull. Bulletin American Museum of Natural History, 46:413–499.

Leng, C. W. and A. J. Mutchler. 1922. Article VIII.- The Lycidae, Lampyridae and Cantharidae (Telephoridae) of the West Indies. Bull. Bulletin American Museum of Natural History, 46:413–499.

Levkanikova, Z. and Bocak, L. 2009. Identification of net-winged beetle larvae (Coleoptera: Lycidae) using three mtDNA fragments: a comparison of their utility. Systematic Entomology (2009), 34, 210–22.

Li, Y., Pang, H. and Bocak, L. 2018. A Review of the Neotenic Genus *Atelius* Waterhouse, 1878 from China (Coleoptera: Lycidae). Annales Zoologici, 68(2):351-356.

Martin, G. J., K. Stanger-Hall, M. A. Branham, L. F. L. Silveira, S. E. Lower, D. W. Hall, X. Li, A. R. Lemmon, E. M. Lemmon, and S. M. Bybee. 2019. Higher-Level Phylogeny and Reclassification of Lampyridae (Coleoptera: Elateroidea). Insect Systematics and Diversity, 3: ixz024.

Martin, G. J., M. A. Branham, M. F. Whiting, and S. M. Bybee. 2017. Total evidence phylogeny and the evolution of adult bioluminescence in fireflies (Coleoptera: Lampyridae). Molecular Phylogenetics and Evolution: 564–575.

Masek, M. and Bocak, L. 2014. The taxonomy and diversity of *Platerodrilus* (Coleoptera, Lycidae) inferred from molecular data and morphology of adults and larvae. ZooKeys 426: 29–63. doi: 10.3897/zookeys.426.7398

Masek, M., Ivie, M.A., Palata, V. and Bocak, L. 2014. Molecular phylogeny and classifi cation of Lyropaeini (Coleoptera: Lycidae) with description of larvae and new species of *Lyropaeus*. Raffles Bulletin of Zoology,62: 136–145.

Masek, M., Motyka, M., Kusy, D., Bocek, M., Li, Y., Bocak, L., 2018. Molecular phylogeny, diversity and zoogeography of net-winged beetles (Coleoptera: Lycidae). Insects 9, 154.

McDowell, W.H., Scatena, F.N., Waide, W.B., Brokaw, N., Camilo, G.R., Covich, A.P., Crowl, T.A., González, G., Greathouse, E.A., Klawinski, P., Lodge, D.J., Lugo, A.E., Pringle, C.M., Richardson, B.A., Richardson, M.J., Schaefer, D.A., Silver, W.L., Thompson, J., Vogt, D., Vogt, K.A., Willig, M.R., Woolbright, L.L., Zou, X., Zimmerman, J.K., 2012. Geographic and ecological setting of the Luquillo Mountains. In: Brokaw, N., Crowl, T.A., Lugo, A.E., McDowell, W.H., Scatena, F.N., Waide, R.B., Willig, M.R. (Eds.), A Caribbean Forest Tapestry: the Multidimensional Nature of Disturbance and Response. Oxford University Press, New York, pp. 72–163.

McMahon, D. P. and Hayward, A. 2016. Why grow up? A perspective on insect strategies to avoid metamorphosis. *Ecological Entomology*, 41: 505–515.

McNamara, K.J. 2012. Heterochrony: The Evolution of Development. *Evolution: Education and Outreach*, 5:203–218.

Mertins, J.W. 1981. Life History and Morphology of the Odd Beetle, *Thylodrias contractus*. *Annals of the Entomological Society of America*, 74:576–581.

Miller, R.S. 1991. A revision of Leptolycini (Coleoptera: Lycidae) with a discussion of paedomorphosis. PhD Dissertation // The Ohio State University. P.1–403 (unpublished).

Mjöberg, E. 1925. The mystery of the so called "Trilobite" or "Perty's larvae" defi nitely solved. Psyche, 22: 119–153.

Perotti, M.A., Young, D. K. and Braig, H.R. 2016. The ghost sex-life of the paedogenetic beetle *Micromalthus debilis*. Scientific Report, 6: 27364.

Price, M.N., Dehal, P.S. and Arkin, A.P. 2010. FastTree 2 – Approximately Maximum-Likelihood Trees for Large Alignments. Plos One, 5(3): e9490.

Ratnasingham, S. and Hebert, P.D.N. 2013., A DNA-based registry for all animal species: the Barcode Index Number (BIN) system. Plos One, 8: doi: 10.1371/journal.pone.0066213

Rattu, R. 2016. Contributo alla conoscenza delle femmine delle specie sarde di Cebrio (Coleoptera, Elateridae, Elaterinae, Cebrionini). Estratto dagli Annali del Museo Civico di Storia Naturale "G. Doria" Vol. 108 - 20 Ottobre 2016.

Rattu, R. 2020. Morphological, geonemic and ecological notes on Cebrio (Tibesia) mediatlantis mediatlantis Kocher, 1952, and description of the female (Coleoptera, Elateridae, Elaterinae, Cebrionini). Bollettino del Museo di Storia Naturale di Venezia, 71: 51–59.

Raupach MJ, Hannig K, Morinière, J. and Hendrich, L. 2016. A DNA barcode library for ground beetles (Insecta, Coleoptera, Carabidae) of Germany: The genus *Bembidion* Latreille, 1802 and allied taxa. *Zookeys*. 2016;(592):121–141. doi:10.3897/zookeys.592.8316

Reilly, S.M., Wiley, E.O. and Meinhardt, D.J. 1997. An integrative approach to heterochrony: the distinction between interspecific and intraspecific phenomena. *Biological Journal of the Linnean Society*, 60: 119–143.

Reiss, R.A., Schwert, D.P., Ashworth, A.C. 1995. Field Preservation of Coleoptera for Molecular Genetic Analyses, Environmental Entomology, 24(3):716–719. https://doi.org/10.1093/ee/24.3.716

Roza, A.S., Quintino, H.Y.S., Mermudes, J.R.M. and Silveira, L.F.L. 2017. *Akamboja* gen. nov., a new genus of railroad-worm beetle endemic to the Atlantic Rainforest, with five new species (Coleoptera: Phengodidae, Mastinocerinae). Zootaxa 4306 (4): 501–523.

Schowalter, T. D., Willig, M.R., Presley, S.J. 2014. Canopy arthropod responses to experimental canopy opening and debris deposition in a tropical rainforest subject to hurricanes. Forest Ecology and Management 332: 93–102. https://doi.org/10.1016/j.foreco.2013.12.008

Scott, A.C. 1938. Paedogenesis in the Coleoptera. Zeitschrift fuer Morphologie und ¨Okologie der Tiere 33: 633–653.

Sikes, D.S., Mullen, L.J. 2021. Phylogeny and evolution of large body size in the rove beetle genus *Phlaeopterus* Motschulsky, 1853 (Coleoptera: Staphylinidae: Omaliinae: Anthophagini). Arthropod Systematics & Phylogeny 70: 75–98.

Srivathsan, A, Baloğlu, B, Wang, W. *et al*. 2018. A MinION™-based pipeline for fast and cost-effective DNA barcoding. Molecular Ecology Resources, 18: 1035–1049. https://doi.org/10.1111/1755-0998.12890

Srivathsan, A., Hartop, E., Puniamoorthy, J. *et al*. 2018. Rapid, large-scale species discovery in hyperdiverse taxa using 1D MinION sequencing. BMC Biol: 17, 96. https://doi.org/10.1186/s12915-019-0706-9

Telfer AC, Young MR, Quinn J, Perez K, Sobel CN, Sones et al. 2015. Biodiversity inventories in high gear: DNA barcoding facilitates a rapid biotic survey of a temperate nature reserve. Biodiversity Data Journal, (3): e6313. doi: 10.3897/BDJ.3.e6313

Trifinopoulos, J., L. T. Nguyen, A. von Haeseler, and B. Q. Minh. 2016. IQ-TREE web server: fast and accurate phylogenetic trees under maximum likelihood. Nucleic Acids Res. 44: W232–W235.

Vea, I.M. and Minakuchi, C. 2021. Atypical insects: molecular mechanisms of unusual life history strategies. *Current Opinion in Insect Science*, 43: 46–53.

Wong, A.T.C. 1996. A new species of neotenous beetle, *Duliticola hoiseni* (Insecta: Coleoptera: Cantharoidea: Lycidae) from peninsular Malaysia and Singapore. Raffles Bulletin of Zoology, 44: 173–187.

Wu, R. J. C. 1997. Secrets of a Lost World: Dominican Amber and its Inclusions. Privately published, Santo Domingo, Dominican Republic.

Li, Y., Gunter, N., Pang, H. and Bocak, L. 2018. DNA-based species delimitation separates highly divergent populations within morphologically coherent clades of poorly dispersing beetles, Zoological Journal of the Linnean Society, 175 (1): 59–72. https://doi.org/10.1111/zoj.12262

Zapata de La Vega, J.S., Sánchez-Ruiz, A and López, M.A. 2020. Nueva aportación al conocimiento del género *Cebrio* Olivier,1790. Descripción de la hembra de *Cebrio* (*Tibesia*) *rozasi* Cobos, 1985 (Coleoptera: Elateridae: Elaterinae: Cebrionini). Boletín de la SAE, 30: 69–74.

Zayas, F. de. 1988. Entomofauna Cubana. Orden Coleoptera. Separata. Descripcion de Nuevas Especies. Editorial Cientifico-Tecnica. 212 pp.

Zhai, Q., Xue, G., Li, M. 2017. DNA barcoding-based sexual association of *Sovia lucasii* and *S. lii* (Lepidoptera: Hesperiidae), with description of a new subspecies. PLOS ONE: 12(8): e0183847. https://doi.org/10.1371/journal.pone.0183847

Zilberman, B. 2020. Phylogenetic analysis of the genus *Corotoca*, with description of a new genus and species from Brazil (Coleoptera, Staphylinidae, Aleocharinae). Insect Systematics & Evolution, 52(2): 201-245. 10.1163/1876312X-bja10005

CHAPTER FOUR

CONCLUSIONS

The previous two chapters of this dissertation provide a foundational work on the evolution, taxonomy, morphology, biology and systematic knowledge of the West Indies Lycidae. The future publication of these chapters will allow the identification of materials of these two groups in dozens of scientific collections and enable investigations on the biology, biogeography distribution patterns and I hope, lead to further collections of material, which will certainly harbor new taxa to be described and studied.

In particular, both works are important to the overall knowledge of New World Lycidae, by providing the first detailed morphological studies and delimitations of the species and genera herein studied, including the documentation of the immatures and extreme paedomorphic females of Leptolycini. These works also cleaned up nomenclatural and taxonomic issues that are as old as two centuries (see discussion under *Thonalmus* bicolor redescription in chapter two) and that prevented the correct understanding and further development of other biological studies with these groups.

As expected, despite the several years of investment and research in these projects, much work still remains to be done. For the second chapter (revision and phylogeny of *Thonalmus*), further research in the biogeography patterns distribution of some of the species (particularly the ones from Montserrat) is advised, as the investigation of such phenomenon was only superficially and collaterally, as a result of my revision and phylogeny, done. Still on *Thonalmus*,

while a well-supported molecular phylogeny for some of the species of this genus was provided, I would like to obtain more DNA data from all species of the genus, generate new datasets compatible with NGS datasets being produced for other Elateroidea groups and to expand the morphological dataset produced, allowing also the proper understanding of the phylogenetic position of Thonalmini among the rest of the Lycidae (see detailed discussion and conclusion sections in chapter two).

For the third chapter (life stage associations and review of the Puerto Rican bank Leptolycini), further investigations in the intraspecific variability of the several color morphs found in *L. heterocornis* is advised, specifically with the obtention of more COI sequences of all of these morphs. As mentioned in the concluding remarks of that chapters, I hope that with the publication of this study more collectors will pay attention to this obscure group of beetles, which I hope will result in the availability of more specimens and the generation of more data, increasing our life-stage associations and the biological knowledge on beetles of the tribe Leptolycini, in particular the knowledge of the females.

Both works combined also generated a significant amount of Sanger DNA data, that I hope will further contribute to large scale phylogenetics analyses of higher-level relationships of the Lycidae. Overall, with chapters two and three, I hope to have provided examples of the importance of an integrative approach to answer biological, evolutionary and taxonomic questions and of natural history collections in any biodiversity-related project and expect that other researchers in the field follow this lead. While the diversity of Lycidae in the West Indies is

significantly smaller than their mainland counterparts, after these studies, their taxonomy, biology and bionomy are nowadays one of the best studied Lycidae fauna in the World.

CUMULATIVE REFERENCES CITED

Abadi S., Azouri D., Pupko T. and Mayrose I. 2019. Model selection may not be a mandatory step for phylogeny reconstruction. Nature Communications, 10(934):1–11.

Aragón, A.R. 2006. Estudios de diversidad de insectos en la región Jibacoa-Hanabanilla. Macizo Guamuhaya. Centro Agrícola, 33(2): 49–56.

Aragón, A.R., Ravelo, H.G., O´Farril, S.R. and Pérez, P.A. 2003. Lista de insectos conocidos, de los cayos Majá y Español de Adentro, Cayería Norte de Villa Clara. Centro Agricola, 30(2): 71–75.

Barbosa, F. F. 2016. Revision and phylogeny of the genus *Balgus* Fleutiaux, 1920 (Coleoptera, Elateridae, Thylacosterninae). Zootaxa 4083(4): 451–482.

Barceló, A. M. and Diéguez, A. R. 2005. Entomofauna asociada al cultivo del tabaco al sol en la unidad administrativa Jesús Menéndez en la provicina de Las Tunas. Fitosanidad, 9(1): 9–14.

BEAST Tutorial. 2013. Divergence Time Estimation using BEAST v1.7.5. Available at: http://treethinkers.org/wp-content/uploads/2013/04/DivTime_BEAST_tutorial_2013.pdf. Last access at: Sep. 29, 2020.

Blackwelder, R. E. 1945. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America, pt. 3. Bulletin of the United States National Museum. i–iv: 343–550.

Bocak, L. 2001. New taxa of *Leptolycus* (Coleoptera: Lycidae) from the Dominican Republic. Folia Heyrovkyana 9(3–4): 203–210.

Bocák, L. and Bocákova, M. 1990. Revision of the suprageneric classification of the family Lycidae (Coleoptera). Polskie Pismo Entomologiczne, 59: 623–676.

Bocak, L. and Bocakova, M. 2008. Phylogeny and classification of the family Lycidae (Insecta: Coleoptera). Annales Zoologici, 58(4):695–720. https://doi.org/10.3161/000345408X396639

Bocak, L. and Matsuda, K. 2010. Review of the immature stages of the family Lycidae (Insecta: Coleoptera). Journal of Natural History, 37(12):1463–1507.

Bocak, L., Bocakova, M., Hunt, T. and Vogler, A.P., 2008. Multiple ancient origins of neoteny in Lycidae (Coleoptera): consequences for ecology and macroevolution. Proceedings of the Royal Society B: Biological Sciences 275, 2015–2023.

Bocakova M. 2003. Revision of the tribe Calopterini (Coleoptera, Lycidae). Studies on Neotropical Fauna and Environment, 38:207–234. doi:10.1076/snfe.38.3.207.28169

Bocakova M. 2005. Phylogeny and classification of the tribe Calopterini (Coleoptera, Lycidae). Insect Systematics & Evolution, 35:437–447. doi:10.1163/187631204788912472

Bocakova, M. 2014. *Lolodorfus*, a new genus of net-winged beetles (Coleoptera: Lycidae: Dexorinae) from Cameroon. Zootaxa 3811 (3): 374–380.

Bocakova, M., Bocak, L., Hunt, T., Teravainen, M. and Vogler, A. P. 2007. Molecular phylogenetics of Elateriformia (Coleoptera): evolution of bioluminescence and neoteny. Cladistics, 23: 477–496. doi:10.1111/j.1096-0031.2007.00164.x

Bocek, M., Fancello, L., Motyka, M., Bocakova, M. and Bocak, L. 2017. The molecular phylogeny of Omalisidae (Coleoptera) defines the family limits and demonstrates low dispersal propensity and ancient vicariance patterns. Systematic Entomology DOI: 10.1111/syen.12271

Bocek, M., Motyka, M., Kusy, D. and Bocak, L. 2019. Genomic and Mitochondrial Data Identify Different Species Boundaries in Aposematically Polymorphic Eniclases Net-Winged Beetles (Coleoptera: Lycidae). Insects, 10: 295. https://doi.org/10.3390/insects10090295

Bourgeois, J. 1883. Synopsis du genre *Thonalmus*. Annales de la Société entomologique de France, (6) 3: 375–380.

Bourgeois, J. 1901. Les Lycides du Muséum d'Histoire Naturelle de Paris. Annales de la Société entomologique de France, 70:31–51.

Bousquet, Y. and Bouchard, P. 2013. The genera in the second catalogue (1833–1836) of Dejean's Coleoptera collection. Zookeys, 282: 1–219.

Bray, T.C. and Bocak, L. 2016. Slowly dispersing neotenic beetles can speciate on a penny coin and generate space-limited diversity in the tropical mountains. *Scientific Reports*, 6:33579.

Brower A. V. Z. 1994. Rapid morphological radiation and convergence among races of the butterfly Heliconius erato Inferred from patterns of mitochondrial DNA Evolution. Proceedings of the National Academy of Sciences of the United States of America, 91: 6491–6495.

Brown, S., Lugo, A.E., Silander, S., and Liegel, L. 1983. Research History and Communities in the Luquillo Experimental Forest. U.S. Department of Agriculture, Forest Service, General Technical Report SO-44, New Orleans, Louisiana: Southern Forest Experiment Station., New Orleans, Louisiana.

Castelnau [Laporte], F. L. N. 1840. Histoire Naturelle des Insectes Coléoptères. Tome I. Paris. 324 pp.

Chalumeau, F. and Touroult, J. 2005. Les longicornes des Petites Antilles (Coleoptera, Cerambycidae). Taxonomie, éthologie, biogéographie. Edition: Pensoft Series Faunistica n°51. Publisher: Pensoft Publishers, 241 pp.

Chevrolat, A. 1870. Coléoptères de l'ile de Cuba. Notes, synonymies et descriptions d'espèces nouvelles. Annales de la Société entomologique de France, (4)10:67–78.

Cicero, J.M. 1988. Ontophylogenetics of Cantharoid Larviforms (Coleoptera: Cantharoidea). The Coleopterists Bulletin, 42(2):105–151.

Coquebert, A.J. 1804. Illustratio Iconographica Insectorum. Paris. 142 pp, 30 plates.

Costa C, Casari-Chen SA, Vanin SA .1988. Larvas de Coleoptera do Brasil. 1. Museu de Zoologia, Universidade de São Paulo, 282 + 65 plates pp. https://doi.org/10.5962/bhl.title.100233

Crowson, R.A. 1981. *The biology of the Coleoptera*. Academic Press, London, 802 pp.

Dalman, J. W. 1817. In: Schönherr, C. J. 1817. Appendix ad C.J. Schönherr Synonymiam Insectorum. Tom. I, Part. 3., Appendix. Stockholm. 266 pp + 2 plates.

Darlington, P. J. 1936. A new oedemerid beetle from Cuba. Psyche, 43: 102-103.

Darlington, P. J. 1938. Experiments on mimicry in Cuba, with suggestions for future study. Transactions of the Royal Entomological Society of London, 87(23):681–695.

Dejean, P.F.M.A. 1833. Catalogue des Coléoptères de la collection de M. le Comte Dejean. [Livraisons 1-2]. Méquignon-Marvis, Paris, 1–176.

Dejean, P.F.M.A. 1836b-1837. Catalogue des coléoptères de la collection de M. le comte Dejean. Troisième édition, revue, corrigée et augmentée. Méquignon-Marvis Père et Fils, Paris. xiv + 503 pp. [Livraisons 1–4 (1836b): pp. 1–384; Livraison 5 (1837): pp. i–xiv + 385–503].

Douglas, H.B., Kundrata, R., Brunke, A.J., Escalona, H.E., Chapados, J.T., Eyres, J., Richter, R., Savard, K., Ślipiński, A., McKenna, D. and Dettman, J.R. 2021. Anchored Phylogenomics, Evolution and Systematics of Elateridae: Are All Bioluminescent Elateroidea Derived Click Beetles? Biology 2021, 10, 451. https://doi.org/10.3390/biology10060451

Drummond, A.J., Ho, S.Y.W., Phillips, M.J. and Rambaut, A. 2006. Relaxed phylogenetics and dating with confidence. PLOS Biology, 4: e88.

Eisner, T., Schroeder, F.C., Snyder, N., Grant, J.B., Aneshansley, D.J., Utterback, D., Meinwald, J. and Eisner, M. 2008. Defensive chemistry of lycid beetles and of mimetic cerambycid beetles that feed on them. Chemoecology, 18: 109–119.

Etzler, F.E., Huether, J., Johnson, P.J., Skillman Jr., F.W., and Ivie, M.A. 2013. Use of Morphology and CO1 Barcoding to Test the Validity of *Tetraopes huetheri* Skillman (Coleoptera: Cerambycidae). The Coleopterists Bulletin, 67(1):46–49. https://doi.org/10.1649/072.067.0110

Etzler, F.E., Wanner, K.W., Morales-Rodriguez, A., Ivie, M.A. 2014. DNA Barcoding to Improve the Species-Level Management of Wireworms (Coleoptera: Elateridae). Journal of Economic Entomology 107(4): 1476–1485. 10.1603/EC13312

Fabricius, J. C. 1775. Systema Entomologiae. Lipsiae [Leipzig]. 832 pp.

Fabricius, J. C. 1781. Species Insectorum. Tome I. Kilonii [Kiel]. 552 pp.

Fabricius, J. C. 1787. Mantissa Insectorum. Tome I. Hafniae. 348 pp.

Fabricius, J. C. 1792. Entomologiae Systematicae Emendata et Auctae. Tom. I. Pars II. Hafniae. 538 pp.

Fabricius, J. C. 1801. Systema Eleutheratorvm secvndvm, ordines, genera, species: Adiectis, Synonymis, Locis, Observationibvsm Descriptionibvs. Tomvs II. Kiliae. 687 pp.

Fernández García, I., Reyes Sánchez, E.E. and Daniel Álvarez, A. 2010. Colección entomológica "Juan C. Gundlach": Serie Elateriformia (Coleoptera). Poeyana, 499:5–12.

Ferreira, V. S. 2016. A revision of the genus *Macrolygistopterus* Pic, 1929 (Coleoptera, Lycidae, Calochromini). Zootaxa. 4105: 321–338.

Ferreira, V. S., O. Keller, M. A. and Branham, M.A. 2020. Multilocus Phylogeny Support the Nonbioluminescent Firefly *Chespirito* as a New Subfamily in the Lampyridae (Coleoptera: Elateroidea). Insect Systematics and Diversity, (2020) 4(6): 2; 1–13. doi: 10.1093/isd/ixaa014

Ferreira, V. S., O. Keller, M. A. Branham, and M. A. Ivie. 2019. Molecular data support the placement of the enigmatic *Cheguevaria* as a subfamily of Lampyridae (Insecta: Coleoptera). Zoological Journal of the Linnean Society, 187: 1253–1258.

Ferreira, V.S. & Costa, C. 2015. A description of the Larva of *Metapteron xanthomelas* (Lucas, 1857) from the Restinga Forest of Southeastern Brazil (Coleoptera: Lycidae, Calopterini). Zootaxa, 3915: 295−300. http://dx.doi.org/10.11646/zootaxa.3915.2.9

Ferreira, V.S. & Ivie, M.A. 2016. Redescription of *Cephalolycus* Pic, 1926 (Coleoptera: Elateroidea: Lycidae) and a Discussion on Its Taxonomic Position. The Coleopterists Bulletin, 70(3): 663−666

Ferreira, V.S. 2020. Revision of *Acroleptus* Bourgeois, 1886 and Descriptions of New *Aporrhipis* Species (Lycidae, Calopterini, Acroleptina). Journal of Natural History. 53: 2739−2756. https://doi.org/10.1080/00222933.2020.1733120

Ferreira, V.S. and Costa, C. 2017. An Online Database of the Immatures of Coleoptera (Arthopoda, Insecta) Described from Brazil. Biodiversity Data Journal, 5: e12252. doi: 10.3897/BDJ.5.e12252

Ferreira, V.S. and Ivie, M.A. 2017. The first fossil species of the extant genus *Cessator* Kazantsev (Coleoptera: Lycidae): a new leptolycini from Dominican Amber. The Coleopterists Bulletin 71, 57–60.

Ferreira, V.S. and Ivie, M.A. 2018a. A revision of *Lycinella* Gorham, 1884 with the description of six new species (Coleoptera, Lycidae, Calopterini). ZooKeys, 792:69–89. doi:10.3897/zookeys.792.28034

Ferreira, V.S., and Ivie, M.A. 2018b. A Review of the Nearctic Genus *Lucaina* Dugès, 1879 (Coleoptera: Lycidae: Lycinae: Calochromini), with Descriptions of Two New Species. The Coleopterists Bulletin, 72(3): 393−406. http://www.bioone.org/doi/full/10.1649/0010-065X-72.3.393

Ferreira, V.S. and Silveira, L.F.L. 2020. A New Paedomorphic Genus of Net-Winged Beetles from the Atlantic Rainforest (Coleoptera, Elateroidea, Lycidae). Papéis Avulsos de Zoologia, v.60.special-issue: e202060(s.i.).35. http://doi.org/10.11606/1807-0205/2020.60.special-issue.35

Fitch, W.M. and Margoliash, E. 1967. Construction of phylogenetic trees. Science, 155: 279-284.

Fleutiaux, E. and A. Sallé. 1889. Liste des coléoptères de la Guadeloupe et descriptions d'espèces nouvelles. Annales de la Société entomologique de France, (6) 9:351–484.

Folmer, O., Black, M., Hoeh, W., Lutz, R. and Vrijenhoek, R. 1994. DNA primers for amplification of mitochondrial cytochrome *c* oxidase subunit I from diverse metazoan invertebrates. Molecular Marine Biology and Biotechnology 3: 294–299.

García, I.F. and Favila, M.E. 2007. Evaluación de dos métodos de captura para inventariar coleópteros terrestres. Poeyana, 495:23–28.

García, I.F., Castillo, M.E.F. and Iborra, G.L. 2014. Composición, riqueza y abundancia de coleópteros (Coleoptera) asociados a bosques semideciduos y vegetaciones ruderales en la Siera del Rosario, Cuba. Boletín de la Sociedad Entomológica Aragonesa (S.E.A.), 54: 329–339.

Gemminger, M. and E. Harold. 1869. Catalogus coleopterorum hucusque descriptorum synonymicus et systematicus. Monachii, 6: 1690–1800. Paris.

Gorham, H. S. 1898. 2. On the serricorn Coleoptera of St. Vincent, Grenada, and the Grenadines (Malacodermata, Ptinidae, Bostrychidae), with descriptions of new species. Proceedings of the Zoological Society of London, 1898:315–333, pl. XXVII.

Gosse, P.H. 1848. XXVI. - On the Insects of Jamaica. Annals of Natural History, 1(2): 268–270.

Gould, S. J. 1977. Ontogeny and phylogeny. Cambridge, MA: Harvard University Press.

Gowdey, C. C. 1926. Catalogus Insectorum Jamaicensis. Department of Agriculture Jamaica Entomological Bulletin, 4(1): 1–114.

Guerrero, K. A. 2001. A Revision and Phylogenetic Analysis of *Trichrous* Chevrolat 1858, and a Review of *Plectocerum* Dejean 1835 (Coleoptera: Cerambycidae: Elaphidiini). Masters of Science Thesis, Montana State University. 71 pp.

Gundlach, J. 1891. Contribución a la entomología cubana. Parque Quinta. Coleopteros. 3(5), 404 pp. Havana.

Harford, C.L., Pringle, M.S., Sparks, R.S.J. and Young, S.R. 2002. The volcanic evolution of Montserrat using 40Ar/39Ar geochronology. Geological Society, London, Memoirs, 21: 93–113.

Harvey, N. 1956. Evolution and Bioluminescence. The Quarterly Review of Biology, 31(4): 270–287.

Hatter, S. J., Palmer, M. R., Gernon, T. M., Taylor, R. N., Cole, P. D., Barfod, D. N. and Coussens, M. 2018. The evolution of the Silver Hills volcanic center, and revised 40Ar/39Ar geochronology of Montserrat, Lesser Antilles, with implications for island arc volcanism. Geochemistry, Geophysics, Geosystems, 19, 427–452. https://doi.org/10.1002/2017GC007053

Heath, T.A., Huelsenbeck, J.P. and Stadler, T. 2014. The fossilized birth-death process for coherent calibration of divergence-time estimates. Proceedings of the National Academy of Sciences of the United States of America, 111, E2957–E2966.

Hillis, D.M. and Huelsenbeck, J.P. 1992. Signal noise and reliability in molecular phylogenetic analyses. Journal of Heredity, 83:189–195.

Hoang, D. T., A. Chernomor, A. von Haeseler, B. Q. Minh, and L. S. Vinh. 2018. UFBoot2: improving the ultrafast bootstrap approximation. Molecular Biology and Evolution, 35: 518–522.

Holland, W.J. 1917. VII. List of the Coleoptera Collected on the Isle of Pines by Gustav A. Link, Sr., 1912-1913. Annals of the Carnegie Museum, 11(3-4):333–345.

Ivie, M. A. 1991. Taxonomic Notes on a Little Known Publication: Zayas, 1988, Entomofauna Cubana. Orden Coleoptera. The Coleopterists Bulletin, 45(4): 399–401.

Ivie, M.A. 1985. Nomenclatural notes on West Indian Elaphidiini (Coleoptera: Cerambycidae). Pan-Pacicif Entomologist, 61(4):303–314.

Ivie, M.A., Marske, K. A., Foley, I. A., Guerrero, K. A. and Ivie, L. L. 2008. 4. Invertebrates of the Centre Hills and Montserrat, with an emphasis on beetles, pp. 56-89. In: Young, R. P. (ed.) (2008). A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No. 1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.

Jackson, G.C. and Bauzá-Salas, J. 1965. Insect Visitors of *Lecythis elliptica* H.B.K. The Journal of Agriculture of the University of Puerto Rico, 49(1): 133–141.

Jacqueline du Val, P.N.C. 1856. Insectes. Ordre de Coléoptères, Lin. (1) In: Sagra, Ramon de (ed.). Histoire physique, politique et naturelle de l'ile de Cuba, vol 7, pp. 1–136 Paris. 328 p.

Jiruskova, A., Bocak, L. 2015. Species Delimitation in *Cautires* (Coleoptera: Lycidae) from Peninsular Malaysia Using DNA Data and Morphology. Annales Zoologici, 65(2), 239–248.

Jukes T.H., Cantor C.R. 1969. Evolution of Protein Molecules. In: Munro H.N. editor. Mammalian Protein Metabolism. New York: Academic Press. p. 21–132.

Kalyaanamoorthy, S., B. Q. Minh, T. K. F. Wong, A. von Haeseler, and L. S. Jermiin. 2017. ModelFinder: fast model selection for accurate phylogenetic estimates. Nature Methods, 14: 577–589.

Katoh, K., K. Misawa, K.I. Kuma, and T. Miyata. 2002. MAFFT: a novel method for rapid multiple sequence alignment based on fast Fourier transform. Nucleic Acids Research. 30: 3059–3066.

Kazantsev, S. V. 2003. Morphology of Lycidae with some considerations on evolution of the Coleoptera. Elytron. 17:49–226.

Kazantsev, S. V. 2009. Leptolycini of Puerto Rico (Coleoptera: Lycidae). Russian Entomological Journal, 18(2):87–95.

Kazantsev, S. V. 2013. New and little-known taxa of "neotenic" Lycidae (Coleoptera), with discussion of their phylogeny. Russian Entomological Journal. 22:9–31.

Kazantsev, S. V. 2017. New leptolycines from Ecuador and Peru (Coleoptera: Lycidae). Russ Entomol J.26: 127–146.

Kazantsev, S.V. 2005. *Neolyrium* gen. n., first South American genus of net-winged beetles with 10-segmented antennae (Coleoptera: Lycidae). Zootaxa 1064: 51–64.

Kimura M. 1980. A simple method for estimating evolutionary rates of base substitutions through comparative studies of nucleotide sequences. Journal of Molecular Evolution, 16(2): 111–20.

Kleine, R. 1933. Lycidae Pars 128. In: Junk W, Schenkling S. (Eds.). Coleopterorum Catalogueus auspiciis et auxilio, Berlin, 145 pp.

Kumar S, Stecher G, Li M, Knyaz C, and Tamura, K. 2018. MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. Molecular Biology and Evolution, 35:1547–1549.

Kundrata, R. and Bocak, L. 2019. Molecular phylogeny reveals the gradual evolutionary transition to soft-bodiedness in click-beetles and identifies Sub-Saharan Africa as a cradle of diversity for Drilini. Zoological Journal of the Linnean Society, 187 (2): 413–452. https://doi.org/10.1093/zoolinnean/zlz033

Kundrata, R., M. Bocakova, and L. Bocak. 2014. The comprehensive phylogeny of the superfamily Elateroidea (Coleoptera: Elateriformia). Molecular Phylogenetics and Evolution, 76: 162–171.

Kusy, D., Motyka, M., Bocek, M., Vogler, A. P. and Bocak, L. 2018. Genome sequences identify three families of Coleoptera as morphologically derived click beetles (Elateridae). Scientific Reports, (8): 17084.

Kusy, D., Motyka, M., Bocek, M., Masek, M., and Bocak, L. 2019. Phylogenomic analysis resolves the relationships among net-winged beetles (Coleoptera: Lycidae) and reveals the parallel evolution of morphological traits. Systematic Entomology 44, 911–925.

Kusy, D., Sklenarova, K., and Bocak, L. 2018. The effectiveness of DNA-based delimitation in *Synchonnus* net-winged beetles (Coleoptera: Lycidae) assessed, and description of 11 new species. Austral Entomology, 57: 25– 39. doi: 10.1111/aen.12266.

Lacordaire, J. T. 1857. Histoire naturelle des insectes. Genera des coléoptères, ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet ordre d'insectes. Tome IV. Paris. 579 pp.

Lanfear, R., B. Calcott, S. Y. Ho, and S. Guindon. 2012. PartitionFinder: combined selection of partitioning schemes and substitution models for phylogenetic analyses. Molecular Biology and Evolution, 29: 1695–1701.

Lanfear. R., P. B. Frandsen, A. M. Wright, T. Senfeld, and B. Calcott. 2016. PartitionFinder 2: New Methods for Selecting Partitioned Models of Evolution for Molecular and Morphological Phylogenetic Analyses. Molecular Biology and Evolution, 34: 772–773.

Lawrence, J.F., Slipinski, A., Seago, A.E., Thayer, M.K., Newton, A.F., Marvaldi, A.E., 2011. Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annales Zoologici*, 61: 1–217.

Leng, C. W. and A. J. Mutchler. 1914. Article XXX.- A preliminary list of the Coleoptera of the West Indies as recorded to Jan. 1, 1914. Bulletin American Museum of Natural History, 33:391–493.

Leng, C. W. and A. J. Mutchler. 1922. Article VIII.- The Lycidae, Lampyridae and Cantharidae (Telephoridae) of the West Indies. Bulletin American Museum of Natural History, 46:413–499.

Letunic, I, and Bork, P. 2019. Interactive Tree Of Life (iTOL) v4: recent updates and new developments. Nucleic Acids Research 47(W1): W256–W259.

Levkanikova, Z. and Bocak, L. 2009. Identification of net-winged beetle larvae (Coleoptera: Lycidae) using three mtDNA fragments: a comparison of their utility. Systematic Entomology (2009), 34, 210–22.

Lewis P.O. 2001. A likelihood approach to estimating phylogeny from discrete morphological character data. Systematic Biology, 50(6):913–925.

Li, Y., Gunter, N., Pang, H. and Bocak, L. 2018. DNA-based species delimitation separates highly divergent populations within morphologically coherent clades of poorly dispersing beetles, Zoological Journal of the Linnean Society, 175 (1): 59–72. https://doi.org/10.1111/zoj.12262

Li, Y., Pang, H. and Bocak, L. 2018. A Review of the Neotenic Genus *Atelius* Waterhouse, 1878 from China (Coleoptera: Lycidae). Annales Zoologici, 68(2):351–356.

Lingafelter, S.W. 2013. Hispaniolan Hemilophini (Coleoptera, Cerambycidae, Lamiinae). Zookeys, 258: 53–83.

Lingafelter, S.W. and Micheli, C.J. 2004. New species of Cerambycidae (Coleoptera) from Puerto Rico with records and notes for other species. Journal of the New York Entomological Society, 112(1):37–55.

Linnaeus, C. 1763. Amoenitates Academicae. VI: 508 pp.

Linneaus, C. 1767. Systema Naturae. 12 ed. Tome I, part 2: 646 pp.

Linsley, E.G. 1959. Mimetic Form and Coloration in the Cerambycidae (Coleoptera). Annals of the Entomological Society of America, 52: 125–131.

Linsley, E.G., Eisner, T. and Klots, A.B. 1961. Mimetic Assemblages of Sibling Species of Lycid Beetles. Evolution, 15(1): 15–29.

Maddison, W. P. and D.R. Maddison. 2019. Mesquite: a modular system for evolutionary analysis. Version 3.61. http://www.mesquiteproject.org

Martin, G. J., K. Stanger-Hall, M. A. Branham, L. F. L. Silveira, S. E. Lower, D. W. Hall, X. Li, A. R. Lemmon, E. M. Lemmon, and S. M. Bybee. 2019. Higher-Level Phylogeny and Reclassification of Lampyridae (Coleoptera: Elateroidea). Insect Systematics and Diversity, 3: ixz024.

Martin, G. J., M. A. Branham, M. F. Whiting, and S. M. Bybee. 2017. Total evidence phylogeny and the evolution of adult bioluminescence in fireflies (Coleoptera: Lampyridae). Molecular Phylogenetics and Evolution, 564–575.

Martorell, L. F. 1976. Annotated Food Catalogue of the Insects of Puerto Rico. Agricultural Experiment Station, University of Puerto Rico, Rio Pedras, Puerto Rico, USA, 303 pp.

Masek, M. and Bocak, L. 2014. The taxonomy and diversity of *Platerodrilus* (Coleoptera, Lycidae) inferred from molecular data and morphology of adults and larvae. ZooKeys 426: 29–63. doi: 10.3897/zookeys.426.7398

Masek, M., Ivie, M.A., Palata, V. and Bocak, L. 2014. Molecular phylogeny and classification of Lyropaeini (Coleoptera: Lycidae) with description of larvae and new species of *Lyropaeus*. Raffles Bulletin of Zoology,62: 136–145.

Masek, M., Motyka, M., Kusy, D., Bocek, M., Li, Y. and Bocak, L., 2018. Molecular phylogeny, diversity and zoogeography of net-winged beetles (Coleoptera: Lycidae). Insects 9, 154.

Matzke, N.J. 2014. Model selection in historical biogeography reveals that founder-event speciation is a crucial process in island clades. Systematic Biology, 63(6): 951–970.

Mayer, P. and Giesbrecht, W. 1884. Zoologischer Jahresbericht. Herausgegeben von der Zoologischen Station Zu Neapel. II. ABTHEILUNG: ARTHROPODA. MIT REGISTER. Leipzig. 550 pp.

McDowell, W.H., Scatena, F.N., Waide, W.B., Brokaw, N., Camilo, G.R., Covich, A.P., Crowl, T.A., González, G., Greathouse, E.A., Klawinski, P., Lodge, D.J., Lugo, A.E., Pringle, C.M., Richardson, B.A., Richardson, M.J., Schaefer, D.A., Silver, W.L., Thompson, J., Vogt, D., Vogt, K.A., Willig, M.R., Woolbright, L.L., Zou, X., Zimmerman, J.K., 2012. Geographic and ecological setting of the Luquillo Mountains. In: Brokaw, N., Crowl, T.A., Lugo, A.E., McDowell, W.H., Scatena, F.N., Waide, R.B., Willig, M.R. (Eds.), A Caribbean Forest Tapestry: the Multidimensional Nature of Disturbance and Response. Oxford University Press, New York, pp. 72–163.

McKenna, D.D., Shin, S., Ahrens, D., Balke, M., Beza-Beza, C., Clarke, D.J., Donath, A., Escalona, H.E., Friedrich, F., Letsch, H., Liu, S., Maddison, D., Mayer, C., Misof, B., Murin, P.J., Niehuis, O., Peters, R.S., Podsiadlowski, L., Pohl, H., Scully, E.D., Yan, E.V., Zhou, X., Slipinski, A., Beutel, R.G. 2019. The evolution and genomic basis of beetle diversity. Proceedings of the National Academy of Sciences, 116: 24729–24737.

McMahon, D. P. and Hayward, A. 2016. Why grow up? A perspective on insect strategies to avoid metamorphosis. *Ecological Entomology*, 41: 505–515.

McNamara, K.J. 2012. Heterochrony: The Evolution of Development. *Evolution: Education and Outreach*, 5:203–218.

Mertins, J.W. 1981. Life History and Morphology of the Odd Beetle, *Thylodrias contractus*. *Annals of the Entomological Society of America*, 74:576–581.

Micheli, J. A. 2010. Longicornios de Puerto Rico. 2010. Pensoft, Publishers, Sofia. ISBN 978954642562.

Miller, R.S. 1991. A revision of Leptolycini (Coleoptera: Lycidae) with a discussion of paedomorphosis. PhD Dissertation // The Ohio State University. P.1–403 (unpublished).

Minh, B. Q., M. A. T. Nguyen, and A. von Haeseler. 2013. Ultrafast approximation for phylogenetic bootstrap. Molecular Biology and Evolution, 30: 1188–1195.

Mjöberg, E. 1925. The mystery of the so called "Trilobite" or "Perty's larvae" defi nitely solved. Psyche, 22: 119–153.

Mutchler, A. J. 1923. Notes on West Indian Lycidae and Lampyridae (Coleoptera) with descriptions of new forms. American Museum Novitates, 60:1–13.

Mutchler, A. J. 1937. Three new species of *Tytthonyx* from Cuba. American Museum Novitates, 924: 1-2.

Myers, J.G. 1927. Ethological Observations on Some Pyrrhocoridae of Cuba (Hemiptera-Heteroptera). Annals of The Entomological Society of America, 20(3): 279–300.

Nguyen, A. 2019. The Effect of Pleistocene Glacial - Interglacial Cycles on Patterns of Genetic Diversity and Differentiation of Populations of *Leptodactylus Albilabris* (White-Lipped Frog) in the Puerto Rican Bank/ UNLV Theses, Dissertations, Professional Papers, and Capstones. 3830. http://dx.doi.org/10.34917/18608737

Nixon, K.C. 2002. WinClada. Published by the author, Ithaca, New York.

Olivier, A. G. 1790. Entomologie, ou Histoire Naturelle des insectes, avec leurs caractères génériques et spécifiques, leur description, leur synonymie, et leur figure enluminée. Coléoptères. Tome Second. Paris: de Baudouin, 485 pp., 63 pls. [2. Nr. 29, p.9].

Padilla, C., Valenciaga, N., Rodríguez, I., Herrera, M. and Fraga, N. 2019. Efecto de la frecuencia y altura de corte en los indicadores morfo-agronómicos y la producción de biomasa de Moringa oleifera vc Criolla de Cuba. Livestock Research for Rural Development, 31, article 105.

Pagel, M. 1994. Detecting correlated evolution on phylogenies: A general method for the comparative analysis of discrete characters. Proceedings of the Royal Society B, 255:37–45.

Parsons, C.T. 1940. Observations in Cuba on Insect Mimicry and Warning Coloration. Psyche, 47(1): 1–7.

Paulian, R. 1947. Malacodermata, 154-164. In: Fleutiaux, E., Legros, C., Lepesme, P. and Paulian, R. Faune de L'Empire Français VII. COLÉOPTÈRES DES ANTILLES (Volume I). Muséum National d'Histoire naturelle, Paris. 239 pp.

Peck, S.B. 2005. A Checklist of the Beetles of Cuba with Data on Distributions and Bionomics (Insecta: Coleoptera). Arthropods of Florida and Neighboring Land Areas, vol. 18., Gainesville, FL, 241 pp.

Peck, S.B., Thomas, M.C. and Turnbow Jr., R.H. 2014. The diversity and distributions of the beetles (Insecta: Coleoptera) of the Guadeloupe Archipelago (Grande-Terre, Basse-Terre, La Désirade, Marie-Galante, Les Saintes, and PetiteTerre), Lesser Antilles. Insecta Mundi, 0352: 1–156.

Peck, S.W., Perez-Gelabert, D.E. 2012. A summary of the endemic beetle genera of the West Indies (Insecta: Coleoptera); bioindicators of the evolutionary richness of this Neotropical archipelago. Insecta Mundi 0212: 1–29.

Perez-Gelabert, D. E. 2008. Arthropods of Hispaniola (Dominican Republic and Haiti): A checklist and bibliography. Zootaxa, 1831: 1–530.

Perez-Gelabert, D. E. 2015. Entomofauna de La Reserva Científica Ébano Verde, Cordillera Central, República Dominicana. Novitates Caribaea, 8: 62–81

Perez-Gelabert, D. E. 2020. Checklist, Bibliography and Quantitative Data of the Arthropods of Hispaniola. Zootaxa 4749 (1): 1–668.

Perotti, M.A., Young, D. K. and Braig, H.R. 2016. The ghost sex-life of the paedogenetic beetle *Micromalthus debilis*. Scientific Report, 6: 27364.

Pisani, D., Benton, M.J. and Wilkinson, M. 2007. Congruence of Morphological and Molecular Phylogenies. Acta Biotheoretica, 55(3): 269–81.

Price, M.N., Dehal, P.S. and Arkin, A.P. 2010. FastTree 2 – Approximately Maximum-Likelihood Trees for Large Alignments. Plos One, 5(3): e9490.

Ratnasingham, S. and Hebert, P.D.N. 2013., A DNA-based registry for all animal species: the Barcode Index Number (BIN) system. Plos One, 8: doi: 10.1371/journal.pone.0066213

Rattu, R. 2016. Contributo alla conoscenza delle femmine delle specie sarde di Cebrio (Coleoptera, Elateridae, Elaterinae, Cebrionini). Estratto dagli Annali del Museo Civico di Storia Naturale “G. Doria”, 108: 235–248.

Rattu, R. 2020. Morphological, geonemic and ecological notes on Cebrio (Tibesia) mediatlantis mediatlantis Kocher, 1952, and description of the female (Coleoptera, Elateridae, Elaterinae, Cebrionini). Bollettino del Museo di Storia Naturale di Venezia, 71: 51–59.

Raupach MJ, Hannig K, Morinière, J. and Hendrich, L. 2016. A DNA barcode library for ground beetles (Insecta, Coleoptera, Carabidae) of Germany: The genus *Bembidion* Latreille, 1802 and allied taxa. *Zookeys*, (592):121–141. doi:10.3897/zookeys.592.8316

Reilly, S.M., Wiley, E.O. and Meinhardt, D.J. 1997. An integrative approach to heterochrony: the distinction between interspecific and intraspecific phenomena. *Biological Journal of the Linnean Society*, 60: 119–143.

Reiss, R.A., Schwert, D.P., Ashworth, A.C. 1995. Field Preservation of Coleoptera for Molecular Genetic Analyses, Environmental Entomology, 24(3):716–719. https://doi.org/10.1093/ee/24.3.716

Ronquist F., Teslenko M., van der Mark P., Ayres D.L., Darling A., Höhna S., Larget B., Liu L., Suchard M.A., Huelsenbeck J.P. 2012. MRBAYES 3.2: Efficient Bayesian phylogenetic inference and model selection across a large model space. Systematic Biology, 61:539–542.

Roza, A.S., Quintino, H.Y.S., Mermudes, J.R.M. and Silveira, L.F.L. 2017. *Akamboja* gen. nov., a new genus of railroad-worm beetle endemic to the Atlantic Rainforest, with five new species (Coleoptera: Phengodidae, Mastinocerinae). Zootaxa 4306 (4): 501–523.

Schönherr, C. J. 1817. Synonymia insectorum, oder: Versuch einer Synonymie aller bisher bekannten Insecten; nach Fabricii Systema eleutheratorum &c. geordnet. Tome I, Part 3. Upsala. 508 pp.

Schowalter, T. D., Willig, M.R., Presley, S.J. 2014. Canopy arthropod responses to experimental canopy opening and debris deposition in a tropical rainforest subject to hurricanes. Forest Ecology and Management 332: 93–102. https://doi.org/10.1016/j.foreco.2013.12.008

Scott, A.C. 1938. Paedogenesis in the Coleoptera. Zeitschrift fuer Morphologie und ¨Okologie der Tiere 33: 633–653.

Sereno P.C. 2007. Logical basis for morphological characters in phylogenetics. Cladistics, 23(6):565–587.

Sikes, D.S., Mullen, L.J. 2021. Phylogeny and evolution of large body size in the rove beetle genus *Phlaeopterus* Motschulsky, 1853 (Coleoptera: Staphylinidae: Omaliinae: Anthophagini). Arthropod Systematics & Phylogeny 70: 75–98.

Srivathsan, A, Baloğlu, B, Wang, W. *et al*. 2018. A MinION™-based pipeline for fast and cost-effective DNA barcoding. Molecular Ecology Resources, 18: 1035–1049. https://doi.org/10.1111/1755-0998.12890

Srivathsan, A., Hartop, E., Puniamoorthy, J. *et al*. 2018. Rapid, large-scale species discovery in hyperdiverse taxa using 1D MinION sequencing. BMC Biology, 17: 96. https://doi.org/10.1186/s12915-019-0706-9

Stahl, A. 1882. Fauna de Puerto-Rico. Clasificación sistemática de los animales que corresponden a esta fauna y Catálogo del gabinete zoológico del doctor A. Stahl en Bayamón. Puerto-Rico. Bayamon. 248 pp.

Suchard, M. A., & Rambaut, A. 2009. Many-core algorithms for statistical phylogenetics. Bioinformatics, 25(11): 1370–1376. https://doi.org/10.1093/bioinformatics/btp244

Swofford D.L. 2003. PAUP*. Phylogenetic Analysis Using Parsimony (*and Other Methods). Version 4.0a. Sinauer Associates Sunderland Massachusetts.

Talavera, G. and J. Castresana. 2007. Improvement of phylogenies after removing divergent and ambiguously aligned blocks from protein sequence alignments. Systematic Biology, 56: 564–577.

Telfer AC, Young MR, Quinn J, Perez K, Sobel CN, Sones et al. 2015. Biodiversity inventories in high gear: DNA barcoding facilitates a rapid biotic survey of a temperate nature reserve. Biodiversity Data Journal, (3): e6313. doi: 10.3897/BDJ.3.e6313

Torres-Montúfar, A., Borsch, T. and Ochoterena, H. 2018. When homoplasy is not homoplasy: dissecting trait evolution by contrasting composite and reductive coding. Systematic biology, 67(3): 543–551.

Toussaint, E.F.A., Seidel, M., Arriaga-Varela, E., Hajek, J., Kral, D., Sekerka, L., Short, A.E.Z. and Fikacek, M. 2016. The peril of dating beetles. Systematic Entomology, 42, 1–10.

Trifinopoulos, J., L. T. Nguyen, A. von Haeseler, and B. Q. Minh. 2016. IQ-TREE web server: fast and accurate phylogenetic trees under maximum likelihood. Nucleic Acids Research, 44: W232–W235.

Turnbow Jr, R. G. and Thomas, M.C. 2008. An annotated checklist of the Coleoptera (Insecta) of the Bahamas. Insecta Mundi, 0034: 1–64.

Turner, J.R.G. 1970. Mimicry: a study in behaviour, genetics, ecology and biochemistry. Science Progress, 58(230): 219-227, 229-235.

Vaidya, G., D. J. Lohman, and R. Meier. 2011. SequenceMatrix: concatenation software for the fast assembly of multi-gene datasets with character set and codon information. Cladistics, 27: 171–180.

Valenciaga, N. and Mora, C.A. 2009. Papel de la artropodofauna asociada a la estabilidad del sistema silvopastoril Leucaenaea-Guinea en Cuba pp. 36-40. In: Lopez, N.A., Pérez, M.S., González, A.O. Wencomo and H., Pérez, N.P. 2009. VIII Taller Internacional Silvopastoril "Los Árboles Y Arbustos En La Ganadería" Memorias. Estación Experimental "Indio Hatuey", Universidad de Matanzas. 402 pp.

Vea, I.M. and Minakuchi, C. 2021. Atypical insects: molecular mechanisms of unusual life history strategies. *Current Opinion in Insect Science*, 43: 46–53.

Virkki, N. 1978. Pre-reduction of the X chromosome in Lycidae (Coleoptera: Cantharoidea). Genetica 49 (2): 229–232.

Vlasak, J., T. K. Philips, and M. A. Ivie. 2018. Notes on the Methiini of the West Indies (Coleoptera: Cerambycidae). The Coleopterists Bulletin, 72: 691–699.

Waterhouse, C. O. 1878. VII. On the different forms occurring in the coleopterous family Lycidae, with descriptions of new genera and species. Transactions of the Entomological Society of London, 95–118.

Williams, L. and Blackmer, J.L. 1991. A Mating Aggregation of *Thonalmus bicolor* (L.) (Coleoptera: Lycidae) Feeding at Morindasp. (Rubiales: Rubiaceae) Nectaries in Jamaica. The Coleopterists Bulletin, 45(4): 358–359.

Wojciechowska, A. and S. A. Ślipiński. 1985. Notes on the *Thonalmus* Bourgeois (Coleoptera, Lycidae) of Cuba with description of a new species. Polskie Pismo Entomologiczne, 55: 265–270.

Wolcott, G. N. .1923 (1924). "Insectae Portoricensis" a preliminary annotated check-list of the insects of Porto Rico, with descriptions of some new species. Coleoptera. The Journal of Agriculture of the University of Puerto Rico 7(1): 71–137.

Wolcott, G. N. 1936. "Insectae Boriquenses" A Revision of "'Insectae Portoricensis' A preliminary Annotated Check-List of the Insects of Porto Rico, with Descriptions of some News Species". The Journal of Agriculture of the University of Puerto Rico 20(1): 1–627.

Wolcott, G. N. 1943. The Seasonal Cycle of Insect Abundance inf Puerto Rican Cane Fields. The Journal of Agriculture of the University of Puerto Rico, 27(2): 85–104.

Wolcott, G.N. 1950 [1948]. The Insects of Puerto Rico, Coleoptera. The Journal of Agriculture of the University of Puerto Rico 32(2): 225–416.

Wolcott, G.N. and Martorell, L.F. 1937. Two Insects New to Puerto Rico: The Lycid Beetle, *Thonalmus chevrolati* Bourgeois, and the Ephydrid Fly, *Ephydra gracilis* Packard. The Journal of Agriculture of the University of Puerto Rico 21: 545–538.

Wong, A.T.C. 1996. A new species of neotenous beetle, *Duliticola hoiseni* (Insecta: Coleoptera: Cantharoidea: Lycidae) from peninsular Malaysia and Singapore. Raffles Bulletin of Zoology, 44: 173–187.

Wu, R. J. C. 1997. Secrets of a Lost World: Dominican Amber and its Inclusions. Privately published, Santo Domingo, Dominican Republic.

Yu, Y., Blair, C., He, X.J. 2020. RASP 4: Ancestral State Reconstruction Tool for Multiple Genes and Characters. Molecular Biology and Evolution, 37(2): 604–606.

Zaldivar, J.C.P, Campos, M.S. and Aguillar, A.T. 2018. Comportamiento de insectos asociados al cultivo del garbanzo en áreas agrícolas de las Tunas, Cuba. Revista digital de Medio Ambiente "Ojeando la agenda", 54:1-14.

Zapata de La Vega, J.S., Sánchez-Ruiz, A and López, M.A. 2020. Nueva aportación al conocimiento del género *Cebrio* Olivier,1790. Descripción de la hembra de *Cebrio* (*Tibesia*) *rozasi* Cobos, 1985 (Coleoptera: Elateridae: Elaterinae: Cebrionini). Boletín de la SAE, 30: 69–74.

Zayas, F. de. 1988. Entomofauna Cubana. Orden Coleoptera. Separata. Descripcion de Nuevas Especies. Editorial Cientifico-Tecnica. 212 pp.

Zayas, F. de. 1988. Entomofauna Cubana. Orden Coleoptera. Separata. Descripcion de Nuevas Especies. Editorial Cientifico-Tecnica. 212 pp.

Zhai, Q., Xue, G., Li, M. 2017. DNA barcoding-based sexual association of *Sovia lucasii* and *S. lii* (Lepidoptera: Hesperiidae), with description of a new subspecies. PLOS ONE: 12(8): e0183847. https://doi.org/10.1371/journal.pone.0183847

Zhang, C. 2017. Molecular clock dating using MrBayes. arXiv:1603.05707.

Zhang, S.Q., Che, L.H., Li, Y., Dan, L., Pang, H., Slipinski, A., and Zhang, P. 2018. Evolutionary history of Coleoptera revealed by extensive sampling of genes and species. Nature Communications, 9, 205.

Zilberman, B. 2020. Phylogenetic analysis of the genus *Corotoca*, with description of a new genus and species from Brazil (Coleoptera, Staphylinidae, Aleocharinae). Insect Systematics & Evolution, 52(2): 201-245. 10.1163/1876312X-bja10005

APPENDICES

APPENDIX A

LIST OF EXAMINED MATERIAL OF *THONALMUS*

Species	WIBF CODE	SEX	#	LABELS	COLL.	Type
T. sinuaticostis	WIBF 041517	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; aggregation on Heliconia	WIBF	No
T. sinuaticostis	WIBF 041555	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; aggregation on Heliconia	WIBF	No
T. sinuaticostis	WIBF 041556	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; aggregation on Heliconia	WIBF	No
T. sinuaticostis	WIBF 042766	Male	1	Type No.; 61028; U.S.N.M./ H.A. Ballou; dedit/ Ballou; No. 885/ Mntserrat; 17.XII.06 WI/ HOLO; TYPE [in a red label]/ Thonalmus; sinuaticostis; ♂ type	USNM	Holotype
T. sinuaticostis	WIBF 042767	Female	1	♀: Mntserrat' 21.3 WI./ HGHubbard; Collector/ Female/ ALLOTYPE [in a red label]/ AllotypeNo.; 61028; U.S.N.M./ Thonalmus; sinuaticostis; ♀ type	USNM	Allotype
T. sinuaticostis	WIBF 042768	Female	1	Mntserrat' 21.3 WI./ HGHubbard; Collector/ Female/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M.	USNM	Paratype
T. sinuaticostis	WIBF 042769	Female	1	Mntserrat' 21.3 WI./ HGHubbard; Collector/ Female/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M.	USNM	Paratype
T. sinuaticostis	WIBF 042770	Female	1	Montserrat/ West Indies/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M.	USNM	Paratype
T. sinuaticostis	WIBF 042771	Female	1	Mntserrat' 21.3 WI./ HGHubbard; Collector/ male/ PARATYPE [in a red label]/ Paratype No.; 61028; U.S.N.M.	USNM	Paratype
T. sinuaticostis	WIBF 042772	Female	1	Mntserrat; 19.3 WI/ HGHubbard; Collector/ Female/ Calopteron; bicolor/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075	AMNH	Paratype
T. sinuaticostis	WIBF 042773	Female	1	HGHubbard; Collector/ Montserrat; West Indies/ Female/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075	AMNH	Paratype
T. sinuaticostis	WIBF 042774	Male	1	Mntserrat; 1.3. WI/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25075/ T. sinuacostis; Type	AMNH	Paratype
T. sinuaticostis	WIBF 042798	Male	1	Montserrat, B.W.I. ; Feb. 1937 ; Coll: S.T. Danforth / Gift of ; J.A. Ramos	MCZ	No
T. sinuaticostis	WIBF 051094	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 051095	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights, 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000, ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	NMPC	No
T. sinuaticostis	WIBF 051096	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051097	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051098	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No

T. sinuaticostis	WIBF 051099	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051100	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051101	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051102	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051103	Male	1	MONTSERRAT : Riley's ; Estate, 400m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 051325	Male	1	MONTSERRAT:Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. sinuaticostis	WIBF 072522	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072523	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072524	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072525	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072526	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072527	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072528	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072530	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072531	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072532	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072533	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072535	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072537	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072538	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072539	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072540	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072541	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072542	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072543	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072544	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072545	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072546	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072547	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072548	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072549	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072550	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072551	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072553	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072554	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072555	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072556	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072557	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072558	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072559	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072560		1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072561	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072562	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072563	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072564	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072565	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072566	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072568	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072569	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072570	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072571	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072572	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072573	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072574	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072575	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072576	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072577	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072578	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072579	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072580	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072581	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072582	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072583	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072585	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072588	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072590	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072594	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072595	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072596	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072599	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072600	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072601	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072602	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072603	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072604	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072605	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072606	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072607	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072608	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072609	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072610	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072611	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072615	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072616	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072617	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072619	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072620	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072621	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072622	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072623	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072624	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072626	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072627	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072630	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072631	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072632	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072635	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072636	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072637	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072640	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072641	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072644	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072645	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072646	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072647	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072648	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072649	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072650	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072651	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072653	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072657	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072658	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072659	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072660	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072663	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072664	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072665	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072666	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072667	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072668	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072669	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072671	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072676	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072678	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072680	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072681	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072682	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072683	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072684	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072686	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072689	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072690	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072691	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072692	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. sinuaticostis	WIBF 072693	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072694	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072698	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072699	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 072703	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21' N, 62° 12. 72' W ; 12 JAN 2002, 775 ft ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. sinuaticostis	WIBF 077109	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 11 - 23 MAR 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077202	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077203	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077204	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077205	Male	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077206	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077207	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077208	Female	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077209	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077210	Male	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077211	Female	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077212	Male	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077213	Male	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077214	Female	1	MONTSERRAT : Centre Hills; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18JUNE2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No

T. sinuaticostis	WIBF 077215	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. sinuaticostis	WIBF 077216	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. sinuaticostis	WIBF 077217	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. sinuaticostis	WIBF 077218	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. sinuaticostis	WIBF 077219	ale, Fema	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; NE of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero ; mating pair	WIBF	No
T. sinuaticostis	WIBF 077220	Male	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' E. of ; Woodlands, 22 - 25 JUNE 2000 ; 16° 45. 936' N, 62° 12. 721' W ; M. A. Ivie & K. A. Guerrero / Malaise ; Trap #1	WIBF	No
T. sinuaticostis	WIBF 077221	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077222	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077223	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077224	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077225	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077226	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. sinuaticostis	WIBF 077227	Male	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' ; 16° 45. 944' N, 62° 12. 727' W ; 17 JUNE 2000 ; M.A.Ivie & K.A.Guerrero	WIBF	No
T. sinuaticostis	WIBF 077229	Male	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' ; 16° 45. 944' N, 62° 12. 727' W ; 17 JUNE 2000 ; M.A.Ivie & K.A.Guerrero	WIBF	No
T. sinuaticostis	WIBF 077230	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077231	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077232	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077233	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No

T. sinuaticostis	WIBF 077234	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077235	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077236	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No

T. sinuaticostis	WIBF 077237	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077238	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077239	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077240	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077241	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077242	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077243	Female	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' E. of ; Woodlands, 22 - 25 JUNE 2000 ; 16° 45. 936' N, 62° 12. 721' W ; M. A. Ivie & K. A. Guerrero / Malaise ; Trap #1	WIBF	No
T. sinuaticostis	WIBF 077244	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077245	Female	1	MONTSERRAT : Centre Hills; lower Spring Ghaut ; E. of Fleming ; 19 JUNE 2000, 650' ; K. A. Guerrero colr	WIBF	No
T. sinuaticostis	WIBF 077246	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077247	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077248	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077249	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077250	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077251	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077252	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077253	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077254	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No

T. sinuaticostis	WIBF 077255	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077256	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077257	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077258	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077259	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077260	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077261	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 16° 45. 209' N, 62° 12. 722' W ; 19 JUNE 2000, 750' ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077262	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights, 800 - 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 JUNE 2000, mesic forest ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077263	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077264	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. sinuaticostis	WIBF 077265	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 16° 45. 209' N, 62° 12. 722' W ; 19 JUNE 2000, 750' ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077266	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 16° 45. 209' N, 62° 12. 722' W ; 19 JUNE 2000, 750' ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077267	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 16° 45. 209' N, 62° 12. 722' W ; 19 JUNE 2000, 750' ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077268	Female	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077269	Female	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077270	Male	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077271	Male	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077272	Male	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077273	Male	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No

T. sinuaticostis	WIBF 077274	Female	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077275	Male	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077276	Male	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077278	Female	1	MONTSERRAT ; Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077279	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; NE of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077280	Male	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. sinuaticostis	WIBF 077281	Female	1	MONTSERRAT : Woodlands ; Duryea's Parr, 420' ; 16° 45. 799' N, 62° 13. 210' W ; 16 - 29 JUNE 2000, in pool ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077282	Female	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; NE of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077283	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; NE of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077285	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; NE of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. sinuaticostis	WIBF 077286	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 08 - 17 APR 2002, 632ft ; A. Krakower, Malaise tr	WIBF	No
T. sinuaticostis	WIBF 077287	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077288	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 08 - 17 APR 2002, 632ft ; A. Krakower, Malaise tr	WIBF	No
T. sinuaticostis	WIBF 077289	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 11 - 23 MAR 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077291	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 11 - 23 MAR 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077292	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 11 - 23 MAR 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077293	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 04 - 23 MAR 2002, 632ft ; A. Krakower, Malaise tr	WIBF	No
T. sinuaticostis	WIBF 077294	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 14 - 21 JUNE2002, 632ft ; A. Krakower, light trap	WIBF	No

T. sinuaticostis	WIBF 077295	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 11 - 23 MAR 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077296	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 17 - 01 MAY2002, 632ft ; A. Krakower, Malaise	WIBF	No
T. sinuaticostis	WIBF 077297	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 11 - 23 MAR 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077298	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 04 - 23 MAR 2002, 632ft ; A. Krakower, Malaise tr	WIBF	No
T. sinuaticostis	WIBF 077299	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 05 - 15 FEB 2002, 632ft ; A. Krakower, Malaise tr	WIBF	No
T. sinuaticostis	WIBF 077300	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 14 - 21 JUNE2002, 632ft ; A. Krakower, light trap	WIBF	No
T. sinuaticostis	WIBF 077302	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 05 - 15 FEB 2002, 632ft ; A. Krakower, Malaise tr	WIBF	No
T. sinuaticostis	WIBF 077303	Female	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077304	Male	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077305	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 30MAY - 06JUNE 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077306	Male	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077307	Female	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077308	Male	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077309	Male	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077310	Male	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. sinuaticostis	WIBF 077311	Female	1	MONTSERRAT : Hope ; Ghaut, 15JUNE2002 ; K. A. Marske, in ; rotten breadfruit	WIBF	No
T. sinuaticostis	WIBF 077312	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 05 - 16 FEB 2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077313	Female	1	MONTSERRAT : Centre Hills; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. sinuaticostis	WIBF 077314	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 14 - 21 JUNE2002, 632ft ; A. Krakower, light trap	WIBF	No
T. sinuaticostis	WIBF 077315	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 14 - 21 JUNE2002, 632ft ; A. Krakower, light trap	WIBF	No
T. sinuaticostis	WIBF 077316	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No

T. sinuaticostis	WIBF 077317	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077318	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077319	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077320	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077321	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077322	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077323	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077324	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077325	Female	1	MONTSERRAT : ; Hope Ghaut ; 12 JAN 2002 ; M. A. Ivie ; & K. A. Marske	WIBF	No
T. sinuaticostis	WIBF 077326	Female	1	MONTSERRAT: Centre Hills ; Hope Ghaut, 260m ; 16° 45. 32' N, 62° 12. 63 'W ; 8-12JAN2002, K. Marske & K. Puliafico, Malaise Trap	WIBF	No
T. sinuaticostis	WIBF 077327	Male	1	MONTSERRAT : Woodlands ; Riverside House light, 43 m ; 16° 45. 99' N, 62° 13. 34' W ; 03JAN2002, M. A. Ivie ; K. Marske &K. Puliafico / Aggregation ; #1	WIBF	No
T. sinuaticostis	WIBF 077328	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35' N, 62° 12. 58' W ; 16 - 17 JUNE 2002, 887 ft ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077329	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35' N, 62° 12. 58' W ; 16 - 17 JUNE 2002, 887 ft ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077330	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35' N, 62° 12. 58' W ; 16 - 17 JUNE 2002, 887 ft ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077331	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35' N, 62° 12. 58' W ; 16 - 17 JUNE 2002, 887 ft ; K. A. Marske colr	WIBF	No

T. sinuaticostis	WIBF 077332	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35' N, 62° 12. 58' W ; 16 - 17 JUNE 2002, 887 ft ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077333	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35' N, 62° 12. 58' W ; 16 - 17 JUNE 2002, 887 ft ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077334	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 9' N, 62° 12. 95' W ; 31 MAY 2002, 632ft ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077335	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 28 MAY 2002, 632ft ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077336	Female	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ft ; 07 - 08 JUNE 2002 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077337	Male	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 23 - 03APRMAR2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077338	Female	1	MONTSERRAT : Cassava ; Ghaut, Beattie House ; 16° 45. 91' N, 62° 12. 95' W ; 23 - 03APRMAR2002, 632ft ; A. Krakower, u. v. light	WIBF	No
T. sinuaticostis	WIBF 077339	Female	1	MONTSERRAT : Woodlands ; Riverside House light ; 16° 45. 99' N, 62° 13. 34' W ; 10 - 13JAN2002, M. A. Ivie ; K. Marske &K. Puliafico	WIBF	No
T. sinuaticostis	WIBF 077340	Female	1	MONTSERRAT : Spring Ghaut ; 10JAN2002, K. A. ; Marske & j. Daley ; Beating vegetation	WIBF	No
T. sinuaticostis	WIBF 077341	Female	1	MONTSERRAT : ; Hope Ghaut ; 08 JAN 2002 ; K. A. Marske & ; K. P. Puliafico	WIBF	No
T. sinuaticostis	WIBF 077342	Female	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ft ; 07 - 08 JUNE 2002 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077343	Female	1	MONTSERRAT : ; Hope Ghaut ; 08 JAN 2002 ; K. A. Marske & ; K. P. Puliafico	WIBF	No
T. sinuaticostis	WIBF 077344	Female	1	MONTSERRAT : Spring Ghaut ; 10JAN2002, K. A. ; Marske & j. Daley ; Beating vegetation	WIBF	No
T. sinuaticostis	WIBF 077345	Female	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ft ; 07 - 08 JUNE 2002 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077346	Male	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ft ; 03 - 04 JUNE 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077347	Female	1	MONTSERRAT : Hope Ghaut, ; 16°45.32'N, 62°12.63'W ; 23 JULY 2005,260 M ; I.A. Foley colr	WIBF	No
T. sinuaticostis	WIBF 077348	Female	1	MONTSERRAT : Big River ; 16° 45. 72' N, 62° 11. 35' W ; 05AUG2005, 1230 ft ; WIBF group	WIBF	No
T. sinuaticostis	WIBF 077349	Male	1	MONTSERRAT : Jack Boy Hill ; 24 MAY 2002 ; K. A. Marske ; beating veg.	WIBF	No
T. sinuaticostis	WIBF 077350	Female	1	MONTSERRAT : St. Peters ; MNI Farmers Assoc. ; 25 JUNE 2002 ; M. A. Ivie colr	WIBF	No

T. sinuaticostis	WIBF 077351	Male	1	MONTSERRAT : ; Fogarty ; 16° 46. 235' N, 62° 12. 53' W ; 21JUNE2002, 367m ; K. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077352	Female	1	MONTSERRAT : Fogerty Ghaut ; 12 - 13 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077353	Male	1	MONTSERRAT : Underwood ; Ghaut, 16° 11. 734' W, 1230 ft ; 13 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077354	Male	1	MONTSERRAT : Fogerty Ghaut ; 12 - 13 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077355	Male	1	MONTSERRAT : Fogerty Ghaut ; 12 - 13 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077356	Male	1	MONTSERRAT : Fogerty Ghaut ; 12 - 13 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077357	Female	1	MONTSERRAT : Big River ; 16° 45. 72' N, 62° 11. 35' W ; 05AUG2005, 1230 ft ; WIBF group	WIBF	No
T. sinuaticostis	WIBF 077358	Male	1	MONTSERRAT : ; Cassava Ghaut ; 11 JUNE 2002 ; M.A.Ivie ; in rotten log	WIBF	No
T. sinuaticostis	WIBF 077359	Female	1	MONTSERRAT : Cassava ; Ghaut, 263m ; 16° 45. 749 'N, 62° 12. 47 'W ; 08-11 JUNE 2003 ; K. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077360	Male	1	MONTSERRAT : Cassava ; Ghaut, 263m ; 16° 45. 749 'N, 62° 12. 47 'W ; 08-11 JUNE 2003 ; K. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077361	Male	1	MONTSERRAT : Cassava ; Ghaut, 263m ; 16° 45. 749 'N, 62° 12. 47 'W ; 08-11 JUNE 2003 ; K. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077362	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 347' N, 62° 12. 58' W ; 30 JUNE 2002, 315m ; M. A. Ivie colr	WIBF	No
T. sinuaticostis	WIBF 077363	Female	1	MONTSERRAT : ; Big River, 1160ft. ; 16° 45. 72 N, 62° 11. 34 W ; 07 - 14AUG2002 ; WIBF Group, uvlight	WIBF	No
T. sinuaticostis	WIBF 077364	Female	1	MONTSERRAT : Jack Boy Hill ; 05 JULY 2002 ; K. A. Marske colr.	WIBF	No
T. sinuaticostis	WIBF 077384	Male	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632ft ; 16° 45. 908 'N, 62° 12. 953 'W ; 21 - 30 JUNE 2002 ; M. A. Ivie, uv light	WIBF	No
T. sinuaticostis	WIBF 077385	Male	1	MONTSERRAT : ; Hope Ghaut ; 03 MAY 2004 ; M. A. Ivie & ; Q. Bloxum colrs	WIBF	No
T. sinuaticostis	WIBF 077386	Male	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632ft ; 16° 45. 908 'N, 62° 12. 953 'W ; 21 - 30 JUNE 2002 ; M. A. Ivie, uv light	WIBF	No
T. sinuaticostis	WIBF 077387	Male	1	MONTSERRAT : Fogarty ; to Cassava Ghaut ; via Lawyer's Mt ; 24 - 25 JUNE 2003 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077388	Male	1	MONTSERRAT : ; Olveston Springs ; 29 MAY 2003 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077389	Male	1	MONTSERRAT : ; Jubilee Heights ; 16° 45. 396 'N, 62° 12. 579 'W ; 1486 ft. 02 - 03 JULY 2002 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077390	Male	1	MONTSERRAT : ; Jubilee Heights ; 16° 45. 396 'N, 62° 12. 579 'W ; 1486 ft. 02 - 03 JULY 2002 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077391	Male	1	MONTSERRAT : ; Jubilee Heights ; 16° 45. 396 'N, 62° 12. 579 'W ; 1486 ft. 06 - 07 JULY 2002 ; K. A. Marske colr	WIBF	No

T. sinuaticostis	WIBF 077392	Female	1	MONTSERRAT : ; Hope Ghaut ; 18 - 19 JUNE 2003 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077393	Female	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632ft ; 16° 45. 91 'N , 62° 12. 95 'W ; 30MAY - 06JUNE2002 ; A. Krakower uv light trap	WIBF	No
T. sinuaticostis	WIBF 077394	Female	1	MONTSERRAT : ; Fairy Walk ; S. E. Centre Hills ; 15 AUG 2005 ; WIBF colrs	WIBF	No
T. sinuaticostis	WIBF 077395	Female	1	MONTSERRAT : ; Fairy Walk ; S. E. Centre Hills ; 15 AUG 2005 ; WIBF colrs	WIBF	No
T. sinuaticostis	WIBF 077396	Female	1	MONTSERRAT : ; Olveston Springs ; 29 MAY 2003 ; K. A. Marske colr	WIBF	No
T. sinuaticostis	WIBF 077397	Female	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632ft ; 16° 45. 908 'N , 62° 12. 953 'W ; 11 - 18FEB2002 ; A. Krakower, uv light	WIBF	No
T. sinuaticostis	WIBF 077398	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N , 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. sinuaticostis	WIBF 077399	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N , 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. sinuaticostis	WIBF 041639	Male	1	Montserrat, B.W.I.; Feb. 1937; Coll: S. T. Danforth	WIBF	No
T. sinuaticostis	WIBF 041640	Male	1	Montserrat, B.W.I.; Feb. 1937; Coll: S. T. Danforth	WIBF	No
T. nigritarsis	WIBF 041550	Male	1	CUBA:Mayabeque,StaCruz ; del Norte, Jardi, de Hershey ; 23.1354°N, 81.9301°W ; 07 SEP 2018 ; T. Alvarez, A. Corso \ StaCruz del Norte ; Jard, de Hershey ; en el bosque, volando, dia	WIBF	No
T. nigritarsis	WIBF 041735	Male	1	BAHAMAS:Andros Is. ; Atala Coppice, ; 6-VI-2004 ; M.C.Thomas, BLT	FSCA	No
T. nigritarsis	WIBF 042337	Male	1	BAHAMAS: Andros; Forfar Field Station; mv + bl, 3 June 2001; R. Turnbow	FSCA	No
T. nigritarsis	WIBF 042338	Male	1	BAHAMAS: Andros Is. ; Atala Coppice, ; 6 - VI - 2004; M. C. Thomas, BLT	FSCA	No
T. nigritarsis	WIBF 042339	Male	1	BAHAMAS: Andros Is. ; Atala Coppice, ; bl trap, 8 June 2004; R. Turnbow	FSCA	No
T. nigritarsis	WIBF 042340	Male	1	BAHAMAS: Andros Is. ; Atala Coppice, ; 6 - VI - 2004; M. C. Thomas, BLT	FSCA	No
T. nigritarsis	WIBF 042341	Male	1	BAHAMAS: Andros ; nr. San Andros ; 18 - V - 1993; Bahamas Survey Team; *Citrus sinensis*	FSCA	No
T. nigritarsis	WIBF 042342	Male	1	BAHAMAS: Andros Is. ; Atala Coppice, ; 6 - VI - 2004; M. C. Thomas, BLT	FSCA	No
T. nigritarsis	WIBF 042343	Male	1	BAHAMAS: Andros Is. ; Forfar Field Station; bl trap, 6 June 2004; R. Turnbow	FSCA	No
T. nigritarsis	WIBF 042344	Male	1	BAHAMAS: Andros Is. ; Forfar Field Station; bl trap, 9 June 2004; R. Turnbow	FSCA	No
T. nigritarsis	WIBF 042345	Male	1	BAHAMAS: Andros Is. ; Atala Coppice, ; 6 - VI - 2004; M. C. Thomas, BLT	FSCA	No
T. nigritarsis	WIBF 042346	Male	1	BAHAMA ISLANDS : ; Andros Island ; San Andros ; June 7, 1974 ; J. W. Smith	TAMU	No
T. nigritarsis	WIBF 042347	Male	1	BAHAMA ISLANDS : ; Andros Island ; San Andros ; June 7, 1974 ; J. W. Smith	TAMU	No
T. nigritarsis	WIBF 042348	Male	1	Coast below ; Pico Turquino ; June 26 - 30, '36 / Cuba 1936 ; Darlington ; Collector	MCZ	No

T. nigritarsis	WIBF 042349	Male	1	Soledad, Cuba ; (Cienfuegos) ; May, 1936 ; Darlington	MCZ	No
T. nigritarsis	WIBF 042350	Male	1	CUBA - Guantanamos prov., ; Baracoa env., Paso de Toa, ; 20°23'23.63" N, 74°33'3.33" W, ; sweeping in ruderal area belw. ; banana plant., with a stream; ; 2. i. 2015, Albert Damaska lgt.	NMPC	No
T. nigritarsis	WIBF 042351	Male	1	nr Guantanamo ; Cuba CFBaker ; Female	USNM	No
T. nigritarsis	WIBF 042352	Male	1	CUBA. Guantanamo, PN ; Humboldt, Estac Ecol. de ; Bahia de Taco I-2009 ; 20. 30. 64. 0 N- 74. 40. 29. 1 W ; col. R. Nuñez. / MNHNCu ; 41. 000085	MNCuba	No
T. nigritarsis	WIBF 042353	Male	1	CUBA. Guantanamo, alred ; de Yumuri del Sur, ; 20, 11, 0. 49 N - 74, 29, 38.0 W ; 20 - 22 - I - 2009 ; col. O. Madruga, R. Nuñez / MNHNCu ; 41.000084	MNCuba	No
T. nigritarsis	WIBF 042354	Male	1	CUBA. Pinar del Rio, ; Sierra del Rosario, Est. ; Ecologica. 9 - 19 - X - 2007 ; col. R. Nuñez, O. Madruga / MNHNCu ; 41.000075	MNCuba	No
T. nigritarsis	WIBF 042355	Male	1	BAHAMAS : Andros Is. ; Maidenhair Coppice ; 24 - 28 - VII - 2006 ; MCThomas, TRSmith ; UV trap in interior coppice	FSCA	No
T. nigritarsis	WIBF 042356	Male	1	Felton Cuba ; WM Mann / [Unintelligible]	NMNH	No
T. nigritarsis	WIBF 042357	Male	1	Baracoa ; Cuba '18 ; WM Mann	NMNH	No
T. nigritarsis	WIBF 042358	Male	1	Pinares Ori- ; ente Cuba '18 ; W M Mann	NMNH	No
T. nigritarsis	WIBF 042359	Male	1	Felton Cuba ; WM Mann	NMNH	No
T. nigritarsis	WIBF 042360	Male	1	Felton Cuba ; WM Mann	NMNH	No
T. nigritarsis	WIBF 042361	Male	1	Upper Ovando R. ; eastern Oriente ; July 17 - 20, 1936 ; 1000 - 2000 ft. / Cuba 1936 ; Darlington ; Collector / [Unintelligible]	MCZ	No
T. nigritarsis	WIBF 042362	Male	1	Soledad, Cuba ; (Cienfuegos) ; May, 1936 ; Darlington	MCZ	No
T. nigritarsis	WIBF 042363	Male	1	Baracoa ; VII - 12 - 36 Cuba ; Darlington	MCZ	No
T. nigritarsis	WIBF 042364	Male	1	Havana ; [Unintelligible] / Cuba.	MCZ	No
T. nigritarsis	WIBF 042365	Male	1	Cuba : ; vic. of ; Havana. ; T. Barbour	MCZ	No
T. nigritarsis	WIBF 042366	Male	1	Coast below ; Pico Turquino ; June 26 - 30, '36 / Cuba 1936 ; Darlington ; Collector	MCZ	No
T. nigritarsis	WIBF 042367	Male	1	Coast below ; Pico Turquino ; June 26 - 30, '36 / Cuba 1936 ; Darlington ; Collector	MCZ	No
T. nigritarsis	WIBF 042368	Male	1	Mts. N. of Imias ; eastern Oriente ; July 25 - 28, 1936 ; 3000 - 4000 ft. / Cuba 1936 ; Darlington ; Collector	MCZ	No
T. nigritarsis	WIBF 042369	Male	1	Aguadores ; Oriente ; June 6, 1936 / Cuba 1936 ; Darlington ; Collector	MCZ	No
T. nigritarsis	WIBF 042370	Male	1	Sola, Cuba / O. D. Link ; Coll. 20VI50 / At Citrus ; sinensis / S. P. B. Acc. ; No. 109322 / [Unintelligible]	FSCA	No
T. nigritarsis	WIBF 042371	Male	1	[Unintelligible] / [Unintelligible] ; Cuba [Unintelligible] 19 ; Coll. C. T. Ramsden / Male	AMNH	No
T. nigritarsis	WIBF 042372	Male	1	San Carlos Est. ; Guantanamo ; Cuba, 4 - 8 X '13 / Male	AMNH	No

T. nigritarsis	WIBF 042373	Male	1	Santiago de ; Cuba. / Male	AMNH	No
T. nigritarsis	WIBF 042374	Male	1	Vinales, Cuba ; Pinar del Rio ; Aug. 27 - 31, 1951 ; P. Vaurie Coll.	AMNH	No
T. nigritarsis	WIBF 042375	Male	1	Santiago de ; Cuba. / Male	AMNH	No
T. nigritarsis	WIBF 042376	Male	1	Santiago de ; Cuba. / Male	AMNH	No
T. nigritarsis	WIBF 042377	Male	1	Nagua, Oriente, Cuba. ; Julio 7 de 1922. ; Col S. C. Bruner y ; C. H. Ballou / 8871 / ne. 24117	AMNH	No
T. nigritarsis	WIBF 042378	Male	1	Vinales, Cuba ; Pinar del Rio ; Aug. 27 - 31, 1951 ; P. Vaurie Coll. / [Unintelligible]	AMNH	No
T. nigritarsis	WIBF 042379	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042380	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042381	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042382	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042383	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042384	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042385	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042386	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042387	Male	1	H. J. Mac Gillavry ; Cuba ; Santa Clara ; (Prov. Sta. Clara) ; 15 .III - 21. IV. 1933	ZMAN	No
T. nigritarsis	WIBF 042388	Male	1	H. J. Mac Gillavry ; Cuba ; Forst region round ; Cacarajicara ; 20 - 22. VI. 1933	ZMAN	No
T. nigritarsis	WIBF 042389	Male	1	H. J. Mac Gillavry ; Cuba ; Guasas ; 8, VII. 1933	ZMAN	No
T. nigritarsis	WIBF 042390	Male	1	Est. C[Unintelligible] ; Agr. de Cuba / Baracoa ; April 19/16	USNM	No
T. nigritarsis	WIBF 042391	Male	1	CUBA : Holguin ; Loma Pilon, Mayari ; Cueva de Bariay ent ; 08 JUL 1990, M. A. Ivie	WIBF	No
T. nigritarsis	WIBF 042392	Male	1	Cuba, 24. 9. 82 ; S. Rosario, Taco ; Taco, S. Bily leg	NMPC	No
T. nigritarsis	WIBF 042393	Male	1	Santa Ana ; [Unintelligible]/ 4 Cuba	ANSP	No
T. nigritarsis	WIBF 042394	Female	1	H. J. MacGillavry; Cuba: Km 517; carret ra central; (? Prov. Camaguey); 5.V.1933	ZMAN	No
T. nigritarsis	WIBF 042395	Female	1	H. J. MacGillavry; Cuba; Santa Clara; (Prov. Sta. Clara); 15.III.-21.IV. 1933	ZMAN	No

T. nigritarsis	WIBF 042396	Female	1	Coast below ; Pico Turquino ; June 26 - 30, '36 / Cuba 1936 ; Darlington ; Collector	MCZ	No
T. nigritarsis	WIBF 042397	Female	1	Cayamas; 24.5; Cuba/ E.A.Schwarz; Collector/ Female	USNM	No
T. nigritarsis	WIBF 042398	Female	1	Cayamas; 5-6; Cuba/ E.A.Schwarz; Collector/ Female	USNM	No
T. nigritarsis	WIBF 042399	Female	1	Cayamas; 6.3; Cuba/ E.A.Schwarz; Collector/ Female	USNM	No
T. nigritarsis	WIBF 042400	Female	1	♀/ Antilla; Cuba '18/ W.M. Mann; collector	USNM	No
T. nigritarsis	WIBF 042401	Female	1	Santiago de ; Cuba. / Female	AMNH	No
T. nigritarsis	WIBF 042402	Female	1	San Carlos Est. ; Guantanamo ; Cuba, 4 - 8 X '13 / Female	AMNH	No
T. nigritarsis	WIBF 042403	Female	1	1301; Cuba; Poey Coll.	ANSP	No
T. nigritarsis	WIBF 042404	Female	1	CUBA. La Habana; Alrededores rio Guajaibón; 22-24-X-2007; col. R. Núñez; (sobre vegetacíon)/ MNHNCu; 41.000093	MNHC	No
T. nigritarsis	WIBF 042405	Female	1	Baraguá, Cuba; V-22-28/ Taken on; Corn/ L. C. Scarammuza; Collector	MCZ	No
T. nigritarsis	WIBF 042406	Female	1	Santiago de; Cuba/ Female	AMNH	No
T. nigritarsis	WIBF 042407	Female	1	Cotorro; CUBA/ Havana; X-15 1924	ANSP	No
T. nigritarsis	WIBF 042408	Female	1	nr Guantanamo ; Cuba CFBaker ; Female	USNM	No
T. nigritarsis	WIBF 042409	Female	1	[No label]	ANSP	No
T. nigritarsis	WIBF 042410	Female	1	Buenos Aires; Trinidad Mts.; May 8-14, 1936; 2500-8500 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. nigritarsis	WIBF 042411	Female	1	Cabanas; 21 May Cuba/ Palmer; & Riley/ Female	USNM	No
T. nigritarsis	WIBF 042412	Female	1	Buenos Aires; Trinidad Mts.; Cuba; Parsons & Folk	MCZ	No
T. nigritarsis	WIBF 042413	Female	1	San Vicente; [illegible], Cuba; VII-23-057	FSCA	No
T. nigritarsis	WIBF 042414	Female	1	Cuba/ O. D. Link; Coll. 17XI50/ At Citrus; sinensis/ S.P.B Acc.; No. 164928/ G.B. Merrill; det. 1950	FSCA	No
T. nigritarsis	WIBF 042415	Female	1	H.J. MacGillavry; Cuba; Puera Ancon; 5-6. VII. 1933	ZMAN	No
T. nigritarsis	WIBF 042416	Female	1	Miami,; FL/ From; Cuba/ W. R. Fyke; CoH 2 II 54/ in; airplane/ S.P.B. Acc. 116902/ G.B. Merrill; det. 1954	FSCA	No
T. nigritarsis	WIBF 042417	ale, Fema	2	Santiago de las; Jan 18, 26; Vegas, Habana./ SWBromley; Collection; 1955	USNM	No
T. nigritarsis	WIBF 042418	Female	1	Cuba. Pinar del Rio, ; Sierra del Rosario, Est. ; Ecologica. 9 - 19 - X - 2007 ; col. R. Nuñez, O. Madruga / MNHNCu ; 41.000076	MNHC	No
T. nigritarsis	WIBF 042419	Female	1	BAHAMAS: Andros Isl.; Maidenhair Coppice; 11-VI-2004; M.C. Thomas, BLT	FSCA	No
T. nigritarsis	WIBF 042420	Female	1	BAHAMA IS: N. Andros Is.; Atala Coppice, 10 Km WNW; Stafford Creek town; Pines 12.VI. 1984/ Beating/ Collected by; S. M. Fondriest	WIBF	No
T. nigritarsis	WIBF 042421	Female	1	Cuba [illegible]	ZMAN	No
T. nigritarsis	WIBF 042422	Male	1	Soledad, Cuba ; (Cienfuegos) ; June, 1929 ; Darlington/ Museum of Comparative Zoology	MCZ	No

T. nigritarsis	WIBF 042423	Male	1	Cuba; Poey Coll	ANSP	No
T. nigritarsis	WIBF 042424	Male	1	1738/ Cuba; Poey Coll.	ANSP	No
T. nigritarsis	WIBF 042425	Male	1	Las Villas Prov. Cuba; Central Soledad Sugar; Plantation. 8 mi ESE; Cienfuegos. 8 June 1951; 22°07°N, 80°19°W; Kevin W. Marg	WIBF	No
T. nigritarsis	WIBF 042426	Male	1	Guanahacabibes; Pen., P.R. Cuba; July 3-4, 1956; C. & P. Vaurie	AMNH	No
T. nigritarsis	WIBF 042427	Male	1	Soledad, Cuba ; 27 - VI - 1925 ; Geo. Salt	MCZ	No
T. nigritarsis	WIBF 042428	Male	1	Soledad, Cuba ; (Cienfuegos) ; May, 1936 ; Darlington	MCZ	No
T. nigritarsis	WIBF 042429	Male	1	Anolis ; cage / Soledad, Cuba ; (Cienfuegos) ; May, 1936 ; Darlington	MCZ	No
T. nigritarsis	WIBF 042430	Male	1	Soledad Cuba ; Cienfuegos ; I. 1927 ~~1926~~	MCZ	No
T. nigritarsis	WIBF 042431	Male	1	Soledad, Cienfuegos ; Cuba Jan - Feb 1927 ; C. T. & B. B. Brues	MCZ	No
T. nigritarsis	WIBF 042432	Male	1	[Unintelligible] ; Soledad Cuba ; Cienfuegos ; XI. 9. 1926 ; Darlington	MCZ	No
T. nigritarsis	WIBF 042433	Male	1	Buenos Aires ; Trinidad Mts. ; May 8 - 14, 1936 ; 2500 - 3500 ft. / Cuba 1936 ; Darlington ; Collector	MCZ	No
T. nigritarsis	WIBF 042434	Female	1	Soledad, Cuba ; Cienfuegos ; June, 1929 ; Darlington	MCZ	No
T. nigritarsis	WIBF 042435	Male	2	CUBA. Pinar del Rio, ; Sierra Rangel (alredr de ; un paredon) 20 - IV - 2009 ; col. R. Nuñez (en copula) / MNHNCu ; 41.000087	MNCuba	No
T. nigritarsis	WIBF 042436	Male	1	CUBA. Pinar del Rio, ; Sierra Rangel (alredr de ; un paredon) 20 - IV - 2009 ; col. O Madruga / MNHNCu ; 41.000086	MNCuba	No
T. nigritarsis	WIBF 042437	Male	1	CUBA. Pinar del Rio, ; Sierra Rangel (alredr de ; un paredon) 20 - IV - 2009 ; col. O Madruga / MNHNCu ; 41.000088	MNCuba	No
T. nigritarsis	WIBF 042438	Male	1	CUBA. Guantanamo, alred ; de Yumuri del Sur, ; 20, 11, 0. 49 N - 74, 29, 38.0 W ; 20 - 22 - I - 2009 ; col. O. Madruga, R. Nuñez / MNHNCu ; 41.000082	MNCuba	No
T. nigritarsis	WIBF 042439	Male	1	Soledad Cuba ; Cienfuegos ; Nov 24 1926 ; Darlington / ae. 22487	AMNH	No
T. nigritarsis	WIBF 042440	Male	1	Jaimanitas, ; Habana, Cuba ; June 27, 1939 / E. N. KELLEGSVIG - WAERING ; COLLECTION	FSCA	No
T. nigritarsis	WIBF 042441	Male	1	Cuba / O. D. Link ; Coll 23V50 / at Mangifera ; indica L. / S. P. B. Acc. ; No. 109323	FSCA	No
T. nigritarsis	WIBF 042442	Male	1	Cueva de Cotilla ; Habana Pr. Cuba ; VI - 16 - 57	FSCA	No
T. nigritarsis	WIBF 042443	Male	1	MIAMI, ; FLA. / FROM ; CUBA / IN. R. Fyke ; coll. 2 II 54 / in ; airplane / S. P. B Acc. ; No. 116902	FSCA	No
T. nigritarsis	WIBF 042444	Male	1	CUBA 31 5. 1985 ; Pico Turquine ; S [Unintelligible]ova lgt	NMPC	No
T. nigritarsis	WIBF 042445	Male	1	Cuba. Baragua ; Chucho Blanco ; Dr. Rambousek / Cuba: 11/X - 28 ; Chucho ; Blanco	NMPC	No
T. nigritarsis	WIBF 042446	Male	1	H. J. Mac Gillavry ; Cuba ; Hormiguero ; 10 - 28. II. 1933	ZMAN	No
T. nigritarsis	WIBF 042447	Male	1	Nueva Gerona, ; Isle of Pines. ; G. Link, Coll / May, 31 ; 1912 / Carn. Mus. ; Acc. 4745	CMNH	No

T. nigritarsis	WIBF 042448	Male	1	Est. Cent. ; Agr. de Cuba / Antilla ; April 10/16	USNM	No
T. nigritarsis	WIBF 042449	Male	1	Cayamas ; 25. 2 Cuba / EA Schwarz ; Collector / 249. / Male	USNM	No
T. nigritarsis	WIBF 042450	Female	1	CUBA, SRRA Rosario ; Taco Taco, 22. 5. ; 1985, S. Bily leg.	NMPC	No
T. nigritarsis	WIBF 042451	Unknown	1	CUBA, SRRA Rosario ; Taco Taco, 22. 5. ; 1985, S. Bily leg.	NMPC	No
T. nigritarsis	WIBF 042452	Unknown	1	CUBA - Ilsa de Pinos ; Nueva Gerona ; Jelinek lgt. 29. 5. 1975	NMPC	No
T. nigritarsis	WIBF 042453	Unknown	1	CUBA (Oriente) ; Yunque de Barracoa ; 16. V. 1975 ; Jelinek lgt.	NMPC	No
T. nigritarsis	WIBF 042454	Unknown	1	CUBA (Oriente) ; Yunque de Barracoa ; 16. V. 1975 ; Jelinek lgt.	NMPC	No
T. nigritarsis	WIBF 042455	Unknown	1	CUBA, prov. Santiago ; Daiquiri, 1. -4. 6. 85 ; S. Brantlova leg.	NMPC	No
T. nigritarsis		Male	1	Calopteron; ♂ nigri;tarse; 277 /LECTOTYPE; Calopteron; nigritarse Chevrolat; det. V.S. Ferreira 2019 (MNHC)	MNHC	Lectotype
T. nigritarsis		Female	1	Calopteron; ♀ nigritar; se; 277/PARALECTOTYPE; Calopteron; nigritarse Chevrolat; det. V.S. Ferreira 2019	MNHC	Paralectotype
T. nigritarsis		Male	1	♀/ Coll. Chevrolat/ nigritarsis [illegible] Cuba; bicolor [illegible]/ Calopteron; bicolor 1-syel; 2-113-16; [illegible]; [illegible] 79 Cuba/ Museum Paris; Coll. J. BOURGEOIS 1911/ Thonalmus; nigritarsis Chevrol./PARALECTOTYPE; Calopteron; nigritarse Chevrolat; det. V.S. Ferreira 2019	MNHN	Paralectotype
T. militaris	WIBF 041528	Male	1	JAMAICA:Trelawny ; Windsor Caves ; 1.IV.1991,uv light ; K.Philipa & Gerofsky		No
T. militaris	WIBF 041529		1	JAMAICA:Trelawny ; Windsor Caves ; 1.IV.1991,uv light ; K.Philipa & Gerofsky		No
T. militaris	WIBF 042590	Male	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042591	Male	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042592	Male	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042593	Male	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042594	Male	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042595	Male	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042596	Male	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042597	Male	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042598	Male	1	Antilles: Jamaica; Hardwar Gap,; 4800 ft.; July 13-15, 1960; P.&C. Vaurie	AMNH	No
T. militaris	WIBF 042599	Male	1	Antilles: Jamaica; Hardwar Gap,; 4800 ft.; July 13-15, 1960; P.&C. Vaurie	AMNH	No
T. militaris	WIBF 042600	Male	1	Antilles: Jamaica; Hardwar Gap,; 4800 ft.; July 13-15, 1960; P.&C. Vaurie	AMNH	No
T. militaris	WIBF 042601	Male	1	Antilles: Jamaica; Hardwar Gap,; 4800 ft.; July 13-15, 1960; P.&C. Vaurie	AMNH	No
T. militaris	WIBF 042602	Male	1	Antilles: Jamaica; Hardwar Gap,; 4800 ft.; July 13-15, 1960; P.&C. Vaurie	AMNH	No
T. militaris	WIBF 042603	Male	1	Antilles: Jamaica; Hardwar Gap,; 4800 ft.; July 13-15, 1960; P.&C. Vaurie	AMNH	No
T. militaris	WIBF 042604	Male	1	Jamaica, Portland; Port Antonio; III - 20 - 1987; J. A. Shuey, coll.	WIBF	No

T. militaris	WIBF 042605	Male	1	Jamaica, Portland; Port Antonio; III - 20 - 1987; J. A. Shuey, coll.	WIBF	No
T. militaris	WIBF 042606	Male	1	Hope Gardens; Jamaica; Feb. 22, 1911/ Male/ ♂	AMNH	No
T. militaris	WIBF 042607	Male	1	Cumberland Dist.; Clarendon. Jam.; Dec. 15-18, 1919; About 3000 ft.	AMNH	No
T. militaris	WIBF 042608	Male	1	Montego Bay; St. Jamee, Jam.; Dec. 26- '19	AMNH	No
T. militaris	WIBF 042609	Male	1	Mandeville; Manchester, Jam.; Dec. 26 1-3. '20; F.4494	AMNH	No
T. militaris	WIBF 042610	Male	1	Jamaica; W.I./ H.G. Hubbard; Collector/ Male	USNM	No
T. militaris	WIBF 042611	Male	1	JAMAICA: Trel. Parish; ca. 6kmN Quick Step; nr. Come Night Cave; 13 December 1975; Gary F. Hevel	USNM	No
T. militaris	WIBF 042612	Male	1	Jamaica; W.I./ H.G. Hubbard; Collector/ Male	USNM	No
T. militaris	WIBF 042613	Male	1	Montego Bay; St. James, Jam.; Dec 1 - '1920/ Wickham; Collection; 1933	USNM	No
T. militaris	WIBF 042614	Male	1	Jamaica; OchoRios; Feb 2' 37/ Sta 312; Chapinand;Blackwelder	USNM	No
T. militaris	WIBF 042615	Male	1	JAMAICA; HOWARD Gap; July 1961; J. Maldonado C	USNM	No
T. militaris	WIBF 042616	Male	1	St. Ann'eParish Jam.; Sept. 14. 1917. (503); Harold Morrison	USNM	No
T. militaris	WIBF 042617	Male	1	JAMAICA: Portland; Port Antonio, Bonnie; View, 29.III.1991; K. Phillips&L.Gerofsky; in pool & beating	USNM	No
T. militaris	WIBF 042618	Male	1	JAMAICA: Manchester; Mandeville; 18-20 VIII 1970; J. H. Frank colr.	WIBF	No
T. militaris	WIBF 042619	Male	1	Trelawney Pk; III.16-20.31Jam; aebray	AMNH	No
T. militaris	WIBF 042620	Male	1	Claremont; III.14.1931; Jamaica	AMNH	No
T. militaris	WIBF 042621	Male	1	Jamaica: Portland; Par., Hope Bay; Somerset Falls; 10 August 1985	WIBF	No
T. militaris	WIBF 042622	Male	1	Jamaica; F. Klages./ Holland; Collection	CMNH	No
T. militaris	WIBF 042623	Male	1	Jamaica; F. Klages./ Holland; Collection	CMNH	No
T. militaris	WIBF 042624	Male	1	JAMAICA: Portland; Par., Milbank; 10 Aug 1985,; M. A. Ivie colr./ at light	WIBF	No
T. militaris	WIBF 042625	Male	1	JAMAICA, St. And.; Irish Town; VIII. 28. 1966; A. T. Howden	FSCA	No
T. militaris	WIBF 042626	Male	1	Jamaica: Portland; Par., Hope Bay; Somerset Falls; 10 August 1985	WIBF	No
T. militaris	WIBF 042627	Male	1	V-VI-1920; acc: 5610; Constant Spring; St. Andrew, Jam.	AMNH	No
T. militaris	WIBF 042628	Male	1	Jamaica:; Mandeville.; A.E. Wigth	MCZ	No
T. militaris	WIBF 042629	Male	1	JAMAICA: Parish of; Trelawny, Vale Royal; 1-3-X-69. R. Arscott; & J. H. Frank; Blacklight Trap	FSCA	No
T. militaris	WIBF 042630	Male	1	JAMAICA: Parish of; Trelawny, Vale Royal; 1-3-X-69. R. Arscott; & J. H. Frank; Blacklight Trap	FSCA	No
T. militaris	WIBF 042631	Male	1	JAMAICA: Portland; Port Antonio, Bonnie; View, 29.III.1991; K. Phillips&L.Gerofsky; in pool & beating	WIBF	No
T. militaris	WIBF 042632	Male	1	Montego Bay; St. James, Jam.; Dec 1 - '1920	AMNH	No
T. militaris	WIBF 042633	Male	1	Antilles: Jamaica; Falmouth; July 19, 1960; C. & P. Vaurie	AMNH	No

T. militaris	WIBF 042634	Male	1	Antilles: Jamaica; Ferry, VII-12-'60; St. Catherine Par.; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 042635	Male	1	JAMAICA; New Haven; Gap May 10' 41/ Sta 59; Chapin	USNM	No
T. militaris	WIBF 042636	Male	1	JAMAICA: Portland; Port Antonio, Bonnie; View, 29.III.1991; K. Phillips&L.Gerofsky; in pool & beating	WIBF	No
T. militaris	WIBF 042637	Male	1	ac. 31224; Bath St. Thomas; Jam. IV.3-6.31	AMNH	No
T. militaris	WIBF 042638	Male	1	Dunrobin Dist.; Mandeville. Manch.; Jam XII-12. '19; About 2350 ft.	AMNH	No
T. militaris	WIBF 042639	Male	1	Jamaica; F. Klages./ Holland; Collection	CMNH	No
T. militaris	WIBF 042640	Male	1	Jamaica: Portland; Par., Hope Bay; Somerset Falls; 10 August 1985	WIBF	No
T. militaris	WIBF 042641	Male	1	JAMAICA; Portland Parish; Port Antonio; Navy Isl./ 26-XII-1987; L.H. Williams & J.L. Blackmer; Feeding Mating on; Morinda citrifolia	WIBF	No
T. militaris	WIBF 042642	Male	1	Kingston; 30-15-II Jam./ Jamaica; E.B. Bryant	MCZ	No
T. militaris	WIBF 042643	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042644	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042645	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042646	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042647	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042648	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042649	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042650	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042651	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042652	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042653	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042654	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042655	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042656	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042657	Female	1	Trelawney; III.16.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042658	Female	1	Trelawney; III.20.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042659	Female	1	Trelawney; III.15.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042660	Female	1	Ft. Clayton; C.Z. II.45/ K. E. Frick; Collector	CAS	No
T. militaris	WIBF 042661	Female	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042662	Female	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042663	Female	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042664	Female	1	Trelawney; III.17.1931; Jamaica/ Ac. 31224	AMNH	No
T. militaris	WIBF 042665	Female	1	JAMAICA: Trelaway; Windsor caves; 4-III-1991; K. Philips	WIBF	No

T. militaris	WIBF 042666	Female	1	JAMAICA: Trelaway; Windsor caves; 4-III-1991; K. Philips	WIBF	No
T. militaris	WIBF 042667	Female	1	JAMAICA: Trelaway; Windsor Caves; 1.IV.1991, uv light; K. Philips&Gerofsky	WIBF	No
T. militaris	WIBF 042668	Female	1	JAMAICA: Trelaway; Windsor Caves; 1.IV.1991, uv light; K. Philips&Gerofsky	WIBF	No
T. militaris	WIBF 042669	Female	1	JAMAICA: Manchester; Mandeville; 18-20 VIII 1970; J. H. Frank colr.	WIBF	No
T. militaris	WIBF 042670	Female	1	JAMAICA: Trel. Parish; ca. 6kmN Quick Step; nr. Come Night Cave; 13 December 1975; Gary F. Hevel	USNM	No
T. militaris	WIBF 042671	Female	1	JAMAICA: Trelaway; Windsor Caves; 1.IV.1991, uv light; K. Philips&Gerofsky	WIBF	No
T. militaris	WIBF 042672	Female	1	Jamaica	USNM	No
T. militaris	WIBF 042673	Female	1	Jamaica	USNM	No
T. militaris	WIBF 042674	Female	1	Jamaica	USNM	No
T. militaris	WIBF 042675	Female	1	Jamaica	USNM	No
T. militaris	WIBF 042676	Female	1	Jamaica	USNM	No
T. militaris	WIBF 042677	Female	1	Calopteron; bicolor/ Jamaica	USNM	No
T. militaris	WIBF 042678	Female	1	Moreland; Jamaica; 5.1917 AHRichie/ JAMAICA; Moreland; 5;1912; A.H. Ritom	USNM	No
T. militaris	WIBF 042679	Female	1	Moreland; Jamaica; 5.1917 AHRichie	USNM	No
T. militaris	WIBF 042680	Female	1	Moreland; Jamaica; 5.1917 AHRichie	USNM	No
T. militaris	WIBF 042681	Female	1	Jamaica; W.I./ H.G. Hubbard; Collector/ Female	USNM	No
T. militaris	WIBF 042682	Female	1	Jamaica; W.I./ H.G. Hubbard; Collector/ Female	USNM	No
T. militaris	WIBF 042683	Female	1	Jamaica; W.I./ H.G. Hubbard; Collector/ Female	USNM	No
T. militaris	WIBF 042684	Female	1	Jamaica; W.I./ H.G. Hubbard; Collector/ Female	USNM	No
T. militaris	WIBF 042685	Female	1	Calopteron; bicolor; Jamaica; July. 1905/ W Robinson; bequest 1929	USNM	No
T. militaris	WIBF 042686	Female	1	JAMAICA; Catherine's Peak; 4600-5000 ft.; 16-XI-1966; A.B. Gurney	USNM	No
T. militaris	WIBF 042687	Female	1	Moneage, Jamaica; Sept. 14; 1917 (514); Harold Morrison.	USNM	No
T. militaris	WIBF 042688	Female	1	♀/ Mandeville; Manchester Jam.; XII.25.1919; About 2250 ft.	USNM	No
T. militaris	WIBF 042689	Female	1	JAMAICA: Palisodes; Gunboat Bead; 30 VIII 1969; R. E. Woodruff	USNM	No
T. militaris	WIBF 042690	Female	1	Jamaica; BathStThos; 8.11.31/ Sta. 392; Chapin and; Blackwelder	USNM	No
T. militaris	WIBF 042691	Female	1	Jamaica; FerryR; May 5, '41/ Sta 540; Chapin	USNM	No
T. militaris	WIBF 042692	Female	1	JAMAICA: PARRISH; ST. Catherine; Worthy Park, 2.2.; mi. N. on Camper-; Down Road/ R. E. Woodruff; 9-19-XI-68; Malaise Trap	FSCA	No
T. militaris	WIBF 042693	Female	1	JAMAICA: St. Thomas; Parrish, Somerset Falls; 3-5-VIII-1985; C.B. & H.V. Weerrs Jr.,; G.B. Edwards	FSCA	No

T. militaris	WIBF 042694	Female	1	W.I.: JAMAICA; St. Mary Par.; Oracabesia; 17 March 1987; J. A. Shuey colr.	WIBF	No
T. militaris	WIBF 042695	Female	1	JAMAICA: Portland; Port Antonio, Bonnie; View, 29.III.1991; K. Phillips&L.Gerofsky; in pool & beating	WIBF	No
T. militaris	WIBF 042696	Female	1	JAMAICA: Portland; Port Antonio, Bonnie; View, 29.III.1991; K. Phillips&L.Gerofsky; in pool & at light	WIBF	No
T. militaris	WIBF 042697	Female	1	JAMAICA: Portland; Parish, 2 mi. S.; Millibank; 29 VIII 1969; R. E. Woodruff colr.	FSCA	No
T. militaris	WIBF 042698	Female	1	JAMAICA: Portland; Parish, 2 mi. S.; Millibank; 29 VIII 1969; R. E. Woodruff colr.	FSCA	No
T. militaris	WIBF 042699	Female	1	JAMAICA: Portland; Parish, 2 mi. S.; Millibank; 29 VIII 1969; R. E. Woodruff colr.	FSCA	No
T. militaris	WIBF 042700	Female	1	Jamaica; OchoRios; 7-IV-81/ W.E. & C.A. Triplehorn; Collectors	OSU	No
T. militaris	WIBF 042701	Female	1	Jamaica, W.I., C.M. Acc. 2522/ Kingston	CMNH	No
T. militaris	WIBF 042702	Female	1	Malvern ; Jamaica ; Petrunkevitch / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042703	Female	1	Antilles : Jamaica ; Claremont. St. Ana ; Parrish VII-22-'60 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 042704	Female	1	Antilles : Jamaica ; Hardwar Gap. ; 4800 ft. ; July 13 - 15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 042705	Female	1	Trelawney ; 111. 17. 1931 ; Jamaica / Ac. 31224	AMNH	No
T. militaris	WIBF 042706	Female	1	Mandev'le ; Ja. Apr. 06 / ex coll. ; Wickham	USNM	No
T. militaris	WIBF 042707	Female	1	Jamaica: ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042708	Female	1	Jamaica: ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042709	Female	1	Jamaica: ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042710	Female	1	Bot. Garden ; Castleton ; Jamaica ; Petrunkevitch / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042711	Female	1	Jamaica: ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042712	Male	1	Melsh. / [Unintelligible] / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042713	Female	1	Corn Puss Gap ; Jamaica / 22. VII. 1937 ; Carn. Mus. ; Acc. 11619	CMNH	No
T. militaris	WIBF 042714	Female	1	Jamaica ; F. Klages. / Holland ; Collection	CMNH	No
T. militaris	WIBF 042715	Female	1	Liguanea Plain Jamaica ; Nov. Dec. 1911 ; C. T. Brues / Gift of ; C. T. Brues	MCZ	No
T. militaris	WIBF 042716	Female	1	Newton, Jamaica ; 3000 ft. Jan. 1912 ; C. T. Brues / Gift of ; C. T. Brues	MCZ	No
T. militaris	WIBF 042717	Female	1	JAMAICA : Trelaway ; Windsor Caves ; 4 - III - 1991 ; K. Philips	WIBF	No
T. militaris	WIBF 042718	Female	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 042719	Female	1	JAMAICA : Trel. Parish ; ca. 6kmN Quick Step ; nr. Come Night Cave ; 13 December 1975 ; Gary F. Hevel	USNM	No

T. militaris	WIBF 042720	Female	1	JAMAICA. / Female	ANSP	No
T. militaris	WIBF 042721	Female	1	Female	ANSP	No
T. militaris	WIBF 042722	Female	1	Jamaica ; Br. W. Ind / 1	ANSP	No
T. militaris	WIBF 042723	Female	1	Hope Gardens; Jamaica; Feb. 22, 1911/ Female	AMNH	No
T. militaris	WIBF 042724	Female	1	Hope Gardens; Jamaica ; Feb. 22, 1911 / Female	AMNH	No
T. militaris	WIBF 042725	Female	1	Jamaica ; Br. W. Ind.	ANSP	No
T. militaris	WIBF 042726	Female	1	Bath, ; Jamaica	ANSP	No
T. militaris	WIBF 042727	Female	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 042728	Female	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 042729	Female	1	Trelawney ; 111. 20. 1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042730	Female	1	Trelawney ; 111. 20. 1931 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042731	Female	1	Trelawney ; 111. 20. 1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042732	Female	1	Trelawney ; 111. 20. 1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042733	Female	1	Trelawney ; 111. 20. 1931 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042734	Female	1	Trelawney ; 111. 20. 1931 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042735	Female	1	Trelawney ; 111. 17. 1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042736	Female	1	Trelawney ; 111. 17. 1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042737	Female	1	Trelawney ; 111. 17. 1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042738	Female	1	Trelawney ; 111. 16. 1931 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042739	Female	1	Trelawney ; 111. 16. 1931 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042740	Female	1	Trelawney ; 111. 16. 1931 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 042741	Female	1	Mandev'le ; Ja. Apr. 06 / EPVanD[Unintelligeble] ; Collector / Van Dyke ; Collection / 13	CAS	No
T. militaris	WIBF 042742	Female	1	Balaclava ; Jamaica ; IV - 5 - 06 / Pres. by ; EPVanD[Unintelligeble]	CAS	No
T. militaris	WIBF 042743	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042744	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042745	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042746	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No

T. militaris	WIBF 042747	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042748	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042749	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042750	Female	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards / 16 - 8	FSCA	No
T. militaris	WIBF 042751	Female	1	JAMAICA : Saint Andrew ; Parrish, Hardwar Gap ; 26-27-VII-1985 ; C. B. & H. V. Weems, ; G. B. Edwards	FSCA	No
T. militaris	WIBF 042752	Female	1	Jamaica : ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042753	Female	1	Jamaica : ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042754	Female	1	Bot. Garden ; Castleton ; Jamaica ; Petrunkevitch / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 042755	ale,Fema	2	Jamaica ; F. Klages. / C. M. ; Acc. 349	CMNH	No
T. militaris	WIBF 042756	Female	1	JAMAICA : Parish of ; St. Catherine, ; Worthy Park, 2.2 ; MI. N. on Camper- ; Down Road / R. E. Woodruff ; 18-25-II-70 ; MALAISE TRAP	FSCA	No
T. militaris	WIBF 050989	Female	1	JAMAICA : St. Andrew ; Parish, Kingston ; Hermitage D Rd. ; 21 VI 1975 / Grissel, Parr. & ; Woodruff colrs. ; Comocladion sp.	FSCA	No
T. militaris	WIBF 050990	Female	1	Jamaica. ; Oct. 15. 1923 ; O. H. Ballon	AMNH	No
T. militaris	WIBF 050991	Female	1	Palm Beach ; Montego Bay ; Jamaica ; Mar. 18 1911 / Female	AMNH	No
T. militaris	WIBF 050992	Female	1	Cinchona ; Jamaica	AMNH	No
T. militaris	WIBF 050993	Female	1	Montego Bay ; Jamaica ; Mar. 17. 1911 / Female	AMNH	No
T. militaris	WIBF 050994	Female	1	Kingston, ; Jamaica, W. I. / No. ; F. C. Nicholas Collection./ ♀ / Female	AMNH	No
T. militaris	WIBF 050995	Female	1	Kingston, ; Jamaica, W. I. / No. ; F. C. Nicholas ; Collection./ Female	AMNH	No
T. militaris	WIBF 050996	Female	1	Kingston, ; Jamaica, W. I. / No. ; F. C. Nicholas ; Collection./ Female	AMNH	No
T. militaris	WIBF 050997	Female	1	Kingston, ; Jamaica, W. I. / No. ; F. C. Nicholas ; Collection./ Female	AMNH	No
T. militaris	WIBF 050998	Female	1	Hope Gardens ; Jamaica ; Feb. 22, 1911 / Female	AMNH	No
T. militaris	WIBF 050999	Female	1	Mandeville ; Manchester, Jam. ; XII.20 1919 ; About 2250 ft.	AMNH	No
T. militaris	WIBF 051000	Female	1	Mandeville ; Manchester, Jam. ; Nov. 30.XII.4. ; 2131 ft.	AMNH	No
T. militaris	WIBF 051001	Female	1	Dunrobin Dist. ; Mandeville, Manch. ; Jam. Dec. 23. '19 ; About 2350 ft.	AMNH	No
T. militaris	WIBF 051002	Female	1	Dunrobin Dist. ; Mandeville, Manch. ; Jam. Jan. 12. '20 ; About 2350 ft.	AMNH	No
T. militaris	WIBF 051003	Female	1	Cumberland Dist. ; Clarendon, Jam. ; Dec. 15-18, 1919 ; About 3000 ft.	AMNH	No
T. militaris	WIBF 051004	Female	1	Trelawney ; III.17.1921 ; Jamaica / Ac. 31224	AMNH	No
T. militaris	WIBF 051005	Female	1	Trelawney ; III.17.1921 ; Jamaica / Ac. 31224	AMNH	No

T. militaris	WIBF 051006	Female	1	Trelawney ; III.20.1931 ; Jamaica / Ac. 31224	AMNH	No
T. militaris	WIBF 051007	Female	1	Trelawney ; III.20.1931 ; Jamaica / Ac. 31224	AMNH	No
T. militaris	WIBF 051008	Female	1	Antilles : Jamaica ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. P. Vaurie	AMNH	No
T. militaris	WIBF 051009	Female	1	Antilles : Jamaica ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. P. Vaurie	AMNH	No
T. militaris	WIBF 051010	Female	1	Antilles : Jamaica ; Hardwar Gap. ; 4800 ft. ; July 13 - 15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051011	Female	1	Antilles : Jamaica ; Christiana. 3000 ft. ; July 15 - 17, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051012	Female	1	Jamaica, B. W. I. ; W. Robinsom. / Female	AMNH	No
T. militaris	WIBF 051013	Female	1	Dunrobin Dist. ; Mandeville, Manch. ; Jam. XII-12. '19 ; About 2350 ft.	AMNH	No
T. militaris	WIBF 051014	Female	1	Cumberland Dist. ; Clarendon, Jam. ; Dec. 15-18, 1919 ; About 3000 ft.	AMNH	No
T. militaris	WIBF 051015	Female	1	Mandeville ; Manchester, Jam. ; Jan. 3-5 '20 ; 2131 ft.- 2300	AMNH	No
T. militaris	WIBF 051016	Female	1	Constant Spring ; St. Andrew, Jam. ; Jan. 25 - '20 ; About 650 ft.	AMNH	No
T. militaris	WIBF 051017	Female	1	Constant Spring ; St. Andrew, Jam. ; Jan. 4 - 24 '20 ; About 650 ft. ; F. 4512	AMNH	No
T. militaris	WIBF 051018	Female	1	Constant Spring ; St. Andrew, Jam. ; Feb. 6 1920 ; About 650 ft.	AMNH	No
T. militaris	WIBF 051019	Female	1	Constant Spring ; St. Andrew, Jam. ; Jan. 4. 24 '20 ; About 650 ft.	AMNH	No
T. militaris	WIBF 051020	Female	1	Jamaica / Female	AMNH	No
T. militaris	WIBF 051021	Female	1	Jamaica / bicolor / Female	AMNH	No
T. militaris	WIBF 051022	Female	1	Jamaica ; Br. W. Ind / F. R. Mason Coll. / 1 / ae. 22926	AMNH	No
T. militaris	WIBF 051104	Female	1	Mandeville ; Manchester, Jam. ; Jan. 8.9. '20 ; 2131 ft.	AMNH	No
T. militaris	WIBF 051105	Female	1	Mandeville ; Manchester, Jam. ; Jan. 16-23. 1920 ; About 2250 ft.	AMNH	No
T. militaris	WIBF 051106	Female	1	Montego Bay ; St. James, Jam. ; Dec. 30- '19	AMNH	No
T. militaris	WIBF 051107	Female	1	Claremont ; III.12.1931 ; Jamaica	AMNH	No
T. militaris	WIBF 051108	Female	1	CALOPTERON ; BICOLOR ; KINGSTON. ; JAMAICA ; JULY 7. 1905 / Female / Jamaica, B. W. I. ; W. Robinson.	AMNH	No
T. militaris	WIBF 051109	Female	1	12 mi.s.Falmouth ; Windsor Estate, ; VIII-II-56 ; B. & B. Valentine / Jamaica, Brit. ; West Indies	OSU	No
T. militaris	WIBF 051110	Female	1	JAMAICA : Portland ; Port Antonio, Bonnie ; View, 29.III.1991 ; K. Philips & L. Gerofsky ; in pool & beating	WIBF	No
T. militaris	WIBF 051111	Female	1	JAMAICA : Portland ; Port Antonio, Bonnie ; View, 29.III.1991 ; K. Philips & L. Gerofsky ; in pool & beating	WIBF	No
T. militaris	WIBF 051112	Female	1	JAMAICA : Portland ; Port Antonio, Bonnie ; View, 29.III.1991 ; K. Philips & L. Gerofsky ; in pool & at light	WIBF	No

T. militaris	WIBF 051113	Female	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 051114	Female	1	Whitefield Hall ; Blue Mts. ; nr 4500 ft. ; Aug. 13-20 / Jamaica ; 1934 ; Darlington / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051115	Male	1	Trelawney ; III.17.1921 ; Jamaica / Ac. 31224	CAS	No
T. militaris	WIBF 051116	Male	1	JAMAICA : St. Catherine, ; Worthy Park, 30-XI-1969 ; E. G. Fransworth, black- ; light trap in Citrus grove	FSCA	No
T. militaris	WIBF 051117	Male	1	JAMAICA : St. Catherine, ; Worthy Park, 30-XI-1969 ; E. G. Fransworth, black- ; light trap in Citrus grove	FSCA	No
T. militaris	WIBF 051118	Male	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. militaris	WIBF 051119	Male	1	JAMAICA : Portland ; Parish, 2 mi. S. ; Millibank ; 29 VIII 1969 ; R. E. Woodruff colr.	FSCA	No
T. militaris	WIBF 051120	Male	1	Jamaica; F. Klages./ Holland; Collection	CMNH	No
T. militaris	WIBF 051121	Male	1	Jamaica; F. Klages./ C. M. ; Acc. 349	CMNH	No
T. militaris	WIBF 051122	Male	1	Jamaica; F. Klages./ Holland; Collection	CMNH	No
T. militaris	WIBF 051123	Male	1	Jamaica; F. Klages./ Holland; Collection	CMNH	No
T. militaris	WIBF 051124	Male	1	JAMAICA, St. Thomas ; Whitfield Hall ; VIII.28.1966 ; A. T. Howden	FSCA	No
T. militaris	WIBF 051125	Male	1	JAMAICA : Parish of ; Trelawny, Vale Royal ; 1-3-X-69, R. Arscott ; & J. H. Frank ; blacklight trap	FSCA	No
T. militaris	WIBF 051126	Male	1	Montego Bay ; Jamaica ; Mar.15 1911 / Male	AMNH	No
T. militaris	WIBF 051127	Male	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 051128	Male	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 051129	Male	1	JAMAICA : Portland ; Par., Hope Bay ; Somerset Falls ; 10 August 1985 / M. A. Ivie ; Collector	WIBF	No
T. militaris	WIBF 051130	Male	1		USNM	No
T. militaris	WIBF 051131	Male	1	Jamaica ; Kingston ; May 30, 1941 / Stabos ; Chapin	USNM	No
T. militaris	WIBF 051132	Male	1	Hope Gardens ; Jamaica ; Jun.11, 1931 / Ornamental ; Plant. ; M Kisliuk ; # 187 / ♂	USNM	No
T. militaris	WIBF 051133	Male	1	BATH. JAMAICA ; JULY.1902. / W Robinson ; bequest1929	USNM	No
T. militaris	WIBF 051134	Male	1	Moreland ; Jamaica ; 5/1917 A H Ritchie	USNM	No
T. militaris	WIBF 051135	Male	1	Moreland ; Jamaica ; 5/1917 A H Ritchie	USNM	No
T. militaris	WIBF 051136	Male	1	Moreland ; Jamaica ; 5/1917 A H Ritchie	USNM	No
T. militaris	WIBF 051137	Male	1	Moreland ; Jamaica ; 5/1917 A H Ritchie	USNM	No

T. militaris	WIBF 051138	Male	1	Jamaica	USNM	No
T. militaris	WIBF 051139	Male	1	Jamaica	USNM	No
T. militaris	WIBF 051140	Male	1	Jamaica	USNM	No
T. militaris	WIBF 051141	Male	1	Jamaica	USNM	No
T. militaris	WIBF 051142	Male	1	JAMAICA : Trel. Parish ; ca. 6kmN Quick Step ; nr. Come Night Cave ; 13 December 1975 ; Gary F. Hevel	USNM	No
T. militaris	WIBF 051143	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051144	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051145	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051146	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051147	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051148	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051149	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051150	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051151	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051152	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051153	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051154	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051155	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051156	Male	1	Trelawney ; III.20.1921 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051157	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051158	Male	1	Trelawney ; III.20.1921 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051159	Male	1	Trelawney ; III.20.1921 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051160	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051161	Male	1	Montego Bay ; St. James, Jam. ; D[Unintellegible] 1- '1920	AMNH	No
T. militaris	WIBF 051162	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051163	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051164	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051165	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051166	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No

T. militaris	WIBF 051167	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051168	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051169	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051170	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051171	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051172	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051173	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 1.IV.1991, uv light ; K. Philips & Gerofsky	WIBF	No
T. militaris	WIBF 051174	Male	1	JAMAICA : Trelawny ; WIndsor Caves ; 4.III.1991 ; K. Philips	WIBF	No
T. militaris	WIBF 051175	Male	1	JAMAICA : Parish of ; Trelawny, Vale Royal ; 1-3-X-69, R. Arscott ; & J. H. Frank ; blacklight trap	FSCA	No
T. militaris	WIBF 051176	Male	1	JAMAICA : Parish of ; Trelawny, Vale Royal ; 1-3-X-69, R. Arscott ; & J. H. Frank ; blacklight trap	FSCA	No
T. militaris	WIBF 051177	Male	1	JAMAICA : Parish of ; Trelawny, Vale Royal ; 1-3-X-69, R. Arscott ; & J. H. Frank ; blacklight trap	FSCA	No
T. militaris	WIBF 051178	Male	1	JAMAICA : Portland ; Port Antonio, Bonnie ; View, 29.III.1991 ; K. Philips & L. Gerofsky ; in pool & beating	WIBF	No
T. militaris	WIBF 051179	Male	1	JAMAICA : Portland ; Port Antonio, Bonnie ; View, 29.III.1991 ; K. Philips & L. Gerofsky ; in pool & beating	WIBF	No
T. militaris	WIBF 051180	Male	1	Trelawney Pk. ; III. 16-20.31 Jam ; ae. 31224	AMNH	No
T. militaris	WIBF 051181	Male	1	Trelawney Pk. ; III. 16-20.31 Jam ; ae. 31224	AMNH	No
T. militaris	WIBF 051182	Male	1	Malvern ; Jamaica ; Petrunkevitch / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051183	Male	1	JAMAICA : Manchester ; Mandeville ; 18-20 VIII 1970 ; J. H. Frank colr.	FSCA	No
T. militaris	WIBF 051184	Male	1	Jamaica. ; July 6	CMNH	No
T. militaris	WIBF 051185	Male	1	JAMAICA : Parish ; St. Catherine. ; Worthy Park Est. / R. E. Woodruff ; II.V.69 ; blacklight trap	FSCA	No
T. militaris	WIBF 051186	Male	1	JAMAICA : Parish ; St. Catherine. ; Worthy Park, 2.2 ; MI. N. on Camper- ; down Road / R. E. Woodruff ; 9-19-XI-68 ; malaise trap / wing drawing	FSCA	No
T. militaris	WIBF 051187	Male	1	P[Unintelligible] ; JAMAICA ; 24.III.1921 ; NO.136 / C. COWDEY / Carn. Mus. ; Acc. 7154	CMNH	No
T. militaris	WIBF 051188	Male	1	Claremont ; III.10.1931 ; Jamaica / Ae. 31224 / EGGS	AMNH	No

T. militaris	WIBF 051189	Male	1	[Unintelligible] ; FSCA	FSCA	No
T. militaris	WIBF 051190	Male	1	Spanish town, JA ; Jan 15 1975 ; S. A. Marshal	DEBU	No
T. militaris	WIBF 051191	Male	1	JAMAICA. / Male	ANSP	No
T. militaris	WIBF 051192	Male	1	JAMAICA. / Male	ANSP	No
T. militaris	WIBF 051193	Male	1	JAMAICA. / Male	ANSP	No
T. militaris	WIBF 051194	Male	1	Jamaica ; Br. W. Ind	ANSP	No
T. militaris	WIBF 051195	Male	1	Antilles : Jamacia ; Christiana. 3000 ft. ; July 15-17. 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051196	Male	1	Antilles : Jamacia ; Christiana. 3000 ft. ; July 15-17. 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051197	Male	1	Antilles : Jamacia ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. & P. Vaurie	AMNH	No
T. militaris	WIBF 051198	Male	1	Antilles : Jamacia ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. & P. Vaurie	AMNH	No
T. militaris	WIBF 051199	Male	1	Antilles : Jamacia ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. & P. Vaurie	AMNH	No
T. militaris	WIBF 051200	Male	1	Antilles : Jamacia ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. & P. Vaurie	AMNH	No
T. militaris	WIBF 051201	Male	1	Antilles : Jamacia ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. & P. Vaurie	AMNH	No
T. militaris	WIBF 051202	Male	1	Antilles : Jamacia ; Golden Grove ; St. Thomas Par. ; July 26, 1960 ; C. & P. Vaurie	AMNH	No
T. militaris	WIBF 051203	Male	1	Antilles : Jamacia ; Hardwar Gap, ; 4800 ft. ; July 13-15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051204	Male	1	Antilles : Jamacia ; Hardwar Gap, ; 4800 ft. ; July 13-15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051205	Male	1	Antilles : Jamacia ; Hardwar Gap, ; 4800 ft. ; July 13-15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051206	Male	1	Antilles : Jamacia ; Hardwar Gap, ; 4800 ft. ; July 13-15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051207	Male	1	Antilles : Jamacia ; Hardwar Gap, ; 4800 ft. ; July 13-15, 1960 ; P. & C. Vaurie	AMNH	No
T. militaris	WIBF 051208	Male	1	JAMAICA : Parish of ; Trelawny, Vale Royal ; 1-3-X-69, R. Arscott ; & J. H. Frank ; blacklight trap	FSCA	No
T. militaris	WIBF 051209	Male	1	JAMAICA : Parish of ; Trelawny, Vale Royal ; 1-3-X-69, R. Arscott ; & J. H. Frank ; blacklight trap	FSCA	No
T. militaris	WIBF 051210	Male	1	Trelawney ; III.17.1931 ; Jamaica / Ac.31224	AMNH	No
T. militaris	WIBF 051211	Male	1	Trelawney ; III.17.1931 ; Jamaica / Ac.31224	CAS	No
T. militaris	WIBF 051212	Male	1	Trelawney ; III.17.1931 ; Jamaica / Ac.31224	CAS	No
T. militaris	WIBF 051213	Male	1	Trelawney ; III.20.1931 ; Jamaica / Ac.31224	CAS	No
T. militaris	WIBF 051214	Male	1	Trelawney ; III.10.1931 ; Jamaica / Ac.31224	CAS	No
T. militaris	WIBF 051215	Male	1	Trelawney ; III.17.1931 ; Jamaica / Ac.31224	CAS	No

T. militaris	WIBF 051216	Male	1	Trelawney ; III.16.1931 ; Jamaica / Ac.31224	CAS	No
T. militaris	WIBF 051217	Male	1	Trelawney ; III.16.1931 ; Jamaica / Ac.31224	CAS	No
T. militaris	WIBF 051218	Male	1	Jamaica. ; July 13 / [Unintelligible] ; July 13	CMNH	No
T. militaris	WIBF 051219	Male	1	Jamaica. ; July 13	CMNH	No
T. militaris	WIBF 051220	Male	1	Jamaica ; F. Klages / Klages Coll'n ; Exot. Coleopt. ; C M Acc. 2275	CMNH	No
T. militaris	WIBF 051221	Male	1	Jamaica ; F. Klages / Klages Coll'n ; Exot. Coleopt. ; C M Acc. 2275	CMNH	No
T. militaris	WIBF 051222	Male	1	Jamaica ; F. Klages / Klages Coll'n ; Exot. Coleopt. ; C M Acc. 2275	CMNH	No
T. militaris	WIBF 051223	Male	1	Jamaica ; F. Klages / Klages Coll'n ; Exot. Coleopt. ; C M Acc. 2275	CMNH	No
T. militaris	WIBF 051224	Male	1	Jamaica ; F. Klages / Holland ; Collection	CMNH	No
T. militaris	WIBF 051225	Male	1	Jamaica ; F. Klages / C. M. ; Acc. 349	CMNH	No
T. militaris	WIBF 051226	Male	1	JAMAICA : ; 6 MI. N. MAVIS BANK ; JUNE 1 1966 / B. K. DOZIER ; COLL.	FSCA	No
T. militaris	WIBF 051227	Male	1	JAMAICA : ; 6 MI. N. MAVIS BANK ; JUNE 1 1966 / B. K. DOZIER ; COLL.	FSCA	No
T. militaris	WIBF 051228	Male	1	JAMAICA : ; 6 MI. N. MAVIS BANK ; JUNE 1 1966 / B. K. DOZIER ; COLL.	FSCA	No
T. militaris	WIBF 051229	Male	1	JAMAICA : ; 6 MI. N. MAVIS BANK ; JUNE 2 1966 / B. K. DOZIER ; COLL.	FSCA	No
T. militaris	WIBF 051230	Male	1	JAMAICA : ; 6 MI. N. MAVIS BANK ; JUNE 2 1966 / B. K. DOZIER ; COLL.	FSCA	No
T. militaris	WIBF 051231	Male	1	JAMAICA, St. Thomas ; Whitfield Hall ; VII.28.1966 ; A. T. Howden	FSCA	No
T. militaris	WIBF 051232	Male	1	Corn Puss Gap ; Jamaica / June 1937 ; Carn. Mus. ; Acc. 11619	CMNH	No
T. militaris	WIBF 051233	Male	1	JAMAICA : Palisodes ; Gunboat Bead ; 30 VIII 1969 ; R. E. Woodruff	FSCA	No
T. militaris	WIBF 051234	Male	1	[Unintelligible] / Coll. R. I. Sc. N. B.	IRSBN	No
T. militaris	WIBF 051235	Male	1	Whitfield Hall ; Blue Mts. ; nr 4500 ft. ; Aug. 13-20 / Jamaica ; 1934 ; Darlington / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051236	Male	1	Jamaica : ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051237	Male	1	Jamaica : ; Mandeville. ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051238	Male	1	Jamaica : ; Balaclava : ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051239	Male	1	Jamaica : ; Balaclava : ; A. E. Wight / Museum of ; Comparative ; Zoology	MCZ	No
T. militaris	WIBF 051240	Male	1	JAMAICA : St. Catherine. ; Worthy Park, 30-XI-1969 ; E. G. Fransworth, black- ; light trap in Citrus grove	FSCA	No
T. militaris	WIBF 051241	Male	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No

T. militaris	WIBF 051242	Male	1	JAMAICA : St. Thomas ; Parrish, Somerset Falls ; 3-5-VIII-1985 ; C. B. & H. V. Weems Jr., ; G. B. Edwards	FSCA	No
T. dominicensis	WIBF 041543		1	DOM.REP:Prov.La Vega ; La Cienaga, 1100m ; 19.0678°N, 70.8613°W ; 29JULY1999, R.S.Miller ; BL, Hg vapor, beating	WIBF	No
T. dominicensis	WIBF 041738	Female	1	DOMIN.REP:Prov.Hato Mayor ; 3 km S. Sabana de la Mar ; 19°01.800´N, 69°29.092´W ; 04AUG1999, 20m ; M.A.Ivie & K.A.Guerrero	WIBF	No
T. dominicensis	WIBF 042954	Male	1	DOM.REP:Prov.Hato Mayor ; 3km W, Sabana de la Mar ; 19.03"N, 30, 4849"W ; 04 AUG 1999, 21m ; R.S.Miller colr.	WIBF	No
T. dominicensis	WIBF 042955	Female	1	REP.DOM:Prov.LaAltagracia ; Parque Nacional del Este ; Guaraguao. 01 MAR 1992. ; K.A.Guerrero y F.DelMonte	WIBF	No
T. dominicensis	WIBF 042956	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.Armando Bermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	No
T. dominicensis	WIBF 042957	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.Armando Bermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	No
T. dominicensis	WIBF 042958	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.Armando Bermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	No
T. dominicensis	WIBF 042959	Male	1	DOM.REP:Prov.Hato Mayor ; W. Sabana de la Mar ; 30JUNE-01JULY 1992 ; M. A. & R. O.Ivie colr	WIBF	No
T. dominicensis	WIBF 042960	Female	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	No
T. dominicensis	WIBF 043150	Female	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	No
T. dominicensis	WIBF 043151	Male	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	No
T. dominicensis	WIBF 043152	Female	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	No
T. dominicensis	WIBF 043153	Male	1	DOM.REP.,Dis.Nac., ; 4km.W.BocaChica ; August 11,1979 ; G.B.Marshall / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 043154	Female	1	DOM.REP.,LaEstrel. ; 10km.E.HondoValle ; August.7,1979 ; C.W.O'Brien / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 043155	Male	1	DOM.REP.,Peravia, ; 15km.E.SanJose de ; Ocoa,August8,1979 ; G.B.Marshall / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 043156	Female	1	DOM.REP.,LaVega, ; 23km.SE.Jarabacoa ; May25,1978 ; O'Brien&Marshall / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 043157	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; Auguest 1,1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 043158	Female	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N,Cabo Hojo, 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	No

T. dominicensis	WIBF 043159		1	DOMINICAN REP.: Prov. ; Barahona,nr.Filipinas, ; Mt.Tutu; 26-VI-7 VII- ; 1992; P.E.Skelley ; day catch, beating	FSCA	No
T. dominicensis	WIBF 043160	Female	1	fthills Cord.Cent. ; S.of Santiago ; June'38, Dom.Rep. ; Darlington	MCZ	No
T. dominicensis	WIBF 043161	Female	1	San Jose de las ; Matas,Dom.Rep. ; 1,000-2,000 ft. ; June'38 Darl.	MCZ	No
T. dominicensis	WIBF 043162	Male	1	DOMINICAN REPUBLIC ; RD-55 ~2 km N Bayahibe, ; La Altagracia Prov.,31.vii. ; 2002, 18°23.423'N ; 68°50.453'W,D. Perez, ; R. Bastardo, B. Hierro / 15.1164-19 / MNHNSD 15.122	MNHN	No
T. dominicensis	WIBF 043163	Male	1	DOMINICAN REPUBLIC ; RD-55 ~2 km N Bayahibe, ; La Altagracia Prov.,31.vii. ; 2002, 18°23.423'N ; 68°50.453'W,D. Perez, ; R. Bastardo, B. Hierro / 15.1163-19 / MNHNSD 15.121	MNHN	No
T. dominicensis	WIBF 043164	Female	1	REPUBLICA DOMINICANA ; Santo Domingo,Parque ; Mirador del Norte ; 20-V-2001 ; H. Yakizawa / 15.1168-19 / MNHNSD 15.126	MNHN	No
T. dominicensis	WIBF 043165	Female	1	REPUBLICA DOMINICANA ; Santo Domingo,Parque ; Mirador del Norte ; 27-V-2001 ; H. Yakizawa / 15.1167-19 / MNHNSD 15.125	MNHN	No
T. dominicensis	WIBF 043166	Female	1	REPUBLICA DOMINICANA ; Santo Domingo,Parque ; Mirador del Norte ; 1-VII-2001 ; H. Yakizawa / 15.1169-19 / MNHNSD 15.127	MNHN	No
T. dominicensis	WIBF 043167	Female	1	REPUBLICA DOMINICANA ; Pedernales ; Oviedo, stream side ; 5-8-VI-2001 ; H. Yakizawa / 15.1153-19 / MNHNSD 15.111	MNHN	No
T. dominicensis	WIBF 043168	Female	1	REP.DOM: Pedernales ; Oviedo, 4.VI.1999 ; Sardis Medrano y ; Dennia Veloz / Photographed ; 2002-2003 ; CBSD / 15.1187-19 / MNHNSD 15.145	MNHN	No
T. dominicensis	WIBF 043169	Female	1	REPUBLICA DOMINICANA; La ; Altagracia, Bayahibe, ; Parque Nacional del Este, ; Guaraguao: Sendero Cueva ; del Puente, 12 June 2001, ; coll. Josue Herinquez / 15.1145-19 / MNHNSD 15.103	MNHN	No
T. dominicensis	WIBF 043170	Female	1	REPUBLICA DOMINICANA: ; Provincia La Vega, Trail Los ; Tablones-La Cienega, P.N. ; A. Bermudez, 20 July 2002, ; coll. D. Perez, B. Hierro, R. ; Bastardo / Photographed ; 2002-2003 ; CBSD / 15.1148-19 / MNHNSD 15.106	MNHN	No
T. dominicensis	WIBF 043171	Female	1	La Hermita. ; El Cercado,PROV. ; SAN JUAN,R.D. ; 28-III-1981 ; Cols. ; Marco-L.Marcano / 23679	MNHN	No
T. dominicensis	WIBF 043172	Male	1	Veron ; Higuey, PROV. ; LA ALTAGRACIA, R.D. ; 10-VIII-1979 ; Cols. ; Marcano-Mota-Reynoso / 05534 / 15.1190-19 / MNHNSD 15.148	MNHN	No
T. dominicensis	WIBF 043173	Male	1	LAS AbejAS ; ,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; COLS. ; MAtusik-Guerrero / 35006	MNHN	No
T. dominicensis	WIBF 043174	Male	1	LAS AbejAS ; ,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; Cols. ; MAtusik-Guerrero / 34984	MNHN	No
T. dominicensis	WIBF 043175	Male	1	LAS AbejAS ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; Cols. ; MAtusik-Guerrero / 34994	MNHN	No
T. dominicensis	WIBF 043176	Male	1	LAS Abejas ; ,PROV. ; PEDERNALES,R.D. ; 23-VI-1989 ; Matusik-Guerrero / 34751	MNHN	No

T. dominicensis	WIBF 043177	Female	1	LAS Abejas ; Sierra Banoruco ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; Matusik-Guerrero / 34978	MNHN	No
T. dominicensis	WIBF 043178	Male	1	LAS Abejas ; ,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35003	MNHN	No
T. dominicensis	WIBF 043179	Male	1	LAS Abejas ; ,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35044	MNHN	No
T. dominicensis	WIBF 043180	Male	1	LAS Abejas ; Sierra Bahoruco ; ,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; Matusik-Guerrero / 35031	MNHN	No
T. dominicensis	WIBF 043181	Male	1	La Cumbre. ; Puerto Plata,R.D. ; 28-I-1979. ; Col.Dominguez. / 01574	MNHN	No
T. dominicensis	WIBF 043182	Male	1	Los Azules. ; Salcedo,PROV. ; SALCEDO,R. D. ; 17-VIII-1979 ; col.Reynoso. / 06480 / 15.1124-19 / MNHNSD 15.82	MNHN	No
T. dominicensis	WIBF 043183	Male	1	Engombe ; DISTRITO NACIONAL ; Rep. Dom. ; 12-III-1985 ; cols.Reynoso.Feliz / 31124 / 15.1100-19 / MNHNSD 15.59	MNHN	No
T. dominicensis	WIBF 043184	Female	1	Engombe ; DISTRITO NACIONAL ; Rep. Dom. ; 12-III-1985 ; cols-Reynoso-Feliz / 31122 / 15.1101-19 / MNHNSD 15.60	MNHN	No
T. dominicensis	WIBF 043185	Male		Herrera ; DISTRITO NACIONAL ; Rep. Dom. ; 18-IV-1985 ; cols.Reynoso / 31149 / 15.1116-19 / MNHNSD 15.74	MNHN	No
T. dominicensis	WIBF 043186	Male	1	Santo DominGo ; DISTRITO NACIONAL ; Rep. Dom. ; 1-IV-1983 ; Cols.:Reynoso / 30325 / 15.1202-19 / MNHNSD 15.160	MNHN	No
T. dominicensis	WIBF 043187	Male	1	LAS ALAMEDAS ; DISTRITO NACIONAL ; Rep. Dom. ; 10/IV/1988 ; Col. ; H.L.DOMINgUEZ / 32488 / 15.1209-19 / MNHNSD 15.167	MNHN	No
T. dominicensis	WIBF 043188	Male	1	Anamuyita ; Higuey, PROV. ; LA ALTAGRACIA. R.D. ; 21-VII-1979 ; Cols.Abud-E. Marcano H / 04500 / 15.1109-19 / MNHNSD 15.68	MNHN	No
T. dominicensis	WIBF 043189	Male	1	Puerto Frances viejo. ; Samana, PROV ; SAMANA, R.D. ; 12-IV-1979 ; Col. Dominguez. / 01858 / 15.1208-19 / MNHNSD 15.166	MNHN	No
T. dominicensis	WIBF 043190	Female	1	Los Ingenitos. ; Sabaneta, PROV. ; STGO. RDGUEZ.,R.D. ; 6-VII-1980 ; Cols.Reynoso-Aquino / 20189 / 15.1200-19 / MNHNSD 15.158	MNHN	No
T. dominicensis	WIBF 043191	Male	1	EL Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; Cols.Marcano-MarcanoM. / 07665 / 15.1088-19 / MNHNSD 15.50	MNHN	No
T. dominicensis	WIBF 043192	Male	1	La Hermita. ; El Cercado,PROV. ; SAN JUAN,R.D. ; 28-III-1981 ; Cols. ; Marco-Abud / 23694 / 15.1201-19 / MNHNSD 15.159	MNHN	No
T. dominicensis	WIBF 043193	Male	1	Km.25 carrAlcoa ; Pedernales. ; 20-05-92 ; guerrero.Delmonte / 15.1095-19 / MNHNSD 15.56	MNHN	No
T. dominicensis	WIBF 043194	Male	1	La Boca ; S.F.Macoris,PROV. ; DUARTE, R.D. ; 1-VI-1983 ; Col. Blas Reynoso. / 30297 / 15.1204-19 / MNHNSD 15.162	MNHN	No
T. dominicensis	WIBF 043195	Female	1	S. J. Ocoa, PROV. ; PERAVIA, R.D. ; 17-V-1980 ; Col. Marcano. / 18007 / 15.1196-19 / MNHNSD 15.154	MNHN	No

T. dominicensis	WIBF 043196	Male	1	EL Manaclar ; San Jose de Ocoa ; 28-4-1979 ; Cicero-Marcano. / 02524 / 15.1128-19 / MNHNSD 15.86	MNHN	No
T. dominicensis	WIBF 043197	Female	1	Los Carreras ; Asuz, PROV. ; AZUA, R. D. ; 27-VI-1985 ; Cols.Reynoso-Sanros / 31303 / 15.1123-19 / MNHNSD 15.81	MNHN	No
T. dominicensis	WIBF 043198			Los Carreras ; Asuz, PROV. ; AZUA, R. D. ; 27-VI-1985 ; Cols.Reynoso-Sanros / 31301 / 15.1122-19 / MNHNSD 15.80	MNHN	No
T. dominicensis	WIBF 051243	Male	1	fthills Cord. Cent. ; S. of Santiago ; June '38, Dom. Rep. ; Darlington	MCZ	No
T. dominicensis	WIBF 051244	Male	1	fthills Cord. Cent. ; S. of Santiago ; June '38, Dom. Rep. ; Darlington	MCZ	No
T. dominicensis	WIBF 051245	Male	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4000ft., July '38 ; Darlington	MCZ	No
T. dominicensis	WIBF 051246	Male	1	San Jose de las ; Matas, Dom. Rep ; 1,000-2,000 ft. ; June '38 Darl.	MCZ	No
T. dominicensis	WIBF 051247	Male	1	Jarabacoa ; Aug. '38, Dom. Rep. ; 1,500-4,000 ft. ; Darlington	MCZ	No
T. dominicensis	WIBF 051248	Female	1	Loma Rucilla & ; mts. N. Dom. Rep ; June '38, 5-8,000 ft ; Darlington	MCZ	No
T. dominicensis	WIBF 051249	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. dominicensis	WIBF 051250	Male	1	Constanza ; Aug. '38, Dom. Rep. ; 3-4,000 ft. ; Darlington	MCZ	No
T. dominicensis	WIBF 051251	Female	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4000ft., July '38 ; Darlington	MCZ	No
T. dominicensis	WIBF 051252	Male	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4000ft., July '38 ; Darlington	MCZ	No
T. dominicensis	WIBF 051253	Male	1	[Unintelligible] ; [Unintelligible] ; Domingo	ZMAN	No
T. dominicensis	WIBF 051254	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	CAS	No
T. dominicensis	WIBF 051255	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	AMNH	No
T. dominicensis	WIBF 051256	Male	1	DOM. REP., LaVega, ; 18km. SE. Constanza ; August 4, 1979 ; G. B. Marshall / R. S. Miller ; Collector	WIBF	No
T. dominicensis	WIBF 051257	Male	1	Colonia Ramfis, R. D. ; 3 April 1953. / J. A. Ramos ; Collector	RAMOS	No
T. dominicensis	WIBF 051258	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	AMNH	No
T. dominicensis	WIBF 051259	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	AMNH	No
T. dominicensis	WIBF 051260	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	AMNH	No
T. dominicensis	WIBF 051261	Male	1	San Lorenzo, ; R. Dom. VI. 24-26. 15	AMNH	No
T. dominicensis	WIBF 051262	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	AMNH	No
T. dominicensis	WIBF 051263	Male	1	San Lorenzo, ; R. Dom. VI. 27-29, 15 / Male	AMNH	No
T. dominicensis	WIBF 051264	Male	1	San Lorenzo, ; R. Dom. VI. 24-26. 15 / Male	AMNH	No
T. dominicensis	WIBF 051265	Male	1	San Lorenzo, ; R. Dom. VI. 24-26. 15 / Male	AMNH	No
T. dominicensis	WIBF 051266	Male	1	San Lorenzo, ; R. Dom. VI. 24-26. 15	AMNH	No
T. dominicensis	WIBF 051267	Male	1	San Lorenzo, ; R. Dom. VI. 27-29. 15 / Male	AMNH	No
T. dominicensis	WIBF 051268	Female	1	San Lorenzo, ; R. Dom. VI. 27-29. 15 / Female	AMNH	No
T. dominicensis	WIBF 051269	ale, Fema	1	San Lorenzo, ; R. Dom. VI. 27-29. 15	AMNH	No

T. dominicensis	WIBF 051270	Female	1	San Lorenzo, ; R. Dom. VI. 27-29. 15 / Female	AMNH	No
T. dominicensis	WIBF 051271	Female	1	San Lorenzo, ; R. Dom. VI. 27-29. 15 / Female	AMNH	No
T. dominicensis	WIBF 051272	Female	1	San Lorenzo, ; R. Dom. VI. 27-29. 15 / Female	AMNH	No
T. dominicensis	WIBF 051273	Male	1	Higueral, S. Dom. ; II. 1914 / Male	AMNH	No
T. dominicensis	WIBF 051274	Male	1	Higueral, S. Dom. ; II. 1914 / Male	AMNH	No
T. dominicensis	WIBF 051275	Male	1	Higueral, S. Dom. ; II. 1914 / Male	AMNH	No
T. dominicensis	WIBF 051276	Male	1	Higueral, S. Dom. ; II. 1914 / Male	AMNH	No
T. dominicensis	WIBF 051277	Male	1	Higueral, S. Dom. ; II. 1914	AMNH	No
T. dominicensis	WIBF 051278	Female	1	Higueral, S. Dom. ; II. 1914 / Female	AMNH	No
T. dominicensis	WIBF 051279	Female	1	Higueral, S. Dom. ; II. 1914 / Female	AMNH	No
T. dominicensis	WIBF 051280	Male	1	Sanchez, R. Dom. ; V. 28-31. 15 / Male	AMNH	No
T. dominicensis	WIBF 051281	Male	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F. 4645	AMNH	No
T. dominicensis	WIBF 051282	Male	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4000ft., July '38 ; Darlington	CAS	No
T. dominicensis	WIBF 051283	Female	1	Higueral, S. Dom. ; II. 1914 / Female	CAS	No
T. dominicensis	WIBF 051284	Male	1	DOMINICAN REPUBLIC : Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L. Strange ; & R. Woodruff	WIBF	No
T. dominicensis	WIBF 051285	Male	1	DOMINICAN REPUBLIC : Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L. Strange ; & R. Woodruff	WIBF	No
T. dominicensis	WIBF 051286	Male	1	DOMINICAN REPUBLIC : Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L. Strange ; & R. Woodruff	WIBF	No
T. dominicensis	WIBF 051287	Male	1	DOMINICAN REPUBLIC : Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L. Strange ; & R. Woodruff	WIBF	No
T. dominicensis	WIBF 051288	Male	1	Colonia Ramfis, R. D. ; 3 April 1953. / J. A. Ramos ; Collector	RAMOS	No
T. dominicensis	WIBF 051289	Female	1	Eubano ; S. Domingo / Carn. Mus. ; Acc. 7209	CMNH	No
T. dominicensis	WIBF 051290	Male	1	San Cristobal Prov. ; REP. DOMINICANA ; 5 VIII 1967	TAMU	No
T. dominicensis	WIBF 051291	Male	1	San Cristobal Prov. ; REP. DOMINICANA ; 14 VIII 1967 / L. H. Rolston ; Collector / Group 2	TAMU	No
T. dominicensis	WIBF 051292	Male	1	Baoruco Prov., ; REP. DOMINICANA ; 4 IV 1967 / L. H. Holston ; Collector	TAMU	No
T. dominicensis	WIBF 051293	Male	1	Puerto Plata Prov. ; REP. DOMINICANA ; 22 VIII 1967 / L. H. Holston ; Collector	TAMU	No
T. dominicensis	WIBF 051294	Male	1	San Lorenzo, ; R. Dom. VI 27-29, 15 / Male	ANSP	No
T. dominicensis	WIBF 051295	Male	1	DOM. REPUBLIC ; La Vega Prov. 4100' ; 2 km. E. Tireo ; V-8-1985 ; J. E. Wappes	WIBF	No
T. dominicensis	WIBF 051296	Male	1	DOMINICAN REP. ; La Palma, 12km. ; E. of El Rio ; 2-13 June 1969 ; Flint & Gomez	USNM	No

T. dominicensis	WIBF 051297	Male	1	DOMINICAN REP. : Prov. ; Barahona, near Filipinas ; Larimar Mine ; 26-VI/7-VII-1992 ; F. W. Skillman Jr. ; beating	FSCA	No
T. dominicensis	WIBF 051298	Male	1	♂ / RioSanJuan ; DR. Mar. '28 ; G. S. Miller.	NMNH	No
T. dominicensis	WIBF 051299	Female	1	DOMIN.REP:Prov. La Vega ; Monabao ; 29 JULY 1999 ; M.A.Ivie & K.A.Guerrero ; in pine sawmill	WIBF	No
T. dominicensis	WIBF 051300	Female	1	DOM.REP.,Peravia ; 16km.E.SanJose de Ocoa,August8,1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 051301	Female	1	DOM.REP.,Peravia ; 16km.E.SanJose de Ocoa,August8,1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 051302	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo, ; August 1, 1979 ; G.B.Marshall / R.S.Miller	WIBF	No
T. dominicensis	WIBF 051303	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo, ; August 1, 1979 ; L.B.O'Brien / R.S.Miller	WIBF	No
T. dominicensis	WIBF 051304	Female	1	DOM.REP.,ElSeibo. ; 9km.N.Pedro ; Sanchez,August.2, ; 1979 L.B.O'Brien / R.S.Miller	WIBF	No
T. dominicensis	WIBF 051305	Female	1	Guaiamati ; SDomingo / H.E.Box ; July, '25	USNM	No
T. dominicensis	WIBF 051306	Female	1	Guaiamati ; SDomingo / H.E.Box ; July, '25	USNM	No
T. dominicensis	WIBF 051307	Male	1	DOMINICAN REPUBLIC ; Prov. La Altagracia ; Nisibon 10-IV-1976 / COLL. ; R. E. Woodruff	FSCA	No
T. dominicensis	WIBF 051308	Female	1	R.DOMINICANA, LA VEGA PR. ; 2KM E TIREO, 4100' ; MAY 8 1985 ; E.GIESBERT,COLL	WIBF	No
T. dominicensis	WIBF 051309	Female	1	R.DOMINICANA, LA VEGA PR. ; 2KM E TIREO, 4100' ; MAY 8 1985 ; E.GIESBERT,COLL	WIBF	No
T. dominicensis	WIBF 051310	Female	1	DOMINICAN REPUBLIC:Prov. ; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W.Dunkle	WIBF	No
T. dominicensis	WIBF 051311	Female	1	Cape Haitian ; Haiti ; June 1954 ; S. Kiem	FSCA	No
T. dominicensis	WIBF 051312	Female	1	DOMINICAN REPUBLIC:Prov. ; Barahona. nr.Filipinas. ; Larimar Mine: 26-VI-7- ; VII-1992: Woodruff & ; Skelley. day beating	FSCA	No
T. dominicensis	WIBF 051313	Female	1	Higueral,RD. ; Apr 10, 1913. / J. R. Johnston ; coll. / P. R. S. G. A. ; Ac.No. 820 1913 / Female	NMNH	No
T. dominicensis	WIBF 051314	Male	1	63 / B[Unintelligible]. R.D. ; [Unintelligible] 9. 19.13. / W.V.Tower ; Collector / Male	NMNH	No
T. dominicensis	WIBF 051315	Male	1	Sto.Domingo, ; Macoriso 3-26-13. ; P.G.Russel.	NMNH	No
T. dominicensis	WIBF 051316	Male	1	SFrncscoMts ; St.Domingo ; [Unintelligible] WI / Aug. Busck ; Collector / Male	NMNH	No
T. dominicensis	WIBF 051317	Female	1	♀ / inSSfrmDr ; Sanduan950 ; May31,1928	NMNH	No

T. dominicensis	WIBF 051318	Female	1	1/2 K.S. of ; Sati Cristobal ; Dom. Rep. ; ♀ VII-14-31 ; Kisliuk, cooley / [Unintelligible] leaf of ; [Unintelligible] ; [Unintelligible]	NMNH	No
T. dominicensis	WIBF 051319	Female	1	St.Domingo ; Sanchez WI ; 4-2-13 / P.G.Russel ; Collector / Female	NMNH	No
T. dominicensis	WIBF 051320	Male	1	St.Domingo ; Sanchez WI ; 4-2-13 / P.G.Russel ; Collector / Female	NMNH	No
T. dominicensis	WIBF 051321	Female	1	Acc. 63 -25. ; Port au Prince. ; ♀ Haiti June 1928. / A. Audant ; Coll.	NMNH	No
T. dominicensis	WIBF 051322	Female	1	Acc. 63 -25. ; Port au Prince. ; ♀ Haiti June 1928. / A. Audant ; Coll.	NMNH	No
T. dominicensis	WIBF 051323		1	DOM.REP.,LaVega, ; 23km.SE.Jarabacoa ; May25,1978 CW&LB ; O'Brien&Marshall / R.S.Miller ; Collection	WIBF	No
T. dominicensis	WIBF 051324	Male	1	PtPrince ; ♂ Haiti / 23 / WICKHAM ; Collection ; 1933	NMNH	No
T. dominicensis	WIBF 043333	Male	1	Nov.22-1915 ; Sanchez,R.Dom. / Male	AMNH	No
T. dominicensis	WIBF 043334	Male	1	DOMINICAN REPUBLIC:Prov. ; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W.Dunkle	FSCA	No
T. dominicensis	WIBF 043335	Male	1	San Lorenzo, ; R.Dom, VI.27-29,15 / Male	AMNH	No
T. dominicensis	WIBF 043336	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. dominicensis	WIBF 043337	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. dominicensis	WIBF 043338	Male	1	Grande Riviere. ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	No
T. hubbardi	WIBF 041515	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; on Heliconia	WIBF	No
T. hubbardi	WIBF 041516	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; on Heliconia	WIBF	No
T. hubbardi	WIBF 041557	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; aggregation on Heliconia	WIBF	No
T. hubbardi	WIBF 041558	Male	1	MONTSERRAT:KatyHill trial ; 16.7614°N, 62.1863°W ; 28JUNE2017, 444m, in Ghaut ; J.Runyon & F.Etlzer ; aggregation on Heliconia	WIBF	No
T. hubbardi	WIBF 042456	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042457	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042458	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042459	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042460	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042461	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042462	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042463	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042582	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No

T. hubbardi	WIBF 042583	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042584	Male	1	MONTSERRAT : Riley's ; Estate, 400 m. ; 21 April 1984 ; Fortune Chalumeau	WIBF	No
T. hubbardi	WIBF 042585		1	MONTSERRAT : 5 MI. E. OF ; Plymouth, Alps Waterfalls ; 26 - VI - 77 ; R. E. WOODRUFF #32 / R. S. Miller ; Collection	WIBF	No
T. hubbardi	WIBF 042586	Male	1	Montserrat, B. W. I. ; Feb. 1937 ; Coll : S. T. Danforth / Gift of ; J. A. Ramos	MCZ	No
T. hubbardi	WIBF 042587	Male	1	Montserrat, B. W. I. ; Feb. 1937 ; Coll : S. T. Danforth / Gift of ; J. A. Ramos	MCZ	No
T. hubbardi	WIBF 042588	Male	1	Montserrat ; W. Indies ; V - 15 40 ; R G Fennah	NMNH	No
T. hubbardi	WIBF 042589	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	NMPC	No
T. hubbardi	WIBF 042757	Female	1	MONTSERRAT : 5 MI. E. OF ; Plymouth, Alps Waterfalls ; 26 - VI - 77 ; R. E. WOODRUFF #32	FSCA	No
T. hubbardi	WIBF 072529	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072534	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072536	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072552	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072567	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072584	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072586	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072587	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072591	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072592	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072593	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072597	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072598	Male	1	MONTSERRAT : Hope Ghaut ; 16 13. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. hubbardi	WIBF 072612	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072613	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072614	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072618	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072625	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072628	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072629	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072633	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072634	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072638	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072639	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072642	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072643	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072652	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072654	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072655	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072656	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072661	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072662	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No

T. hubbardi	WIBF 072670	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072672	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072673	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072674	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072675	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072677	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072679	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072685	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072687	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072688	Female	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072695	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072696	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072697	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072700	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 072701	Male	1	MONTSERRAT : Hope Ghaut ; 16 15. 21 'N, 62° 12. 72 'W ; 12 JAN 2002, 775 ft. ; Marske. Hilton. Ivie ; Thonalmus Aggregation	WIBF	No
T. hubbardi	WIBF 077019	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077020	Female	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' ; 16° 45. 944' N, 62° 12. 727' W ; 17 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077021	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077022	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No

T. hubbardi	WIBF 077023	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077024	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077025	Male	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' ; 16° 45. 944' N, 62° 12.727' W ; 17 JUNE 2000 ; M.A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077026	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077027	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077028	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077029	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077030	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077031	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077032	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077033	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077034	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077035	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077036	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077037	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. hubbardi	WIBF 077038	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. hubbardi	WIBF 077039	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077040	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077041	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No

T. hubbardi	WIBF 077042	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077043	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077044	Male	1	MONTSERRAT : E. side ; N. of Airport, nr. dump ; 26 JUNE 2000 ; K. A. Guerrero colr.	WIBF	No
T. hubbardi	WIBF 077045	Female	1	MONTSERRAT : Woodlands ; Drivers License Bureau ; 20 JUNE 2000 ; K. A. Guerrero colr	WIBF	No
T. hubbardi	WIBF 077046	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077047	Male	1	MONTSERRAT : ; 16° 45. 4' N, 62° 12. 7' W ; Gun Hill, 850 ft. ; 14 JUNE 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077048	Female	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ; 05 - 15 FEB 2002, 632 ft ; A. Krakower, Malaise tr	WIBF	No
T. hubbardi	WIBF 077049	Male	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ft ; 07 - 08 JUNE 2002 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077050	Male	1	MONTSERRAT : ; Fogerty Ghaut ; 12 - 13 MAY 2002 ; K. A. Marskw colr.	WIBF	No
T. hubbardi	WIBF 077051	Male	1	MONTSERRAT : ; 16° 45. 4' N, 62° 12. 7' W ; Gun Hill, 850 ft. ; 14 JUNE 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077052	Female	1	MONTSERRAT : ; 16° 45. 4' N, 62° 12. 7' W ; Gun Hill, 850 ft. ; 14 JUNE 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077053	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35 'N, 62° 12. 58 'W ; 16 - 17 JUNE2002, 887 ft. ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077054	Female	1	MONTSERRAT : Underwood ; Ghaut, 16° 46. 327' N ; 62° 11. 734' W, 1230 ft ; 13 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077055	Female	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ft ; 30 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077056	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, 260m ; 16° 45. 32' N, 62° 12. 63' W ; 8 - 12 JAN 2002, K. Marske & ; K. Puliafico, Malaise Trap	WIBF	No
T. hubbardi	WIBF 077057	Female	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ;11 - 23 MAR 2002, 632 ft ; A. Krakower, u.v. light	WIBF	No
T. hubbardi	WIBF 077058	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077059	Female	1	MONTSERRAT : Woodlands ; Riverside House ; 16° 45. 99 N, 62° 13. 34' W ; 25 JULY 2005 ; I. A. Foley, uv light	WIBF	No
T. hubbardi	WIBF 077060	Male	1	MONTSERRAT : ; Cassava Ghaut ; 02 JUNE 2003 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077061	Female	1	MONTSERRAT : Woodlands ; Riverside House ; 16° 45. 99 N, 62° 13. 34' W ; 25 JULY 2005 ; I. A. Foley, uv light	WIBF	No

T. hubbardi	WIBF 077062	Female	1	MONTSERRAT : ; Cassava ; Ghaut, 263m ; 16° 45. 749 'N, 62° 12. 47 'W ; 24 JULY 2005; WIBF group colrs	WIBF	No
T. hubbardi	WIBF 077063	Female	1	MONTSERRAT : Woodlands ; Riverside House ; 16° 45. 99 N, 62° 13. 344' W ; 26 JULY 2005, UV light ; I. A. Foley colr	WIBF	No
T. hubbardi	WIBF 077064	Male	1	MONTSERRAT : ; Jack Boy Hill ; 16° 45. 77 ' N, 62° 10. 98' W ; 10 AUG 2005 ; I. A. Foley colr	WIBF	No
T. hubbardi	WIBF 077065	Male	1	MONTSERRAT : Furlong ; Cedar Ghaut ; 04 AUG 2005 ; WIBF colrs	WIBF	No
T. hubbardi	WIBF 077066	Female	1	MONTSERRAT : ; Sweetwater Ghaut ; at road ; 01 AUG 2005 ; WIBF Group	WIBF	No
T. hubbardi	WIBF 077067	Female	1	MONTSERRAT : ; Big River, 1160 ft. ; 16° 24. 72N, 62° 11. 34W ; 07 - 10AUG2005 ; WIBF Group, Malaise	WIBF	No
T. hubbardi	WIBF 077068	Female	1	MONTSERRAT : ; Sweetwater Ghaut ; at road ; 01 AUG 2005 ; WIBF Group	WIBF	No
T. hubbardi	WIBF 077069	Male	1	MONTSERRAT : ; Cassava Ghaut ; Beattie House, 632 ft ; 16° 45. 91 'N, 62° 12. 95 'W ; 24 JULY 2005, 632 ft ; I. A. Foley colr	WIBF	No
T. hubbardi	WIBF 077070	Female	1	MONTSERRAT : ; Cassava Ghaut ; 16° 45. 91 'N, 62° 12. 95 'W ; 24 JULY 2005, 632 ft ; I. A. Foley colr	WIBF	No
T. hubbardi	WIBF 077071	Female	1	MONTSERRAT : ; Cassava Ghaut ; 16° 45. 91 'N, 62° 12. 95 'W ; 24 JULY 2005, 632 ft ; I. A. Foley colr	WIBF	No
T. hubbardi	WIBF 077072	Female	1	MONTSERRAT : ; Cassava Ghaut ; 16° 45. 91 'N, 62° 12. 95 'W ; 02 AUG 2005, 632 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077073	Male	1	MONTSERRAT : Jack Boy ; Hill, Malaise trap ; 16° 45. 77 ' N, 62° 10. 98' W ; 12 AUG 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077074	Male	1	MONTSERRAT : Jack Boy ; Hill, Malaise trap ; 16° 45. 77 ' N, 62° 10. 98' W ; 12 AUG 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077075	Male	1	MONTSERRAT : ; Jack Boy Hill ; 16° 45. 77 ' N, 62° 10. 98' W ; 28 JULY 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077076	Female	1	MONTSERRAT : ; Jack Boy Hill ; 16° 45. 77 ' N, 62° 10. 98' W ; 28 JULY 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077077	Female	1	MONTSERRAT : ; Jack Boy Hill ; 16° 45. 77 ' N, 62° 10. 98' W ; 28 JULY 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077078	Male	1	MONTSERRAT : ; Jack Boy Hill ; 16° 45. 77 ' N, 62° 10. 98' W ; 28 JULY 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077079	Female	1	MONTSERRAT : Jack Boy ; Hill, Malaise trap ; 16° 45. 77 ' N, 62° 10. 98' W ; 12 AUG 2005, 1677 ft ; WIBF group	WIBF	No
T. hubbardi	WIBF 077080	Male	1	MONTSERRAT : ; Silver Hill ; 12 JUNE 2003 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077081	Male	1	MONTSERRAT : Woodlands ; Riverside House ; 16° 45. 99 N, 62° 13. 34' W ; AUGUST 2005 ; WIBF group colrs	WIBF	No
T. hubbardi	WIBF 077082	Male	1	MONTSERRAT : ; Silver Hill ; 12 JUNE 2003 ; K. A. Marske colr.	WIBF	No

T. hubbardi	WIBF 077083	Male	1	MONTSERRAT : ; Big River, 1160 ft. ; 16° 24. 72N, 62° 11. 34W ; 07 - 14AUG2005 ; WIBF Group, uvlight	WIBF	No
T. hubbardi	WIBF 077084	Female	1	MONTSERRAT : Cassava Ghaut ; 09 MAY 2004 ; M. A. Ivie colr. ; in pool	WIBF	No
T. hubbardi	WIBF 077085	Female	1	MONTSERRAT : ; Jack Boy Hill, 1677ft ; 16° 45. 77 ' N, 62° 10. 98' W ; 31 JULY - 04 AUG 2005 ; WIBF Group, Malaise trap	WIBF	No
T. hubbardi	WIBF 077086	Female	1	MONTSERRAT : ; Big River, 1160 ft. ; 16° 24. 72N, 62° 11. 34W ; 07 - 10AUG2005 ; WIBF Group, Malaise	WIBF	No
T. hubbardi	WIBF 077087	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 347 'N, 62° 12. 58 'W ; 04 JUNE 2003, uv light ; K. Marske, D. Smith, ; M. Hulme colrs	WIBF	No
T. hubbardi	WIBF 077088	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 347 'N, 62° 12. 58 'W ; 04 JUNE 2003, uv light ; K. Marske, D. Smith, ; M. Hulme colrs	WIBF	No
T. hubbardi	WIBF 077089	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 347 'N, 62° 12. 58 'W ; 04 JUNE 2003, uv light ; K. Marske, D. Smith, ; M. Hulme colrs	WIBF	No
T. hubbardi	WIBF 077090	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 347 'N, 62° 12. 58 'W ; 04 JUNE 2003, uv light ; K. Marske, D. Smith, ; M. Hulme colrs	WIBF	No
T. hubbardi	WIBF 077091	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 347 'N, 62° 12. 58 'W ; 30 JUNE 2002, 315 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077092	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, 260m ; 16° 45. 32' N, 62° 12. 63' W ; 8 - 12 JAN 2002, K. Marske & ; K. Puliafico, Malaise Trap	WIBF	No
T. hubbardi	WIBF 077093	Male	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ; 14 - 21 JUNE 2002, 632 ft ; A. Krakower, light trap	WIBF	No
T. hubbardi	WIBF 077094	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, 260m ; 16° 45. 32' N, 62° 12. 63' W ; 8 - 12 JAN 2002, K. Marske & ; K. Puliafico, Malaise Trap	WIBF	No
T. hubbardi	WIBF 077095	Male	1	MONTSERRAT : ; 16° 45. 4' N, 62° 12. 7' W ; Gun Hill, 850 ft. ; 14 JUNE 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077096	Male	1	MONTSERRAT : ; 16° 45. 4' N, 62° 12. 7' W ; Gun Hill, 850 ft. ; 14 JUNE 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077097	Male	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ; 11 - 23 MAR 2002, 632 ft ; A. Krakower, u. v. light	WIBF	No
T. hubbardi	WIBF 077098	Male	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ; 08 - 17 APR 2002, 632 ft ; A. Krakower, Malaise tr	WIBF	No
T. hubbardi	WIBF 077099	Male	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ; 08 - 17 APR 2002, 632 ft ; A. Krakower, Malaise tr	WIBF	No
T. hubbardi	WIBF 077100	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, 260m ; 16° 45. 32' N, 62° 12. 63' W ; 8 - 12 JAN 2002, K. Marske & ; K. Puliafico, Malaise Trap	WIBF	No
T. hubbardi	WIBF 077101	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 35 'N, 62° 12. 58 'W ; 16 - 17 JUNE 2002, 887 ft. ; K. A. Marske colr	WIBF	No

T. hubbardi	WIBF 077102	Male	1	MONTSERRAT : Underwood ; Ghaut, 16° 46. 327' N ; 62° 11. 734' W, 1230 ft ; 23 MAY 2002 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077103	Female	1	MONTSERRAT : ; Rendezvous Bluff ; 20 MAY 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077104	Female	1	MONTSERRAT : ; Hope Ghaut ; 23 JUN 2002 ; M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077105	Male	1	MONTSERRAT : ; Gun Hill ; Olveston Spring ; 19 MAY 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077106	Female	1	MONTSERRAT : ; Gun Hill ; Olveston Spring ; 19 MAY 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077107	Female	1	MONTSERRAT : Gun Hill ; 16° 45. 45' N, ; 62° 12. 70' W, 887 ; 07 - 08 JUNE 2002 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077108	Female	1	MONTSERRAT : ; Brimm's Ghaut ; 06 JUNE 2002 ; K. A. Marske colr.	WIBF	No
T. hubbardi	WIBF 077109	Female	1	MONTSERRAT : Cassava ; Ghaut , Beattie House ; 16° 45. 91 'N, 62° 12. 95 'W ; 11 - 23 MAR 2002, 632 ft ; A. Krakower, u. v. light	WIBF	No
T. hubbardi	WIBF 077110	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077111	Female	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077112	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077113	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077114	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077115	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077116	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077117	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077118	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077119	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077120	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077121	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000 ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	WIBF	No

T. hubbardi	WIBF 077122	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000 ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	WIBF	No
T. hubbardi	WIBF 077123	Female	1	MONTSERRAT : Centre Hills ; Jubilee Heights 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000 ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	WIBF	No
T. hubbardi	WIBF 077124	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077125	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000 ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	WIBF	No
T. hubbardi	WIBF 077126	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000 ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	WIBF	No
T. hubbardi	WIBF 077127	Male	1	MONTSERRAT : Centre Hills ; Jubilee Heights 1350' ; 16° 45. 514 'N, 62° 12. 581 'W ; 20 - 27 JUNE 2000 ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #3	WIBF	No
T. hubbardi	WIBF 077128	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077129	Female	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077130	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077131	Female	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077132	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077133	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077134	Female	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077135	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077136	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077137	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077138	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077139	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077140	Male	1	MONTSERRAT : Centre Hills ; Spring Ghaut, 750' ; N. E. of Fleming ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No

T. hubbardi	WIBF 077141	Male	1	MONTSERRAT : Centre Hills ; E. Woodlands ; Cassava Ghaut, 800' ; 16° 45. 936' N, 62° 12. 721' W ; 17 - 22 JUNE 2000, Malaise #1 / M. A. Ivie & ; K. A. Guerrero colrs	WIBF	No
T. hubbardi	WIBF 077142	Male	1	MONTSERRAT : Centre Hills ; E. Woodlands ; Cassava Ghaut, 800' ; 16° 45. 936' N, 62° 12. 721' W ; 17 - 22 JUNE 2000, Malaise #1 / M. A. Ivie & ; K. A. Guerrero colrs	WIBF	No
T. hubbardi	WIBF 077143	Female	1	MONTSERRAT : Centre Hills ; E. Woodlands ; Cassava Ghaut, 800' ; 16° 45. 936' N, 62° 12. 721' W ; 17 - 22 JUNE 2000, Malaise #1 / M. A. Ivie & ; K. A. Guerrero colrs	WIBF	No
T. hubbardi	WIBF 077144	Male	1	MONTSERRAT : Centre Hills ; E. Woodlands ; Cassava Ghaut, 800' ; 16° 45. 936' N, 62° 12. 721' W ; 17 - 22 JUNE 2000, Malaise #1 / M. A. Ivie & ; K. A. Guerrero colrs	WIBF	No
T. hubbardi	WIBF 077145	Male	1	MONTSERRAT : Centre Hills ; E. Woodlands ; Cassava Ghaut, 800' ; 16° 45. 936' N, 62° 12. 721' W ; 17 - 22 JUNE 2000, Malaise #1 / M. A. Ivie & ; K. A. Guerrero colrs	WIBF	No
T. hubbardi	WIBF 077146	Female	1	MONTSERRAT : Centre Hills ; E. Woodlands ; Cassava Ghaut, 800' ; 16° 45. 936' N, 62° 12. 721' W ; 17 - 22 JUNE 2000, Malaise #1 / M. A. Ivie & ; K. A. Guerrero colrs	WIBF	No
T. hubbardi	WIBF 077147	Male	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' E. of ; Woodlands, 25 - 27 JUNE 2000 ; 16° 45. 936' N, 62° 12. 721' W ; M. A. Ivie & K. A. Guerrero / Malaise ; trap #1	WIBF	No
T. hubbardi	WIBF 077148	Male	1	MONTSERRAT : Centre Hills ; Caines River, 1150' ; Blackwood Allen Springs ; 16° 46. 272' N, 62° 12. 030' W ; 27JUNE2000 .M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077149	Female	1	MONTSERRAT : Centre Hills ; Caines River, 1150' ; Blackwood Allen Springs ; 16° 46. 272' N, 62° 12. 030' W ; 27JUNE2000 .M. A. Ivie	WIBF	No
T. hubbardi	WIBF 077150	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077151	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077152	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077153	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077154	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077155	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No

T. hubbardi	WIBF 077156	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077157	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077158	Male	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077159	Female	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077160	Male	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077161	Male	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077162	Female	1	MONTSERRAT : Centre Hills ; 16° 45. 209' N, 62° 12. 722' W ; HopeGhaut, E. of Salem, 750' ; water intakes, 18 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077163	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077164	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077165	Female	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077166	Female	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077167	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077168	Female	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077169	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077170	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077171	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077172	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077173	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077174	Male	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No

T. hubbardi	WIBF 077175	Female	1	MONTSERRAT : Centre Hills ; N. E. of Fleming ; Spring Ghaut, 750' ; 19 JUNE 2000 ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. hubbardi	WIBF 077176	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. hubbardi	WIBF 077177	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. hubbardi	WIBF 077178	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. hubbardi	WIBF 077179	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. hubbardi	WIBF 077180	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. hubbardi	WIBF 077181	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; on/rnd dead standing tree	WIBF	No
T. hubbardi	WIBF 077182	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077183	Male	1	MONTSERRAT : Centre Hills ; Cassava Ghaut, 800' E. of ; Woodlands, 22 - 25 JUNE 2000 ; 16° 45. 936' N, 62° 12. 721' W ; M. A. Ivie & K. A. Guerrero / Malaise ; Trap #1	WIBF	No
T. hubbardi	WIBF 077184	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 18 - 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077185	Female	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 21 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; at uv light	WIBF	No
T. hubbardi	WIBF 077186	Male	1	MONTSERRAT : Centre Hills ; Hope Ghaut, E. of Salem ; 23 - 27 JUNE 2000, 850' ; M. A. Ivie & K. A. Guerrero ; Malaise trap #2	WIBF	No
T. hubbardi	WIBF 077187	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077188	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077189	Female	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077190	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No

T. hubbardi	WIBF 077191	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077192	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077193	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077194	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077195	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077196	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077197	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077198	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077199	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077200	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077201	Male	1	MONTSERRAT : E. side Centre ; Hills, trail from dump to ; Jack Boy Hill, 900' ; 16° 46. 116 'N, 62° 10. 468 'W ; 25 JUNE 2000, M. A. Ivie / Aggregation ; #2	WIBF	No
T. hubbardi	WIBF 077290	Female	1	MONTSERRAT : ; 16° 45. 4' N, 62° 12. 7' W ; Gun Hill, 850 ft. ; 14 JUNE 2002 ; K. A. Marske	WIBF	No
T. hubbardi	WIBF 077301	Male	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632 ft ; 16° 45. 91 'N, 62° 12. 95 'W ; 18 MAR - 04 APR 2002, 632 ft ; A. Krakower, Malaise tr	WIBF	No

T. hubbardi	WIBF 077365	Male	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632 ft ; 16° 45. 91 'N, 62° 12. 95 'W ; 30 MAY - 06 JUNE 2002 ; A. Krakower uv light trap	WIBF	No
T. hubbardi	WIBF 077366	Male	1	MONTSERRAT : Cassava Ghaut ; Beattie House, 632 ft ; 16° 45. 91 'N, 62° 12. 95 'W ; 30 MAY - 06 JUNE 2002 ; A. Krakower uv light trap	WIBF	No
T. hubbardi	WIBF 077367	Male	1	MONTSERRAT : ; Jubilee Heights ; 16° 45. 396 'N, 62° 12. 579 'W ; 1486 ft. 06 - 07 JULY 2002 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077368	Female	1	MONTSERRAT : Fogarty ; to Cassva Ghaut ; via Lawyer's Mt ; 24 JUNE 2003 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077369	Male	1	MONTSERRAT : Fogarty ; to Cassva Ghaut ; via Lawyer's Mt ; 24 JUNE 2003 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077370	Male	1	MONTSERRAT : Fogarty ; to Cassva Ghaut ; via Lawyer's Mt ; 24 - 25 JUNE 2003 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077371	Male	1	MONTSERRAT : ; Jubilee Heights ; 16° 45. 396 'N, 62° 12. 579 'W ; 1486 ft. 06 - 07 JULY 2002 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077372	Male	1	MONTSERRAT : ; Jubilee Heights ; 16° 45. 396 'N, 62° 12. 579 'W ; 1486 ft. 06 - 07 JULY 2002 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077373	Male	1	MONTSERRAT : ; Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 23 - 25 JULY 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077374	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077375	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077376	Male	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077377	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077378	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077379	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 077380	Female	1	MONTSERRAT : Fogarty ; to Cassva Ghaut ; via Lawyer's Mt ; 24 - 25 JUNE 2003 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077381	Female	1	MONTSERRAT : ; Olveston Spring ; 29 MAY 2003 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077382	Female	1	MONTSERRAT : ; Olveston Spring ; 29 MAY 2003 ; K. A. Marske colr	WIBF	No
T. hubbardi	WIBF 077383	Female	1	MONTSERRAT : Hope Ghaut ; 16° 45. 209 'N, 62° 12. 722 'W ; 10 AUG 2005, 750 ft. ; M. A. Ivie colr	WIBF	No
T. hubbardi	WIBF 042758	Male	1	Male/ Montserrat; West Indies/ HGHubbard; Collector; HOLO; TYPE [in a red label]/ Thonalmus; hubbardi; ♂ type/ Type No.; 61027; U.S.N.M.	USNM	Holotype

T. hubbardi	WIBF 042759	Female	1	Female/ Mntserrat; 22.3 WI/ HGHubbard; Collector/ ALLOTYPE [in a red label]/ AllotypeNo.; 61027; U.S.N.M.	USNM	Allotype
T. hubbardi	WIBF 042760	Male	1	Montserrat; West Indies/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Paratype No.; 61027; U.S.N.M.	USNM	Paratype
T. hubbardi	WIBF 042761	Male	1	Mntserrat; 11.3 WI/ HGHubbard; Collector/ 84/ Male/ PARATYPE [in a red label]/ Paratype No.; 61027; U.S.N.M.	USNM	Paratype
T. hubbardi	WIBF 042762	Male	1	Mntserrat; 21.3 WI/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Paratype No.; 61027; U.S.N.M.	USNM	Paratype
T. hubbardi	WIBF 042763	Female	1	Mntserrat; WI/ 69 Hubb?; Montserrat/ Female/ PARATYPE [in a red label]/ Paratype No.; 61027; U.S.N.M.	USNM	Paratype
T. hubbardi	WIBF 042764	Male	1	Montserrat; West Indies/ HGHubbard; Collector/ Male/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25072	AMNH	Paratype
T. hubbardi	WIBF 042765	Female	1	Thonalmus bicolor/ Thonalmus bicolor/ Montserrat; West Indies/ HGHubbard; Collector/ PARATYPE [in a red label]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 25073	AMNH	Paratype
T. bicolor	WIBF 041513	Male	1	DOMINICAN REP: Pedernales ; Road to Los Arroyos ; 18.2310°N 71.7529°W ; 14 JUNE 2017,1173m ; O. Keller, by hand	WIBF	No
T. bicolor	WIBF 041514	Male	1	DOMINICAN REP: Pedernales ; Road to Los Arroyos ; 18.2310°N 71.7529°W ; 14 JUNE 2017,1173m ; O. Keller, by hand	WIBF	No
T. bicolor	WIBF 041532	Male	1	DOMIN.REP:Prov.Pedernales ; N.of Pedernales, border rd ; RioBanana, S.of Arroyos, ; 18°09.291´N, 71°45.540´W ; 21JUL1999,Ivie & Guerrero	WIBF	No
T. bicolor	WIBF 041545	Male	1	DOMINIC.REP .:Prov.La Vega ; Constanza, 1160m, 30AUG1988 ; beating in secondary pine ; guava forest, M. A. Ivie, ; T.K.Philips & K.A.Johnson	WIBF	No
T. bicolor	WIBF 041730	Male	1	DOMINICAN REPUBLIC: ; Prov.Puerto Plata, Ecol. ; Reserve La Cumbre,29-31 ; V-2006, 3000 ft, at night ; R.E.Woodruff	FSCA	No
T. bicolor	WIBF 041731		1	DOMIN.REP: Prov. Barahona ; 18km fr.Cabral,off Polo Rd ; 2.5 km SE Montear Nuevo ; 18°06.452'N, 71°14.717'W ; 26 JULY 1999, 1020m / M. A. Ivie & K. A. ; Guerrero, Coffee. ; Mangoliacea forest	WIBF	No
T. bicolor	WIBF 042775	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042776	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042777	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042778	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042779	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042780	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042781	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042782	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042783	Male	1	Higueral .S.Dom ; II.1914	AMNH	No

T. bicolor	WIBF 042784	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 042785	Male	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F.4645	AMNH	No
T. bicolor	WIBF 042786	Male	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F.4648	AMNH	No
T. bicolor	WIBF 042787	Male	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F.4648	AMNH	No
T. bicolor	WIBF 042788	Male	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F.4648	AMNH	No
T. bicolor	WIBF 042789	Male	1	Tivert. ; Haiti ; IV.1.'22 / About 300 ft. alt. ; F. 4657	AMNH	No
T. bicolor	WIBF 042790		1	San Lorenzo, ; R.Dom.VI.27-29,15	AMNH	No
T. bicolor	WIBF 042791	Male	1	DOM.REP.,LaVega, ; 10km.NE.Constanza ; May 25,1978 CW&LB ; O'Brien&Marshall	WIBF	No
T. bicolor	WIBF 042792	Male	1	DOM.REP.,Peravia, ; 15km.E.SanJose de ; Ocoa,August 8,1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 042793	Female	1	DOMINICAN REPUBLIC: ; Prov. Puerto Plata, Ecol. ; Reserve La Cumbre,29-31 ; V-2006, 3000 ft, at night ; R.E.Woodruff	FSCA	No
T. bicolor	WIBF 042794	Female	1	DOMINICAN REPUBLIC: ; Prov. Puerto Plata, Ecol. ; Reserve La Cumbre,29-31 ; V-2006, 3000 ft, at night ; R.E.Woodruff	FSCA	No
T. bicolor	WIBF 042795	Male	1	Kenscoff. Haiti ; 20 June 1938 ; Coll: J.A.Ramos / 4000 ft.	MAYAGUEZ	No
T. bicolor	WIBF 042796		1	Kenscoff. Haiti ; 19 June 1938 ; Coll: J.A.Ramos	MAYAGUEZ	No
T. bicolor	WIBF 042797		1	Kenscoff. Haiti ; 19-June 1938 ; Coll: J.A.Ramos	MAYAGUEZ	No
T. bicolor	WIBF 042799	Male	1	Monte Mayor. ; El Cercado,PROV. ; SAN JUAN,R.D. ; 28-XII-1980 ; col.Marcano. / 22963	MNHN	No
T. bicolor	WIBF 042800	Male	1	El Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; cols.Marcano-Marcano M. / 07722	MNHN	No
T. bicolor	WIBF 042801	Male	1	Piedra Gorda ; DISTIRTO NACIONAL ; Rep. Dom. ; 7-VI-1980 ; Cols.Marcano-Abud / 18791	MNHN	No
T. bicolor	WIBF 042802	Female	1	San Juan,PROV. ; SAN JUAN,R.D. ; 18-IV-1973 ; Col : Dominguez / 08201	MNHN	No
T. bicolor	WIBF 042803		1	REPUBLICA DOMINICANA ; La Vega, Ebano Verde ; Reserva Scientifico ; 2-VI-2001 ; H. Takizawa / 15.1175-19 / MNHNSD 15.133	MNHN	No
T. bicolor	WIBF 042804	Male	1	REPUBLICA DOMINICANA ; Monte Plata ; La Luisa ; 10-VII-2001 ; H. Takizawa / 15.1188-19 / MNHNSD 15.146	MNHN	No
T. bicolor	WIBF 042805	Female	1	REPUBLICA DOMINICANA: ; Monsenor Nouel, Bonao, La ; Cieneguita, Villa Las ; Hortencias ; 12 May 2001 ; coll. Carmelo Nunez / 15.1161-19 / MNHNSD 15.119	MNHN	No
T. bicolor	WIBF 042806	Male	1	Republica Dominicana, ; Prov. San Juan. Trillo ; desde el rio Bao hasta ; la Guacara. Pico Duarte. ; 10.VII.1992. Red de ; golpeo y volando / Lysidae / 15.1182-19 / MNHNSD 15.140	MNHN	No
T. bicolor	WIBF 042807	Female	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 29-VII-1979 ; Col. Reynoso. / 05312	MNHN	No

T. bicolor	WIBF 042808	Female	1	REP.DOM.: Prov. La Vega, ; Trail Arroyazo to La Sal, ; Res. Ebano Verde ; (19°2'374"N, 70°32'684"W) ; 1249 m, 10 July 2002, coll. ; D. Perez, B. Hierro, R. / 15.1180-19 / MNHNSD 15.138	MNHN	No
T. bicolor	WIBF 042809	Male	1	Las Abejas ; PROV. ; PEDERNALES, R.D. ; 27-VI 1989 ; cols Matusik- Guerrero / 34990	MNHN	No
T. bicolor	WIBF 042810	Female	1	Republica Dominicana, ; Prov. San Juan, La Guacara, ; Pico Duarte, Parque Nacional ; Armando Bermudez.10.VII.1992 ; M.Ivie y K. Guerrero (con red de ; golpeo) / 15. 1154-19 / MNHNSD 15.112	MNHN	No
T. bicolor	WIBF 042811	Male	1	Republica Dominicana, ; Prov. San Juan, La Guacara, ; Pico Duarte, Parque Nacional ; Armando Bermudez.10.VII.1992 ; M.Ivie y K. Guerrero (con red de ; golpeo) / 15. 1155-19 / MNHNSD 15.113	MNHN	No
T. bicolor	WIBF 042812	Female	1	Republica Dominicana, ; Prov. San Juan, Sabaneta, ; Alto de la Rosa, camino a ; Sabana Vieja, inicio loma ; El Atrecho. N 19°02'54" ; W 071°12'49". 1772m. ; 28.VI.2008. C. Suriel, E. ; De los Santos, M. ; Landestroy, G. de los ; Santos. / 15.1173-19 / MNHNSD 15.131	MNHN	No
T. bicolor	WIBF 042813	Male	1	El Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; cols.Marcano-Marcano M. / 07560 / 15.1087-19 / MNHNSD 15.49	MNHN	No
T. bicolor	WIBF 042814	ale, Fema	2	El Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; cols.Marcano-Marcano M. / 07548 / 15.1081-19 / MNHNSD 15.45	MNHN	No
T. bicolor	WIBF 042815	ale, Fema	2	El Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; cols.Marcano-Marcano M. / 07643 / 15.1090-19 / MNHNSD 15.51	MNHN	No
T. bicolor	WIBF 042961	ale, Fema	2	El Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; cols.Marcano-Marcano M. / 07732 / 15.1080-19 / MNHNSD 15.44	MNHN	No
T. bicolor	WIBF 042962	Male	1	El Convento. ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; cols.Marcano-Marcano M. / 07752 / 15.1086-19 / MNHNSD 15.48	MNHN	No
T. bicolor	WIBF 042963	Male	1	Cajuilito ; S. Crisbobal, PROV. ; SAN CRISTOBAL,R.D. ; 21-I-1987 ; COLJ.T.Rosario / 31446 / 15.1210-19 / MNHNSD 15.168	MNHN	No
T. bicolor	WIBF 042964	Male	1	Canafistol. ; S.J. Matas,PROV. ; SANTIAGO,R.D. ; 25-V-1980 ; Col. Marcano / 18218 / 15.1112-19 / MNHNSD 15.71	MNHN	No
T. bicolor	WIBF 042965	Male	1	Anamurita, ; Higuey, PROV. ; LA ALTAGRACIA. R.D. ; 21-VII-1979 ; Cols. Abud-E.Marcano M / Anamurita, ; Higuey, PROV. ; LA ALTAGRACIA. R.D. ; 21-VII-1979 ; Cols. Abud-E.Marcano M / 04510 / 15.1111-19 / MNHNSD 15.70	MNHN	No
T. bicolor	WIBF 042966	Male	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 18-VIII-1979 ; Col. Reynoso. / 06868 / 15.1110-19 / MNHNSD 15.64	MNHN	No
T. bicolor	WIBF 042967	Male	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 29-VII-1979 ; Col. Reynoso. / 05315 / 15.1108-19 / MNHNSD 15.67	MNHN	No

T. bicolor	WIBF 042968	Female	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 18-VIII-1979 ; Col. Reynoso. / 06870 / 15.1104-19 / MNHNSD 15.63	MNHN	No
T. bicolor	WIBF 042969	Male	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 29-VII-1979 ; Col. Reynoso. / 05327 / 15.1106-19 / MNHNSD 15.65	MNHN	No
T. bicolor	WIBF 042970	Male	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 18-VIII-1979 ; Col. Reynoso. / 06869 / 15.1103-19 / MNHNSD 15.62	MNHN	No
T. bicolor	WIBF 042971	Male	1	Las Cuevas. ; Salcedo, PROV. ; SALCEDO, R.D ; 29-VII-1979 ; Col. Reynoso. / 05272 / 15.1107-19 / MNHNSD 15.66	MNHN	No
T. bicolor	WIBF 042972	Female	1	Nisibon ; Higuey, PROV. ; LA ALTAGRACIA, R. D. ; 28-IV-1980 ; Cols. Aguino-Martinez / 16432 / 15.1119-19 / MNHNSD 15.77	MNHN	No
T. bicolor	WIBF 042973	Male	1	Nisibon ; Higuey, PROV. ; LA ALTAGRACIA, R. D. ; 28-IV-1980 ; Cols. Aguino-Martinez / 16451 / 15.1120-19 / MNHNSD 15.78	MNHN	No
T. bicolor	WIBF 042974	Female	1	Anamurita, ; Higuey, PROV. ; LA ALTAGRACIA. R.D. ; 21-VII-1979 ; Cols. Abud-E.Marcano M / 04518 / 15.1110-19 / MNHNSD 15.69	MNHN	No
T. bicolor	WIBF 042975	Male	1	El Convento ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; Marcano M-Marcano / 07588 / 15.1085-19 / MNHNSD 15.47	MNHN	No
T. bicolor	WIBF 042976	Male	1	El Convento ; Constanza, PROV. ; LA VEGA, R. D. ; 26-VIII-1979 ; Cols. ; Marcano M-Marcano / 07534 / 15.1083-19 / MNHNSD 15.46	MNHN	No
T. bicolor	WIBF 042977	Male	1	Piedra Gorda ; DISTIRTO NACIONAL ; Rep. Dom. ; 7-VI-1980 ; Cols.Marcano-Abud / 18827 / 15.1140-19 / MNHNSD 15.98	MNHN	No
T. bicolor	WIBF 042978	Female	1	Piedra Gorda ; DISTIRTO NACIONAL ; Rep. Dom. ; 7-VI-1980 ; Cols.Marcano-Abud / 18773 / 15.1139-19 / MNHNSD 15.97	MNHN	No
T. bicolor	WIBF 042979	Male	1	Monte Mayor. ; El Cercado,PROV. ; SAN JUAN,R.D. ; 28-XII-1980 ; col.Marcano. / 23056 / 15.1138-19 / MNHNSD 15.96	MNHN	No
T. bicolor	WIBF 042980	Male	1	Monte Mayor. ; El Cercado,PROV. ; SAN JUAN,R.D. ; 28-XII-1980 ; col.Marcano. / 23011 / 15.1137-19 / MNHNSD 15.95	MNHN	No
T. bicolor	WIBF 042981	Male	1	Engombe ; DISTRITO NACIONAL ; Rep. Dom. ; 12-III-1985 ; Cols. Reynoso Faliz / 31123 / 15.1098-19 / MNHNSD 15.57	MNHN	No
T. bicolor	WIBF 042982	Male	1	Engombe ; DISTRITO NACIONAL ; Rep. Dom. ; 12-III-1985 ; Cols. Feliz Deynos / 31121 / 15.1099-19 / MNHNSD 15.58	MNHN	No
T. bicolor	WIBF 042983	Male	1	DISTRITO NACIONAL ; Rep. Dom. ; 15-XII-1981 ; Cols.H.Dominguez / 28201 / 15.1205-19 / MNHNSD 15.163	MNHN	No
T. bicolor	WIBF 042984	Male	1	Haina ; DISTRITO NACIONAL ; Rep. Dom. ; 21-I-1983 ; Cols. Dguez / 29701 / 15.1203-19 / MNHNSD 15.161	MNHN	No
T. bicolor	WIBF 042985	Female	1	Herrera ; DISTRITO NACIONAL ; Rep. Dom. ; 18-IV-1985 ; Cols. Reynoso / 31138 / 15.1113-19 / MNHNSD 15.72	MNHN	No
T. bicolor	WIBF 042986	Female	1	La Cana. Nisibon ; Higuey, PROV. ; LA ALTAGRACIA, R.D. ; 29-III-1980 ; Cols. Marcano-Dguez / 14446 / 15.1121-19 / MNHNSD 15.79	MNHN	No

T. bicolor	WIBF 042987		1	Haina ; S. Cristobal, PROV. ; SAN CRISTOBAL, R.D. ; 14-II-1982 ; Col.H.Dominguez / 28590 / 15.1195-19 / MNHNSD 15.153	MNHN	No
T. bicolor	WIBF 042988	Male	1	La Cuaba ; V. Altagracia, PROV. ; SAN CRISTOBAL, R. D. ; 7-VI-1980 ; Cols. Marcano-Abud / 18895 / 15.1197-19 / MNHNSD 15.155	MNHN	No
T. bicolor	WIBF 042989	Male	1	Boca del Gran Estero ; Nagua, PROV. ; M.T. SANCHEZ, R.D. ; 26-VII-1980 ; Col. Marcano / 20948 / 15.1193-19 / MNHNSD 15.151	MNHN	No
T. bicolor	WIBF 042990	Female	1	Los Azules. ; Salcedo, PROV. ; SALCEDO, R. D. ; 17-VIII-1979 ; col. Reynoso. / 06478 / 15.1125-19 / MNHNSD 15.83	MNHN	No
T. bicolor	WIBF 042991	Female	1	El Manaclar. ; S. J. Ocoa, PROV. ; PERAVIA, R.D. ; 28-IV-1979 ; Cols. Cicero-Marcano. / 02454 / 15.1126-19 / MNHNSD 15.84	MNHN	No
T. bicolor	WIBF 042992	Male	1	Canada Miguel. ; Comendador, PROV. ; ELIAS PINA, R.D.. ; 29-XII-1979 ; Cols. Dgues-Aquino / 12969 / 15.1194-19 / MNHNSD 15.152	MNHN	No
T. bicolor	WIBF 042993	Male	1	[Unintelligible] Abelas, Sierra ; Banoraco ; PROV. ; PEDERNALES, R. D. ; 19-VI-1989 ; cols. Matusik-Guerrero / 34242 / 15.1117-19 / MNHNSD 15.75	MNHN	No
T. bicolor	WIBF 042994	Male	1	REPUBLICA DOMINICANA: ; Provincia La Vega, Trail Los ; Tablones-La Clenega, P.N. ; A. Bermudez, 20 July 2002, ; coll. D. Perez, B. Hierro, R. ; Bastardo / Photographed ; 2002-2003 ; CBSD / 15.1147-19 / MNHNSD 15.105	MNHN	No
T. bicolor	WIBF 042995	Female	1	DOMIN.REP: Prov. LaVega ; Par.Nac.ArmandoBermudez ; above Los Tablones ; 07 JULY 1992, 1200m ; M.A. & R.O. Ivie colrs	WIBF	No
T. bicolor	WIBF 042996	Male	1	DOMIN.REP: Prov. LaVega ; Par.Nac.ArmandoBermudez ; above Los Tablones ; 07 JULY 1992, 1200m ; M.A. & R.O. Ivie colrs	WIBF	No
T. bicolor	WIBF 042997	Male	1	DOMIN.REP: Prov.Santiago ; Par.Nac. ArmandoBermudez ; LaGuacara,19°07'N.71°02W ; 1124m. 10 JULY 1992 ; M.A. & R.O. Ivie colrs	WIBF	No
T. bicolor	WIBF 042998	Male	1	DOMIN.REP: Prov.Santiago ; Par.Nac. ArmandoBermudez ; LaGuacara,19°07'N.71°02W ; 1124m. 10 JULY 1992 ; M.A. & R.O. Ivie colrs	WIBF	No
T. bicolor	WIBF 042999	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	No
T. bicolor	WIBF 043000	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	No
T. bicolor	WIBF 043001	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	No
T. bicolor	WIBF 043002	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m. 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	No
T. bicolor	WIBF 043003	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m. 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	No
T. bicolor	WIBF 043004	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m. 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	No

T. bicolor	WIBF 043005	Male	1	DOMIN.REP:Prov.Santiago ; Par.Nac.ArmandoBermudez ; Rio Bao, 1212m ; 10JULY1992 ; M.A.& R.O.Ivie colrs	WIBF	No
T. bicolor	WIBF 043006	Female	1	DOMIN.REP:Prov.Santiago ; Par.Nac.ArmandoBermudez ; Rio Bao, 1212m ; 10JULY1992 ; M.A.& R.O.Ivie colrs	WIBF	No
T. bicolor	WIBF 043007	Male	1	DOM.REP:Prov.Hato Mayor ; Jkm W, Sabana de la Mar ; 19.03°N, 70.4849°W ; 04 AUG 1999. 21m ; R.S.Miller colr.	WIBF	No
T. bicolor	WIBF 043008	Female	1	DOMIN.REP:Prov.Santiago ; Par.Nac.ArmandoBermudez ; Loro-Rio Laguna ; 984-1222m, 19°08 ' N, 71°.02W ; 11JUL1992.M.A. & R.O.Ivie	WIBF	No
T. bicolor	WIBF 043009	Male	1	DOM.REP:Prov. PuertoPlata ; S.Pico Isabel de Torres ; 258m, El Cupey Rd. ; 19°45.214'N 70°43.6464'W ; 30JULY1999,Ivie &Guerrero	WIBF	No
T. bicolor	WIBF 043010	Male	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	No
T. bicolor	WIBF 043011	Female	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	No
T. bicolor	WIBF 043012	Female	1	DOM.REP:Prov.HatoMayor ; Par.Nac. Los Haitises ; 19°00'N, 69°29'W, 160m ; 19JULY1993, D.S.Sikes ; & R.P.Rosenfield colrs	WIBF	No
T. bicolor	WIBF 043339	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 043340	Male	1	San Lorenzo, ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 043341	Male	1	DOMINICAN REPUBLIC: ; Prov. Puerto Plata, Ecol. ; Reserve La Cumbre,29-31 ; V-2006, 3000 ft, at night ; R.E.Woodruff	FSCA	No
T. bicolor	WIBF 043342	Male	1	DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating	WIBF	No
T. bicolor	WIBF 043343	Male	1	DOMINICAN REPUBLIC ; Pedernales Prov., 25.5 ; km. N Cabo Rojo ; 20 May 1992 ; R. Turnbow	FSCA	No
T. bicolor	WIBF 043344	Male	1	Sanchez,Dom.Rep. ; July'38 ; Darlington	MCZ	No
T. bicolor	WIBF 043345	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 050907	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050908	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050909	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050910	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050911	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050912	Male	1	Sanchez,Dom.Rep. ; July'38 ; Darlington	MCZ	No
T. bicolor	WIBF 050913	Male	1	Jarabacoa ; Aug.'38,Dom.Rep. ; 1,500-4,000 ft. ; Darlington	MCZ	No
T. bicolor	WIBF 050914	Male	1	Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000ft.,July'38 ; Darlington	MCZ	No
T. bicolor	WIBF 050915	Male	1	Pt. Au Prince ; Haiti / F. C. Bowditch ; Coll. / Museum of ; Comparative ; Zoology	MCZ	No

T. bicolor	WIBF 050916	Male	1	Santo Domingo ; REP. DOMINICANA ; 30 XII 1966 / L. H. Rolston / Collector	TAMU	No
T. bicolor	WIBF 050917	Male	1	Mariani ; Haiti XI-4-'25 ; W A Hoffman / n sp. ; H S B. 1928	NMNH	No
T. bicolor	WIBF 050918	Male	1	Kenscoff Haiti ; 20 June 1938 ; Coll: J.A.Ramos / 4000 ft	RAMOS	No
T. bicolor	WIBF 050919	Male	1	S.Domingo ; D.R.24VII66 / L.H. Rolston ; Collector	TAMU	No
T. bicolor	WIBF 050920	Male	1	San Lorenzo, ; R.Dom.VI.24-26,15	CAS	No
T. bicolor	WIBF 050921	Male	1	San Lorenzo, ; R.Dom.VI.24-26,15	CAS	No
T. bicolor	WIBF 050922	Male	1	San Lorenzo, ; R.Dom.VI.24-26,15	CAS	No
T. bicolor	WIBF 050923	Male	1	San Lorenzo, ; R.Dom.VI.24-26,15	CAS	No
T. bicolor	WIBF 050924	Male	1	San Lorenzo, ; R.Dom.VI.27-29,15	CAS	No
T. bicolor	WIBF 050925	Male	1	San Lorenzo, ; R.Dom.VI.27-29,15	CAS	No
T. bicolor	WIBF 050926	Male	1	San Lorenzo, ; R.Dom.VI.27-29,15	CAS	No
T. bicolor	WIBF 050927	Male	1	San Lorenzo, ; R.Dom.VI.27-29,15 / Male	CAS	No
T. bicolor	WIBF 050928	Male	1	San Lorenzo, ; R.Dom.VI.27-29,15 / Male	CAS	No
T. bicolor	WIBF 050929	Male	1	DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating	WIBF	No
T. bicolor	WIBF 050930	Male	1	DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating	WIBF	No
T. bicolor	WIBF 050931	Male	1	DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating	WIBF	No
T. bicolor	WIBF 050932	Male	1	DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating	WIBF	No
T. bicolor	WIBF 050933	Male	1	DOM. REPUBLIC ; Barahona Prov. ; 11 km. S. Barahona ; V-6-1985 ; J. E. Wappes	WIBF	No
T. bicolor	WIBF 050934	Male	1	DOMINICAN REPUBLIC:Pr. ; La Vega, vic. Manabao ; 15-VII-1996 ; Coll. M.C.Thomas	FSCA	No
T. bicolor	WIBF 050935	Male	1	DOMINICAN REPUBLIC:Pr. ; La Vega, vic. Manabao ; 15-VII-1996 ; Coll. M.C.Thomas	FSCA	No
T. bicolor	WIBF 050936	Male	1	DOMINICAN REPUBLIC:Pr. ; La Vega, vic. Manabao ; 18-VII-1996 ; Coll. M.C.Thomas / -6	FSCA	No
T. bicolor	WIBF 050937	Male	1	DOMINICAN REPUBLIC ; Pedernales Prov., 25.5 ; km. N Cabo Rojo ; 20 May 1992 ; R. Turnbow	FSCA	No
T. bicolor	WIBF 050938	Male	1	DOMINICAN REPUBLIC ; Pedernales Prov., 25.5 ; km. N Cabo Rojo ; 20 May 1992 ; R. Turnbow	FSCA	No
T. bicolor	WIBF 050939	Male	1	DOM.REP:Hato Mayor ; 3km S. Sabana de la Mar ; 19.03°N, 69.385°W ; 04 AUG 1999, 21m ; R. S. Miller colr	WIBF	No

T. bicolor	WIBF 050940	Male	1	DOM.REP:Hato Mayor ; 3km S. Sabana de la Mar ; 19.03°N, 69.385°W ; 04 AUG 1999, 21m ; R. S. Miller colr	WIBF	No
T. bicolor	WIBF 050941	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien	WIBF	No
T. bicolor	WIBF 050942	Male	1	DOMINICAN REPUBLIC: ; Prov.Puerto Plata, Ecol. ; Reserve La Cumbre,29-31 ; V-2006, 3000 ft, at night ; R.E.Woodruff	WIBF	No
T. bicolor	WIBF 050943	Male	1	DOMINICAN REPUBLIC: ; La Vega. 3 km SE ; Jarabacoa. Rio Bai- ; quate. 560m. 24 Jul ; 1987 R. Davidson	CMNH	No
T. bicolor	WIBF 050944	Male	1	DOMIN.REP:Prov.Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for. ; 18°07.360'N, 71°34.657'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	No
T. bicolor	WIBF 050945	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050946	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050947	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050948	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050949	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050950	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050951	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050952	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050953	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050954	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 050955	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050956	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050957	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050958	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No

T. bicolor	WIBF 050959	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050960	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050961	Male	1	DOMINICAN REPUBLIC: ; Prov. Dajabon, 5km. ; S. Restauracion ; 5-VI-1986, R.Miller ; & L. Stange	WIBF	No
T. bicolor	WIBF 050962	Male	1	DOM.REP.,Peravia, ; 17km.E.SanJoze de ; Ocoa,Aug.8,1979 ; G.B.Marshall / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050963	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050964	Male	1	fthills Cord.Cent. ; S.of Santiago ; June'38,Dom.Rep ; Darlington	MCZ	No
T. bicolor	WIBF 050965	Male	1	Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000ft.,July'38 ; Darlington	MCZ	No
T. bicolor	WIBF 050966	Male	1	Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000ft.,July'38 ; Darlington	MCZ	No
T. bicolor	WIBF 050967	Male	1	Constanza to ; Jarabacoa ; Aug'38,Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	No
T. bicolor	WIBF 050968	Male	1	Constanza to ; Jarabacoa ; Aug'38,Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	No
T. bicolor	WIBF 050969	Male	1	Constanza ; Aug'38,Dom.Rep. ; 3-4,000 ft,Darl.	MCZ	No
T. bicolor	WIBF 050970	Male	1	Sanchez,Dom.Rep. ; July'38 ; Darlington	MCZ	No
T. bicolor	WIBF 050971	Male	1	Pt. Au Prince ; Haiti / F. C. Bowditch ; Coll. / Museum of ; Comparative ; Zoology	MCZ	No
T. bicolor	WIBF 050972	Male	1	Higueral ; Sto Domingo ; W.I.II-1914 / E.G.Smyth ; Collector	ANSP	No
T. bicolor	WIBF 050973	Male	1	Higueral ; Sto Domingo ; W.I.II-1914 / E.G.Smyth ; Collector	ANSP	No
T. bicolor	WIBF 050974	Male	1	Higueral ; Sto Domingo ; W.I.II-1914 / E.G.Smyth ; Collector	ANSP	No
T. bicolor	WIBF 050975	Male	1	Higueral ; Sto Domingo ; W.I.II-1914 / E.G.Smyth ; Collector / 2	ANSP	No
T. bicolor	WIBF 050976	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	WIBF	No
T. bicolor	WIBF 050977	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	ANMH	No
T. bicolor	WIBF 050978	Male	1	DOM.REP.,LaEstrel. ; 11km.E.HondoValle ; August 7,1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050979	Male	1	DOM.REP.,S.C.,18 ; km.W.SanCristobal, ; RioNizao,Aug.5, ; 1979 L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 050980	Male	1	Dominican Rep. ; Jarabacoa, Lavega ; Prov. El. 1700' / CHARLES M. STEVENS ; XXII-VI-1981	WIBF	No
T. bicolor	WIBF 050981	Male	1	DOMINICAN REP. ; Jarabacoa ; 3-4 June 1969 ; Flint & Gomez	USNM	No
T. bicolor	WIBF 050982	Male	1	DOMINICAN REP. ; La Toma, N.of ; San Cristobal ; 9-10 June 1969 ; Flint & Gomez	USNM	No
T. bicolor	WIBF 050983	Male	1	DOMIN.REP: Prov. Barahona ; 18km fr.Cabral,off Polo Rd ; 2.5 km SE Montear Nuevo ; 18°06.452'N, 71°14.717'W ; 26 JULY 1999, 1020m / M. A. Ivie & K. A. ; Guerrero, Coffee. ; Mangoliacea forest	WIBF	No

T. bicolor	WIBF 050984	Male	1	DOM.REP: Prov. Barahona ; 18km Cabral,Polo Rd. ; 1.5km SE Montear Nuevo ; 18°06.452'N,71°14.717'W ; 26JULY1999, 1020m / M. A. Ivie & ; K.A.Guerrero	WIBF	No
T. bicolor	WIBF 050985	Male	1	Pt.au Prince ; Haiti ; R.J.Crew / ex coll. ; Wickham	NMNH	No
T. bicolor	WIBF 050986	Male	1	Pt.au Prince ; Haiti ; R.J.Crew / ex coll. ; Wickham	NMNH	No
T. bicolor	WIBF 050987	Male	1	Pt.au Prince ; Haiti ; R.J.Crew / ex coll. ; Wickham	NMNH	No
T. bicolor	WIBF 050988	Male	1	San Lorenzo, ♂ ; R.Dom.VI,27-29,15 / WICKHAM ; Collection ; 1933	USNM	No
T. bicolor	WIBF 051023	Male	1	Higueral .S.Dom ; II.1914 / WICKHAM ; Collection ; 1933 ; ♂	USNM	No
T. bicolor	WIBF 051024	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051025	Male	1	Bizoton ; Haiti XI-3' 25 ; WAHoffman	NMNH	No
T. bicolor	WIBF 051026	Male	1	♂ / Kenscoff ; Haiti ; 24.6.31 ; K[Unintelligible]light ; C. #14	NMNH	No
T. bicolor	WIBF 051027	Male	1	W.[Unintelligible].Rockwell ; Collection / Portau Prince ; Haiti / 64	NMNH	No
T. bicolor	WIBF 051028	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051029	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051030	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051031	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051032	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051033	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051034	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051035	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051036	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051037	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051038	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051039	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051040	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051041	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051042	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051043	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051044	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051045	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051046	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051047	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051048	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No

T. bicolor	WIBF 051049	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051050	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15	AMNH	No
T. bicolor	WIBF 051051	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051052	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051053	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051054	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051055	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051056	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051057	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051058	Male	1	San Lorenzo, ; R.Dom.VI,24-26,15	AMNH	No
T. bicolor	WIBF 051059	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051060	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051061	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051062	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051063	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051064	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051065	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051066	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051067	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051068	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051069	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051070	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051071	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051072	Male	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051073	Female	1	San Lorenzo, ; R.Dom.VI,27-29,15 / Female	AMNH	No
T. bicolor	WIBF 051074	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051075	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051076	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051077	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051078	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051079	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051080	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051081	Male	1	Higueral .S.Dom ; II.1914	AMNH	No

T. bicolor	WIBF 051082	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051083	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051084	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051085	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051086	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051087	Male	1	Higueral .S.Dom ; II.1914	AMNH	No
T. bicolor	WIBF 051326	Female	1	Sourees ; Matelas ; IX - 5 / Haiti ; 1934 ; Darlington / Museum of ; Comparative ; Zoology	MCZ	No
T. bicolor	WIBF 051327	Female	1	Constanza to ; Jarabacoa ; Aug '38, Dom. Rep. ; 2-4,000 ft, Darl.	MCZ	No
T. bicolor	WIBF 051328	Female	1	Constanza ; Aug '38, Dom. Rep. ; 3-4,000 ft. ; Darlington	MCZ	No
T. bicolor	WIBF 051329	Female	1	Constanza ; Aug '38, Dom. Rep. ; 3-4,000 ft. ; Darlington	MCZ	No
T. bicolor	WIBF 051330	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051331	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051332	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051333	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051334	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051335	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051336	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051337	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051338	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051339	Female	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051340	Female	1	Villa Altagracia ; July '38. Dom. Rep. ; Darlington	MCZ	No
T. bicolor	WIBF 051341	Female	1	Villa Altagracia ; July '38. Dom. Rep. ; Darlington	MCZ	No
T. bicolor	WIBF 051342	Female	1	Sanchez, Dom. Rep. ; July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051343	Female	1	Sanchez, Dom. Rep. ; July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051344	Female	1	Sanchez, Dom. Rep. ; July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051345	Female	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4,000 ft., July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051346	Female	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4,000 ft., July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051347	Female	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4,000 ft., July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051348	Female	1	Mt. Diego de ; Ocampo, Dom. Rep. ; 3-4,000 ft., July '38 ; Darlington	MCZ	No
T. bicolor	WIBF 051349	Female	1	fthills Cord. Cent. ; S. of Santiago ; June '38, Dom. Rep ; Darlington	MCZ	No
T. bicolor	WIBF 051350	Female	1	Pto. Plata ; Dom. Rep. ; Hurst	MCZ	No
T. bicolor	WIBF 051351	Female	1	Pto. Plata ; Dom. Rep. ; Hurst	MCZ	No

T. bicolor	WIBF 051352	Female	1	Pto. Plata ; Dom. Rep. ; Hurst	MCZ	No
T. bicolor	WIBF 051353	Female	1	Haiti ; VIII-1927 / Coll : S. T. Danforth / Stuart T. ; Danforth ; Collection	MCZ	No
T. bicolor	WIBF 051354	Female	1	Pt. au Prince ; Haiti ; R. J. Crew / ex coll. ; Wickham	NMNH	No
T. bicolor	WIBF 051355	Female	1	DOMIN. REP : Prov. Hato Mayor ; 3 km S. Sabana de la Mar ; 19° 01. 800 'N, 69° 29. 092 'W ; 04 AUG 1999, 20m ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. bicolor	WIBF 051356	Female	1	DOM. REP : Hato Mayor ; 3km S. Sabana de la Mar ; 19. 03° N 69. 385° W ; 04 AUG 1999, 21m ; R. S. Miller colr	WIBF	No
T. bicolor	WIBF 051357	Female	1	Dominican Rep. ; Guai[Unintelligible]ati ; July 1925 / H. E. Box ; Collector / Pres. by ; Imp. Inst. Ent. ; Brit. Mus. ; 1931-486	BMNH	No
T. bicolor	WIBF 051358	Female	1	La Romana, S. D ; 3-1-1914 / G BMerrill ; Collector	FSCA	No
T. bicolor	WIBF 051359	Female	1	Kenscott, Haiti ; 20 June 1938 ; Coll: J. A. Ramos / 4000 ft.	RAMOS	No
T. bicolor	WIBF 051360	Female	1	Haiti ; [Unintelligible] ; July 25, 1950 ; A. Curtiss	AMNH	No
T. bicolor	WIBF 051361	Female	1	Higueral. S. Dom. ; II. 1914 / Female	CAS	No
T. bicolor	WIBF 051362	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051363	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051364	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051365	Female	1	fthills Cord. Cent. ; S. of Santiago ; June '38, Dom. Rep ; Darlington	MCZ	No
T. bicolor	WIBF 051366	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051367	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051368	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051369	Female	1	DOM REP : Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M. C. Thomas, beating	WIBF	No
T. bicolor	WIBF 051370	Female	1	DOM REP : Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M. C. Thomas, beating	WIBF	No
T. bicolor	WIBF 051371	Female	1	DOM. REPUBLIC ; La Vega Prov. 4100' ; 2 km. E. Tireo ; V-8-1985 ; J. E. Wappes	WIBF	No
T. bicolor	WIBF 051372	Female	1	DOM. REPUBLIC ; Puerto Plata Prov. ; 14 km. W. P. Plata ; V-11-1985 ; J. E. Wappes	WIBF	No
T. bicolor	WIBF 051373	Female	1	DOM. REPUBLIC ; Barahona Prov. ; 11 km. S. Barahona ; V-6-1985 ; J. E. Wappes	WIBF	No
T. bicolor	WIBF 051374	Female	1	fthills Cord. Cent. ; S. of Santiago ; June '38, Dom. Rep ; Darlington	MCZ	No
T. bicolor	WIBF 051375	Female	1	DOMIN. REP : Prov. Hato Mayor ; 3 km S. Sabana de la Mar ; 19° 01. 800 'N, 69° 29. 092 'W ; 04 AUG 1999, 20m ; M. A. Ivie & K. A. Guerrero	WIBF	No
T. bicolor	WIBF 051376	Female	1	DOMIN. REP : Prov. Hato Mayor ; 3 km S. Sabana de la Mar ; 19° 01. 800 'N, 69° 29. 092 'W ; 04 AUG 1999, 20m ; M. A. Ivie & K. A. Guerrero	WIBF	No

T. bicolor	WIBF 051377	Female	1	DOMINICAN REP.:Prov. ; Barahona. nr.Filipinas ; Larimar Mine: 26-VI-7- ; VIII-1992: Woodruff & ; Skelley. at light	FSCA	No
T. bicolor	WIBF 051378	Female	1	Romana, ; Santo Domingo ; March 5, 1925	FSCA	No
T. bicolor	WIBF 051379	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	AMNH	No
T. bicolor	WIBF 051380	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	AMNH	No
T. bicolor	WIBF 051381	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	AMNH	No
T. bicolor	WIBF 051382	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	AMNH	No
T. bicolor	WIBF 051383	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051384	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051385	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051386	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051387	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051388	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051389	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051390	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051391	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051392	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051393	Female	1	San Lorenzo, ; R. Dom. VI. 24-26,15	AMNH	No
T. bicolor	WIBF 051394	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	AMNH	No
T. bicolor	WIBF 051395	Female	1	San Lorenzo, ; R. Dom. VI. 24-26,15	AMNH	No
T. bicolor	WIBF 051396	Female	1	Higueral. S. Dom. ; II. 1914 / Female	AMNH	No
T. bicolor	WIBF 051397	Female	1	Higueral. S. Dom. ; II. 1914 / Female	AMNH	No
T. bicolor	WIBF 051398	Female	1	Higueral. S. Dom. ; II. 1914 / Female	AMNH	No
T. bicolor	WIBF 051399	Female	1	Higueral. S. Dom. ; II. 1914 / Female	AMNH	No
T. bicolor	WIBF 051400	Female	1	Higueral. S. Dom. ; II. 1914 / Female	AMNH	No
T. bicolor	WIBF 051401	Female	1	Higueral. S. Dom. ; II. 1914 / Female	ANSP	No
T. bicolor	WIBF 051402	Female	1	Higueral. S. Dom. ; II. 1914	AMNH	No
T. bicolor	WIBF 051403	Female	1	Higueral. S. Dom. ; II. 1914	AMNH	No
T. bicolor	WIBF 051404	Female	1	Higueral. S. Dom. ; II. 1914	AMNH	No
T. bicolor	WIBF 051405	Female	1	Higueral. S. Dom. ; II. 1914	AMNH	No
T. bicolor	WIBF 051406	Female	1	Higueral. S. Dom. ; II. 1914	AMNH	No
T. bicolor	WIBF 051407	Female	1	DOMINICAN REPUBLIC: ; Prov.Hato, Mayor ; km.23 N.Hato Mayor ; Finca Mango Limpio / 17-IX-1988 ; R. E. Woodruff ; on citrus	WIBF	No

T. bicolor	WIBF 051408	Female	1	DOMINICAN REPUBLIC: ; Prov.Hato, Mayor ; km.23 N.Hato Mayor ; Finca Mango Limpio / 17-IX-1988 ; R. E. Woodruff ; on citrus	WIBF	No
T. bicolor	WIBF 051409	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051410	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051411	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051412	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051413	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051414	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051415	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051416	Female	1	DOMINICAN REPUBLIC:Prov. ; La Altagracia,Nisbon ; 4-X-1985, citrus ; Woodruff & Stange	WIBF	No
T. bicolor	WIBF 051417	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien	WIBF	No
T. bicolor	WIBF 051418	Female	1	DOM.REP:Hato Mayor ; 3km S. Sabana de la Mar ; 19.03°N 69.385°W ; 04 AUG 1999, 21m ; R. S. Miller colr	WIBF	No
T. bicolor	WIBF 051419	Female	1	R.DOMINICANA ; 14 KM W PUERTO PLATA ; MAY 10-11, 1985 ; E.GIESBERT,COLL.	WIBF	No
T. bicolor	WIBF 051420	Female	1	Higueral ; Sto Doming ; W.I. II-1914 / E.G.Smyth ; Collector	ANSP	No
T. bicolor	WIBF 051421	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051422	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15	CAS	No
T. bicolor	WIBF 051423	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	CAS	No
T. bicolor	WIBF 051424	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	CAS	No
T. bicolor	WIBF 051425	Female	1	San Lorenzo, ; R. Dom. VI. 27-29,15 / Female	CAS	No
T. bicolor	WIBF 051426	Female	1	♀ San Lorenzo, ; R. Dom. VI. 27-29,15 / WICKHAM ; Collection ; 1933	WIBF	No
T. bicolor	WIBF 051427	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051428	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051429	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051430	Female	1	Kenscoff ,Haiti ; 20 June 1938 ; Coll: J.A.Ramos / 4000 ft.	MAYAGUEZ	No
T. bicolor	WIBF 051431	Female	1	Kenscoff ,Haiti ; 20 June 1938 ; Coll: J.A.Ramos / 4000 ft.	MAYAGUEZ	No

T. bicolor	WIBF 051432	Female	1	Kenscoff ,Haiti ; 20 June 1938 ; Coll: J.A.Ramos / 4000 ft.	MAYAGUEZ	No
T. bicolor	WIBF 051433	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051434	Female	1	San Cristobal Prov. ; REP. DOMINICANA ; 8 VIII 1967 / L. B. ROLSTON ; Collector	TAMU	No
T. bicolor	WIBF 051435	Female	1	San Cristobal Prov. ; REP. DOMINICANA ; 8 VIII 1967 / L. B. ROLSTON ; Collector	TAMU	No
T. bicolor	WIBF 051436	Female	1	DOM.REP.,LaVega, ; 12km.E.Constanza ; August 10,1979 ; G.B.Marshall / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051437	Female	1	DOM.REP.,LaVega, ; 12km.E.Constanza ; August 10,1979 ; C.W.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051438	Female	1	DOM.REP.,LaAltag. ; 18km.NW.Boca de ; Yuma,August.1, 1979 ; G.B.Marshall / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051439	Female	1	DOM.REP.,Peravia, ; 16km.E.SanJose de ; Ocoa,August8,1979 ; C.W.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051440	Female	1	DOM.REP.,Peravia, ; 17km.E.SanJose de ; Ocoa,August.8,1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051441	Female	1	DOMINIC.REP.:PROV.La Vega ; ca.10km F.Constanza,1295m ; 31AUG1988,beating in pine ; guava forest, M. A. Ivie, ; T.K.Philips & K.A.Johnson	WIBF	No
T. bicolor	WIBF 051442	Female	1	Higueral ; Sto Dom. ; II.1914 / W. Indies. ; Brit. Mus. ; 1923-175.	BMNH	No
T. bicolor	WIBF 051443	Female	1	♀ / RioSanJuan ; DR.3 - '28 ; G.S.Miller.	USNM	No
T. bicolor	WIBF 051444	Female	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051445	Female	1	DOM.REP.,Peravia, ; 9km.E.SanJose de ; Ocoa,August.8,1979 ; O'Brien&Marshall/ R.S.Miller ; Collection	WIBF	No
T. bicolor	WIBF 051446	Male	1	DODOMINICAN REP. ; Jarabacoa ; 3-4 June 1969 ; Flint & Gomez	USNM	No
T. bicolor	WIBF 051447	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051448	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	No
T. bicolor	WIBF 051449	ale, Fema	2	in ; copulo / DOM.REP.,S.Crist., ; 18km.W.S.Cristobal ; RioNizao, Aug.5, ; 1979 G.B.Marshall / R.S.Miller	WIBF	No
T. bicolor	WIBF 051450	ale, Fema	2	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051451		1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien	WIBF	No
T. bicolor	WIBF 051452		1	Guanica,P.R. ; IV.20 1914. / BOAT-LOAD OF CANE FROM ; HIGUERAL, R.D. / R.H Van Zwalen- ; burg, Collector. / [Unintelligible] / ♀	AMNH	No

T. bicolor	WIBF 051453		1	Guanica,P.R. ; IV.20 1914. / BOAT-LOAD OF CANE FROM ; HIGUERAL, R.D. / R.H Van Zwalen- ; burg, Collector. / [Unintelligible] / ♂	AMNH	No
T. bicolor	WIBF 051454	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051455	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051456	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051457	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051458	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051459	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051460	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051461	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051462	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051463	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051464	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051465	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15 / Male	AMNH	No
T. bicolor	WIBF 051466	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15	AMNH	No
T. bicolor	WIBF 051467	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15	AMNH	No
T. bicolor	WIBF 051468	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15	AMNH	No
T. bicolor	WIBF 051469	Male	1	San Lorenzo. ; R.Dom.VI.27-29,15	AMNH	No
T. bicolor	WIBF 051470	Male	1	San Lorenzo. ; R.Dom.VI.27-29,16	AMNH	No
T. bicolor	WIBF 051471	Male	1	San Lorenzo. ; R.Dom.VI.27-29,17	AMNH	No
T. bicolor	WIBF 051472	Male	1	San Lorenzo. ; R.Dom.VI.27-29,18	AMNH	No
T. bicolor	WIBF 051473	Male	1	San Lorenzo. ; R.Dom.VI.27-29,19	AMNH	No
T. bicolor	WIBF 051474	Male	1	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051475	Male	1	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051476	Male	1	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051477	Male	1	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051478	Male	1	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051479	Male	1	San Lorenzo. ; R.Dom.VI.24-26,15	AMNH	No
T. bicolor	WIBF 051480	Male	1	R.DOMINICANA ; 14 KM W PUERTO PLATA ; MAY 10-11, 1985 ; E.GIESBERT,COLL.	WIBF	No
T. bicolor	WIBF 051481	Male	1	R.DOMINICANA ; 14 KM W PUERTO PLATA ; MAY 10-11, 1985 ; E.GIESBERT,COLL.	WIBF	No
T. bicolor	WIBF 051482	Male	1	Villa Altagracia ; July '38. Dom. Rep. ; Darlington	MCZ	No
T. bicolor	WIBF 051483	Male	1	Villa Altagracia ; July '38. Dom. Rep. ; Darlington	MCZ	No

T. bicolor	WIBF 051484	Male	1	Constanza to ; Jarabacoa ; Aug '38, Dom. Rep. ; 2-4,000 ft, Darl.	MCZ	No
T. bicolor	WIBF 051485	Male	1	Constanza to ; Jarabacoa ; Aug '38, Dom. Rep. ; 2-4,000 ft, Darl.	MCZ	No
T. bicolor	WIBF 051486	Male	1	Constanza to ; Jarabacoa ; Aug '38, Dom. Rep. ; 2-4,000 ft, Darl.	MCZ	No
T. bicolor	WIBF 051487	Male	1	Constanza to ; Jarabacoa ; Aug '38, Dom. Rep. ; 2-4,000 ft, Darl.	MCZ	No
T. bicolor	WIBF 051488	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051489	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051490	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051491	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051492	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051493	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051494	Male	1	Wenskoff, Haiti ; VII 1941 ; Payne 1450 [Unintelligible]	MCZ	No
T. bicolor	WIBF 051495	Male	1	San Jose de las ; Matas. Dom. Rep ; 1,000-2,000 ft. ; June'38 Darl	MCZ	No
T. bicolor	WIBF 051496	Male	1	San Jose de las ; Matas. Dom. Rep ; 1,000-2,000 ft. ; June'38 Darl	MCZ	No
T. quadrilacinius	WIBF 041539	Female	1	Vega Baja ; 23 IV 1988 ; C. Felix	UPR-RP	Paratype
T. quadrilacinius	WIBF 041540	Male	1	Puerto RIco ; Boca de Cangrejos ; ´´Pinones´´ Dec. 12 ; 1984, J. Negron	WIBF	Paratype
T. quadrilacinius	WIBF 041648	Male	1	Isabela, P.R. ; E.E.A. ; Mazzo 1991 ; GONZALO Mejia	UPR-RP	Paratype
T. quadrilacinius	WIBF 041729	Female	1	PUERTO RICO:Mayaguez ; Univ, P.R. M. Campus ; 18.2109°N 67. 14091248W ; 28 NOV 2019 ; Flying during day	UPR-RP	Paratype
T. quadrilacinius	WIBF 043199	Male	1	R.DOMINICANA, ; 11KM S BARAHONA ; MAY 6-17, 1985 ; E.GIESBERT,COLL.	FSCA	Paratype
T. quadrilacinius	WIBF 043200	Male	1	R.DOMINICANA, ; 11KM S BARAHONA ; MAY 17, 1985 ; E.GIESBERT,COLL.	FSCA	Paratype
T. quadrilacinius	WIBF 043201	Male	1	R.DOMINICANA, ; 11KM S BARAHONA ; MAY 17, 1985 ; E.GIESBERT,COLL.	FSCA	Paratype
T. quadrilacinius	WIBF 043202	Male	1	R.DOMINICANA, ; 11KM S BARAHONA ; MAY 17, 1985 ; E.GIESBERT,COLL.	FSCA	Paratype
T. quadrilacinius	WIBF 043203		1	DOMINICAN REPUBLIC:Prov ; La Altagracia, Nisibon ; 4-7 1978, Malaise Trap ; R. E. Woodruff & G. B. ; Fairchild colrs.	FSCA	Paratype
T. quadrilacinius	WIBF 043204	Male	1	DOMINICAN REPUBLIC:Prov ; La Altagracia, Nisibon ; 4-7 1978, Malaise Trap ; R. E. Woodruff & G. B. ; Fairchild colrs.	FSCA	Paratype
T. quadrilacinius	WIBF 043205	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; C.W.O'Brien / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043206	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043207	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	Paratype

T. quadrilacinius	WIBF 043208	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043209	Male	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043210	Female	1	DOM.REP.,LaAltag. ; 2km.SW.CampoNuevo ; August 1, 1979 ; L.B.O'Brien / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043211	Male	1	Romana Prov., ; REP. DOMINICANA ; 9 XI 1967 / L. H. Rolston ; Collector	TAMU	Paratype
T. quadrilacinius	WIBF 043212	Female	1	Romana Prov., ; REP. DOMINICANA ; 9 XI 1967 / L. H. Rolston ; Collector	TAMU	Paratype
T. quadrilacinius	WIBF 043213	Male	1	Pto Rico ; Ponce ; J.M.Caprilles / June 1-15, ; 1945 ; light trap	USNM	Paratype
T. quadrilacinius	WIBF 043214	Female	1	Pto Rico ; Ponce ; J.M.Caprilles / June 1-15, ; 1945 ; light trap	USNM	Paratype
T. quadrilacinius	WIBF 043215	Male	1	32 km.SW.Mirebalais, ; c500' Haiti 5-vii-1956 ; B. & B. Valentine / Beating dead ; branches in ; semi-desert. / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043216	Male	1	33 km.SW.Mirebalais, ; c500' Haiti 5-vii-1956 ; B. & B. Valentine / Beating dead ; branches in ; semi-desert. / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043217	Male	1	Romana Prov., ; REP. DOMINICANA ; 9 XI 1967 / L. H. Rolston ; Collector	WIBF	Paratype
T. quadrilacinius	WIBF 043218	Male	1	Guaiamati ; SDomingo / H. E. Box ; July'25	USNM	Paratype
T. quadrilacinius	WIBF 043219	Male	1	Guaiamati ; SDomingo / H. E. Box ; July'25 / 62	USNM	Paratype
T. quadrilacinius	WIBF 043220	Female	1	DOMINICAN REPUBLIC: ; PROV.BARAHONA,5KM. ; NW OF BARAHONA,AGR. ; EXP.STA.,29-30-IV-78 / G. B. FAIRCHILD & ; R. E. WOODRUFF	FSCA	Paratype
T. quadrilacinius	WIBF 043221	Male	1	HAITI: Art Bonite Prov. ; Mandarin, 10 km SSE ; Gonaives 12-VIII-2010 ; collector R. Hirzel	FSCA	Paratype
T. quadrilacinius	WIBF 043222	Male	1	DOMINICAN REPUBLIC:Prov. ; Barahona, 5 km. NW ; Barahona,Agaric.Exp.Sta. ; 29-30 IV 1978 ; R. E. Woodruff colr.	FSCA	Paratype
T. quadrilacinius	WIBF 043223	Male	1	DOMINICAN REPUBLIC: ; Prov.Hato, Mayor ; km.23 N.Hato Mayor ; Finca Mango Limpio / 17-IX-1988 ; R.E.Woodruff ; on citrus	FSCA	Paratype
T. quadrilacinius	WIBF 043224	Female	1	DOM.REP.,Peravia, ; 13km.W.Bani ; Aug.12,1979 ; G. B.Marshall / R.S.Miller ; Collection	WIBF	Paratype
T. quadrilacinius	WIBF 043225	Male	1	DOMIN.REP:Prov.Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for. ; 18°07.360'N, 71°34.657'W ; 22 JULY 1999. M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. quadrilacinius	WIBF 043226	Female	1	Haiti No.155-24 ; Christophe's Citadel ; June 2 1927 / G.N.Wolcott ; Coll.	USNM	Paratype
T. quadrilacinius	WIBF 043227	Male	1	Acc. 63-25 ; Port au Prince, ; Haiti Apr,1927 / G.N.Wolcott ; Coll.	USNM	Paratype
T. quadrilacinius	WIBF 043228	Male	1	HAITI ; Col de sac ; IV.1953 ; H.E.Box / Harold E.Box ; Collection ; 1963	USNM	Paratype
T. quadrilacinius	WIBF 043229	Male	1	La Moriniere ; Haiti III 1-5. ; 1922. / About 125 ft. alt. ; F.4638 B.	AMNH	Paratype
T. quadrilacinius	WIBF 043230	Male	1	La Moriniere ; Haiti III ; 1-5.1922. / About 125 ft. alt. ; F.4638	AMNH	Paratype

T. quadrilacinius	WIBF 043231	Male	1	Constanza ; Aug.'38,Dom.Rep ; 3-4,000 ft. ; Darlington	MCZ	Paratype
T. quadrilacinius	WIBF 043232	Male	1	6m.E.of ; San Cristobal ; Dom.Rep. ; VII-15-31 ; [Unintelligible], Cooley / ex.leaf ; of Mango ; #19	NMNH	Paratype
T. quadrilacinius	WIBF 043233	Male	1	58 / Romania.R.D ; april.9.1913. / W.V.Tower ; Collector	NMNH	Paratype
T. quadrilacinius	WIBF 043234	Female	1	P.R.Acc.No. 33-57 ; PONCE,D.R. ; 4/4/57 ; Coll.S.Madina	UPR	Paratype
T. quadrilacinius	WIBF 043235	Female	1	Quayanilla, P.R. ; Nov [unintelligible],39 / G.N.Wolcott & ; L.F.Martorell ; Collectors / Acc.H 323-39	UPR	Paratype
T. quadrilacinius	WIBF 043236	Female	1	Guanica, P.R. ; Sept 10 1936 / Acc.#17-36 ; Coll by: ; G.N.Wolcott ; L.F Martorell / On cano.	UPR	Paratype
T. quadrilacinius	WIBF 043237	Female	1	PUERTO RICO ; Fajardo-Finca ; Elraro-Las Crombas ; Oct.12,1977 ; M.Vir[unintelligible]i ♀	UPR	Paratype
T. quadrilacinius	WIBF 043238	Female	1	Quayanilla, P.R. ; Nov 8,39 / ♀ ; G.N.Wolcott & ; L.F.Martorell ; Collectors / Acc.H 323-39	NMNH	Paratype
T. quadrilacinius	WIBF 043239	Female	1	Quayanilla, P.R. ; Nov 8,39 / ♀ ; G.N.Wolcott & ; L.F.Martorell ; Collectors / Acc.H 323-40	NMNH	Paratype
T. quadrilacinius	WIBF 043240	Female	1	Higueral S.Dom.	AMNH	Paratype
T. quadrilacinius	WIBF 043241	Female	1	La Moriniere ; Haiti III. ; 1-5. 1922. / About 125 ft. alt. ; F. 4638 B.	AMNH	Paratype
T. quadrilacinius	WIBF 043242	Female	1	Pivert. ; Haiti ; IV.1.1922 / About 300 ft. alt. ; F. 4657	AMNH	Paratype
T. quadrilacinius	WIBF 043243	Female	1	PUERTO RICO ; Barrio mora, ; Isabela,VII-4-58 ; A.F.S Sanderson	AMNH	Paratype
T. quadrilacinius	WIBF 043244	Female	1	Clas Mesas ; Mayaquez,P.R. ; OCT. 3,81 P.R	FSCA	Paratype
T. quadrilacinius	WIBF 043245	Female	1	Camuy P.R. ; Sept.5.81 ; Luis Me[unintelligible]s	FSCA	Paratype
T. quadrilacinius	WIBF 043246	Female	1	PUERTO RICO: ; Varrio Mora, ; nr. Isabela ; 04JULY1958 ; M.W.Sanderson	WIBF	Paratype
T. quadrilacinius	WIBF 043247	Female	1	Mayaguez, P. R. ; XI-10-1948 ; Coll.[unintelligible]	EPRL	Paratype
T. quadrilacinius	WIBF 043248	Female	1	Mayaguez, P. R. ; XI-6 1948 ; Coll. CTURRO	EPRL	Paratype
T. quadrilacinius	WIBF 043249	Female	1	Mayaguez, P. R. ; XI-2 1963	EPRL	Paratype
T. quadrilacinius	WIBF 043250	Female	1	Mayaguez, P. R. ; 10/2 1953	EPRL	Paratype
T. quadrilacinius	WIBF 043251	Female	1	Mayaguez, P. R. ; 1-XI-81 W.Colon 1954	EPRL	Paratype
T. quadrilacinius	WIBF 043252	Female	1	Mayaguez, P. R. ; Oct 28, 46 ; E Alicea	EPRL	Paratype
T. quadrilacinius	WIBF 043253	Female	1	Anasco, P.R. ; XI-24, 1948 ; Coll: N. VAZQUez	EPRL	Paratype
T. quadrilacinius	WIBF 043254		1	Mayaguez, P. R. ; X-23-1953	EPRL	Paratype
T. quadrilacinius	WIBF 043255	Male	1	Mayaguez, P. R. ; X-23-1953	EPRL	Paratype
T. quadrilacinius	WIBF 043256	Male	1	Mayaguez, P. R. ; XI-11-1953	EPRL	Paratype
T. quadrilacinius	WIBF 043257	Male	1	Mayaguez, P. R. ; X-18-1953	EPRL	Paratype
T. quadrilacinius	WIBF 043258	Male	1	Mayaguez, P. R. ; Oct [unintelligible] 1948 ; Coll. [unintelligible] Cruzado	EPRL	Paratype
T. quadrilacinius	WIBF 043259	Male	1	Mayaguez, P. R. ; II-21 1942 ; Coll. R.Acevedo	EPRL	Paratype

T. quadrilacinius	WIBF 043260	Male	1	Mayaguez, P. R. ; III-15 1942 ; Coll. [unintelligible]	EPRL	Paratype
T. quadrilacinius	WIBF 043261	Male	1	Mayaguez, P. R. ; 5-Oct. 1940 ; Coll. J.Perocier	EPRL	Paratype
T. quadrilacinius	WIBF 043262	Male	1	Mayaguez, P. R. ; XI 10 1948 ; Coll. R[unintelligible]	EPRL	Paratype
T. quadrilacinius	WIBF 043263	Male	1	Fa. Lycidae / Mayaguez, P. R. ; XI-25 1948 ; Coll. M Martinez	EPRL	Paratype
T. quadrilacinius	WIBF 043264	Male	1	Penuelas, P.R. ; III-30 1942 ; Coll:W.Grana	EPRL	Paratype
T. quadrilacinius	WIBF 043265	Male	1	Consumo, P. R. ; VIII-6-1953 ; Coll: S.Mediva	EPRL	Paratype
T. quadrilacinius	WIBF 043266	Male	1	Boqueron, P.R. ; Oct 10-1948 ; Coll: [unintelligible]	EPRL	Paratype
T. quadrilacinius	WIBF 043267	Female	1	Losey Field, ; near Ponce ; P.R.,IV-26-'45 ; R.Usinger. Coll.	EMEC	Paratype
T. quadrilacinius	WIBF 043268	Male	1	Losey Field, ; near Ponce ; P.R.,IV-26-'45 ; R.Usinger. Coll.	EMEC	Paratype
T. quadrilacinius	WIBF 043269	Male	1	ARECEBO P.R ; 10/10/81 ; G.VEIAZQUEZ	EMEC	Paratype
T. quadrilacinius	WIBF 043270	Female	1	Lajas P.R. ; Oct 25, 1981 ; Stgo. Matos	EMEC	Paratype
T. quadrilacinius	WIBF 043271	Female	1	Isabela, P.R. ; E.E.A. ; Mazzo 1991 ; GONZALO Mejia	UPR-RP	Paratype
T. quadrilacinius	WIBF 043272	Female	1	Isabela, P.R. ; E.E.A. ; Mazzo 1991 ; GONZALO Mejia	UPR-RP	Paratype
T. quadrilacinius	WIBF 043273	Female	1	MOROUIS ; 5 III 1988 ; A.F	UPR-RP	Paratype
T. quadrilacinius	WIBF 043274	Male	1	PR Mayaquz ; Rum-vertearo ; 13 X, 1987 ; Inglez III II	UPR-RP	Paratype
T. quadrilacinius	WIBF 043275	Male	1	PR Mayaquz ; Rum-vertearo ; 13 X, 1987 ; Inglez II III	UPR-RP	Paratype
T. quadrilacinius	WIBF 043276	Male	1	PR Mayaquz ; Rum-vertearo ; 13 X, 1987 ; Inglez III II	UPR-RP	Paratype
T. quadrilacinius	WIBF 043277	Male	1	Mayaguez, P.R. ; Rum ; OcSubae 1990 ; Gonzalo Mejia	UPR-RP	Paratype
T. quadrilacinius	WIBF 043278	Male	1	Isabela, P.R. ; E.E.A. ; Mazzo 1991 ; GONZALO Mejia	UPR-RP	Paratype
T. quadrilacinius	WIBF 043279	Male	1	Batas ; 3/87 ; gladys Tonces	UPR-RP	Paratype
T. quadrilacinius	WIBF 043280		1	Rio Picolia [unintelligible] ; 2/28/1988 ; [unintelligible]	UPR-RP	Paratype
T. quadrilacinius	WIBF 043281		1	Anasco, P.R. ; Finca Alers ; 3 IX 1981 ; N.Semidey	FSCA	Paratype
T. quadrilacinius	WIBF 043282	Male	1	P.R.Acc.No.2848 ; Isabela P.R. ; March 30,1948 / G.N.Wolcott ; Coll.	UPR	Paratype
T. quadrilacinius	WIBF 043283	Male	1	Guanica, P.R. ; Sept 10 1936 / Acc.#17-36 ; Coll by: ; G.N.Wolcott ; L.F Martorell / On cano.	UPR	Paratype
T. quadrilacinius	WIBF 043284	Male	1	Guanica, P.R. ; Sept 10 1936 / Acc.#17-36 ; Coll by: ; G.N.Wolcott ; L.F Martorell / On cano.	UPR	Paratype
T. quadrilacinius	WIBF 043285	Male	1	Quayanilla, P.R. ; Nov 8, 39 / G.N.Wolcott & ; L. F. Martorell ; Collectors / Acc H 323-39	UPR	Paratype
T. quadrilacinius	WIBF 043286	Male	1	Losey Field, ; near Ponce ; P.R.,IV-26-'45 ; R.Usinger. Coll.	CNC	Paratype
T. quadrilacinius	WIBF 043287	Male	1	Mayaguez, P. R. ; 9-16 July 1955. ; Collected at light. / J.A.Ramos ; Collector	WIBF	Paratype
T. quadrilacinius	WIBF 043288	Male	1	Ponce, P. R. ; May 1946 ; Coll: at light / J. Maldonado ; Capriles	WIBF	Paratype
T. quadrilacinius	WIBF 043289	Male	1	♂ / Ponce. PR. ; 29.7.49 ; [unintelligible]. 9663	NMNH	Paratype
T. quadrilacinius	WIBF 043290	Male	1	♂ / Quayanilla, P.R ; Nov.8,39 / G.N.Wolcott ; L.F.Martorell ; Acc#323-39	NMNH	Paratype

T. quadrilacinius	WIBF 043291	Male	1	57 / Romana.R.P. ; april.9.1913. / W.V.Tower ; Collector / Male	NMNH	Paratype
T. quadrilacinius	WIBF 043292	Male	1	Ramey AFB ; P.R. #380 ; 7-17-58-13650 / Weed leaf ; mango tree	USNM	Paratype
T. quadrilacinius	WIBF 043293	Male	1	P.R. Lajas ; Ext experimental ; Sept 126/81 ; LANA ; Jorge Delgado Colect ; F Lycidae		Paratype
T. quadrilacinius	WIBF 043294		1	13-ENe-87 ; K.ChRistian / ISAbElA ; MAIZ		Paratype
T. quadrilacinius	WIBF 043306	Male	1	Santo Domingo ; DISTRITO NACIONAL ; Rep. Dom. ; 27-VI-1984 ; Col. Reynoso / 30954	MNHNSD	Paratype
T. quadrilacinius	WIBF 043307	Male	1	Engombe ; DISTRITO NACIONAL ; Rep. Dom. ; 20-IX-1979 ; Col. Reynoso / 10181 / 15.1102-19 / MNHNSD 15.61	MNHNSD	Paratype
T. quadrilacinius	WIBF 043308	Male	1	Rio Guanajuma ; Valverde,PROV. ; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21600 / 15.1092-19 / MNHNSD 15.53	MNHNSD	Paratype
T. quadrilacinius	WIBF 043309	Male	1	Rio Guanajuma ; Valverde,PROV. ; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21597 / 15.1093-19 / MNHNSD 15.54	MNHNSD	Paratype
T. quadrilacinius	WIBF 043310	Male	1	Rio Guanajuma ; Valverde,PROV. ; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21603 / 15.1091-19 / MNHNSD 15.52	MNHNSD	Paratype
T. quadrilacinius	WIBF 043311	Female	1	Rio Guanajuma ; Valverde,PROV. ; VALVERDE,R.D. ; 6-IX-1980 ; Col.Marcano / 21598 / 15.1094-19 / MNHNSD 15.55	MNHNSD	Paratype
T. quadrilacinius	WIBF 043312	Female	1	Baguacima. Potrero ; Valverde,PROV. ; VALVERDE,R.D. ; 5-IV-1980 ; Cols. Marcano-Aquino / 15901 / 15.1135-19 / MNHNSD 15.93	MNHNSD	Paratype
T. quadrilacinius	WIBF 043313	Female	1	Baguacima. Potrero ; Valverde,PROV. ; VALVERDE,R.D. ; 5-IV-1980 ; Cols. Marcano-Aquino / 15881 / 15.1136-19 / MNHNSD 15.94	MNHNSD	Paratype
T. quadrilacinius	WIBF 043314	Female	1	La Angostusa. ; Bani, PROV. ; PERAVIA, R.D. ; 15-IX-1979 ; cols. Dguez. Reynoso / 09450 / 15.1134-19 / MNHNSD 15.92	MNHNSD	Paratype
T. quadrilacinius	WIBF 043315	Female	1	La Angostusa. ; Bani, PROV. ; PERAVIA, R.D. ; 15-IX-1979 ; cols. Dguez. Reynoso. / 08972 / 15.1133-19 / MNHNSD 15.91	MNHNSD	Paratype
T. quadrilacinius	WIBF 043316	Male	1	Matanzas. ; Bani, PROV. ; PERAVIA, R.D. ; 15-VII-1979 ; col. Dominguez. / 04348 / 15.1207-19 / MNHNSD 15.165	MNHNSD	Paratype
T. quadrilacinius	WIBF 043317	Male	1	El Numero. ; Azua, PROV. ; AZUA, R. D. ; 28-VI-1981 ; Cols. Reynoso-Aquino / 26098 / 15.1079-19 / MNHNSD 15.43	MNHNSD	Paratype
T. quadrilacinius	WIBF 043318	Male	1	El Numero. ; Azua, PROV. ; AZUA, R. D. ; 26.VI.1981 ; Cols. Reynoso-Aquino / 25931 / 15.1078-19 / MNHNSD 15.42	MNHNSD	Paratype
T. quadrilacinius	WIBF 043319	Female	1	Aeropuerto La Union ; Puerto Plata,PROV. ; PUERTO PLATA, R.D. ; 27-XII-1978. ; Col.Dominguez / 00584 / 15.1192-19 / MNHNSD 15.150	MNHNSD	Paratype
T. quadrilacinius	WIBF 043320	Male	1	Cumayasa. ; La Romana, PROV. ; LA ROMANA, R. D. ; 29-VII-1979 ; Col.Dominguez / 05017 / 15.1199-19 / MNHNSD 15.157	MNHNSD	Paratype
T. quadrilacinius	WIBF 043321	Male	1	Isla Cabrito. ; Descubierta,PROV. ; INDEPENDENCIA,R.D. ; 7-VII-1979 ; col.Marcano. / 04281 / 15.1198-19 / MNHNSD 15.156	MNHNSD	Paratype

T. quadrilacinius	WIBF 043322	Male	1	REPUBLICA DOMINICANA: La ; Altagracia, Bayahibe, ; Parque Nacional del Este, ; Guaraguao: Sendero Cueva ; del Puente, 12 June 2001, ; coll. Josue Herinquez / 15.1144-19 / MNHNSD 15.102	MNHNSD	Paratype
T. quadrilacinius	WIBF 043323		1	Republica Dominicana, ; Prov, Barahona, Pueblo ; Viejo, Espartillo, Parque ; Nacional Sierra de Bahoruco. ; 22.V.2003.B. Hierro / 15.1172-19 / MNHNSD 15.130	MNHNSD	Paratype
T. quadrilacinius	WIBF 043324	Male	1	REPUBLICA DOMINICANA ; San Cristobal, 43km ; NW Sto.Dgo. Rio ; Isabela, 16-VIII- ; 2001 H. Takizawa / 15.1174-19 / MNHNSD 15.132	MNHNSD	Paratype
T. quadrilacinius	WIBF 043325		1	Boca de Yoma.P.N.E ; 2-5-92 ; Felix del Monte / 36,416 / 15.1191-19 / MNHNSD 15.149	MNHNSD	Paratype
T. quadrilacinius	WIBF 043326	Male	1	REP.DOM:Prov.LaAltagracia ; Parque Nacional del Este ; 50m E. Caseta de Boca de ; Yuma. 03MAY1992. con red ; de barrido en la maleza / K. A. Guerrero y ; F. DelMonte colrs.	WIBF	Paratype
T. quadrilacinius	WIBF 043327	Male	1	DOM.REP:Prov.Hato Mayor ; Sabana de la Mar. hotel ; 31MAR-03APR1992. M.A. ; Ivie.D.S.Sikes.W.Lanier	WIBF	Paratype
T. quadrilacinius	WIBF 043328	Male	1	Pto.Plata ; Dom. Rep. ; Hurst	MCZ	Paratype
T. quadrilacinius	WIBF 043329	Male	1	Valverde Prov., ; REP. DOMINICANA ; 10 X 1967 / L. H. Rolston ; Collector	TAMU	Paratype
T. quadrilacinius	WIBF 043330	Male	1	Prov. Sanchez Ramirez ; Rep. Dominicana ; Cotul, El Muro ; On Foliage - 5/8/02 ; Gino Nearns	FSCA	Paratype
T. quadrilacinius	WIBF 043331	Male	1	La Moriniere ; Haiti III. ; 1-5. 1922. / About 125 ft. alt. ; F. 4638	AMNH	Paratype
T. quadrilacinius	WIBF 043332	Male	1	JuanaDiaz ; PuertoRico ; J.Micheli ; XI.1976	USNM	Paratype
T. guerreiroi	WIBF 043354	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35016	MNHNSD	Paratype
T. guerreiroi	WIBF 043355	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35027	MNHNSD	Paratype
T. guerreiroi	WIBF 043356	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; Matusik-Guerrero / 34980	MNHNSD	Paratype
T. guerreiroi	WIBF 043357	Male	1	Las Abejas, Sierra de ; Bahoruco ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. Matusik-Guerrero / 34979	MNHNSD	Paratype
T. guerreiroi	WIBF 043358	Male	1	Las Abejas, Sierra de ; Bahoruco ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. Matusik-Guerrero / 35036	MNHNSD	Paratype
T. abejaensis	WIBF 043359	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 34987	MNHNSD	Paratype
T. abejaensis	WIBF 043360	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35030	MNHNSD	Paratype
T. abejaensis	WIBF 043361	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35018	MNHNSD	Paratype

T. abejaensis	WIBF 043362	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35019	MNHNSD	Paratype
T. abejaensis	WIBF 043363	Male	1	Las Abejas ; Pedernales,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35012	MNHNSD	Paratype
T. abejaensis	WIBF 043364	Male	1	Las Abejas ; ,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 34985	MNHNSD	Paratype
T. abejaensis	WIBF 043365	Male	1	Las Abejas ; ,PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35026	MNHNSD	Paratype
T. abejaensis	WIBF 043366	Female	1	ALTO Bandera ; CONSTANZA ; La Vega, PROV. ; LA VEGA, R.D. ; [Unintelligible] 1/V/1988 ; H.L.DOMINguez / 32470	MNHNSD	Paratype
T. abejaensis	WIBF 043367	Male	1	ALTO BANDERA ; CONSTANZA ; La Vega, PROV. ; LA VEGA, R.D. ; 1/V/1988 ; col. ; H.L.DOMINguez / 32471 / 15.1129-19 / MNHNSD 15.87	MNHNSD	Paratype
T. abejaensis	WIBF 043368	Male	1	Loma Rucilla & ; mts.N.,Dom.Rep ; June´38,5-8,000 ft ; Darlington	MCZ	Paratype
T. abejaensis	WIBF 043369	Female	1	Loma Rucilla & ; mts.N.,Dom.Rep ; June´38,5-8,000 ft ; Darlington	MCZ	Paratype
T. abejaensis	WIBF 043370	Male	1	Loma Rucilla & ; mts.N.,Dom.Rep ; June´38,5-8,000 ft ; Darlington	MCZ	Paratype
T. abejaensis	WIBF 043371	Male	1	Camp Perrin ; nr 1000 ft. ; Oct.8-27 / Haiti ; 1934 ; Darlington / Museum of : Comparative ; Zoology	MCZ	Paratype
T. abejaensis	WIBF 043372	Female	1	Valle Nuevo ; SE Constanza ; Aug.´38,Dom.Rep ; c. 7,000 ft.,Darl.	MCZ	Paratype
T. abejaensis	WIBF 043373	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes, beating veg.	WIBF	Paratype
T. abejaensis	WIBF 043374	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes, beating veg.	WIBF	Paratype
T. abejaensis	WIBF 043375	Male	1	DOM.REP: Prov.Barahona ; 18km Cabral,Polo Rd. ; 1.5km SE Montear Nuevo ; 18°06.452´N,71°14.717´W ; 26JULY1999, 1020m	WIBF	Paratype
T. abejaensis	WIBF 043376	Female	1	DOM.REP.:Par.Nac.Almando ; Bermudez,Cordillera Cent. ; slopes of Pico del Yaque ; 04 Sep 1988, 1930-2415m ; beating in pine forest / M.A.Ivie,T.K.Philips ; & K.A.Johnson colrs.	WIBF	Paratype
T. abejaensis	WIBF 043377	Male	1	REPUBLICA DOMINICANA: La ; Vega, Constanza, Reserva ; Cientifica Ebano Verde, El ; Arroyazo, 18 September ; 1999 ; coll. D. Perez, S. Medrano, & / 15.1142-19 / MNHNSD 15.100	MNHNSD	Paratype
T. darlingtoni	WIBF 041541		1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 041542	Male	1	DOMINICAN REPUBLIC:Prov. ; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W. Dunkle	WIBF	Paratype
T. darlingtoni	WIBF 041544		1	DOMINICAN REP.:Prov. ; Barahona, nr.Filipinas ; Larimar Mine:20-26- ; VI-1992: Woodruff, ; Landolt,& Skelley	FSCA	Paratype
T. darlingtoni	WIBF 042816	Female	1	Cape Haitien, ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype

T. darlingtoni	WIBF 042817	Female	1	NE foothills ; La Hotte ; 2-4000ft. ; Oct.10-24 / Haiti ; 1934 ; Darlington / Museum of : Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042818	Female	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042819	Female	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042820	Female	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042821	Female	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042822	Female	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042823	Female	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042824	Female	1	Hinoha Hayti ; July Ependarn / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042825	Female	1	Camp Perrin ; nr 1000 ft. ; Oct. 8-27 / Haiti ; 1934 ; Darlington / Museum of : Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042826	Female	1	Camp Perrin ; nr 1000 ft. ; Oct. 8-27 / Haiti ; 1934 ; Darlington / Museum of : Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042827	Male	1	Constanza to ; Jarabacoa ; Aug'38, Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	Paratype
T. darlingtoni	WIBF 042828	Male	1	Constanza to ; Jarabacoa ; Aug'38, Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	Paratype
T. darlingtoni	WIBF 042829	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042830	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042831	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042832	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042833	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042834	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042835	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042836	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042837	Male	1	Grande Riviere ; Hayti, Mann / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042838	Male	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042839	Male	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042840	Male	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042841	Male	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042842	Male	1	Grande Riviere . ; W.M.MannHaiti / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 042843	Male	1	Constanza ; Aug.'38,Dom.Rep ; 3-4,000 ft. ; Darlington	MCZ	Paratype
T. darlingtoni	WIBF 042844	Male	1	Mt. Quita- ; Espuela, Dom. Rep. ; July'38,2-3,000 ft. ; Darlington	MCZ	Paratype
T. darlingtoni	WIBF 042845	Male	1	Mt. Diego de ; Ocampo, Dom. Rep. ; July'38,3-4,000 ft. ; Darlington	MCZ	Paratype
T. darlingtoni	WIBF 042846	Male	1	gr. Riviere	MCZ	Paratype
T. darlingtoni	WIBF 042847	Male	1	Higueral, S. Dom. ; II.1914 / Male	AMNH	Paratype

T. darlingtoni	WIBF 042848	Female	1	Higueral, S. Dom. ; II.1914 / Female	AMNH	Paratype
T. darlingtoni	WIBF 042849	Female	1	Higueral, S. Dom. ; II.1914 / Female	AMNH	Paratype
T. darlingtoni	WIBF 042850	Female	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F. 4644	AMNH	Paratype
T. darlingtoni	WIBF 042851	Female	1	Aux Caves, Haiti ; Mch. 15-20, '22 ; F. 4644	AMNH	Paratype
T. darlingtoni	WIBF 042852	Female	1	DOMINICAN REP.: Prov. ; Barahona, near Filipinas ; Larimar Mine ; 26-VI/7-VIII-1992 ; F. W. Skillman Jr. ; beating	FSCA	Paratype
T. darlingtoni	WIBF 042853	Female	1	DOMINICAN REP.: Prov. ; Barahona, near Filipinas ; Larimar Mine ; 26-VI/7-VIII-1992 ; F. W. Skillman Jr. ; beating	FSCA	Paratype
T. darlingtoni	WIBF 042854	Female	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042855	Female	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042856	Female	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042857	Female	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042858	Female	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042859	Female	1	DOMIN.REP : Prov. Pedernales ; Par.Nac.Sierra de Baoruco ; 42.5km N. El Aceitiller ; 09AUG1999, 1495m ; M.A. Ivie colr.	WIBF	Paratype
T. darlingtoni	WIBF 042860	Female	1	DOMIN.REP : Prov.Hato Mayor ; 3 km S. Sabana de la Mar ; 19°01.800 'N, 69°29.092 'W ; 04AUG1999, 20m ; M.A.Ivie & K.A.Guerrero	WIBF	Paratype
T. darlingtoni	WIBF 042861	Female	1	DOMIN.REP : Prov.Hato Mayor ; 3 km S. Sabana de la Mar ; 19°01.800 'N, 69°29.092 'W ; 04AUG1999, 20m ; M.A.Ivie & K.A.Guerrero	WIBF	Paratype
T. darlingtoni	WIBF 042862	Female	1	DOMIN.REP : Prov.Hato Mayor ; 3kmS. Sabana de la Mar, 21m ; 19°01.800 'N, 69°29.092 'W ; 04AUG1999, M.A.Ivie ; dead logs and fungus	WIBF	Paratype
T. darlingtoni	WIBF 042863	Female	1	DOM REP : Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating	WIBF	Paratype
T. darlingtoni	WIBF 042864	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042865	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype

T. darlingtoni	WIBF 042866	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042867	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042868	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. darlingtoni	WIBF 042869	Female	1	DOM.REP:Hato Mayor ; 3km S. Sabana de la Mar ; 19.03°N, 69.385°W ; 04 AUG 1999, 21m ; R. S. Miller colr	WIBF	Paratype
T. darlingtoni	WIBF 042870	Female	1	DOM.REP:Hato Mayor ; 3km S. Sabana de la Mar ; 19.03°N, 69.385°W ; 04 AUG 1999, 21m ; R. S. Miller colr	WIBF	Paratype
T. darlingtoni	WIBF 042871	Female	1	Paso de la Vaca ; Mons. Nouel- ; Constanza Rd, ; Prov. La Vega, ; R. D. ; Dec. 27, 1955. ; Alt. 1500 m. / J. Maldonado. ; Caprilles, Coll.	NMNH	Paratype
T. darlingtoni	WIBF 042872	Female	1	♀ / Mariani ; Haiti 10-27-'25 ; WAHoffman	NMNH	Paratype
T. darlingtoni	WIBF 042873	Female	1	Haiti No 363-25 ; Kenscoff. Haiti ; April 4 1927 ; ♀ / G.N.Wolcott ; Coll.	NMNH	Paratype
T. darlingtoni	WIBF 042874	Female	1	Petionville ; Haiti. Jul.8 ; [Unintelligible] ; # 89. 1931 / ♀	NMNH	Paratype
T. darlingtoni	WIBF 042875	Female	1	At Blanton mine N. of ; San Christobal,R.Dom. ; ♀ July 27, 1917 (377). ; Harold Morrison.	NMNH	Paratype
T. darlingtoni	WIBF 042876	Female	1	♀ / BassinBlen ; Tortne [Unintelligible] ; Haiti ECA ; GMLeonard / Apr' ug ; #23	NMNH	Paratype
T. darlingtoni	WIBF 042877	Female	1	DOMINICAN REP.:Prov. ; Barahona.nr.Filipinas ; Larimar Mine: 26-VI-7- ; VII-1992: Woodruff & ; Skelley. day beating	FSCA	Paratype
T. darlingtoni	WIBF 042878	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042879	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042880	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042881	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042882	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042883	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042884	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042885	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype

T. darlingtoni	WIBF 042886	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042887	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042888	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042889	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042890	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042891	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042892	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042893	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042894	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042895	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042896	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042897	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042898	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042899	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 21 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042900	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042901	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042902	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042903	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042904	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype

T. darlingtoni	WIBF 042905	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042906	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042907	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042908	Male	1	DOM REP:Barahona Prov. ; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms	WIBF	Paratype
T. darlingtoni	WIBF 042909	Male	1	Grande Riviere . ; W.M.MannHaiti / WMMann ; Coll. ; 1954	USNM	Paratype
T. darlingtoni	WIBF 042910	Male	1	Grande Riviere . ; W.M.MannHaiti / WMMann ; Coll. ; 1954	USNM	Paratype
T. darlingtoni	WIBF 042911	Male	1	Grande Riviere . ; W.M.MannHaiti / WMMann ; Coll. ; 1954	USNM	Paratype
T. darlingtoni	WIBF 042912	Male	1	Haiti ; Kenscoff ; VIII-11-35 / Sta 23 ; Blackwelder	USNM	Paratype
T. darlingtoni	WIBF 042913	Male	1	8 miles west Jayaco, la Vega Prov., ; Republica Dominicana ; August 3, 1967 ; J. C. Schaffner	TAMU	Paratype
T. darlingtoni	WIBF 042914	Male	1	Sanchez,Dom.Rep. ; July'38 ; Darlington	CAS	Paratype
T. darlingtoni	WIBF 042915	Male	1	Higueral, S.Dom. ; II.1914 / Male	CAS	Paratype
T. darlingtoni	WIBF 042916	Male	1	Higueral, S.Dom. ; II.1914 / Male	ANSP	Paratype
T. darlingtoni	WIBF 042917	Male	1	HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL.	FSCA	Paratype
T. darlingtoni	WIBF 042918	Male	1	HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL.	FSCA	Paratype
T. darlingtoni	WIBF 042919	Male	1	HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL.	FSCA	Paratype
T. darlingtoni	WIBF 042920	Female	1	HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL.	FSCA	Paratype
T. darlingtoni	WIBF 042921	Female	1	HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL.	FSCA	Paratype
T. darlingtoni	WIBF 042922	Female	1	Haiti ; Kenscoff ; VIII-11-35 / Sta 23 ; Blackwelder	USNM	Paratype
T. darlingtoni	WIBF 042923	Female	1	Cape Haitien, ; W.M.MannHaiti / WMMann ; Coll. ; 1954	USNM	Paratype
T. darlingtoni	WIBF 042924	Female	1	Furcy, 4000' ; Haiti 10-vii-1956 ; B&B Valentine / R.S.Miller ; Collection	WIBF	Paratype
T. darlingtoni	WIBF 042925	Female	1	Morne Guimby, 22 km. ; SE. Fond Verrettes, ; Haiti 20-vii-1956 ; 6500' B.&B. Valentine / Foret des Pins, ; Hardwood cloud ; forest, beating. / R.S.Miller ; Collection	WIBF	Paratype
T. darlingtoni	WIBF 042926	Female	1	DOM.REP: Prov. La Vega ; Jarabacoa-El Rio Rd. ; 910m. 11APR1992.M.Ivie ; D.Sikes & W.Lanier	WIBF	Paratype
T. darlingtoni	WIBF 042927	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042928	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042929	Female	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype

T. darlingtoni	WIBF 042930	Female	1	DOM. REPUBLIC ; Puerto Plata Prov. ; 14 km. W. P. Plata ; V-11-1985 ; J.E. Wappes	WIBF	Paratype
T. darlingtoni	WIBF 042931	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042932	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042933	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042934	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042935	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042936	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042937	Male	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. darlingtoni	WIBF 042938	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042939	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042940	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042941	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042942	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 19 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042943	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 042944	Male	1	DOMIN.REP : Prov. Pedernales ; Par.Nac.Sierra de Baoruco ; 42.5km N. El Aceitiller ; 09AUG1999, 1495m ; M.A. Ivie colr.	WIBF	Paratype

T. darlingtoni	WIBF 042945	Male	1	DOMINICAN REPUBLIC:Prov. ; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W. Dunkle	WIBF	Paratype
T. darlingtoni	WIBF 042946	Male	1	DOMINICAN REP.:Prov. ; Barahona.nr.Filipinas ; Larimar Mine: 20-26- ; VI-1992: Woodruff, ; Landolt, & Skelley	FSCA	Paratype
T. darlingtoni	WIBF 042947	Male	1	DOMINICAN REPUBLIC: Barahona Prov.,near ; Filipinas Larimar ; Mine ; 1/6-VII-1992 ; F.W.Skillman Jr.	FSCA	Paratype
T. darlingtoni	WIBF 042948	Male	1	HAITI: Dept. Sud-Oueste ; Massif de La Selle ; Morne d'Enfer 1850m. ; 15-V-1984 M.C. Thomas	WIBF	Paratype
T. darlingtoni	WIBF 042949	Male	1	R.DOMINICANA, LA CUMBRE ; DE PUERTO PLATA. 2000' ; MAY 8-9 1985 ; E.GIESBERT, COLL.	WIBF	Paratype
T. darlingtoni	WIBF 042950	Male	1	Sanchez.R.II ; III.29-IV.1916 / Male	AMNH	Paratype
T. darlingtoni	WIBF 042951	Male	1	Higueral,R.D. ; Apr.10.1913 / J.R.Johnston ; Coll. / P. R. S. G. A. ; Ac.No. 844 1913 / Male	NMNH	Paratype
T. darlingtoni	WIBF 042952	Male	1	San Lorenzo, ; R.Dom. VI 27-29,15 / Female	AMNH	Paratype
T. darlingtoni	WIBF 042953	Male	1	At Blanton mine N. of ; San Christobal,R.Dom. ; July 26, 1917 (374). ; Harold Morrison ♂	NMNH	Paratype
T. darlingtoni	WIBF 043070	Female	1	REPUBLICA DOMINICANA ; Monsenor Nouvel ; La Presa de Blanco ; 11-14-V-2001 ; H. Takizawa / 15.1151-19 / MNHNSD 15.109	MNHNSD	Paratype
T. darlingtoni	WIBF 043071	Female	1	DOM.REP:Prov.Pedernales ; Las Abejas, 1225m ; 18.1504'N, 71.6231°W ; 09 AUG 1999 ; R.S.Miller colr	WIBF	Paratype
T. darlingtoni	WIBF 043072	Male	1	DOM.REP:Prov.Pedernales ; 30.5km N.Cabo Rojo ; 18°07.28'N, 71°35.84'W ; 20 JULY 1999. 995m ; R.S.Miller colr.	WIBF	Paratype
T. darlingtoni	WIBF 043073	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043074	Female	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043075	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043076	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043077	Female	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043078	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043079	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043080	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype

T. darlingtoni	WIBF 043081	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043082	Male	1	DOM.REP:Prov.Pedernales ; P.N.Sierra Baoruco ; 32km,N Cabo Rojo. 1285m ; 18°07.36'N, 71°34.66'W ; 26JULY1999.R.S.Miller ; Aggregation #1	WIBF	Paratype
T. darlingtoni	WIBF 043083	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	Paratype
T. darlingtoni	WIBF 043084	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	Paratype
T. darlingtoni	WIBF 043085	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	Paratype
T. darlingtoni	WIBF 043086	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	Paratype
T. darlingtoni	WIBF 043087	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 970-1080m, 23JULY1993 ; D.S.Sikes & R.Rosenfeld	WIBF	Paratype
T. darlingtoni	WIBF 043088	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. darlingtoni	WIBF 043089	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. darlingtoni	WIBF 043090	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.Armando Bermudez ; LaCienaga-LosTablones ; 1100-1245m, 09 APR 1992 ; M.A.Ivie.D.S.Sikes.W.Lanier	WIBF	Paratype
T. darlingtoni	WIBF 043091	Male	1	DOMIN.REP : Prov. Pedernales ; Par.Nac.Sierra de Baoruco ; Las Abejas, 09AUG1999,1250m ; 18°09.023'N, 71°37.387'W ; M.A.Ivie & K.A.Guerrero / at ; light	WIBF	Paratype
T. darlingtoni	WIBF 043092	Male	1	DOMIN.REP : Prov. Pedernales ; Par.Nac.Sierra de Baoruco ; Las Abejas, 09AUG1999,1250m ; 18°09.023'N, 71°37.387'W ; M.A.Ivie & K.A.Guerrero / at ; light	WIBF	Paratype
T. darlingtoni	WIBF 043093	Female	1	DOMIN.REP : Prov.Hato Mayor ; 3 km S. Sabana de la Mar ; 19°01.800 'N, 69°29.092 'W ; 04AUG1999, 20m ; M.A.Ivie & K.A.Guerrero	WIBF	Paratype
T. darlingtoni	WIBF 043094	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 043095	Female	1	DOM.REP:Prov.Pedernales ; Sierra de Bahoruco, 215m ; Rio Bananna,s.Los Arroyos ; 18°09.2905'N,71°45.540'W ; 21 JULY 1999, R.S.Miller	WIBF	Paratype
T. darlingtoni	WIBF 043096	Female	1	DOM.REP : Prov.HatoMayor ; W. Sabana de la Mar ; Par. Nac. Los Haitises ; bosque humido. 16 APR ; 1992. M. A. Ivie colr	WIBF	Paratype
T. darlingtoni	WIBF 043097	Female	1	DOM.REP: Pr.Pedernales ; Las Abejas, 1225m ; 18°09.032'N, 71°37.475W ; 22 JULY-09 AUG 1999 ; Ivie etal.Malaise trap	WIBF	Paratype
T. darlingtoni	WIBF 043098	Male	1	DOM.REP:ProvHatoMayor ; Par.Nac.Los Haitises ; 01-02APR1992, bosque ; humido,W.Sabana dlMar ; M.Ivie,D.Sikes,Lanier	WIBF	Paratype

T. darlingtoni	WIBF 043099	Male	1	Wenskoff,Haiti ; VII 1941 ; Payne 1450 m	MCZ	Paratype
T. darlingtoni	WIBF 043100	Female	1	Constanza to ; Jarabacoa ; Aug'38, Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	Paratype
T. darlingtoni	WIBF 043101	Female	1	HAITI: 3 MI. EAST ; KENSCOFF V.30 1973 / B. K. DOZIER ; COLL.	FSCA	Paratype
T. darlingtoni	WIBF 043102	Male	1	Higueral.S.Dom. ; II.1914 / Male	AMNH	Paratype
T. darlingtoni	WIBF 043103	Male	1	DOMINICAN REP.: Prov. ; Barahona,nr. Filipinas, ; Larimar Mine;20-26-VI- ; 1992; R.E. Woodruff & ; P.E.Skelley, at light / -2	FSCA	Paratype
T. darlingtoni	WIBF 043104	Female	1	REPUBLICA DOMINICANA ; Monsenor Nouvel ; La Presa de Blanco ; 11-14-V-2001 ; H. Takizawa / 15.1150-19 / MNHNSD 15.108	MNHNSD	Paratype
T. darlingtoni	WIBF 043105	Female	1	REPUBLICA DOMINICANA: La ; Vega, Jarabacoa, PN ; Armando Bermudez ; Los Tablones (19°3'308", ; 70°53'49"), 1278 m, 20 July ; 2002, coll. Sardis Medrano / 15.1149-19 / MNHNSD 15.107	MNHNSD	Paratype
T. darlingtoni	WIBF 043106	Female	1	REPUBLICA DOMINICANA: La ; Vega, Jarabacoa, La ; Cienega de Manabao ; 15 February 2000 ; coll. Josue Henriquez / 15.1185-19 / MNHNSD 15.143	MNHNSD	Paratype
T. darlingtoni	WIBF 043107	Male	1	REPUBLICA DOMINICANA: La ; Vega, Constanza, La ; Ondonada, 12-13 July 1998 ; coll. Santo Navarro & Denia ; Veloz / 15.1186-19 / MNHNSD 15.144	MNHNSD	Paratype
T. darlingtoni	WIBF 043108	Female	1	REP. DOM: La Vega, Jarabacoa ; La Cienega de Manabao ; 8-II-2001 ; Josue Henriques / 15.1157-19 / MNHNSD 15.115	MNHNSD	Paratype
T. darlingtoni	WIBF 043109	Female	1	REP. DOM: La Vega, Jarabacoa ; La Cienega de Manabao ; 8-II-2001 ; Josue Henriques / 15.1156-19 / MNHNSD 15.114	MNHNSD	Paratype
T. darlingtoni	WIBF 043110	Female	1	REPUBLICA DOMINICANA: La ; Vega, Constanza, El ; Aguacate, 19-16 July 1998 ; coll. S. Medrano, D. Veloz, & ; S. Navarro / 15.1171-19 / MNHNSD 15.129	MNHNSD	Paratype
T. darlingtoni	WIBF 043111	Female	1	REPUBLICA DOMINICANA: La ; Altagracia, Bayahibe, ; Parque Nacional del Este, ; Guaraguao Sendero Cueva ; del Puente, 12 June 2001, ; coll. Josue Herinquez / 15.1143-19 / MNHNSD 15.101	MNHNSD	Paratype
T. darlingtoni	WIBF 043112	Female	1	REPUBLICA DOMINICANA: ; Duarte, San Francisco de ; Macoris, Laguna Cano ; Santana, 30 June 1999 ; coll. Santo Navarro & Denia ; Veloz / 15.1177-19 / MNHNSD 15.135	MNHNSD	Paratype
T. darlingtoni	WIBF 043113	Female	1	REPUBLICA DOMINICANA: ; Monsenor Nouel, Bonao, ; Blanco, Sende[Unintelligible]os ; 13 May 2001 ; coll. C. A. Nunez y Haruo ; Matsuzawa / 15.1162-19 / MNHNSD 15.120	MNHNSD	Paratype
T. darlingtoni	WIBF 043114	Male	1	Higueral ; Sto Domingo ; W.I.II-1914 / E.G.Smyth ; Collector / F.R.MasonColl. / 2 / ac22926	AMNH	Paratype
T. darlingtoni	WIBF 043115	Male	1	Pt.au Prince ; Haiti ; R.J.Crew ♂ / ex coll. ; Wickham	NMNH	Paratype
T. darlingtoni	WIBF 043116	Male	1	Acc.363-25. ; Port au Prince. ♂ ; Haiti June 1925 / G.N.Wolcott ; Coll.	NMNH	Paratype

T. darlingtoni	WIBF 043117	Male	1	REP.DOM.: Barahona, Cachote, ; Finca de Vigilio Uceta (18°6'53"N, ; 71°11'649"W), 1235 m, 30 June ; 2004, coll. K.Guerrero,D.Lawrie,& ; D.Veloz / Photographed ; 2002-2003 ; CBSD / 15.1181-19 / MNHNSD 15.139	MNHNSD	Paratype
T. darlingtoni	WIBF 043118	Female	1	REP.DOM:Monse or Noel ; Bonao, Loma el pichon ; 27-30.VI, 1998 ; D. Veloz y S. Navarro / 15.1165-19 / MNHNSD 15.123	MNHNSD	Paratype
T. darlingtoni	WIBF 043119	Male	1	REP.DOM:Monse or Noel ; Bonao, Loma el pichon ; 27-30.VI, 1998 ; D. Veloz y S. Navarro / 15.1165-19 / MNHNSD 15.124	MNHNSD	Paratype
T. darlingtoni	WIBF 043120	Male	1	REPUBLICA DOMINICANA ; Hato Mayor ; nr. San Rafael ; 27-IV-2001 ; H. Takizawa / 15.1176-19 / MNHNSD 15.134	MNHNSD	Paratype
T. darlingtoni	WIBF 043121	Male	1	Herrero ; DISTRITO NACIONAL ; Rep. Dom. ; 18-IV-1985 ; col. Reynoso / 31150 / 15.1114-19 / 15.1115-19 / MNHNSD 15.73	MNHNSD	Paratype
T. darlingtoni	WIBF 043122	Male	1	Herrero ; DISTRITO NACIONAL ; Rep. Dom. ; 18-IV-1985 ; col. Reynoso / 31152	MNHNSD	Paratype
T. darlingtoni	WIBF 043123	Male	1	LAS Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35033	MNHNSD	Paratype
T. darlingtoni	WIBF 043124	Male	1	LAS Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35020	MNHNSD	Paratype
T. darlingtoni	WIBF 043125	Female	1	LA Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 34996	MNHNSD	Paratype
T. darlingtoni	WIBF 043126	Male	1	LAS Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35021	MNHNSD	Paratype
T. darlingtoni	WIBF 043127	Male	1	LAS Abejas ; PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35028	MNHNSD	Paratype
T. darlingtoni	WIBF 043128	Male	1	LAS Abejas ; PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; Matusik-Guerrero / 35024	MNHNSD	Paratype
T. darlingtoni	WIBF 043129	Male	1	LAS Abejas ; PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols, ; Matusik-Guerrero / 34983	MNHNSD	Paratype
T. darlingtoni	WIBF 043130	Female	1	LAS Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols, ; Matusik-Guerrero / 34981	MNHNSD	Paratype
T. darlingtoni	WIBF 043131	Male	1	LAS Abejas ; Sierra Baharoco ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; Matusik-Guerrero / 35007	MNHNSD	Paratype
T. darlingtoni	WIBF 043132	Female	1	LAS Abejas Sierra ; Baharoco ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. Matusik-Guerrero / 34998	MNHNSD	Paratype
T. darlingtoni	WIBF 043133	Male	1	Las Abejas, Sierra ; Baharoco ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. Matusik.Guerrero / 34982	MNHNSD	Paratype
T. darlingtoni	WIBF 043134	Female	1	ALTO BANDERA ; CONSTANZA ; La Vega, PROV. ; LA VEGA, R. D. ; I/V/1988 ; col. ; H. L. DOMINGUEZ / 32469	MNHNSD	Paratype

T. darlingtoni	WIBF 043135	Male	1	ALTO BANDERA ; CONSTANZA ; La Vega, PROV. ; LA VEGA, R. D. ; I/V/1988 ; col. ; H. L. DOMINGUEZ / 32472 / 15.1130-19 / MNHNSD 15.88	MNHNSD	Paratype
T. darlingtoni	WIBF 043136	Female	1	Salto de las Aguas ; blancas. ; Constanza, PROV. ; LA VEGA, R. D. ; 17-VIII-1979 ; col. Marcano Hijo-Dguez. / 06294	MNHNSD	Paratype
T. darlingtoni	WIBF 043137	Female	1	Salto de las Aguas ; blancas. ; Constanza, PROV. ; LA VEGA, R. D. ; 17-VIII-1979 ; col. Dguez-Marcano Hijo. / 06295	MNHNSD	Paratype
T. darlingtoni	WIBF 043138	Female	1	Las Abejas, Sierra ; Baharoco ; PROV. ; PEDERNALES,R.D. ; 19-VI-1989 ; cols. Matusik-Guerrero / 34243 / 15.1118-19 / MNHNSD 15.76	MNHNSD	Paratype
T. darlingtoni	WIBF 043139	Male	1	El Majagual. ; Azua, PROV. ; AZUA, R. D. ; 22-VII-1979 ; Dominguez-Marcano. Reynoso / 04728 / 15.1206-19 / MNHNSD 15.164	MNHNSD	Paratype
T. darlingtoni	WIBF 043140	Female	1	El Manaclar ; San Jose' de Ocoa ; RB-4-19[Unintelligible] ; Cicero-Marcano. / 02485 / 15.1127-19 / MNHNSD 15.85	MNHNSD	Paratype
T. darlingtoni	WIBF 041710	Male	1	GrandeRiviere; W.M. MannHaiti/ Museum of; Comparative; Zoology	MCZ	Paratype
T. darlingtoni	WIBF 041711	Male	1	DOM. REP: Prov. Pedernales; 24 km N. Cabo Rojo, 610m; 20 AUG 1988, wet forest; M. Ivie, Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 041712	Male	1	D.R.: Las Abejas; 1300m, cloud forest; S.A. Marshall	DEBU	Paratype
T. darlingtoni	WIBF 041713	Male	1	Mt. Diego de ; Ocampo, Dom. Rep. ; July'38,3-4,000 ft. ; Darlington	MCZ	Paratype
T. darlingtoni	WIBF 041714	Male	1	DOM. REP: Prov. Pedernales; 24 km N. Cabo Rojo, 610m; 20 AUG 1988, wet forest; M. Ivie, Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 041715	Male	1	DOM. REP: Prov. Pedernales; 24 km N. Cabo Rojo, 610m; 20 AUG 1988, wet forest; M. Ivie, Philips & Johnson	WIBF	Paratype
T. darlingtoni	WIBF 041716	Male	1	Haiti 3 MI. East; Kenscoff; V.30.1973/ B.K. Dozier/ coll.	FSCA	Paratype
T. humeralis	WIBF 043054	Male	1	Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000 ft.,July'38 ; Darlington	MCZ	Paratype
T. humeralis	WIBF 043055	Male	1	Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000 ft.,July'38 ; Darlington	MCZ	Paratype
T. humeralis	WIBF 043056		1	Mt.Diego de ; Ocampo,Dom.Rep ; 3-4,000 ft.,July'38 ; Darlington / R.S.Miller ; Collection	MCZ	Paratype
T. humeralis	WIBF 043057	Male	1	Constanza ; Aug.'38,Dom.Rep ; 3-4,000 ft. ; Darlington	MCZ	Paratype
T. humeralis	WIBF 043058	Female	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. humeralis	WIBF 043059	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. humeralis	WIBF 043060	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m. 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. humeralis	WIBF 043061	Male	1	DominRep ; Jarabacoa / Nov 1950 ; NLHKrauss	USNM	Paratype
T. humeralis	WIBF 043062	Female	1	REP.DOMINICANA ; La Cumbre(P.Plata) ; 380m,21-24.III.78 ; L.Masner,malaise	CNC	Paratype
T. humeralis	WIBF 043063	Female	1	Higueral.S.Dom. ; II.1914 / Female	AMNH	Paratype

T. humeralis	WIBF 043064	Female	1	DOM REP:Pedernales ; Prov. 25.5km N Cabo ; Rojo 19-21-V-1991 ; M.C.Thomas, beating / Michael ; thomas	WIBF	Paratype
T. humeralis	WIBF 043065	Male	1	R.DOMINICANA, LA CUMBRE ; DE PUERTO PLATA. 2000' ; MAY 8-9, 1985 ; E.GIESBERT. COLL.	WIBF	Paratype
T. humeralis	WIBF 043066	Male	1	DOM.REP:Prov.Pedernales ; 24 km N.Cabo Rojo, 610m ; 20 AUG 1988,wet forest ; M.Ivie.Philips & Johnson	WIBF	Paratype
T. humeralis	WIBF 043067	Female	1	DOMIN.REP : Prov.Hato Mayor ; 3 km S. Sabana de la Mar ; 19°01.800 'N, 69°29.092 'W ; 04AUG1999, 20m ; M.A.Ivie & K.A.Guerrero	WIBF	Paratype
T. humeralis	WIBF 043068	Male	1	REP.DOM:Pedernales ; Prov.Sierra Baoruco ; 30 km N.Cabo Rojo ; 2400' XII-31-1986 ; Doyen & Santiago	EMEC	Paratype
T. humeralis	WIBF 043069	Male	1	DOM.REP:Prov.Pedernales ; P.N. Sierra de Baoruco ; Las Abejas, 1240m ; 18°09.023'N, 71°37.387'W ; 09 AUG 1999, M.A.Ivie	WIBF	Paratype
T. humeralis	WIBF 043295	Male	1	DOMIN.REP:Prov.Pedernales ; P.N.SierradeBaoruco, 1240m ; 18°09.023'N.71°37.387'W ; LasAbejas,09AUG1999,light ; M.A.Ivie & K.A.Guerrero	WIBF	Paratype
T. humeralis	WIBF 043296	Female	1	DOMIN.REP : Prov. Pedernales ; P.N.Sierra Baoruco, 1285m ; 32km N CaboRojo,pine for ; 18°07.360 'N, 71°34.657 'W ; 22 JULY 1999, M. A. Ivie / aggregation ; #1	WIBF	Paratype
T. humeralis	WIBF 043297	Female	1	DOMIN.REP : Prov. Pedernales ; Par.Nac.Sierra de Baoruco ; Las Abejas, 09AUG1999,1250m ; 18°09.023'N, 71°37.387'W ; M.A.Ivie & K.A.Guerrero / at ; light	WIBF	Paratype
T. humeralis	WIBF 043298	Female	1	DOMIN.REP:Prov.Pedernales ; N. of Pedernales, 188m ; La Aguita, 21 JULY 1999 ; 18°09.172'N, 71°44.786'W ; M.A.Ivie,Guerrero&Dominici	WIBF	Paratype
T. humeralis	WIBF 043299	Male	1	DOM.REP:Prov.Pedernales ; 23km N. Cabo Rojo, 612m ; 18°06'N, 71°38'W ; 09 JULY 1993, beating ; D.Sikes & R.Rosenfeld	WIBF	Paratype
T. humeralis	WIBF 043300	Female	1	DOM.REP:Prov.Hato Mayor ; W. Sabana de la Mar ; Par. Nac. Los Haitises ; bosque humido,01JULY1992 ; M.A. & R.O.Ivie colrs	WIBF	Paratype
T. humeralis	WIBF 043301	Male	1	Constanza ; Aug.'38,Dom.Rep ; 3-4,000 ft. ; Darlington	MCZ	Paratype
T. humeralis	WIBF 043302		1	Colonia[unintelligible].V. ; 1000 m 1974 / Rep. Dominic. ; J.& S.Klapperich /		Paratype
T. humeralis	WIBF 043303	Male	1	Dominican Republic ; RD-126 Santiago Prov., ; Caseta Parque en Diferencia, ; PNAB, 740 m, 19°16.313'N ; 71°03.132'W,8.iv.2003,D. ; Perez, R. Bastardo, B. Hierro / 15.1179-19 / MNHNSD 15.137	MNHNSD	Paratype
T. humeralis	WIBF 043304	Female	1	REP. DOM: La Vega, Jarabacoa ; La Cienega de Manabao ; 8-II-2001 ; Josue Henriquez / 15.1160-19 / MNHNSD 15.118	MNHNSD	Paratype
T. humeralis	WIBF 043305	Female	1	REPUBLICA DOMINICANA: ; Provincia La Vega, Trail Los ; Tablones-La Cienega, P.N. ; A. Bermudez, 20 July 2002, ; coll. D. Perez, B. Hierro, R. ; Bastardo / Photographed ; 2002-2003 ; CBSD / 15.1146-19 / MNHNSD 15.104	MNHNSD	Paratype

T. thomasi	WIBF 043013	Female	1	Dominican Republic ; Prov. La Ramana ; H lgueral, 7MAY1978 ; R.E.Woodruff. & G.B. ; Fairchild	FSCA	Paratype
T. thomasi	WIBF 043014	Female	1	DOMINICAN REPUBLIC:PR. ; LA ROMANA, RUTA HIGUEY ; SANTONI, 2KM. S.W. OF ; RIO CHAVON, X-85 ; WOODRUFF & STANGE	FSCA	Paratype
T. thomasi	WIBF 043015	Female	1	Acc 116-24 I[Unintelligible] ; Gona[Unintelligible]ve[Unintelligible], Haiti. ; Aug. 23, 1924 / A.E. Vinson ; Collector /	USNM	Paratype
T. thomasi	WIBF 043016	Female	1	DOM.REP:Barahona Prov. ; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms / Michael Thomas	FSCA	Paratype
T. thomasi	WIBF 043017	Male	1	DOM.REP:Barahona Prov. ; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms / Michael Thomas	FSCA	Paratype
T. thomasi	WIBF 043018	Male	1	DOM.REP:Barahona Prov. ; 4.5km S Barahona ; 18-V-1992 M.C. Thomas ; on flowers of ; tropical almond	FSCA	Paratype
T. thomasi	WIBF 043141	Male	1	Las Abejas ; Oviedo,PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik.-Guerrero / 34989	MNHNSD	Paratype
T. thomasi	WIBF 043142	Male	1	La Cumbre. ; Puerto Plata,PROV. ; PUERTO PLATA,R.D. ; 16-VI-1976 ; Col.Dominguez. ; Luz. / 08222 / 15.1132-19 / MNHNSD 15.90	MNHNSD	Paratype
T. thomasi	WIBF 043143	Female	1	La Cumbre. ; Puerto Plata,PROV. ; PUERTO PLATA,R.D. ; 16-VI-1976 ; Col.Dominguez. ; Luz. / 08263 / 15.1131-19 / MNHNSD 15.89	MNHNSD	Paratype
T. thomasi	WIBF 043144	Male	1	Bayahibe ; La Romana, PROV. ; LA ROMANA, R. D ; 9-VIII-1979 ; Cols. ; Marcano-Mota-Reyoso / 05362 / 15.1189-19 ; MNHNSD 15.147	MNHNSD	Paratype
T. thomasi	WIBF 043145	Male	1	REPUBLICA DOMINICANA ; Santo Domingo,Parque ; Mirador del Norte ; 17-VI-2001 ; H. Takizawa / 15.1170-19 / MNHNSD 15.128	MNHNSD	Paratype
T. thomasi	WIBF 043146	Female	1	Dominican Republic ; RD-156 Azua Prov., ; Barreras, La Furnia, ; 18°19.289'N 70°54.755'W, ; 18.vii.2003, D. Perez, R. ; Bastardo, B. Hierro. (n) / 15.1184-19 / MNHNSD 15.142	MNHNSD	Paratype
T. thomasi	WIBF 043147	Female	1	REPUBLICA DOMINICANA ; Pedernales ; Oviedo, stream side ; 5-8-VI-2001 ; H. Takizawa / 15.1152-19 / MNHNSD 15.110	MNHNSD	Paratype
T. thomasi	WIBF 043148	Male	1	Dominican Republic ; RD-141 Independencia ; Prov.,Rio Las Damas, 1 km S ; Duverge, Parque Nacional / Sierra de Bahoruco, ; 18°22.284'N 71°31.940'W, ; 5.vii.2003,D.Perez, R. ; Bastardo, B. Hierro. (d) / 15.1183-19 / MNHNSD 15.141	MNHNSD	Paratype
T. thomasi	WIBF 043149	Male	1	DOM.REP:Independencia ; Prov..ESE Jimani ; S.LagoLimon.13APR1992 ; M.A. & R.O. Ivie	WIBF	Paratype
T. thomasi	WIBF 043346	Male	1	DOM REP:Barahona Prov. ; 4.5km S Barahona ; 23-V-1992 M.C. Thomas ; tropical almond blooms	WIBF	Paratype
T. thomasi	WIBF 043347	Male	1	DOM REP:Barahona Prov. ; 4.5km S Barahona ; 18-V-1992 M.C. Thomas ; on flowers of ; tropical almond	WIBF	Paratype

T. centralis	WIBF 043018	Female	1	DOM. REPUBLIC ; La Vega Prov. 4100' ; 2 km. E. Tireo ; V-8-1985 ; J. E. Wappes	WIBF	Paratype
T. centralis	WIBF 043019	Female	1	Higueral, S.Dom. ; II.1914	AMNH	Paratype
T. centralis	WIBF 043020	Male	1	Higueral, S.Dom. ; II.1914	AMNH	Paratype
T. centralis	WIBF 043021	Male	1	San Lorenzo, ; R.Dom.VI.27-29,15	AMNH	Paratype
T. centralis	WIBF 043022	Male	1	Constanza ; Aug.'38,Dom.Rep. ; 3-4,000 ft. ; Darlington	MCZ	Paratype
T. centralis	WIBF 043023	Male	1	Constanza ; Aug.'38,Dom.Rep. ; 3-4,000 ft. ; Darlington	MCZ	Paratype
T. centralis	WIBF 043024	Male	1	Constanza to ; Jarabacoa ; Aug.'38,Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	Paratype
T. centralis	WIBF 043025	Male	1	Trow d' Eaw ; 19-XI-4000 ft / Haiti ; 1934 ; Darlington / Museum of ; Comparative ; Zoology	MCZ	Paratype
T. centralis	WIBF 043026	Male	1	♂ / RioSanJuan ; DR.3 - '28 ; G.S.Miller.	USNM	Paratype
T. centralis	WIBF 043027	Male	1	LaRomana,S.D ; 3-I-1914	FSCA	Paratype
T. centralis	WIBF 043028	Female	1	DOMINICAN REPUBLIC: ; La Vega Province ; 5km SE Jarabacoa ; 3-VI-1994 ; coll. M.C. Thomas	FSCA	Paratype
T. centralis	WIBF 043029	Female	1	DOMIN.REP: Prov.LaVega ; La Cienega, 1100m ; 19°04.07'N, 70°51.68'W ; 29JULY1999, at night ; M.A.Ivie & K.A.Guerrero	WIBF	Paratype
T. centralis	WIBF 043030	Female	1	DOMIN.REP: Prov.La Vega ; La Cienega, 1100m ; 19.0678°N, 70.8613°W ; 29JULY1999, R.S.Miller ; BL, Hg vapor, beating	WIBF	Paratype
T. centralis	WIBF 043031	Female	1	DOMIN.REP: Prov.La Vega ; La Cienega, 1100m ; 19.0678°N, 70.8613°W ; 29JULY1999, R.S.Miller ; BL, Hg vapor, beating	WIBF	Paratype
T. centralis	WIBF 043032	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. centralis	WIBF 043033	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. centralis	WIBF 043034	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. centralis	WIBF 043035	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. centralis	WIBF 043036	Male	1	DOM.REP: Prov. La Vega ; Par.Nac.ArmandoBermudez ; LaCienaga-Los Tablones ; 1187m, 29 JULY 1993 ; D.S.Sikes. beating veg.	WIBF	Paratype
T. centralis	WIBF 043037	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35005	MNHNSD	Paratype
T. centralis	WIBF 043038	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35004	MNHNSD	Paratype
T. centralis	WIBF 043039	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 34992	MNHNSD	Paratype

T. centralis	WIBF 043040	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35043	MNHNSD	Paratype
T. centralis	WIBF 043041	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35041	MNHNSD	Paratype
T. centralis	WIBF 043042	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35037	MNHNSD	Paratype
T. centralis	WIBF 043043	Female	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. ; Matusik-Guerrero / 35017	MNHNSD	Paratype
T. centralis	WIBF 043044	Male	1	Las Abejas ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI 1989 ; cols. Matusik-Guerrero / 35009	MNHNSD	Paratype
T. centralis	WIBF 043045	Male	1	Las Abejas, Sierra ; Bahoruco ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI - 1984 ; cols. Matusik-Guerrero / 35039	MNHNSD	Paratype
T. centralis	WIBF 043046	Male	1	Las Abejas, Sierra ; Bahoruco ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI - 1984 ; cols. Matusik-Guerrero / 35014	MNHNSD	Paratype
T. centralis	WIBF 043047	Male	1	Las Abejas, Sierra ; Bahoruco ; Pedernales, PROV. ; PEDERNALES,R.D. ; 27-VI - 1984 ; cols. Matusik-Guerrero / 35032	MNHNSD	Paratype
T. centralis	WIBF 043048	Male	1	REP. DOM: La Vega, Jarabacoa ; La Cienega de Manabao ; 8-II-2001 ; Josue Henriquez / 15.1159-19 / MNHNSD 15.117	MNHNSD	Paratype
T. centralis	WIBF 043049	Male	1	REP. DOM: La Vega, Jarabacoa ; La Cienega de Manabao ; 8-II-2001 ; Josue Henriquez / 15.1158-19 / MNHNSD 15.116	MNHNSD	Paratype
T. centralis	WIBF 043050	Male	1	DOMINICAN REPUBLIC:Prov. ; Pedernales, Las Mercedes ; Rd., Pine Zone, 27-V-1991 ; S. W. Dunkle	FSCA	Paratype
T. centralis	WIBF 043051	Male	1	DOMINICAN REPUBLIC: ; La Vega Prov., PN Armando ; Bermudez, km 1-3 along trial ; W of La Cienaga 900-1100 m ; 19°01.753'N, 70°54.654'W ; beating - 22 June 2005 ; Steven Lingafelter	WIBF	Paratype
T. centralis	WIBF 043052	Male	1	Republica Dominicana ; Prov.Sanchez Ramirez ; Mina Pueblo Viejo ; Hatillo, Margajita ; 369-310 mE ; 2095-124 mN ; 23.iv.2003 ; Col.R.H. Bastardo / 15.1178-19 / MNHNSD 15.136	MNHNSD	Paratype
T. centralis	WIBF 043053	Male	1	REPUBLICA DOMINICANA: La ; Vega, Constanza, Reserva ; Cientifica Ebano Verde, El ; Arroyazo, 18 September ; 1999 ; coll. Daniel Perez & Sardis / 15.1141-19 / MNHNSD 15.99	MNHNSD	Paratype
T. centralis	WIBF 043348	Male	1	LAS Abejas ; PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35010	MNHNSD	Paratype
T. centralis	WIBF 043349	Male	1	LAS Abejas ; PROV. ; PEDERNALES,R.D. ; 27-VI-1989 ; cols. ; Matusik-Guerrero / 35025	MNHNSD	Paratype
T. centralis	WIBF 043350	Male	1	DOMINICAN REPUBLIC: ; Prov. La Altagracia ; 10km. E. Nisibon ; 13-VI-1986, L.Stange ; & R. Woodruff	WIBF	Paratype
T. centralis	WIBF 043351	Male	1	Higueral, S.Dom. ; II.1914	AMNH	Paratype

T. centralis	WIBF 043352	Male	1	Constanza to ; Jarabacoa ; Aug.'38,Dom.Rep. ; 2-4,000 ft,Darl.	MCZ	Paratype
T. amabilis	WIBF 041530	Female	1	CUBA:Holguin,Sierra de ; Nipe,Rio Piloto Abajo ; at Pueblo Nuevo, 195m ; 04Jul 1990, M. A. Ivie	WIBF	No
T. amabilis	WIBF 041551	Male	1	CUBA:Mayabeque, StaCruz ; del Norte,Jard. de Hershey ; 23.1354°N,81.9301°w ; 18 DEC 2018 ; Y. Alvarez, A. Corso \ StaCruz del Norte ; Jard. de Hershey ; en el bosque,volando, dia	WIBF	No
T. amabilis	WIBF 041732	Male	1	CUBA: Pinar del Rio ; Vinales, ; EL Moncada ; MARCH 2008,D. Saladrigas	WIBF	No
T. amabilis	WIBF 041741	male	1	Coast below; Pico Turquino; June 26-30, '36/ Darlington Collector	MCZ	No
T. amabilis	WIBF 041742	male	1	BAHAMAS: Andros Isl.; San Andros; June 22, 1976 -; ex Baccharis; JW Smith FD Benett	TAMU	No
T. amabilis	WIBF 041743	male	1	CUBA: Pinar del Rio; Cajalbana, 370 m; 30JUNE1990, pine; forest, M.A.Ivie colr	WIBF	No
T. amabilis	WIBF 041744	male	1	Cuba./ Havana; Barbour/ Thonalmus; amabilis (J.D.)	MCZ	No
T. amabilis	WIBF 041745	male	1	H. Bryant; San Juan; de los Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. amabilis	WIBF 041746	male	1	H. Bryant; San Juan; de los Remedios; Cuba	MCZ	No
T. amabilis	WIBF 041747	male	1	Cuba:; via of; Havana.; T. Barbour	MCZ	No
T. amabilis	WIBF 041748	male	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 8000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. amabilis	WIBF 041749	male	1	Coast below; Pico Turquino; June 26-30, '36/ Darlington Collector	MCZ	No
T. amabilis	WIBF 041750	male	1	San Carlos Est.; Guantanamo; Cuba.4-8 X' 13/ Male	AMNH	No
T. amabilis	WIBF 041751	male	1	Havana; Barbour/ Cuba.	MCZ	No
T. amabilis	WIBF 041752	male	1	Felton Cuba; WMMann	NHMN	No
T. amabilis	WIBF 041753	male	1	Soledad, CUBA; June, July 1947; WLNutting	MCZ	No
T. amabilis	WIBF 041754	male	1	Cuba, Prov. Oriente: Sier-;ra Maestra, Ocujaldel; Turquino, 8-9.II.1967; leg. R. Bielawski; et A. Riedel/ Inst. Zool. P.A.N.; Warszawa; 51/67	MZPW	No
T. amabilis	WIBF 041755	male	1	Taco Taco, Cuba.; Abril 1-6, 1922.; S.C. Bruner, J. Acuna; y C.H. Ballou, col./ 8871/ ac. 24117/ Thonalmus; amabilis; Jacq. Duval; det. A.G. Ne	AMNH	No
T. amabilis	WIBF 041756	male	1	452 ♂/ Cuba; Poey Coll./ Calopteron; amabile J.D.; Lycides/ Loaned by A.N.S.P.	ANSP	No
T. amabilis	WIBF 041757	male	1	Cuba, Prov. Oriente: Sier-;ra Maestra, Ocujaldel; Turquino, 8-9.II.1967; leg. R. Bielawski; et A. Riedel/ Inst. Zool. P.A.N.; Warszawa; 51/67	MZPW	No
T. amabilis	WIBF 041758	male	1	H.J. Mac Gillavry; Cuba; San Blas; 1-9.III.1933	ZMAN	No
T. amabilis	WIBF 041759	male	1	CUBA: Pinar del Rio, S. de; los Organos, Viñales, Hoyo; de Fanías, Dos Hermanas; 17-IV-2009 col. R. Nuñez/ MNHNCu; 41.000111	MNHC	No

T. amabilis	WIBF 041760	male	1	Cuchillo de; Guajimero; +- 2000 ft., Ote.; VII-22-36'/ Cuba 1936; Darlington; Collector	MCZ	No
T. amabilis	WIBF 041761	male	1	CUBA: Pinar del Rio,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MHNCu; 41.000122	MNHC	No
T. amabilis	WIBF 041762	male	1	Cayamas; 25.12 Cuba/ E.A. Schwarz; Collector/ Male/ Property of; USNM	USNM	No
T. amabilis	WIBF 041763	male	1	CUBA: Pinar del Rio,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MHNCu; 41.000126	MNHC	No
T. amabilis	WIBF 041764	male	1	CUBA: Pinar del Rio,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MHNCu; 41.000119	MNHC	No
T. amabilis	WIBF 041765	male	1	CUBA: Pinar del Rio,; Sierra del Rosario, alred.; Estación Ecol. El Salón.; X-2010 col. O. Madruga/ colecta diurna/ MHNCu; 41.000108	MNHC	No
T. amabilis	WIBF 041766	male	1	CUBA: Santiago de Cuba,; Gran Piedra Pinar detrás; de Estac. Ecol. 15-III-2009; col. O. Madruga, R. Nuñez/ MHNCu; 41.000117	MNHC	No
T. amabilis	WIBF 041767	male	1	CUBA: Pinar de Rio,; Sierra Rangel (alredr de; un paredón) 20-IV-2009; col. M. Hernández/ MHNCu; 41.000112	MNHC	No
T. amabilis	WIBF 041768	male	1	CUBA: Pinar del Rio, S. de; los Organos, Viñales, Hoyo; de Fanías, Dos Hermanas; 17-IV-2009 col. R. Nuñez/ MNHNCu; 41.000110	MNHC	No
T. amabilis	WIBF 041769	male	1	CUBA: Matanzas, Pan; de Matanzas. Ladera Sur; (volando entre vegetación); II-2011 col. O. Madruga,; D. Barrios C. Mancina/ MNHNCu; 41.000121	MNHC	No
T. amabilis	WIBF 041770	male	1	CUBA: Holguín, Mayarí; Sierra Cristal, Est. Biolog.; La Zoilita 15-20-II-2010; 20,37,41.7 N- 75,29,08.1 W; col. O. Madruga, R. Núñez/ MNHNCu; 41.000116	MNHC	No
T. amabilis	WIBF 041771	male	1	CUBA. Pinar del Río,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MNHNCu; 41.000118	MNHC	No
T. amabilis	WIBF 041772	male	1	CUBA. Pinar del Río,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MNHNCu; 41.000125	MNHC	No
T. amabilis	WIBF 041773	male	1	CUBA. Pinar del Río,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MNHNCu; 41.000124	MNHC	No
T. amabilis	WIBF 041774	male	1	CUBA. Pinar del Río,; Sierra Rangel (alredr de; un paredón) 20-IV-2009; col. R. Núñez./ 41.000113	MNHC	No
T. amabilis	WIBF 041775	male	1	CUBA. Pinar del Río,; Sierra del Rosario, Soroa.; II-2009 (durante el cortejo); col. L.M. Díaz/ MNHNCu; 41.000123	MNHC	No
T. amabilis	WIBF 041776	male	1	CUBA. Guantánamo,; Baracoa, camino de la; Majana 18-1-2009; col. O. Madruga/ MNHNCu; 41.000115	MNHC	No
T. amabilis	WIBF 041777	male	1	♂/ CUBA. Pinar d. Rio; Soroa, 11.4.1975; Jelíne lgt.	NMPC	No
T. amabilis	WIBF 041778	male	1	CUBA, 26.5.85; Gran Piedra; S. Billy leg.	NMPC	No
T. amabilis	WIBF 041779	female	1	CUBA. Pinar del Río,; Sierra del Rosario, Soroa; II-2009 (durante el cortejo); col. L.M. Díaz/MNHNCu; 41.000127	MNHC	No

T. amabilis	WIBF 041780	female	1	CUBA. Pinar del Río,; Sierra del Rosario, Soroa; II-2009 (durante el cortejo); col. L.M. Díaz/MNHNCu; 41.000120	MNHC	No
T. amabilis	WIBF 041781	female	1	Felton Cuba; WMMann	NMNH	No
T. amabilis	WIBF 041782	female	1	Felton Cuba; WMMann	NMNH	No
T. amabilis	WIBF 041783	female	1	Buenos Aires; Trinidadd Mts.; VI. 39' CUBA; Parsons &	MCZ	No
T. amabilis	WIBF 041784	female	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 8000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. amabilis	WIBF 041785	female	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 8000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. amabilis	WIBF 041786	female	1	Cuchillo de; Guajimero; +- 2000 ft., Ote.; VII-22-36	MCZ	No
T. amabilis	WIBF 041787	female	1	Loma del Gato; Cobre Range, Ote.; July 3-7, 1936; about 3000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. amabilis	WIBF 041788	female	1	Bah. HondaCuba; June 1-3; Wickman./ ex coll.; Wickham	NMNH	No
T. amabilis	WIBF 041789	female	1	Cuba 7. K.; N. of Vinales; Sept. 16-22' 13/ Female	AMNH	No
T. amabilis	WIBF 041790	female	1	Cuba 7. K.; N. of Vinales; Sept. 16-22' 13/ Female	AMNH	No
T. amabilis	WIBF 041791	female	1	Nueva Gerona; Isle of Pines.; G. Link, Coll/ May 31; 1912/ Carn. Mus.; Acc. 4745/ Insect collection; CARNEGIE MUSEUM OF; NATURAL HISTORY; Pittsburgh, Pa. (CMNH)	CMNH	No
T. amabilis	WIBF 041792	female	1	H.J. Mac Gillavry; Cuba; Sierra de Guane; 9.VII.1933	ZMAN	No
T. amabilis	WIBF 041793	female	1	CUBA, 28.5.85; Gran Piedra; S. Brantlová let.	MAIC	No
T. amabilis	WIBF 041794	female	1	Isla de Pinos; Cuba [illegible]. 15; [illegible]/ ex. Coll.; Wickham/ Thonalmus; suave; Jac. Duv./ Thonalmus; suave; Jacq. Duv.	NMNH	No
T. amabilis	WIBF 042081	male	1	Calopteron; amabile J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur	MNHN	Lectotype
T. amabilis	WIBF 042082	male	1	♂/ Cuba; Calopteron; amabile Jacq.; [illegible] p. 82 cuba/ MUSEUM PARIS; Coll. J. Bourgeois 1911/ Thonalmus; amabilis; J. DuVal	MNHN	Paralectotype
T. aulicus	WIBF 041531	Female	1	BAHAMAS: ANDROS ID. ; Church´s Blue Hole, ; 1.7 mi. E. Love Hill ; 26.IV.1994-008, R.S. ; Anderson, high ; interior coppice litt.		No
T. aulicus	WIBF 041533	Female	1	BAHAMAS:Andros Island ; Forfar Field Sta.,Stafford ; Creek,2-8-VI-2001 ; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 041534	Male	1	BAHAMAS:Andros Island ; Forfar Field Sta.,Stafford ; Creek,2-8-VI-2001 ; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 041549	Female	1	CUBA:Mayabeque,StaCruz ; del Norte,Jard. de Hershey ; 23.1354°W, 81.9301°W ; 01 AUG 2018 ; Y. Alvarez, A. Corso \ StaCruz del Norte ; Jard. de Hershey ; en el bosque,volando, dia	WIBF	No
T. aulicus	WIBF 041736		1	BAHAMAS:Andros Is. ; Maidenhair Coppice ; 11-VI-2004 ; M.C. Thomas	FSCA	No

T. aulicus	WIBF 041795	male	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24521/ ParatypeNo; 61026; USNM/ Property of; USNM	USNM	Paratype
T. aulicus	WIBF 041796	male	1	on wild; cotton plant; M. Kisliuk #18/ Nassau; NP. v29'21/ Property of; USNM/ bahamae; [illegible]. 1931	USNM	No
T. aulicus	WIBF 041797	female	1	♀/ Mangrove Cay; Anbros Is.; May-June 1917/ Wm. M. Mann; Collector/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524/ WieKHAM; Collection; 1933/ ParatypeNo; 61026; USNM/ Property of; USNM	USNM	Paratype
T. aulicus	WIBF 041798	female	1	♀/ Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524/ WieKHAM; Collection; 1933/ ParatypeNo; 61026; USNM/ Property of; USNM	USNM	Paratype
T. aulicus	WIBF 041799	female	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24523/ ParatypeNo; 61026; USNM/ Property of; USNM	USNM	Paratype
T. aulicus	WIBF 041800	male	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24521/ Collection of the; CALIFORNIA ACADEMY; OF SCIENCES, San; Francisco, Calif.	CAS	Paratype
T. aulicus	WIBF 041801	male	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041802	male	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041803	male	1	Near Blue; Hills. n.p.; V.31.04; W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041804	male	1	Near Blue; Hills. n.p.; V.31.04; W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041805	male	1	Near Blue; Hills. n.p.; V.31.04; W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041806	male	1	Near Blue; Hills. n.p.; V.31.04; W. M. Wheeler,; Collection/ Male/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041807	male	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041808	male	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041809	male	1	Fresh Creek; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]	AMNH	Paratype

T. aulicus	WIBF 041810	male	1	Fresh Creek; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041811	male	1	Fresh Creek; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041812	male	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524/ Collection of the; CALIFORNIA ACADEMY; OF SCIENCES, San; Francisco, Calif.	CAS	Paratype
T. aulicus	WIBF 041813	male	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24525/ PARATYPE; Thonalmus; bahamae; L&M	ANSP	Paratype
T. aulicus	WIBF 041814	male	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Male/ Paratype [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24522/ ParatypeNo; 61026; USNM/ Thonalmus; bahamae; Leng Mutchler; Paratype/ Property of; USNM	USNM	Paratype
T. aulicus	WIBF 041815	female	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24525/ PARATYPE; Thonalmus; bahamae; L&M	ANSP	Paratype
T. aulicus	WIBF 041816	female	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041817	female	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041818	female	1	Mangrove Cay; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ Paratype [in red]	AMNH	Paratype
T. aulicus	WIBF 041819	female	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041820	female	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041821	female	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041822	female	1	Near Blue; Hills. n.p.; V.31.04/ W. M. Wheeler,; Collection/ Female/ PARATYPE [in red]	AMNH	Paratype
T. aulicus	WIBF 041823	female	1	Fresh Creek; Andros Is.; May-June 1917/ Wm. M. Mann; Collector/ Female/ Paratype [in red]/ Am. Mus. Nat. Hist.; Dept. Invert. Zool.; No. 24524	AMNH	Paratype
T. aulicus	WIBF 041824	female	1	BAHAMAS: B.W.I.; South Bimini; June 15 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041825	female	1	BAHAMAS: B.W.I.; South Bimini; June 15 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041826	female	1	BAHAMAS: B.W.I.; South Bimini; June 15 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041827	female	1	BAHAMAS: B.W.I.; South Bimini; June 15 1967; B. K. Dozier	FSCA	No

T. aulicus	WIBF 041828	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041829	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041830	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041831	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041832	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041833	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041834	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041835	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041836	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041837	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041838	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041839	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041840	female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041841	female	1	BAHAMAS: B.W.I/; Exuma VI.12.1968/ Hummingbird; Cay W. of; Georgetown/ B.K. Dozier; coll.	FSCA	No
T. aulicus	WIBF 041842	female	1	BAHAMAS: B.W.I/; Exuma VI.12.1968/ Hummingbird; Cay W. of; Georgetown/ B.K. Dozier; coll.	FSCA	No
T. aulicus	WIBF 041843	female	1	BAHAMAS: B.W.I/; Exuma VI.12.1968/ Hummingbird; Cay W. of; Georgetown/ B.K. Dozier; coll.	FSCA	No
T. aulicus	WIBF 041844	Male	1	Calopteron; elegantulum J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur	MNHN	Lectotype
T. aulicus	WIBF 041845	female	1	Calopteron; aulicum J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur	MNHN	Lectotype
T. aulicus	WIBF 041846	male	1	BAHAMAS: Eleuthera; Rainbow Bay; 29-VI-6-VII-1990; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 041847	male	1	BAHAMAS: Eleuthera; Rainbow Bay; 29-VI-6-VII-1990; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 041848	male	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 041849	male	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 041850	male	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 041851	male	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 041852	male	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 041853	male	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 041854	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041855	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041856	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No

T. aulicus	WIBF 041857	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041858	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041859	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041860	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041861	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041862	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041863	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041864	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041865	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041866	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041867	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041868	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041869	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041870	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041871	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041872	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041873	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041874	male	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 041875	male	1	BAHAMAS: Eleuthera; Rainbow Bay; 29-VI-6-VII-1990; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 041876	male	1	BAHAMAS: Eleuthera; Rainbow Bay; 29-VI-6-VII-1990; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 041877	male	1	BAHAMAS: Eleuthera; Rainbow Bay; I-VII-1988; R.W. & D.B. Wiley	FSCA	No
T. aulicus	WIBF 041878	male	1	BAHAMAS: Eleuthera; Rainbow Bay; IV-V-1985; R. & D. Wiley	FSCA	No
T. aulicus	WIBF 041879	male	1	BAHAMA IS: N. Andros Is.; Atala Coppice, 10 Km WNM; Stafford Creek town; 12.VI.1984/ Beating/ Collected by; S.M. Fondriest	WIBF	No
T. aulicus	WIBF 041880	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No
T. aulicus	WIBF 041881	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No
T. aulicus	WIBF 041882	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No
T. aulicus	WIBF 041883	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No
T. aulicus	WIBF 042097	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No

T. aulicus	WIBF 042098	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No
T. aulicus	WIBF 042099	male	1	BAHAMAS: B.W.I.; Exuma; VI.12.1968/ Hummingbird; Cay; W. OF; Georgetown/ B.K. Dozier; coll	FSCA	No
T. aulicus	WIBF 042100	male	1	BAHAMAS: Andros Is.; Forfar Field Station; bl trap, 8 June 2004; R. Turbnow	FSCA	No
T. aulicus	WIBF 042101	male	1	BAHAMAS: Andros Is.; Forfar Field Station; bl trap, 8 June 2004; R. Turbnow	FSCA	No
T. aulicus	WIBF 042102	male	1	BAHAMAS: Andros Is.; Forfar Field Station; trap, 8 June 2004; R. Turbnow	FSCA	No
T. aulicus	WIBF 042103	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042104	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042105	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042106	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042107	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042108	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042109	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042110	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042111	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042112	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042113	male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042114	male	1	BAHAMAS: Andros Island; Atala Coppice, 3-VI-2001; M.C. Thomas; blacklight trap	FSCA	No
T. aulicus	WIBF 042115	male	1	BAHAMAS: Andros Island; Atala Coppice, 3-VI-2001; M.C. Thomas; blacklight trap	FSCA	No
T. aulicus	WIBF 042116	male	1	BAHAMAS: Andros Island; Atala Coppice, 3-VI-2001; M.C. Thomas; blacklight trap	FSCA	No
T. aulicus	WIBF 042117	ale, Fema	2	BAHAMA IS: N. Andros Is.; Atala Coppice, 10 Km WNW; Stafford Creek town; 13 VI 1984/ Beating/ in copulo/ Collected by; S. M. Fondriest	WIBF	No
T. aulicus	WIBF 042118	Male	1	ClarenceTown; LongIs. Bahamas; 24-VII-36	MCZ	No

T. aulicus	WIBF 042119	Male	1	BAHAMAS: Andros Island; Forfar Field Sta., Stafford; Creek, 4-VI-2001,; M.C. Thomas, blacklight; trap in coastal coppice	FSCA	No
T. aulicus	WIBF 042120	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 3 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042121	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 3 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042122	Male	1	BAHAMAS: Eleuthera; nr. Rock Sound. 20-; V-1993, Bahama Survey; Team. Persea americana	WIBF	No
T. aulicus	WIBF 042123	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 2 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042124	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 2 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042125	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 2 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042126	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 4 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042127	Male	1	BAHAMAS: Andros; Forfar Field Station; mv+bl, 4 June 2001; R. Turbnow	FSCA	No
T. aulicus	WIBF 042128	Male	1	CUBA: Holguín; 2-3KmNW Canadon; 09JUL1990, 120m; M.A. Ivie solr.	WIBF	No
T. aulicus	WIBF 042129	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No
T. aulicus	WIBF 042130	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No
T. aulicus	WIBF 042131	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No
T. aulicus	WIBF 042132	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No
T. aulicus	WIBF 042133	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042134	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042135	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042136	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042137	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042138	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042139	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042140	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042141	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042142	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042143	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042144	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042145	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042146	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042147	Male	1	Soledad, Cuba; 20-II-1925; Geo Salt	MCZ	No
T. aulicus	WIBF 042148	Male	1	Soledad, CUBA; June, July1947; WLNutting	MCZ	No
T. aulicus	WIBF 042149	Male	1	Baraguá, Cuba; IV-21-28/ At light/ C.F. Stahl; Collector	MCZ	No

T. aulicus	WIBF 042150	Male	1	Cotorro; CUBA/ Havana; VII-1924	ANSP	No
T. aulicus	WIBF 042151	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. aulicus	WIBF 042152	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1915	ANSP	No
T. aulicus	WIBF 042153	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1916	ANSP	No
T. aulicus	WIBF 042154	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1917	ANSP	No
T. aulicus	WIBF 042155	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1918	ANSP	No
T. aulicus	WIBF 042156	Male	1	Guantanamo; II.7.14Cuba; H. Skinner; II'14	ANSP	No
T. aulicus	WIBF 042157	Male	1	From Anolis; Cage 1936; Soledad/ Soledad, Cuba; (Cienfuegos); May, 1936; Darlington	MCZ	No
T. aulicus	WIBF 042158	Male	1	Soledad, Sta. Clara; Cuba VI 28 1932; Bates and Fairchild	MCZ	No
T. aulicus	WIBF 042159	Male	1	[illegible] Los Negros; Cuba 1913 Exp./ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042160	Male	1	Baragua, Camaguey; Cuba VI-18 1932; Bates and Fairchild/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042161	Male	1	Stgo. - Vegas, Cuba; Geo. Dimmock.; 27 Mar. 1905	NMNH	No
T. aulicus	WIBF 042162	Male	1	4/ Cuba 1939; C.T. Parsons/ June 8-15; Soledad; Santa Clara; Prov.	MCZ	No
T. aulicus	WIBF 042163	Male	1	Cayamas; 25 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042164	Male	1	San Vicente,; P.R., Cuba; July 25-28, 1956; C. & P. Vaurie	AMNH	No
T. aulicus	WIBF 042165	Male	1	Taco Taco, Cuba,; Abril 1-6 1922; S. C. Bruner, J.Acuna; y C.H. Ballou, col./ 8868/ ac. 2411	AMNH	No
T. aulicus	WIBF 042166	Male	1	Santiago de; Cuba./ Male	AMNH	No
T. aulicus	WIBF 042167	Male	1	Cuba/ Female	AMNH	No
T. aulicus	WIBF 042168	Male	1	Coast below; Pico Turquino; June 26-30, '36/ Cuba 1936; Darlington; Collector	AMNH	No
T. aulicus	WIBF 042169	Male	1	Aug 04/ Vicinity of Havana,; Cuba; Mel. T. Cook, Coll/ Male	AMNH	No
T. aulicus	WIBF 042170	ale, Fema	2	1299./ Poey Coll./ Cuba./Cuba; Poey Coll.	ANSP	No
T. aulicus	WIBF 042171	ale, Fema	2	Soledad, Cuba; (Cienfuegos); Apr. 1986; Darlington	MCZ	No
T. aulicus	WIBF 042172	ale, Fema	2	24/ Cuba 1939; C.T. Parsons/ June 8-15/ Soledad; Santa Clara; Prov.	MCZ	No
T. aulicus	WIBF 042173	ale, Fema	2	Buenos Aires; Trinidad Mts.; May 8-14, 1936/ 2500-8500 ft./ Cuba, 1936; Darlington; Collector	MCZ	No
T. aulicus	WIBF 042174	Male	1	Cuchillo de; Guajimero; +- 2000 ft. Ote.; VII-22-36/ Cuba 1936; Darlington; Collector	MCZ	No
T. aulicus	WIBF 042175	Male	1	[illegible]; San Carlos Est./ Guantanamo, at light; Cuba 29 Apr 1914; Coll. C. T. Ramsden/ male	MCZ	No
T. aulicus	WIBF 042176	Male	1	29/ GuantamoCuba; June 1917; CollC. T. Ramsden/ Male	AMNH	No
T. aulicus	WIBF 042177	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042178	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No

T. aulicus	WIBF 042179	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042180	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042181	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042182	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042183	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042184	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042185	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042186	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042187	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042188	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042189	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042190	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042191	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042192	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042193	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042194	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042195	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042196	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042197	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042198	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042199	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042200	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042201	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042202	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042203	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042204	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042205	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042206	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042207	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042208	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042209	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042210	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042211	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No

T. aulicus	WIBF 042212	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042213	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042214	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042215	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042216	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042217	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042218	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042219	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042220	Male	1	CUBA:; Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042221	Male	1	H. Bryant; San Juan; de los; Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042222	Male	1	H. Bryant; San Juan; de los; Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042223	Male	1	Cardenas; Cuba.; WM Mann/ Property of/ USNM	USNM	No
T. aulicus	WIBF 042224	Male	1	6/ Cuba 1939; C. T. Parsons/ June 8-15/ Soledad; Santa Clara; Prov	MCZ	No
T. aulicus	WIBF 042225	Male	1	Est. Cent.; Agr. De Cuba; 7'3-01/ Herradura; Feb. 6/15	USNM	No
T. aulicus	WIBF 042226	Male	1	Cayamas; 16.2 Cuba/ EASchwarz; Collector/ Male	USNM	No
T. aulicus	WIBF 042227	Male	1	Hunter; No3476/ no4/ on cane/Jovellanos; Cuba III-17-15/ Male	USNM	No
T. aulicus	WIBF 042228	Male	1	Cayamas; 27.1 Cuba/ EASchwarz; Collector/ Male	USNM	No
T. aulicus	WIBF 042229	Male	1	San Carlos Est.; Guantanamo; Cuba, 4-8 X' 13/ male	AMNH	No
T. aulicus	WIBF 042230	Male	1	Cayamas; 27.2 Cuba/ EASchwarz; Collector/ Male	USNM	No
T. aulicus	WIBF 042231	Male	1	H. Bryant; San Juan; de los; Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042232	Male	1	Hunter; No3476/ no4/ on cane/Jovellanos; Cuba III-12-16/ Male	USNM	No
T. aulicus	WIBF 042233	Female	1	BAHAMA ISLANDS:; Andros Island; San Andros; June 6, 1974; J. W. Smith	TAMU	No
T. aulicus	WIBF 042234	Female	1	BAHAMAS: Andros Island; Forfar Field Sta. Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042235	Female	1	BAHAMAS: Andros Island; Forfar Field Sta. Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042236	Female	1	BAHAMAS: Andros Island; Forfar Field Sta. Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042237	Female	1	BAHAMAS: Andros Island; Forfar Field Sta. Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No
T. aulicus	WIBF 042238	Female	1	BAHAMAS: Andros Island; Forfar Field Sta. Stafford; Creek, 2-8-VI-2001; coll. M.C. Thomas	FSCA	No

T. aulicus	WIBF 042239	Female	1	BAHAMAS: Andros Island; Forfar Field Sta. Stafford; Creek, 7-VI-2001; coll. B.K. Dozier, black-; light trap in coastal coppice	FSCA	No
T. aulicus	WIBF 042240	Female	1	BAHAMAS: Andros Is.; Forfar Field Station; bl trap, 6 June 2004; R. Turbnow	FSCA	No
T. aulicus	WIBF 042241	Female	1	BAHAMAS: Eleuthera; nr. Rock Sound. 20-; V-1993, Bahama Survey; Team. Persea americana	FSCA	No
T. aulicus	WIBF 042242	Female	1	BAHAMAS: Andros Is.; Atala Coppce; 6-VI-2004; M. C. Thomas, BLT	FSCA	No
T. aulicus	WIBF 042243	Female	1	B.W.I., Bahamas, Nassau; New Providence, Bellot; Grove 27-V-1992; coll. K. Hibbard; Citrus aurantifolia	FSCA	No
T. aulicus	WIBF 042244	Female	1	BAHAMAS: B.W.I.; South Bimini; June 15 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 042245	Female	1	BAHAMAS: Andros Isl.; San Andros; June 22, 1976; ex. Leucaena glauca; J W Smith F D Bennet	TAMU	No
T. aulicus	WIBF 042246	Female	1	BAHAMAS: Eleuthera; Rainbow Bay; IV-VII-1989; R.W. & D.W. Wiley	FSCA	No
T. aulicus	WIBF 042247	Female	1	Arthurs Town; Cat. I., Bahamas; VII 7 1935; W. J. Clench	MCZ	No
T. aulicus	WIBF 042248	Female	1	GRAND BAHAMA ISLAND; Freeport; 20-27 June 1987; W. E. Steiner,; M.J. & R. Molineaux/ At black light; Caribbean pine; and palmetto scrub	WIBF	No
T. aulicus	WIBF 042249	Female	1	BAHAMAS: ANDROS ID.; London Ridge, 2.7. mi. N., 0.8 mi E. Forfar Field; Stn., 28.IV.1994-011; R. S. Anderson, high; interior coppice beat	WIBF	No
T. aulicus	WIBF 042250	Female	1	BAHAMAS: Andros Island; Atala Coppice, 3-VI-2001; M.C. Thomas; blacklight trap	FSCA	No
T. aulicus	WIBF 042251	Female	1	BAHAMAS: Andros Is.; Maidenhair Coppice; bi trap, 10 June 2004; R. Turnbow	FSCA	No
T. aulicus	WIBF 042252	Female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 042253	Female	1	BAHAMAS: B.W.I.; South Bimini; June 16 1967; B. K. Dozier	FSCA	No
T. aulicus	WIBF 042254	Female	1	BAHAMAS: Andros Isl.,; Fresh Creek; 25-VI-1972/ B. K. Dozier; coll.	FSCA	No
T. aulicus	WIBF 042255	Male	1	H. Bryant; San Juan; de los; Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042256	Male	1	Soledd, Cuba; 14-III 1925; J. O. Myers	MCZ	No
T. aulicus	WIBF 042257	Male	1	H. Bryant; San Juan; de los; Remedios; Cuba	MCZ	No
T. aulicus	WIBF 042258	Male	1	Soledad, Cuba; (Cienfuegos); Aug 2-12, '34; Darlington/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042259	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No
T. aulicus	WIBF 042260	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042261	Male	1	Soledad, Cuba; (Cienfuegos); May, 1986/ From Anolis; Cage 1936; Soledad	MCZ	No
T. aulicus	WIBF 042262	Male	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No

T. aulicus	WIBF 042263	Male	1	Buenos Aires; Trinidad Mts.; May 8-14, 1936/ 2500-8500 ft./ Cuba, 1936; Darlington; Collector/ Fig. for; mimicry; paper '38	MCZ	No
T. aulicus	WIBF 042264	Female	1	H. Bryant; San Juan; de los; Remedios; Cuba	MCZ	No
T. aulicus	WIBF 042265	Female	1	H. Bryant; San Juan; de los; Remedios; Cuba	MCZ	No
T. aulicus	WIBF 042266	Female	1	H. Bryant; San Juan; de los; Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042267	Female	1	H. Bryant; San Juan; de los; Remedios; Cuba/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042268	Female	1	Soledad, Cuba; 27-VI-1925/ Geo. Salt	MCZ	No
T. aulicus	WIBF 042269	Female	1	Soledad, Cuba; (Cienfuegos); V, VI. '39; Parsons	MCZ	No
T. aulicus	WIBF 042270	Female	1	1211; Cuba/ Museum of' Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042271	Female	1	Buenos Aires; Trinidad Mts.; May 8-14, 1936; 2500-3500 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. aulicus	WIBF 042272	Female	1	San Blas & vic.; Trinidad Mts.; May 9, 1936; 1000-8000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. aulicus	WIBF 042273	Female	1	Baraguá, Cuba; VII-5-28; Taken on; sugar cane./ L. C. Scaramuzza; Collector	MCZ	No
T. aulicus	WIBF 042274	Female	1	Soledad, CUBA; June, July1947; WLNutting	MCZ	No
T. aulicus	WIBF 042275	Female	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042276	Female	1	From Anolis; Cage 1936; Soledad/ Soledad, Cuba; (Cienfuegos); May, 1936; Darlington	MCZ	No
T. aulicus	WIBF 042277	Female	1	Soledad nr.; Cienfuegos; Cuba 6-20- VIII/ N. Banks; collector	MCZ	No
T. aulicus	WIBF 042278	Female	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 8000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. aulicus	WIBF 042279	Female	1	Baragua, Camaguey; Cuba VI-18 1932; Bates and Fairchild/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042280	Female	1	5/ Cuba, 1939; C.T. Parsons/ June 8-15/ Soledad; Santa Clara; Prov.	MCZ	No
T. aulicus	WIBF 042281	Female	1	Soledad, CUBA; June, July1947; WLNutting	MCZ	No
T. aulicus	WIBF 042282	Female	1	Cuba.; Ch. Wrigth/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042283	Female	1	Anolis; Cage/ Soledad, Cuba; (Cienfuegos); May 1936; Darlington	MCZ	No
T. aulicus	WIBF 042284	Male	1	Santiago de las; Vegas, Cuba.; Col., S.C. Bruner.; 4-28-22./8868/ ac.24117	AMNH	No
T. aulicus	WIBF 042285	Male	1	Caymas; 21.2 Cuba/ EASchwarz; Collector/ Male	USNM	No
T. aulicus	WIBF 042286	Male	1	Cabanas.; P dR., Cuba; Female	AMNH	No
T. aulicus	WIBF 042287	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042288	Male	1	Cayamas; 22.5 Cuba/ EASchwarz; Collector/ Male	USNM	No

T. aulicus	WIBF 042289	Male	1	Cayamas; 22.5 Cuba/ EASchwarz; Collector/ Male	USNM	No
T. aulicus	WIBF 042290	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. aulicus	WIBF 042291	Male	1	H. J. MacGillavry; Cuba; Guasas; 8.VII.1933	ZMAN	No
T. aulicus	WIBF 042292	Male	1	CUBA. Cienfuegos,; alrededores Pico San Juan; 1100 msnm V-2006; col. R. Núñez; MNHNCu; 41.000077	MNHC	No
T. aulicus	WIBF 042293	Male	1	CUBA. Cienfuegos,; alrededores Pico San Juan; 1100 msnm V-2006; col. R. Núñez; MNHNCu; 41.000078	MNHC	No
T. aulicus	WIBF 042294	Male	1	San Carlos Est.; Guantanamo; Cuba, 4-8 X' 13/ female	AMNH	No
T. aulicus	WIBF 042295	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042296	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042297	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042298	Male	1	Aug 04/ Vicinity of Havana,; Cuba; Mel. T. Cook, Coll/ Male	CAS	No
T. aulicus	WIBF 042299	Male	1	H. J. MacGillavry; Cuba; Forst region round; Cacajicara; 20-22.VI.1933	ZMAN	No
T. aulicus	WIBF 042300	Male	1	H. J. MacGillavry; Cuba; Guasas; 8.VII.1933	ZMAN	No
T. aulicus	WIBF 042301	Male	1	H. J. MacGillavry; Cuba; Entronque; Orozco-Frias; 23.VI.1933	ZMAN	No
T. aulicus	WIBF 042302	Male	1	H. J. MacGillavry; Cuba; Entronque; Orozco-Frias; 23.VI.1933	ZMAN	No
T. aulicus	WIBF 042303	Male	1	PasoReal; IV-19'23 Cuba/ J.S. Hine; Coll.	OSU	No
T. aulicus	WIBF 042304	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042305	Male	1	Stgo. - Vegas, Cuba; Geo. Dimmock.; 6 Apr. 1905	NMNH	No
T. aulicus	WIBF 042306	Male	1	CUBA 31 5. 1985; Pico Turquine; S Brantlová lgt	WIBF	No
T. aulicus	WIBF 042307	Male	1	Cuba; Poey Coll./ 128 ♀	ANSP	No
T. aulicus	WIBF 042308	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. aulicus	WIBF 042309	Male	1	Cotorro; Cuba/ Havana; VII-20-1924	ANSP	No
T. aulicus	WIBF 042310	Male	1	Santa Ana; III-4 Cuba	ANSP	No
T. aulicus	WIBF 042311	Male	1	Cuba; Poey Coll./ 1299 ♂	ANSP	No
T. aulicus	WIBF 042312	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042313	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042314	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042315	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042316	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042317	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042318	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042319	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. aulicus	WIBF 042320	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No

T. aulicus	WIBF 042327	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042328	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042329	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042330	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042331	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042332	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042333	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042334	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042335	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042336	Male	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042464	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042465	Male	1	Cotorro; CUBA/ Havana; vii 20 1924	ANSP	No
T. aulicus	WIBF 042466	Male	1	Cuba./ Dr. Lewis	ANSP	No
T. aulicus	WIBF 042467	Male	1	Cayamas; 5-3 Cuba/ EASchwarz; Collector/ 250/ Male	USNM	No
T. aulicus	WIBF 042468	Male	1	Havana; Cuba. Baker	CMNH	No
T. aulicus	WIBF 042469	Male	1	Name; Date 23 Ges, 1913; Guatáno, at light; [illegible]; Coll. C.T. Ramsden, Guantanamo, Cuba/ Male	AMNH	No
T. aulicus	WIBF 042470	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042471	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042472	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042473	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042474	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042475	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042476	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042477	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042478	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042479	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042480	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042481	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042482	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042483	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042484	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042485	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No

T. aulicus	WIBF 042486	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042487	Female	1	Cotorro; CUBA/ Havana; vii 20 1924	ANSP	No
T. aulicus	WIBF 042488	Female	1	Zaza d. Media; Cuba. 30 IX' 13/ Female	AMNH	No
T. aulicus	WIBF 042489	Female	1	Santiago de; Cuba./ Female	AMNH	No
T. aulicus	WIBF 042490	Female	1	Cayamas; 22.5 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042491	Female	1	Cayamas; 2.3 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042492	Female	1	Soledad, Cuba; nr. Cienfuegos; July 20, 1956; C.&P. Vaurie	AMNH	No
T. aulicus	WIBF 042493	Female	1	H.J.MacGillavry; Cuba; Forst region round; Cacarajicara; 20-22; VI. 1933	ZMAN	No
T. aulicus	WIBF 042494	Female	1	Espera[illegible]; 16 IV 33	ZMAN	No
T. aulicus	WIBF 042495	Female	1	FreshCreek; Bahamas; WM Mann	USNM	No
T. aulicus	WIBF 042496	Female	1	H.J.MacGillavry; Cuba; Puerta Ancon; 5-6.VII.1933	ZMAN	No
T. aulicus	WIBF 042497	Female	1	Aug 04/ Vicinity of Havana,; Cuba; Mel. T. Cook, Coll/ Female	AMNH	No
T. aulicus	WIBF 042498	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042499	Male	1	Name; Date Apr 20/14; Guantanamo, at light / Male	AMNH	No
T. aulicus	WIBF 042500	Female	1	CUBA: Guantanamo; Le Moult	AMNH	No
T. aulicus	WIBF 042501	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042502	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042503	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042504	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042505	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042506	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042507	Female	1	CUBA: Guantanamo; Le Moult	IRSB	No
T. aulicus	WIBF 042508	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042509	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042510	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042511	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042512	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042513	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042514	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042515	Female	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. aulicus	WIBF 042516	Female	1	Cotorro; CUBA/ Havana; VII-1924	ANSP	No
T. aulicus	WIBF 042517	Female	1	Cotorro; CUBA/ Havana; VII-1924	ANSP	No
T. aulicus	WIBF 042518	Female	1	Cotorro; CUBA/ Havana; 20-VII-1924	ANSP	No

T. aulicus	WIBF 042519	Female	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. aulicus	WIBF 042520	Female	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. aulicus	WIBF 042521	Female	1	Cuba	ANSP	No
T. aulicus	WIBF 042522	Female	1	Santiago de; Cuba/ Female	AMNH	No
T. aulicus	WIBF 042523	Female	1	Santiago de; Cuba/ Female	AMNH	No
T. aulicus	WIBF 042524	Female	1	Santiago de; Cuba/ Female	AMNH	No
T. aulicus	WIBF 042525	Female	1	Boracoa. Ha-; bana, Cuba; 6-29-39/ E.N. Kellesvig-Waering; Collection	FSCA	No
T. aulicus	WIBF 042526	Female	1	Cayamas, Cuba.; Geo. Dimmock.; 17 Apr. 1905/ No. 22754; See Dimmock's; Entomological; notes (in MS.).	USNM	No
T. aulicus	WIBF 042527	Female	1	452 ♀/ Cuba; Poey Coll.	ANSP	No
T. aulicus	WIBF 042528	Female	1	Cayamas; 2.3 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042529	Female	1	Cayamas; 23.5 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042530	Female	1	Cayamas; 23.5 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042531	Female	1	Cayamas; 10.5 Cuba/ EASchwarz; Collector/ Female	USNM	No
T. aulicus	WIBF 042532	Female	1	STgo. - Vegas, Cuba; Geo. Dimmock.; 27 Mar. 1905/ Collection; Fknah	USNM	No
T. aulicus	WIBF 042533	Female	1	Hunter; No3476/ no4/ on cane/ Jovellana; Cuba III-17-15/ Female	USNM	No
T. aulicus	WIBF 042534	Female	1	[No label]	ANSP	No
T. aulicus	WIBF 042535	Female	1	Cayamas, Cuba.; Geo. Dimmock.; 17 Apr. 1905/ No. 22754; See Dimmock's; Entomological; notes (in MS.).	USNM	No
T. aulicus	WIBF 042536	Female	1	Cuba	FMNH	No
T. aulicus	WIBF 042537	Female	1	1299; ♀/ Cuba; Poey Coll	FMNH	No
T. aulicus	WIBF 042538	Female	1	Cuba/ Cuba	FMNH	No
T. aulicus	WIBF 042539	Female	1	Cayamas, Cuba.; Geo. Dimmock.; 17 Apr. 1905/ No. 22755w; See Dimmock's; Entomological; notes (in MS.)./ Female	USNM	No
T. aulicus	WIBF 042540	Female	1	under board; of floor at; Orlando Fla; 1945; ABKlotz; 45-18678/ on airplan; after flight;toCuba [illegible]; ABKlotz; to CFWWM [illegible]	USNM	No
T. aulicus	WIBF 042541	Female	1	Cayamas, Cuba.; Geo. Dimmock.; 17 Apr. 1905/ No. 22755X; See Dimmock's; Entomological; notes (in MS.).	USNM	No
T. aulicus	WIBF 042542	Female	1	BAHAMA IS: Andros Is.; Forfar Field Station, nr.; Stafford Creek; 17 June 1983	WIBF	No
T. aulicus	WIBF 042543	Female	1	[illegible]; Cuba	ZMAN	No
T. aulicus	WIBF 042544	Female	1	H.J.MacGillavry; Cuba; Forst region round; Cacarajicara; 20-22; VI. 1933	ZMAN	No
T. aulicus	WIBF 042545	Female	1	CUBA, Srra Rosario; Taco Taco, 22.5.85; S. Brantlová leg.	NMPC	No
T. aulicus	WIBF 042546	Female	1	CUBA. Matanzas, Penins.; Varahicacos, Est. Ecol.; 17-VI-2008; col. R. Núñez/ MNHNCu; 41.000079	MNHC	No

T. aulicus	WIBF 042547	Female	1	H.J.MacGillavry; Cuba; Entronque; Orozco-Frias; 23-VI.1933	ZMAN	No
T. aulicus	WIBF 042548	Female	1	H.J.MacGillavry; Cuba; Entronque; Orozco-Frias; 23-VI.1933	ZMAN	No
T. aulicus	WIBF 042549	Female	1	H.J.MacGillavry; Cuba; Camaguey; 21.IV-5. V.1933	ZMAN	No
T. aulicus	WIBF 042550	Female	1	CUBA. Cienfuegos,; alrededores, Pico San Juan,; 1100 msnm V-2006; col. R. Núñez/ MNHNCu; 41.000089	MNHC	No
T. aulicus	WIBF 042551	Female	1	CUBA. Matanzas, Penins.; Varahicacos, Est. Ecol.; 17-VI-2008; col. R. Núñez/ MNHNCu; 41.000083	MNHC	No
T. aulicus	WIBF 042552	Female	1	Cuba; VI-23-'22; W.B. Wheelis	LSAM	No
T. aulicus	WIBF 042553	Female	1	CUBA/ Collection of; Mrs. A. T. Stosson; Ac. 26226/ ♀	AMNH	No
T. aulicus	WIBF 042554	Female	1	Joimanitas; Habana, Cuba; July 4, 1939/ E.N. Kellesvig-Waering; Collection	FSCA	No
T. aulicus	WIBF 042555	Female	1	San Carlos Est.; Guantanamo; Cuba. 4-8 X' 13/ Female	AMNH	No
T. aulicus	WIBF 042556	Female	1	Cuba/ Female	AMNH	No
T. aulicus	WIBF 042557	Female	1	Nagua, Oriente, Cuba.; Julio 7 de 1922.; Col. S.C. Bruner y; C.H. Ballou/ 8870/ ac. 24117	AMNH	No
T. aulicus	WIBF 042558	Female	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. aulicus	WIBF 042559	Female	1	CUBA/ Collection of; Mrs. A. T. Stosson; Ac. 26226/ ♀	AMNH	No
T. aulicus	WIBF 042560	Female	1	57.12.05/ Vicinity of Havana,; Cuba.; Mel. T. Cook, Coll./ Female	AMNH	No
T. aulicus	WIBF 042561	Female	1	Santiago de; Cuba/ Female	AMNH	No
T. aulicus	WIBF 042562	Female	1	Santiago de; Cuba/ Female	AMNH	No
T. aulicus	WIBF 042563	Female	1	Jobabo, Cuba; I-18-25/ TPRF; Ent. No. 649/ Taken on Sugar Cane/ C. F. Stahl; Collector.	USNM	No
T. aulicus	WIBF 042564	Female	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington/ Museum of; Comparative; Zoology	MCZ	No
T. aulicus	WIBF 042565	Female	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 042566	Female	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 042567	Female	1	South Bimini Isl.; Bahamas, B.W.I.; May 1951; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 042568	Female	1	BAHAMAS: Eleuthera; Rainbow Bay; 29-VI-6-VII-1990; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 042569	Female	1	BAHAMAS: Eleuthera; Rainbow Bay; 29-VI-6-VII-1990; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 042570	Female	1	South Bimini Isl.; Bahamas, B.W.I.; VI - 21 - 1950; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 042571	Male	1	South Bimini Isl.; Bahamas, B.W.I.; VI - 8 - 1950; Cazier & Gerstsch	AMNH	No
T. aulicus	WIBF 042572	Female	1	Nassau,; Bahamas.; 1907- 156./ 20	BMNH	No
T. aulicus	WIBF 042573	Female	1	BAHAMAS: Eleuthera; Rainbow Bay; I-VIII-1987; J.R. & S.C. Wiley	FSCA	No
T. aulicus	WIBF 042574	Female	1	BAHAMA IS: N. Andros Is.; Atala Coppice, 10 Km WNW; Stafford Creek town; 12 VI 1984/ Beating/ Collected by; S. M. Fondriest	WIBF	No

T. aulicus	WIBF 042575	Female	1	BAHAMA IS: N. Andros Is.; Atala Coppice, 10 Km WNW; Stafford Creek town; 13 VI 1984/ Beating/ Collected by; S. M. Fondriest	WIBF	No
T. aulicus	WIBF 042576	Female	1	BAHAMAS ANDROS ISL.,; FRESH CREEK; 25-VI-1972/ B. K. DOZIER; Coll.	FSCA	No
T. aulicus	WIBF 042577	Female	1	Blue Hills Nassau; Bahama Islands; W.W.Worthington	CMNH	No
T. aulicus	WIBF 042578	Female	1	BAHAMAS: Andros Is.; Forfar Field Sta. nr.; Stafford Creek; 8-VI-2004; M. C. Thomas, BLT	FSCA	No
T. aulicus	WIBF 042579	Female	1	BAHAMAS: Andros Is.; 1-2 Km S. Loudon Cr.; 5-VI-2004: M. C.; Thomas	FSCA	No
T. aulicus	WIBF 042580	Female	1	BAHAMAS: Andros Is.; Maidenhair Coppice; bi trap, 10 June 2004; R. Turnbow	FSCA	No
T. aulicus	WIBF 042581	Female	1	Nassau, Bahamas; 19 June 66 L. Hensler/ Rollins Col. Coll.; Ex T.R. Backer c-n; MGCL Accession; #2011-34	FSCA	No
T. distinguendus	WIBF 041884	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041885	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041886	Male	1	Cayamas; L.3 Cuba/ EA Schwarz; Collector/ male/ Property of USNM	USNM	No
T. distinguendus	WIBF 041887	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. distinguendus	WIBF 041888	Male	1	Guantanamo; Cuba/ CT Ramsden; V. 7. 1914	ANSP	No
T. distinguendus	WIBF 041889	Male	1	Guantanamo; Cuba/ CT Ramsden; V. 7. 1914	ANSP	No
T. distinguendus	WIBF 041890	Male	1	Soledad nr.;Cienfuegos; Cuba 6-20-VIII/ N. Banks; collector	MCZ	No
T. distinguendus	WIBF 041891	Male	1	NW foothills; Trinidad Mts; V-I-36/ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041892	Male	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 3000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041893	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041894	Male	1	Cabanas.; P dR. Cuba; Spt.5-8 ' 13/ Male	AMNH	No
T. distinguendus	WIBF 041895	Male	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 3000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041896	Male	1	Buenos Aires; Trinidad Mts.; May 8-14, 1936; 2500-3500 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041897	Male	1	Cayamas; Cuba, Baker/ H. Klages Coll'n; C. M. Acc. 11414	CMNH	No
T. distinguendus	WIBF 041898	Male	1	NW foothills; Trinidad Mts; V-I-36/ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041899	Male	1	Cayamas; 30 JT Cuba/ EA Schwarz; Collector/ Male	USNM	No
T. distinguendus	WIBF 041900	Male	1	Plant 187/ H. J. Mac Gillavry; Cuba; Santa Clara; (Pro. Sta. Clara); 15. III-21.IV. 1933	ZMAN	No
T. distinguendus	WIBF 041901	Male	1	H.J. Mac Gillavry; Cuba; Puerta Ancon; 5-6. VII. 1933	ZMAN	No
T. distinguendus	WIBF 041902	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No

T. distinguendus	WIBF 041903	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041904	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041905	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041906	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041907	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041908	Male	1	H.J. Mac Gillavry; Cuba; Santa Clara; (Prov. Sta. Clara); 15. III-21. IV. 1933	ZMAN	No
T. distinguendus	WIBF 041909	Male	1	H.J. Mac Gillavry; Cuba; [Unintelligable]; Guayajabos; 14. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041910	Male	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. distinguendus	WIBF 041911	Male	1	Cuba: Soledad; Sta. Clara; 1932	MCZ	No
T. distinguendus	WIBF 041912	Male	1	Cuba K.; N. of Vinales; Sept. 16-22 ' 13/ Male	exAMNH	No
T. distinguendus	WIBF 041913	Male	1	Est. Exp. Agronomica; Stgo. de las Vegas; 7-12-1960; Prov. P. Rio Cuba	IZAC	No
T. distinguendus	WIBF 041914	Male	1	1299; var./ Cuba;Poey Coll.	ANSP	No
T. distinguendus	WIBF 041915	Male	1	Cuba:; Guantanamo; Le Moult	IRSB	No
T. distinguendus	WIBF 041916	Male	1	NW foothills; Trinidad Mts; V-I-36/ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041917	Male	1	Cayamas; 7.5 Cuba/ EA Schwarz; Collector/ Male	USNM	No
T. distinguendus	WIBF 041918	Male	1	1300/ Cuba; Poey Coll.	ANSP	No
T. distinguendus	WIBF 041919	Female	1	Mts. N. of Imias; eastern Oriente; July 25-28, 1936; 3000-4000 ft./ Cuba 1936; Darlington; Collector	MCZ	No
T. distinguendus	WIBF 041920	Female	1	Cayamas; 305 Cuba/ EA Schwarz; Collector/ Female	USNM	No
T. distinguendus	WIBF 041921	Female	1	Cayamas; [Unintelligable] Cuba/ EA Schwarz; Collector/ on cotton/ Female	USNM	No
T. distinguendus	WIBF 041922	Female	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041923	Female	1	H.J. Mac Gillavry; Cuba; Guacas; 8, VII. 1933	ZMAN	No
T. distinguendus	WIBF 041924	Female	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041925	Female	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041926	Female	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041927	Female	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041928	Female	1	H.J. Mac Gillavry; Cuba; [Unintelligable]; Guayajabos; 14. VI. 1933	ZMAN	No
T. distinguendus	WIBF 041929	Female	1	H.J. Mac Gillavry; Cuba; Guacas; 8, VII. 1933	ZMAN	No
T. distinguendus	WIBF 041930	Female	1	Cayamas; [Unintelligable] Cuba/ EA Schwarz; Collector/ Female	USNM	No
T. distinguendus	WIBF 041931	Female	1	Soledad, Cuba; Cienfuegos; June 1929; Darlington	MCZ	No
T. distinguendus	WIBF 041932	Female	1	Soledad Cuba; Cienfuegos; X-15 1926; Darlington	MCZ	No
T. distinguendus	WIBF 041933	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. distinguendus	WIBF 041934	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No

T. distinguendus	WIBF 041935	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. distinguendus	WIBF 041936	Female	1	Vinales, Cuba; Pinar del Rio; Aug. 27-31, 1951; P. Vaurie Coll.	AMNH	No
T. distinguendus	WIBF 041937	Female	1	Cuba/ O. D. Link; Coll [Unintelligable]/ At Citrus; sinensi/ S.P.B. Acc.; No.1169[Unintelligable]2/ S.P.B. Acc.; No. 109328	FSCA	No
T. distinguendus	WIBF 042096	Male	1	Calopteron; distinguendum J.D. [Jacquelin du Val handwriting]/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur	MNHN	Lectotype
T. suavis	WIBF 041535	Female	1	CUBA:Pinar del Rio ; Sierra del Rosario, ; ca. 15km S.CIncoPesos ; Rangel, 29JUNE1990 ; 420m, M.A.Ivie colr.	WIBF	No
T. suavis	WIBF 041678	Male	1	CUBA:Pinar delRio, Vinales ; Hotel las Hazmines, 200m ; 22.5964°N, 83.7244°W ; 09 MAY 2019 ; L.W. Vinola, at light	WIBF	No
T. suavis	WIBF 041726	Male	1	CUBA, Pinar del Rio Prov. ; Sierra del Rosario Biosphere ; Reserve 17.vii.-02.viii.2018 ; 22°47′45′N 83°0041′O ; E.RUZZER N. TORMEN G. TMOSSI	WIBF	No
T. suavis	WIBF 041727	Male	1	CUBA, Pinar del Rio Prov. ; Sierra del Rosario Biosphere ; Reserve 17.vii.-02.viii.2018 ; 22°47′45′N 83°0041′O ; E.RUZZER N. TORMEN G. TMOSSI	WIBF	No
T. suavis	WIBF 041728	Male	1	Cuba:Pinar del Rio,Sierra ; del Rosario,H.Villa Soroa ; 22.7958°N 82.0114°W ; 17 JULY-02 AUG 2018 ; E.Ruzzier & N.Tormen	WIBF	No
T. suavis	WIBF 041733	Male	1	BAHAMAS, Great Abaco ; Marsh Harbour ; 15-V-2005 ; Z. Prusak \ Disturbed beach ; Collected on palm tree ; trunk at night	FSCA	No
T. suavis	WIBF 041734	Male	1	CUBA Sierra Maestra, ; Granma, camino de Palma ; Mocha al Pico Turquino ; (entre La Platica y km4 1\2) ; 27-XI-2007 ; col. E. Fonseca \ MNHNCu ; 41.000102	MNHN	No
T. suavis	WIBF 041938	Male	1	Baragua. Cuba; 4-28-30/ Taken on; tree/ L.D. Christenson; Collector	MCZ	No
T. suavis	WIBF 041939	Male	1	Baragua, Camaguey; Cuba VI-18 1932; Bates and Fairchild	MCZ	No
T. suavis	WIBF 041940	Male	1	Soledad,Cienfuegos; Cuba Jan-Feb 1927; C.T. & B.B. Brues	MCZ	No
T. suavis	WIBF 041941	Male	1	Soledad,Cienfuegos; Cuba Jan-Feb 1927; [Unintelligable] . T. Brues	MCZ	No
T. suavis	WIBF 041942	Male	1	Soledad,Cienfuegos; Cuba Jan-Feb 1927; C.T. & B.B. Brues	MCZ	No
T. suavis	WIBF 041943	Male	1	Soledad,Cienfuegos; Cuba Jan-Feb 1927; C.T. & B.B. Brues	MCZ	No
T. suavis	WIBF 041944	Male	1	Cuba: Soledad; Sta. Clara; 1932	MCZ	No
T. suavis	WIBF 041945	Male	1	Cabanas.; P dR. Cuba; Sept. 5-8 ' 13/ Male	AMNH	No
T. suavis	WIBF 041946	Male	1	Soledad.; VI. 1918. Cuba; ace : 5320	AMNH	No
T. suavis	WIBF 041947	Male	1	Est. Cent.; Agr. de Cuba; [Unintelligible] -20; [Unintelligible]. Acuna/ 8869/ [Unintelligible]. 24 [Unintelligible] 7/	CAS	No
T. suavis	WIBF 041948	Male	1	[no label]	FSCA	No
T. suavis	WIBF 041949	Male	1	Soledad Cuba; Cienfuegos; X 11-3. 1926; Darlington/ [Unintelligible] 27481	AMNH	No
T. suavis	WIBF 041950	Male	1	Zaza d. Media; Cuba. 30 IX ' 13/ Male	AMNH	No
T. suavis	WIBF 041951	Male	1	San Carlos Est.; Guantanamo; Cuba, 4-8 X ' 13/ Male	AMNH	No

T. suavis	WIBF 041952	Male	1	Cuba./ Male	AMNH	No
T. suavis	WIBF 041953	Male	1	Soledad. Sta. Clara; Cuba 1932	MCZ	No
T. suavis	WIBF 041954	Male	1	Bayamos; Cuba; VI '48	FSCA	No
T. suavis	WIBF 041955	Male	1	Bayamos; Cuba; VI '48	FSCA	No
T. suavis	WIBF 041956	Male	1	at Light; Baragua; Cuba VI, 11, ' 32; LD Christenson	NMNH	No
T. suavis	WIBF 041957	Male	1	Soledad Cuba; Cienfuegos; X 11-3. 1926; Darlington/ [Unintelligible] 27481	AMNH	No
T. suavis	WIBF 041958	Male	1	Santiago de; Cuba./ Male	AMNH	No
T. suavis	WIBF 041959	Male	1	Name; Date [Unintelligable] / Guantanamo, at light [Unintelligible] / Male	AMNH	No
T. suavis	WIBF 041960	Male	1	Zaza d. Media; Cuba. 30 IX ' 13/ Male	AMNH	No
T. suavis	WIBF 041961	Male	1	Guantanamo Cuba; apr. 1915; Coll C.T. Ramsden/ Male	AMNH	No
T. suavis	WIBF 041962	Male	1	Santiago de; Cuba./ Male	AMNH	No
T. suavis	WIBF 041963	Male	1	Delicias; [Unintelligible] / 15/15 Cuba/ Male	AMNH	No
T. suavis	WIBF 041964	Male	1	Hayana; Cuba, Baker/ H. Klages Coll'n; C.M. Acc. 11414	CMNH	No
T. suavis	WIBF 041965	Male	1	Cayamas; 23.2 Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041966	Male	1	San Antonio; de Sul Cuba; 1918/ WM Mann; collector	NMNH	No
T. suavis	WIBF 041967	Male	1	Baracoa 1901; [Unintelligible] Cuba/ Aug Busck; Collector/ Male	NMNH	No
T. suavis	WIBF 041968	Male	1	Cayamas; 27.2 Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041969	Male	1	Cayamas; 30.12 Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041970	Male	1	Cayamas; 2.3 Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041971	Male	1	Cayamas; 6.2 Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041972	Male	1	Cayamas, Cuba. Geo. Dimmock. 17 Apr. 1905./ No. 2275[Unintelligible]; See Dimmock's; Entomological; notes (in MS.).	NMNH	No
T. suavis	WIBF 041973	Male	1	Cayamas; [Unintelligible] Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041974	Male	1	Cayamas; 30.12 Cuba/ EA Schwarz; Collector/ Male	NMNH	No
T. suavis	WIBF 041975	Male	1	San Carlos Est.; Guantanamo; Cuba, 4-8 X ' 13/ Wickham; Collection; 1933	NMNH	No
T. suavis	WIBF 041976	Male	1	Cuba; Barag[Unintelligible]; June 14. 32/ at Light; LD Christen-; son	NMNH	No
T. suavis	WIBF 041977	Male	1	Cuba: Holguin, Sierra de; Nipe, 23 km S. Mayari, Pinares de Mayari; 650m, 03 July 1990; M.A. Ivie colr	WIBF	No
T. suavis	WIBF 041978	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. suavis	WIBF 041979	Male	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. suavis	WIBF 041980	Male	1	H.J. Mac Gillavry; Cuba; Hormiguero; 10-28.II.1933	ZMAN	No
T. suavis	WIBF 041981	Male	1	West Indies; Cuba; 4 Dec, 1908	WIBF	No
T. suavis	WIBF 041982	Male	1	West Indies; Cuba; 12 Jan 1909	WIBF	No
T. suavis	WIBF 041983	Male	1	Baragua, Camaguey; Cuba VI-18-1932; Bates and Fairchild	MCZ	No

T. suavis	WIBF 041984	Male	1	Cuba; via of; Havana; T. Barbour	MCZ	No
T. suavis	WIBF 041985	Male	1	Baragua, Camaguey; Cuba VI-18-1932; Bates and Fairchild	MCZ	No
T. suavis	WIBF 041986	Male	1	Soledad Cuba; Cienfuegos; X-15 1926; Darlington	MCZ	No
T. suavis	WIBF 041987	Male	1	Anolis; cage/ Soledad Cuba; (Cienfuegos); May, 1936; Darlington	MCZ	No
T. suavis	WIBF 041988	Male	1	Baraguá, Cuba; 7-29-27/ T P R; Ent. No. 3212/ Take on; Grassos/ L. C. Saramuzza; Collector	MCZ	No
T. suavis	WIBF 041989	Male	1	Baraguá, Cuba; 12-4-29; Taken on; corn/ Christenson; LD coll.	MCZ	No
T. suavis	WIBF 041990	Male	1	Soledad Cuba; (Cienfuegos); May, 1936; Darlington	MCZ	No
T. suavis	WIBF 041991	Male	1	Baragua, Camaguey; Cuba VI-18-1932; Bates and Fairchild	MCZ	No
T. suavis	WIBF 041992	Male	1	Baragua, Camaguey; Cuba VI-18-1932; Bates and Fairchild	MCZ	No
T. suavis	WIBF 041993	Male	1	near Casa Harvard; Soledad, Cienfuegos; CUBA July, 1933; N. A. Weber	MCZ	No
T. suavis	WIBF 041994	Male	1	Soledad Cuba; Cienfuegos; Jan 10-27 1926	MCZ	No
T. suavis	WIBF 041995	Male	1	Soledad, Cienfuegos; Cuba Jan-Feb 1927; C. T. Brues	MCZ	No
T. suavis	WIBF 041996	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 041997	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 041998	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 041999	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042000	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042001	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042002	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042003	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042004	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042005	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042006	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042007	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042008	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042009	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042010	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042011	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042012	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042013	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042014	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042015	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No

T. suavis	WIBF 042016	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042017	Male	1	Guantanamo; Cuba/ CTRamsden; V.7.1914	ANSP	No
T. suavis	WIBF 042018	Male	1	128; ♂/ Cuba; Poey Coll.	ANSP	No
T. suavis	WIBF 042019	Male	1	Habana; 27.3 Cuba/ E. A. Schwarz; Collector/ 248/ Male/ Property of; USNM	USNM	No
T. suavis	WIBF 042020	Male	1	Guantanamo; II.9.14 Cuba/ H. Skinner; 11' 14	ANSP	No
T. suavis	WIBF 042021	Male	1	Guantanamo; II.9.14 Cuba/ H. Skinner; 11' 14	ANSP	No
T. suavis	WIBF 042022	Male	1	Guantanamo; II.9.14 Cuba/ H. Skinner; 11' 14	ANSP	No
T. suavis	WIBF 042023	Male	1	CUBA 31.5.1985; Pico Turquine; S. Brantlova lgt	NMPC	No
T. suavis	WIBF 042024	Male	1	CUBA. Sierra Maestra; Granma, Bartolomé Masó,; La Jeringa VIII-2009; col. R. Nuñez/ MNHNCu; 41.000097	MNHC	No
T. suavis	WIBF 042025	Male	1	CUBA. La Habana,; Quivican, La Chapa, borde; de camino, descansando en; Ficus sp., de noche; VIII-2010 col. E. Fonseca/ MNHNCu; 41.000105	MNHC	No
T. suavis	WIBF 042026	Male	1	CUBA. Santiago de Cuba,; Gran Piedra, Pluvisilva; (Km 19) 11-III-2008; col. O. Madruga, R. Nuñez/ MNHNCu; 41.000114	MNHC	No
T. suavis	WIBF 042027	Male	1	CUBA. Santiago de Cuba,; Gran Piedra, alreded Estac.; Ecolog. (Km15) 9-III-2008; col. O. Madruga, R. Nuñez/ MNHNCu; 41.000101	MNHC	No
T. suavis	WIBF 042028	Male	1	CUBA. Sierra Maestra,; Granma, Camino de Palma; Mocha al Pico Turquino; (entre La Platica y KM41/2)/ 27-XI-2007 (sobre veget.); col. E. Fonseca/ MNHNCu 41.000103	MNHC	No
T. suavis	WIBF 042029	Male	1	CUBA. Sierra Maestra,; Granma, Camino de Palma; Mocha al Pico Turquino; (entre La Platica y KM41/2)/ 27-XI-2007; col. E. Fonseca, R. Nuñez/ MNHNCu 41.000099	MNHC	No
T. suavis	WIBF 042030	Male	1	CUBA. Sierra Maestra,; Granma, Estac Ecológica; Aguada de Joaquín; 27-30-XI-2007/ MNHNCu 41.000091	MNHC	No
T. suavis	WIBF 042031	Male	1	CUBA. Artemisa,; Sierra del Rosario, Estac.; Ecol., El Salón. III-2011; a la luz; col. JL Guerra/ MNHNCu 41.000109	MNHC	No
T. suavis	WIBF 042032	Female	1	West Indies; Cuba; 8 Dec. 1908	WIBF	No
T. suavis	WIBF 042033	Female	1	West Indies; Cuba; 12 Jan. 1909	WIBF	No
T. suavis	WIBF 042034	Female	1	Cuba; Vinãlez	WIBF	No
T. suavis	WIBF 042035	Female	1	H.J. Mac Gillavry; Cuba: km 517,; carretera cental; (? Prov. Camaguey); 5.V.1933	WIBF	No
T. suavis	WIBF 042036	Female	1	H.J. Mac Gillavry; Cuba; Entronque; Orozco-Frias; 23. VI. 1933	ZMAN	No
T. suavis	WIBF 042037	Female	1	Soledad Cuba; Cienfuegos; Nov 10 1926; Darlington/ ac27481	AMNH	No
T. suavis	WIBF 042038	Female	1	Topes de Collantes; L.V., Cuba; VII-17-1956; C. & P. Vaurie	AMNH	No
T. suavis	WIBF 042039	Female	1	San Carlos Est.; Guantanamo; Cuba, 4-8 X' 13/ Female	AMNH	No
T. suavis	WIBF 042040	Female	1	Zaza d. Media; Cuba. 30 IX ' 13/ Female	AMNH	No

T. suavis	WIBF 042041	Female	1	Zaza d. Media; Cuba. 30 IX ' 13/ Female/ Wickham; Collection; 1933	NMNH	No
T. suavis	WIBF 042042	Female	1	Cayamas; 2.3 Cuba/ EA Schwarz; Collector/ Female/ 247	NMNH	No
T. suavis	WIBF 042043	Female	1	Cayamas; 2.3 Cuba/ EA Schwarz; Collector/ Female	NMNH	No
T. suavis	WIBF 042044	Female	1	Cayamas; 2.3 Cuba/ EA Schwarz; Collector/ Female	NMNH	No
T. suavis	WIBF 042045	Female	1	Báraca 1901; [illegible] Cuba/ Aug Busck; Collector/ 247/ Female	NMNH	No
T. suavis	WIBF 042046	Female	1	Miami; Fla./ From; Cuba/ W.A. Fyke; coll. 11.2 1954/ In; airplane/ S.P.B. Acc.; No. 116902/ G. B. Meriill; det. 1954	FSCA	No
T. suavis	WIBF 042047	Female	1	Miami; Fla./ From; Cuba/ W.A. Fyke; coll. 11.2 1954/ In; airplane/ S.P.B. Acc.; No. 116901/ G. B. Meriill; det. 1954	FSCA	No
T. suavis	WIBF 042048	Female	1	♀/ at light; Baragua, Cuba; Jun. 3. 1932; LDChristensen	NMNH	No
T. suavis	WIBF 042049	Female	1	♀/ at light; Baragua, Cuba; Jun. 3. 1932; LDChristensen	NMNH	No
T. suavis	WIBF 042050	Female	1	nr. Guantanamo; Cuba CFBaker/ Female	NMNH	No
T. suavis	WIBF 042051	Female	1	Cayamas; 7.5 Cuba/ EA Schwarz; Collector/ Female	NMNH	No
T. suavis	WIBF 042052	Female	1	Est. Cent.; Agr. de Cuba; Baracoa; April 19-16/ Property of; USNM	USNM	No
T. suavis	WIBF 042053	Female	1	Est. Cent.; Agr. de Cuba/ Baracoa; April 19-16 /Property of; USNM	USNM	No
T. suavis	WIBF 042054	Female	1	Jobabo Cuba.; I-10-25/ TERF; Ent. No. 49/ Taken on; sugar cane; G.F. Stahl; Collector.	NMNH	No
T. suavis	WIBF 042055	Female	1	Guantamo; Cuba/ CTRRamsden; V-7. 1914	ANSP	No
T. suavis	WIBF 042056	Female	1	CUBA, 30.5.1985/ Pico Turquino; S. Billy leg.	NMPC	No
T. suavis	WIBF 042057	Female	1	Baracoa 1901; [intelletible]; Cuba/ Aug Busck; Collector/ 541/ Property of; USNM/ Female	USNM	No
T. suavis	WIBF 042058	Female	1	CUBA: Isle of Pines; nr. Rio Callejon, nr.; Santa Barbara; I:3-7: 1950 L. Ross	FMNH	No
T. suavis	WIBF 042059	Female	1	CUBA: Isle of Pines; nr. Rio Callejon, nr.; Santa Barbara; I:3-7: 1950 L. Ross	FMNH	No
T. suavis	WIBF 042060	Female	1	CUBA: Oriente, Loma; (Pico) del Gato, Sierra; Maestra, 26-28 MAR 1959; M. W. Sanderson	MAIC	No
T. suavis	WIBF 042061	Female	1	CUBA: Santiago de Cuba,; Gran Piedra, Pina detrás; de Éstac. Ecol. 15-III-2008; col. O. Madruga, R. Nuñez/ MNHNCu; 41.000095	MNHC	No
T. suavis	WIBF 042062	emale, ma	2	CUBA: Sierra Maestra,; Granma, camino de Palma; Mocha al Pico Turquino; (entre La Platica y Km4 1/2); 27-XI-2007 (sobre vegetale); col. O. Madruga/ MNHNCu; 41.000094	MNHC	No
T. suavis	WIBF 042063	Female	1	CUBA. Sierra Maestra,; Granma, camino de Palma; Mocha al Pico Turquno; (km4 1/2 - cruce Las Cuevas); 27-XI-2007/ MNHNCu; 41.000098	MNHC	No
T. suavis	WIBF 042064	Female	1	CUBA. Sierra Maestra,; Granma, camino de Palma; Mocha al Pico Turquno; (km4 1/2 - cruce Las Cuevas); 27-XI-2007/ MNHNCu; 41.000100	MNHC	No
T. suavis	WIBF 042065	Female	1	CUBA. Sierra Maestra,; Granma, Bartolomé Masó,; La Jeringa VIII-2009; col. R. Nuñez/ MNHNCu; 41.000096	MNHC	No

T. suavis	WIBF 042066	Female	1	CUBA. Artemisa,; Sierra del Rosario, Estac.; Ecol., El Salón. III-2011; (volando diurno); col. O. Madruga/ MNHNCu 41.000107	MNHC	No
T. suavis	WIBF 042067	Female	1	CUBA. Sierra Maestra,; Granma, Bartolomé Masó,; I-XII-2007; col. S. Gutiérrez/ MNHNCu; 41.000104	MNHC	No
T. suavis	WIBF 042068	Female	1	CUBA. Pinar del Rio, PN; Mil Cumbres; Estac. Biol.; Cajálbana, 1-2011; col. M. Hernandez/ MNHNCu; 41.000090	MNHC	No
T. suavis	WIBF 042069	Female	1	BAHAMAS: Andros Isl.; San Andros; June 22, 1976; ex. Leucaena glauca; J W Smith F D Bennet	TAMU	No
T. suavis	WIBF 042070	Female	1	BAHAMAS: Andros Isl.; Fresh Creek; 25-VI-1972/ B. K. Dozier; Coll.	FSCA	No
T. suavis	WIBF 042071	Female	1	BAHAMAS: Grand Bahamas; Wallace Farn; 20-X-1992 Bahama; Surey Team, Mango	FSCA	No
T. suavis	WIBF 042072	Female	1	Nassau, N.P.; BAHAMAS; 28 July 1972/ T.E. Rogers; Coll.	WIBF	No
T. suavis	WIBF 042073	Male	1	BAHAMA ISLANDS:; Andros Island; San Andros; June 6, 1974; J. W. Smith	TAMU	No
T. suavis	WIBF 042074	Male	1	BAHAMA ISLANDS:; Andros Island; San Andros; June 6, 1974; J. W. Smith	TAMU	No
T. suavis	WIBF 042075	Male	1	Grand Bahama Isl.; Pine Ridge; May 13, 1953/ At light/ Van Voast - A.M.N.H.; Bahama Isls Exped; Coll. E..B. Hayden &; G.B. Rabb	AMNH	No
T. suavis	WIBF 042076	Male	1	Marsh Harbour,; Abaco, Bahamas,; Aug. 25, 1971; H. & A. Howden	CNC	No
T. suavis	WIBF 042077	Male	1	GRAND BAHAMA ISLAND; Freeport; 20-27 June 1987; W. E. Steiner,; M. J. & R. Molineaux	WIBF	No
T. suavis	WIBF 042078	Male	1	BAHAMAS: Andros Is.; Atala Coppice,; 6-VI-2004; M. C. Thomas, BLT	FSCA	No
T. suavis	WIBF 042079	Female	1	Calopteron; suavis J.D. [Jacquelin du Val handwriting]/♀/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur	MNHN	Lectotype
T. suavis	WIBF 042080	Male	1	♂ / Cuba/ Ex-Musaeo; A. Sallé; 1897/ Museum Paris; Ex. Coll.; R. Oberthur	MNHN	No
T. suavis	WIBF 043353	Female	1	CUBA: Artemiza ; SanCristobal.10-12MAY2011 ; Bio.Res.Sierra delRosario ; 22.8417°N,82.9449°W ; E. Fosenca, at light	WIBF	No
T. mariani	WIBF 041647	Female	1	CUBA. Santiago de Cuba, ; Gran Piedra, alreded Estae. ; Ecolog. (Km15) 9-III-2008 ; col. O. Madruga, R. Nunez \ MNHNCu ; 41.000072	MNHN	No
T. mariani	WIBF 041737	Male	1	CUBA: Granma prov.; Bartolome Maso municipality, ; Pico Varacas, Subida Alto de Merino ; 05.iii.2013, F. Cala Riquelme	NMPC	No
T. mariani	WIBF 042083	Male	1	♂/ HOLOTYPE [in a red label]/ Cuba 5-74; Grand Pindra; 1200m/ Thonalmus; mariani sp. n.; det.; A. Wojciechowska 1983	NMPC	Holotype
T. mariani	WIBF 042084	Female	1	Paratypus / Cuba 5-74; Grand Pindra; 1200m/ Thonalmus; mariani sp. n.; det.; A. Wojciechowska 1983	NMPC	Paratype
T. mariani	WIBF 042085	Female	1	Gran Piedra; Ote; V -----69; Col. Broche	NMPC	No
T. mariani	WIBF 042086	Female	1	CUBA. Santiago de Cuba,; Gran Piedra, La Piedra; 16-III-2008; col. O. Madruga, R. Nuñez; MNHNCu; 41.000071	MNHC	No

T. mariani	WIBF 042087	Female	1	CUBA. Santiago de Cuba,; Gran Piedra, Pluvisilva; (Km 19) 11-III-2008; col. O. Madruga, R. Nuñez;/ MNHNCu; 41.000070	MNHC	No
T. mariani	WIBF 042088	Female	1	CUBA. Santiago de Cuba,; Gran Piedra, Pluvisilva; (Km 19) 11-III-2008; col. O. Madruga, R. Nuñez;/ MNHNCu; 41.000074	MNHC	No
T. mariani	WIBF 042089	Female	1	CUBA. Santiago de Cuba,; Gran Piedra, Pluvisilva; (Km 19) 11-III-2008; col. O. Madruga, R. Nuñez;/ MNHNCu; 41.000106	MNHC	No
T. mariani	WIBF 042090	Female	1	CUBA. Santiago de Cuba,; Gran Piedra, alreded Estac.; Écolog. (Km15) 9-III-2008; col. O. Madruga, R. Nuñez;/ MNHNCu; 41.000073	MNHC	No
T. mariani	WIBF 042091	Female	1	CUBA. Santiago de Cuba,; Gran Puedra, El Chorrito; 20.00.66 N- 75.40.42 W; (Km 7 1/2) 14-III-2008; col. O. Madruga, R. Nuñez;/ MNHNCu; 41.000081	MNHC	No
T. mariani	WIBF 042092	Female	1	CUBA: Pinar del Rio; Vinales; El Moncada; MARCH 2008, D. Saladrigas	WIBF	No
T. mariani	WIBF 042093	Female	1	CUBA. Santiago de Cuba,; Gran Piedra, El Olimpo; 20,01,07.0 N- 75,39,54.0 W; 13-III-2008; col. O. Madruga, R. Nuñez;/ MNHNCu; 41.000080	MNHC	No
T. mariani	WIBF 042094	Female	1	CUBA: Granma; Bartolome Maso; La Platica; 27-28 JAN 2007	WIBF	No
T. mariani	WIBF 042095	Male	1	GRAN PIEDRA; Ote; V ----- 69; Col. Garcia	NMPC	No
T. subquadratus	WIBF 042321	Male	1	Antilles: Jamaica; 3.Mi. So. Moneague; July 23, 1960; C. & P. Vaurie	AMNH	No
T. subquadratus	WIBF 042322	Male	1	Jamaica:; Balaclava:; A.E. Wight/ Museum of; Comparative; Zoology	MCZ	No
T. subquadratus	WIBF 042323	Male	1	Jamaica; F. Klage/ C.M./ Acc. 349	CMNH	No
T. subquadratus	WIBF 042324	Female	1	Belmore Castle; Trelawney; Jamaica/ 12. VII. 1937; Carn. Mus.; Acc. 11619	CMNH	No
T. subquadratus	WIBF 042325	Male	1	Jamaica; W.I./ HGHubbard; Collector/ Male/ HOLO; TYPE [in a red label]/ Type; 61025; USNM	USNM	Yes
T. subquadratus	WIBF 042326	Female	1	Jamaica; W.I./ HGHubbard; Collector/ Female/ PARATYPE/ Paratype; 61025; USNM	USNM	Yes

APPENDIX B

PHOTOS OF EXAMINED TYPE MATERIAL OF THONALMUS



Appendix B Figure 1. Lectotype male of *Calopteron amabile* Jacqueline du Val, 1857 deposited in the MNHN. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels. **E)** Original labels.



Appendix B Figure 2. Lectotype female of *Calopteron amabile* Jacque-line du Val, 1856 deposited in the MNHN. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels.



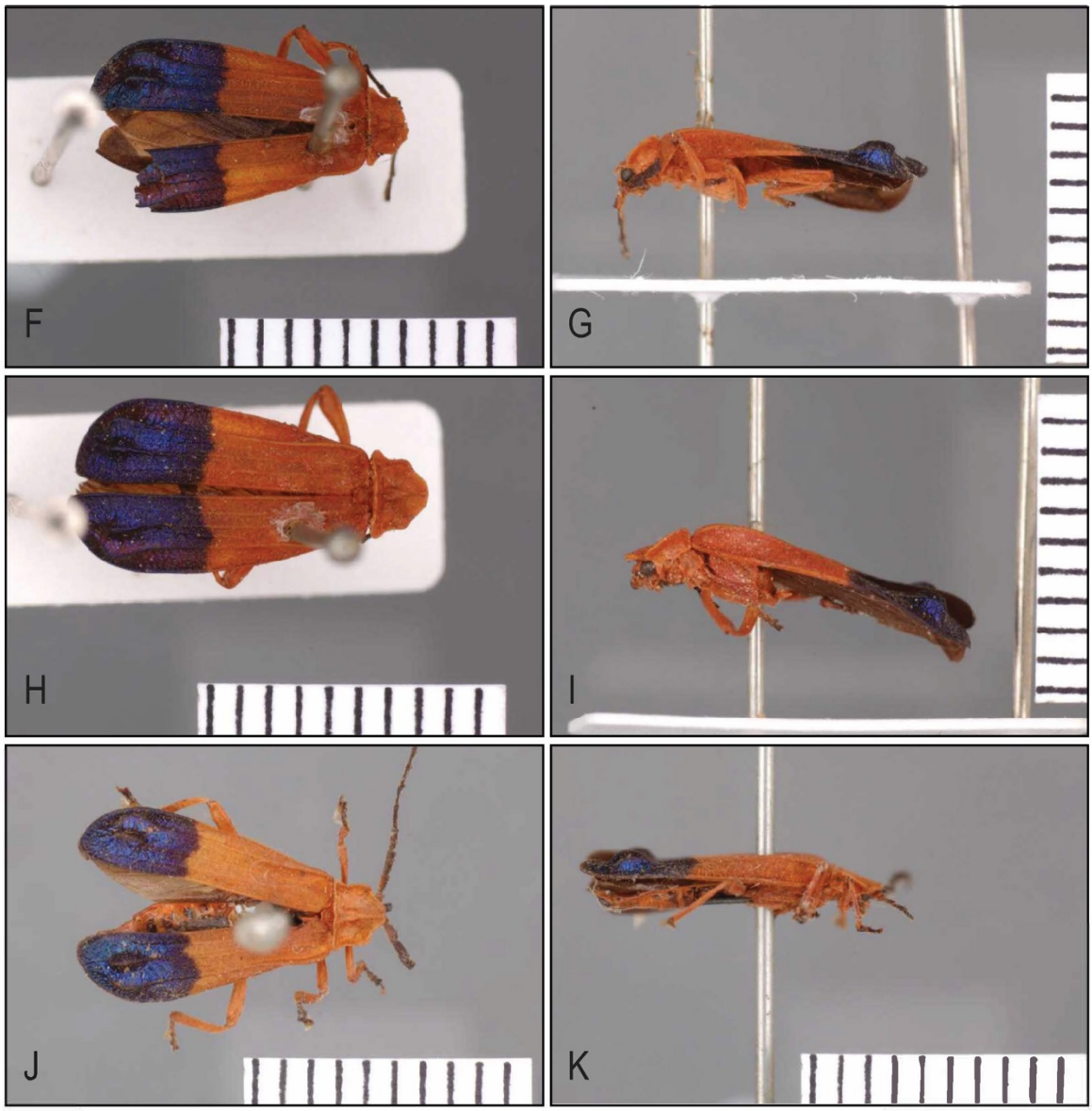
Appendix B Figure 3. Lectotype male of *Calopteron elegantulum* Jacqueline du Val, 1857 deposited in the MNHN. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels.



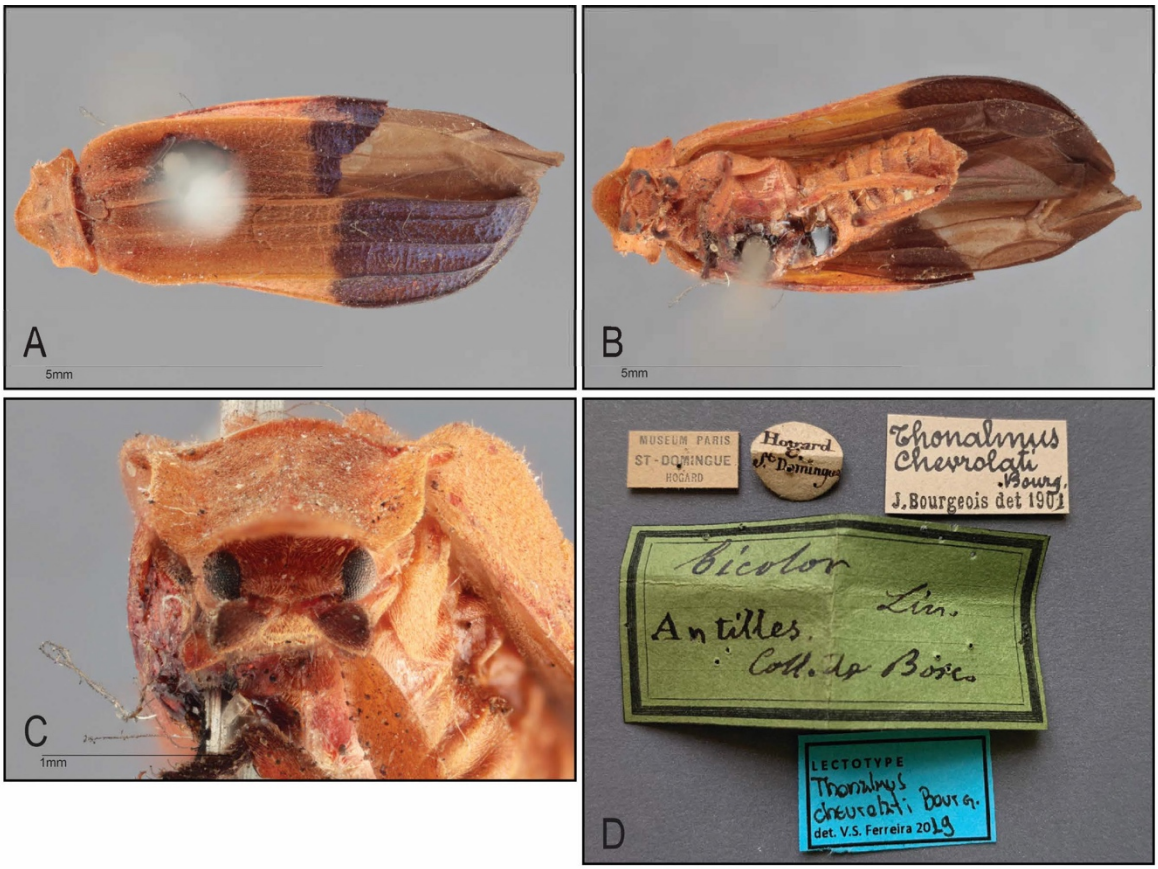
Appendix B Figure 4. Holotype male of *Thonalmus bahamae* Leng and Mutchler, 1922 deposited in the AMNH. **A)** Dorsal habitus. Original link available at: http://research.amnh.org/iz/types_db/details.php?specimen_id=1102



Appendix B Figure 5. Syntypes of *Catharis bicolor* Linnaeus, 1763 deposited in the LSUK**. Designated lectotype specimen LINN8480. A)** Dorsal habitus. **B)** Ventral habitus. **C)** Labels. **Designated paralectotype specimen LINN8481**. **D)** Dorsal habitus. **E)** Lateral view.



Appendix B Figure 5. Syntypes of *Catharis bicolor* Linnaeus, 1763 deposited in the LSUK**. Designated paralectotype specimen LINN8482. F)** Dorsal habitus. **G)** Lateral habitus. **Designated paralectotype specimen LINN8483. H)** Dorsal habitus. **I)** Lateral habitus.**Designated paralectotype specimen LINN8484**. **J)** Dorsal habitus. **K)** Lateral habitus.



Appendix B Figure 6. Lectotype female of *Thonalmus chevrolati* Bourgeois, 1901 deposited in the MNHN**. A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Labels.



Appendix B Figure 7. Lectotype male of *Calopteron distinguendum* Jacqueline du Val, 1856 deposited in the MNHN. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels. **E)** Original labels.



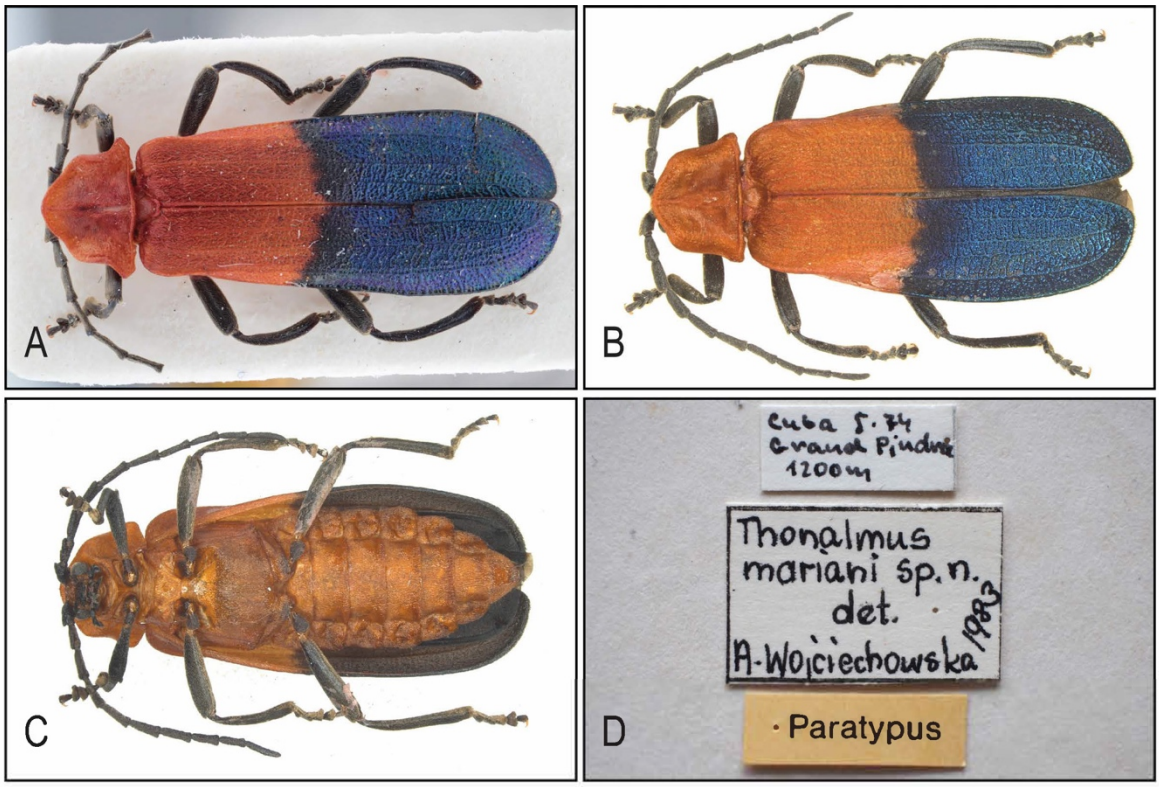
Appendix B Figure 8. Lectotype male of *Calopteron dominicense* Chevrolat, 1870 deposited in the MNHN**. A)** Dorsal habitus. **B)** Ventral habitus. **C)** Labels.



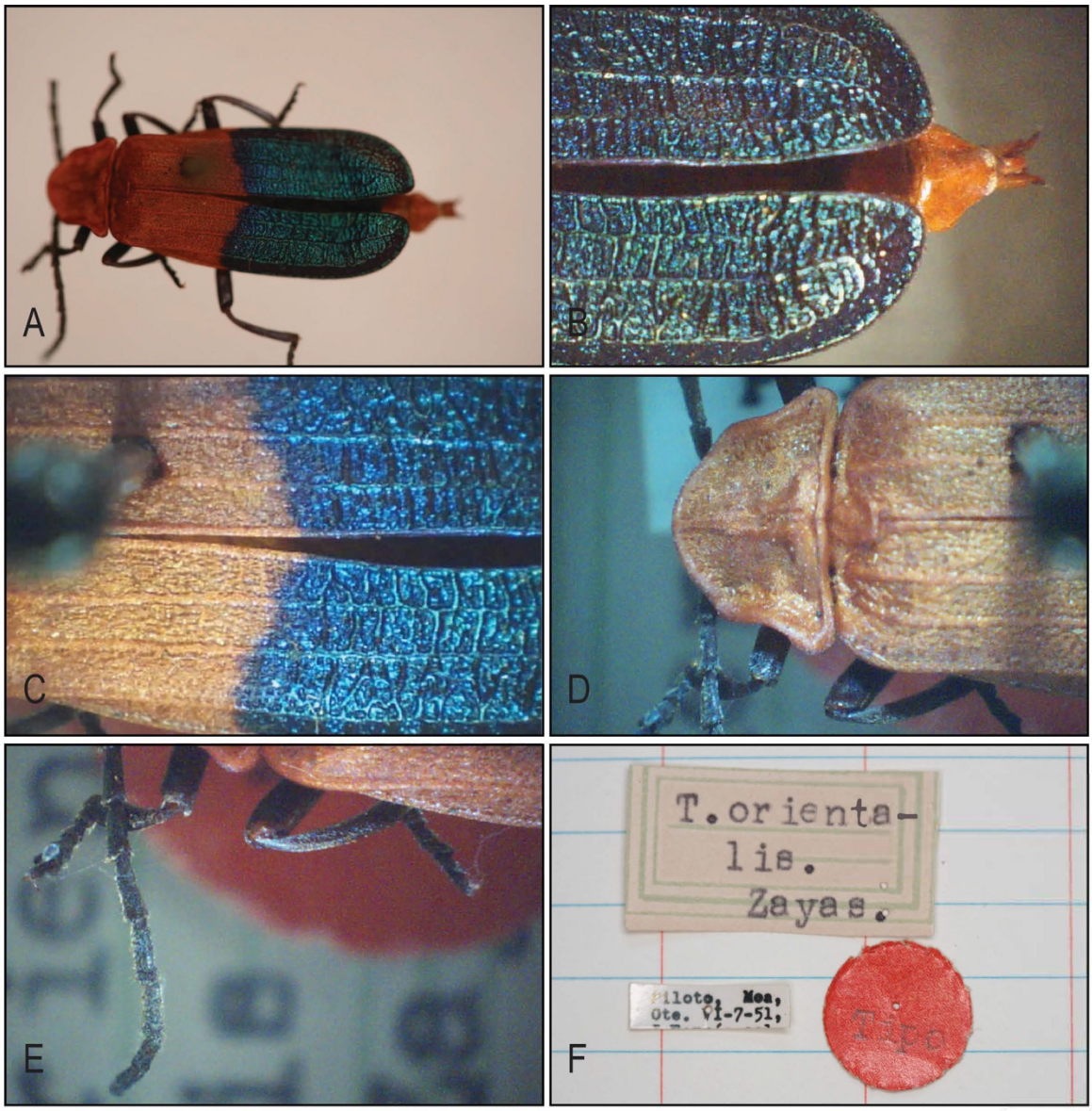
Appendix B Figure 9. Holotype male of *Thonalmus hubbardi* Leng and Mutchler, 1922 deposited in the USNM**. A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels. **E)** Original labels.



Appendix B Figure 10. Allotype female of *Thonalmus hubbardi* Leng and Mutchler, 1922 deposited in the USNM. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels. **E)** Original labels.



Appendix B Figure 11. Type specimens of of *Thonalmus mariani* Wojciechowska and Slipinski, 1985. Holotype male deposited at NMPC. **A)** Dorsal habitus. Paratype female deposited at MZPW. **B)** Dorsal habitus. **C)** Ventral habitus. **D)** Original labels. **Female photos taken by David Schim-rosczyk (used with permission).**



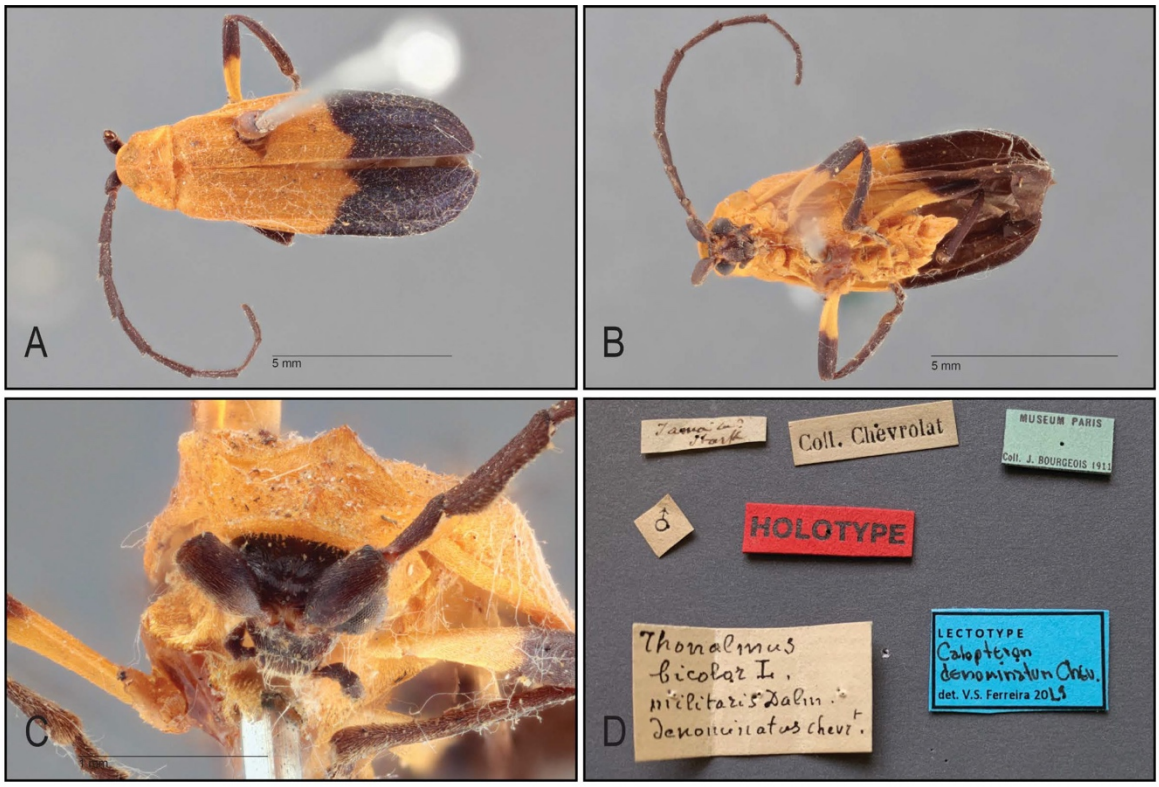
Appendix B Figure 12. Holotype female of *Thonalmus orientalis* Zayas, 1988 deposited in Zayas private collection. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels. **E)** Original labels.



Appendix B Figure 13. Lectotype male of *Lycus militaris* Dalman, 1817 deposited in the NHRS. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Labels. **Photos taken by Johannes Bergsten (used with permission).**



Appendix B Figure 14. Paralectotype male of *Lycus militaris* Dalman, 1817 deposited in the NHRS. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Label. **E)** Original label. **Photos taken by Johannes Bergsten (used with permission).**



Appendix B Figure 15. Lectotype male of *Calopteron denominatum* Chevrolat, 1870 deposited in the MNHN**. A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Labels.



Appendix B Figure 16. Type specimens of *Calopteron nigritarse* Jacqueline du Val, 1857 deposited in the MNHC. Lectotype, male. **A)** Dorsal habitus. **B)** Label. Paralectotype, female. **C)** Dorsal habitus. **D)** Ventral habitus. **E)** Frons. **F)** Label.



Appendix B Figure 17. Holotype male of *Thonalmus sinuaticostis* Leng and Mutchler, 1922 deposited in the USNM. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D-F)** Original labels.



Appendix B Figure 18. Allotype female of *Thonalmus sinuaticostis* Leng and Mutchler, 1922 deposited in the USNM. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D-F)** Original labels.



Appendix B Figure 19. Lectotype female of *Calopteron suave* Jacque-line du Val, 1857 deposited in the MNHN. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D)** Original labels. **E)** Original labels.



Appendix B Figure 20. Holotype male of *Thonalmus subquadratus* Leng and Mutchler, 1922 deposited in the USNM. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Frons view. **D-E)** Original labels.

APPENDIX C

EVOLUTIONARY MODELS, MODEL TEST SELECTION AND RESULTS FOR RASP, GENBANK ACCESSION CODES, MRBAYES DATING COMMAND BLOCKS AND COMMAND BLOCKS FOR PHYLOGENETIC ANALYSES OF *THONALMUS*

Table S1. Model selection and partitioning schemes as indicated by PartitionFinder2 and the best-fitting model according to the Bayesian information criterion for the BI analysis performed in MrBayes using the four molecular markers (cox1, rrnl, 28S and 18S). The protein-coding gene (cox1) was set up by amino-acid expression.

Loci	**Model**
rrnl, cox1 position 1, cox1 position 2	GTR+I+G
18S, 28S	K80+I
cox1 position 3	HKY+G

Table S2. Model selection and partitioning schemes as indicated by ModelFinder and the best-fitting model according to the Bayesian information criterion for the ML analysis performed in IQTree using the four molecular markers (cox1, rrnl, 28S and 18S). The protein-coding gene (cox1) was set up by amino-acid expression.

Locus	**Model**
rrnl	TIM2+F+G4
18S	K2P+I
28S	TPM3u+F+G4
cox1 position 1	TIM2+F+G4
cox1 position 2	F81+F+G4
cox1 position 3	TPM3u+F+I+G4

Table S3. Results of model test in BiogeoBears for the Ancestral Area Reconstruction in RASP.

#Results of Model Test#

	LnL	numparams	d	e	j	AICc	AICc_wt
DEC	-39.24	2	0.0036	0.0049	0	83.08	0.0007
DEC+J	-31.99	3	0.0006	1.0e-12	0.028	71.23	0.25
DIVALIKE	-36.12	2	0.0026	0.0006	0	76.83	0.015
DIVALIKE+J	**-30.95**	**3**	**0.0006**	**1.0e-12**	**0.033**	**69.17**	**0.71**
BAYAREALIKE	-48.71	2	0.0052	0.017	0	102	5.2e-08
BAYAREALIKE+J	-34.49	3	0.0004	0.0017	0.031	76.24	0.021

Use the highest AICc_wt to select the best model

==========

alt	null	LnLalt	LnLnull	DFalt	DFnull	DF	Dstatistic	pval	test	tail	AIC1
	AIC2	AICwt1	AICwt2	AICweight_ratio_model1		AICweight_ratio_model2					
DEC+J	DEC	-31.99	-39.24	3	2	1	14.51	0.0001	chi-squared	one-tailed	
	69.97	82.48	1.00	0.0019	520.2	0.0019					
DIVALIKE+J	DIVALIKE		-30.95	-36.12	3	2	1	10.33	0.0013	chi-squared	
	one-tailed		67.9	76.23	0.98	0.015	64.39	0.016			
BAYAREALIKE+J	BAYAREALIKE		-34.49	-48.71	3	2	1	28.45	9.6e-08	chi-squared	
	one-tailed		74.98	101.4	1.00	1.8e-06	553912	1.8e-06			

The p-value of the LRT (Likelihood Ratio Test) tells you whether or not you can reject

the null hypothesis that without J and +J confer equal likelihoods on the data.

log likelihood (LnL) dispersal (d) extinction (e) founder event (J)

Table S4. *Thonalmus* and outgroup taxa used in the present study and GenBank accession codes.

Taxon	**rrnl**	**18S**	**28S**	**cox**
WIBF041556 *Thonalmus sinuaticostis*	MT431476	MT431500	MT431452	MT447931
MTEC023635 *Leptolycus flavicollis*	MT431480	MT431504	MT431456	MT447947
MTEC023638 *Tainopteron* sp	MT431484	MT431508	MT431460	MT447946
UPOL000594 *Thonalmus sinuaticostis*	DQ181019	DQ181093	DQ181167	DQ181241
UPOL000595 *Thonalmus hubbardi*	DQ181020	DQ181094	DQ181168	DQ181242
UPOLA00469 *Lycus* sp.	KT751979	KT752152	KT752310	KT751662
UPOLA00592 *Thonalmus amabilis*	KT752090	KT752258	KT752422	KT751767
UPOLA00593 *Thonalmus amabilis*	KT752091	KT752259	KT752423	KT751768
UPOLA00595 *Thonalmus quadrilacinius*	KT752093	KT752261	KT752425	KT751769
WIBF041513 *Thonalmus bicolor*	MT431489	MT431514	MT431465	MT447939
WIBF041514 *Thonalmus bicolor*	MT431467	MT431491	MT431443	MT447940
WIBF041515 *Thonalmus hubbardi*	MT431468	MT431492	MT431444	MT447945
WIBF041516 *Thonalmus hubbardi*	MT431488	MT431513	MT431464	MT447944
WIBF041517 *Thonalmus sinuaticostis*	MT431472	MT431496	MT431448	MT447933
WIBF041528 *Thonalmus militaris*	MT431486	MT431511	MT431463	MT447943
WIBF041529 *Thonalmus militaris*	MT431487	MT431512	-	MT447942
WIBF041530 *Thonalmus amabilis*	MT431477	MT431501	MT431453	MT447941
WIBF041532 *Thonalmus bicolor*	MT431471	MT431495	MT431447	MT447938
WIBF041542 *Thonalmus darlingtoni*	MT431485	MT431510	MT431462	MT447936
WIBF041543 *Thonalmus dominicensis*	MT431483	MT431507	MT431459	MT447935
WIBF041545 *Thonalmus bicolor*	MT431469	MT431493	MT431445	MT447937
WIBF041551 *Thonalmus amabilis*	MT431478	MT431502	MT431454	MT447934
WIBF041555 *Thonalmus sinuaticostis*	MT431475	MT431499	MT431451	MT447932
WIBF041557 *Thonalmus hubbardi*	MT431481	MT431505	MT431457	MT447930
WIBF041558 *Thonalmus hubbardi*	MT431474	MT431498	MT431450	MT447929
WIBF041648 *Thonalmus quadrilacinius*	MT431490	-	MT431466	-
WIBF041726 Thonalmus suavis	MT431479	MT431503	MT431455	MT447927
WIBF041727 Thonalmus suavis	MT431470	MT431494	MT431446	MT447926
WIBF041728 Thonalmus suavis	MT431482	MT431506	MT431458	MT447925
WIBF041729 *Thonalmus quadrilacinius*	-	MT431509	MT431461	MT447928
WIBF041733 *Thonalmus suavis*	MT431473	MT431497	MT431449	MT447924

Table S5. Scored characters used for morphology and total evidence phylogenies.

#NEXUS

BEGIN DATA;

DIMENSIONS NTAX=22 NCHAR=77;

FORMAT DATATYPE = STANDARD GAP = - MISSING = ? SYMBOLS = " 0 1 2 3 4 5 6";

MATRIX

Thonalmus_abejaensis__
00012111110000020100000011011101110101010000012010200200110010001000120203020

Thonalmus_aulicus_ 00012111010000020100000010011101100101010000001010101-
0100100010001O?0320010000

Thonalmus_humeralis_
00012111110000020100000011011101110111010000012010200200110010001000120213020

Thonalmus_guerreiroi_ 00012111010000020100000011011101110111010000012010O-
0100100010001???20213020

Thonalmus_darlingtoni_ 00012111010000020100000010011101110111010000012010O-
0100110010001001220223020

Thonalmus_bicolor_
00012111010000020100000010011101100101010000001110210200100010101001220223020

Thonalmus_amabilis_ 10012111010000020100000011011101100111010100001010101-
0101100010001000320010000

Thonalmus_centralis_
00012111010000020100000010011101110111010000001010210200100011221001120223020

Thonalmus_distinguendus_ 0001211101000002010000001100110111010101010000101010110001000010?0320113000

Thonalmus_dominicensis_ 0001211101000002010000001001110110010101000000101010100110101001220223020

Thonalmus_hubbardi_ 0001211111000002010000001101110110010101010000111021000110001030101012020202020

Thonalmus_mariani_ 0001211101000002010000001001110101010101000000101010100010010?0?20010020

Thonalmus_militaris_ 000121110100100001000000110-0101100101010000001110001000100?01202130?0

Thonalmus_nigritarsis_ 0001211101000002010000001001110111011101010000101001010001000?0220123000

Thonalmus_quadrilacinius_ 0001211101000002010000001001110100010101000000101021010010000101100011202230200

Thonalmus_sinuaticostis_ 0001211111000002010000001101110110010101010000101001000100?0401010120202020

Thonalmus_suavis_ 0001211111000002010000001101110110010101010000101020020110001000010?0?20200000

Thonalmus_subquadratus_ 0001211101001002020000001101110110010101000000101001010001000?0120211?0

Thonalmus_thomasi_ 0001211101000002010000001001110110010101010000101001000110221000120223020

Leptolycus_albicauda 210000000011-01-13011111?12110010110101011111---013-000100110----11051----1-2

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        Cessator_luquillonis     201011200010001-13011010212110011110101011101---013-
000100110----11061----1-2
        Lycus_arizonensis        000132110020210001110110101011111101010000000000001-
0100101210001110410---010;
END;
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Table S6. Results of DIVALIKE analysis in RASP.

BioGeoBEARS result file of Name		
[TAXON]		
1	MTEC023635_Leptolycus_albicauda	B
2	MTEC023638_Tainopteron_sp	B
3	UPOLA00469_Lycus_sp	C
4	WIBF041516_Thonalmus_hubbardi	A
5	WIBF041528_Thonalmus_militaris	F
6	WIBF041530_Thonalmus_amabilis	D
7	WIBF041532_Thonalmus_bicolor	E
8	WIBF041542_Thonalmus_darlingtoni	E
9	WIBF041543_Thonalmus_dominicensis	E
10	WIBF041555_Thonalmus_sinuaticostis	A
11	WIBF041728_Thonalmus_suavis	D
12	WIBF041729_Thonalmus_quadrilacinius	BE
13	Thonalmus_abejaensis	E
14	Thonalmus_aulicus	D
15	Thonalmus_humeralis	E
16	Thonalmus_guerreiroi	E
17	Thonalmus_centralis	E
18	Thonalmus_distinguendus	D
19	Thonalmus_mariani	D
20	Thonalmus_nigritarsis	D

21 Thonalmus_subquadratus F

22 Thonalmus_thomasi E

23 Cessator_luquillonis B

[TREE]

Tree=(3:1.309823e+02,(((1:1.327737e+01,23:1.327737e+01):31.061354912085,2:4.433872e+01):5.847128e+01,((((4:2.57043482826638,10:2.570435e+00):2.213391e+01,(5:5.406802e+00,21:5.406802e+00):1.929754e+01):7.560309e+00,(((6:6.034350e+00,(14:3.175159e+00,19:3.175159e+00):2.859190e+00):4.058568e+00,(18:4.383705e+00,20:4.383705e+00):5.709212e+00):1.095936e+01,11:2.105228e+01):1.121237e+01):6.373360e+00,((7:1.361088e+01,((8:3.250347e+00,16:3.250347e+00):4.337364e+00,(13:2.973479e+00,15:2.973479e+00):4.614232e+00):6.023169e+00):5.086548e+00,((9:3.159752e+00,12:3.159752e+00):7.477535e+00,(17:4.994715e+00,22:4.994715e+00):5.642572e+00):8.060141e+00):1.994058e+01):6.417199e+01):2.817234e+01);

[RESULT]

DIVALIKE+j results:

node 24: B 100.000000 BE 0.000000 BD 0.000000 BF 0.000000 AB 0.000000 BC 0.000000 E 0.000000 D 0.000000 A 0.000000 F 0.000000 C 0.000000 DE 0.000000 AE 0.000000 EF 0.000000 CE 0.000000 DF 0.000000 AD 0.000000 AF 0.000000 CD 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 25: B 100.000000 E 0.000000 BE 0.000000 BD 0.000000 D 0.000000 AB 0.000000 BF 0.000000 A 0.000000 F 0.000000 BC 0.000000 C 0.000000 DE 0.000000 AE 0.000000 EF 0.000000 CE 0.000000 DF 0.000000 AD 0.000000 AF 0.000000 CD 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 26: A 100.000000 F 0.000000 D 0.000000 AF 0.000000 E 0.000000 AD 0.000000 B 0.000000 AE 0.000000 AB 0.000000 C 0.000000 AC 0.000000 DF 0.000000 EF 0.000000 BF 0.000000 CF

0.000000 DE 0.000000 BD 0.000000 CD 0.000000 BE 0.000000 CE 0.000000 BC 0.000000 /
0.000000

node 27: F 100.000000 A 0.000000 D 0.000000 AF 0.000000 E 0.000000 B 0.000000 DF 0.000000 C
0.000000 EF 0.000000 BF 0.000000 CF 0.000000 AD 0.000000 AE 0.000000 AB 0.000000 AC
0.000000 DE 0.000000 BD 0.000000 CD 0.000000 BE 0.000000 CE 0.000000 BC 0.000000 /
0.000000

node 28: A 43.863090 F 43.863090 AF 12.273830 D 0.000000 E 0.000000 AD 0.000000 DF 0.000000
B 0.000000 AB 0.000000 BF 0.000000 AE 0.000000 EF 0.000000 C 0.000000 AC 0.000000 CF
0.000000 DE 0.000000 BD 0.000000 CD 0.000000 BE 0.000000 BC 0.000000 CE 0.000000 /
0.000000

node 29: D 93.418710 E 3.458405 DE 3.122891 AD 0.000000 DF 0.000000 BD 0.000000 CD
0.000000 EF 0.000000 AE 0.000000 BE 0.000000 CE 0.000000 F 0.000000 A 0.000000 B 0.000000 C
0.000000 AF 0.000000 AB 0.000000 BF 0.000000 CF 0.000000 AC 0.000000 BC 0.000000 /
0.000000

node 30: D 99.696250 DE 0.156493 E 0.147256 AD 0.000000 DF 0.000000 BD 0.000000 CD
0.000000 F 0.000000 A 0.000000 B 0.000000 C 0.000000 EF 0.000000 AE 0.000000 BE 0.000000 CE
0.000000 AF 0.000000 BF 0.000000 AB 0.000000 CF 0.000000 AC 0.000000 BC 0.000000 /
0.000000

node 31: D 100.000000 DE 0.000000 DF 0.000000 AD 0.000000 BD 0.000000 CD 0.000000 E
0.000000 A 0.000000 F 0.000000 B 0.000000 C 0.000000 AF 0.000000 EF 0.000000 AE 0.000000
AB 0.000000 BF 0.000000 BE 0.000000 CF 0.000000 AC 0.000000 CE 0.000000 BC 0.000000 /
0.000000

node 32: D 99.961690 E 0.021175 DE 0.017135 A 0.000000 F 0.000000 AD 0.000000 DF 0.000000
BD 0.000000 CD 0.000000 B 0.000000 C 0.000000 EF 0.000000 AE 0.000000 BE 0.000000 CE

0.000000 AF 0.000000 BF 0.000000 AB 0.000000 CF 0.000000 AC 0.000000 BC 0.000000 /
0.000000

node 33: D 99.980580 E 0.016129 DE 0.003287 F 0.000000 A 0.000000 B 0.000000 C 0.000000 AD
0.000000 DF 0.000000 BD 0.000000 CD 0.000000 EF 0.000000 AE 0.000000 BE 0.000000 CE
0.000000 AF 0.000000 BF 0.000000 AB 0.000000 CF 0.000000 AC 0.000000 BC 0.000000 /
0.000000

node 34: D 39.108020 F 19.548500 A 19.548500 AD 8.519555 DF 8.519555 AF 4.739203 E 0.014804
DE 0.000656 EF 0.000605 AE 0.000605 B 0.000000 BD 0.000000 AB 0.000000 BF 0.000000 C
0.000000 CD 0.000000 AC 0.000000 CF 0.000000 BE 0.000000 CE 0.000000 BC 0.000000 /
0.000000

node 35: E 91.860730 DE 4.672750 D 3.466516 BE 0.000000 EF 0.000000 AE 0.000000 CE 0.000000
BD 0.000000 AD 0.000000 DF 0.000000 CD 0.000000 B 0.000000 A 0.000000 F 0.000000 C
0.000000 AB 0.000000 BF 0.000000 BC 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 /
0.000000

node 36: E 100.000000 D 0.000000 DE 0.000000 BE 0.000000 EF 0.000000 AE 0.000000 CE
0.000000 B 0.000000 A 0.000000 F 0.000000 C 0.000000 BD 0.000000 DF 0.000000 AD 0.000000
CD 0.000000 AB 0.000000 BF 0.000000 BC 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 /
0.000000

node 37: E 99.627450 DE 0.232348 D 0.140204 BE 0.000000 EF 0.000000 AE 0.000000 CE 0.000000
B 0.000000 A 0.000000 F 0.000000 C 0.000000 BD 0.000000 DF 0.000000 AD 0.000000 CD
0.000000 AB 0.000000 BF 0.000000 BC 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 /
0.000000

node 38: E 99.968320 D 0.023523 DE 0.008155 B 0.000000 F 0.000000 A 0.000000 C 0.000000 BE
0.000000 EF 0.000000 AE 0.000000 CE 0.000000 BD 0.000000 DF 0.000000 AD 0.000000 CD

0.000000 BF 0.000000 AB 0.000000 BC 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 39: E 99.558980 BE 0.289870 B 0.151149 DE 0.000000 EF 0.000000 AE 0.000000 CE 0.000000 BD 0.000000 BF 0.000000 AB 0.000000 BC 0.000000 D 0.000000 F 0.000000 A 0.000000 C 0.000000 DF 0.000000 AD 0.000000 CD 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 40: E 100.000000 BE 0.000000 DE 0.000000 EF 0.000000 AE 0.000000 CE 0.000000 B 0.000000 D 0.000000 A 0.000000 F 0.000000 C 0.000000 BD 0.000000 AB 0.000000 BF 0.000000 BC 0.000000 AD 0.000000 DF 0.000000 CD 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 41: E 99.955870 B 0.030357 BE 0.013773 D 0.000000 A 0.000000 F 0.000000 DE 0.000000 EF 0.000000 AE 0.000000 CE 0.000000 C 0.000000 BD 0.000000 BF 0.000000 AB 0.000000 BC 0.000000 AD 0.000000 DF 0.000000 AF 0.000000 CD 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 42: E 99.950700 B 0.018430 D 0.015492 BE 0.010248 DE 0.005117 BD 0.000013 A 0.000000 F 0.000000 C 0.000000 EF 0.000000 AE 0.000000 CE 0.000000 AB 0.000000 BF 0.000000 BC 0.000000 DF 0.000000 AD 0.000000 CD 0.000000 AF 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 43: E 22.034780 DE 20.292300 D 10.824150 EF 10.526730 AE 10.526730 AD 5.694435 DF 5.694435 A 5.606594 F 5.606594 AF 3.167588 B 0.010961 BE 0.004966 BD 0.004780 BF 0.002478 AB 0.002478 CE 0.000000 CD 0.000000 AC 0.000000 CF 0.000000 C 0.000000 BC 0.000000 / 0.000000

node 44: B 28.322110 BE 15.182550 E 12.234750 BD 9.313322 D 7.505075 AB 5.310010 BF 5.310010 A 4.279036 F 4.279036 DE 2.999840 EF 1.556182 AE 1.556182 AD 0.841817 DF 0.841817

AF 0.468269 C 0.000000 BC 0.000000 CE 0.000000 CD 0.000000 AC 0.000000 CF 0.000000 / 0.000000

node 45: BC 33.803280 CE 16.067790 CD 10.079810 BE 7.083942 CF 5.793904 AC 5.793904 BD 4.345452 C 4.110440 BF 2.477569 AB 2.477569 B 1.942255 DE 1.399679 E 0.923217 EF 0.726090 AE 0.726090 D 0.579161 DF 0.392779 AD 0.392779 F 0.332904 A 0.332904 AF 0.218487 / 0.000000

[SUPPLEMENT]

==========

alt	null	LnLalt	LnLnull	DFalt	DFnull	DF	Dstatistic	pval	test	tail
	AIC1	AIC2	AICwt1	AICwt2	AICweight_ratio_model1		AICweight_ratio_model2			
DEC+J	DEC	-31.99	-39.24	3	2	1	14.51	0.0001	chi-squared	one-tailed
	69.97	82.48	1.00	0.0019	520.2	0.0019				
DIVALIKE+J	DIVALIKE	-30.95	-36.12	3	2	1	10.33	0.0013	chi-squared	
	one-tailed	67.9	76.23	0.98	0.015	64.39	0.016			
BAYAREALIKE+J	BAYAREALIKE	-34.49	-48.71	3	2	1	28.45	9.6e-08	chi-squared	
	one-tailed	74.98	101.4	1.00	1.8e-06	553912	1.8e-06			

The p-value of the LRT (Likelihood Ratio Test) tells you whether or not you can reject

the null hypothesis that without J and +J confer equal likelihoods on the data.

[END]

Table S7. Dispersal and Vicariance results of RASP (see Appendix D, fig 12, for tree with node numbers)

NODE24:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

B->B^B->B|B

PROBABILITY:

1.0000

NODE25:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

B->B^B->B|B

PROBABILITY:

1.0000

NODE26:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

A->A^A->A|A

PROBABILITY:

1.0000

NODE27:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

F->F^F->F|F

PROBABILITY:

1.0000

NODE28:

EVENT MATRIX:

Dispersal:2

Vicariance:1

Extinction:0

Event Route:

A->AF->F|A

PROBABILITY:

0.4386

NODE29:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

D->D^D->D|D

PROBABILITY:

0.9342

NODE30:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

D->D^D->D|D

PROBABILITY:

0.9313

NODE31:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

D->D^D->D|D

PROBABILITY:

1.0000

NODE32:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

D->D^D->D|D

PROBABILITY:

0.9966

NODE33:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

D->D^D->D|D

PROBABILITY:

0.9994

NODE34:

EVENT MATRIX:

Dispersal:2

Vicariance:1

Extinction:0

Event Route:

D->AD->D|A

PROBABILITY:

0.1715

NODE35:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

0.9186

NODE36:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

1.0000

NODE37:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

0.9152

NODE38:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

0.9960

NODE39:

EVENT MATRIX:

Dispersal:1

Vicariance:0

Extinction:0

Event Route:

E->E^E->BE^E->E|BE

PROBABILITY:

0.9956

NODE40:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

1.0000

NODE41:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

0.9952

NODE42:

EVENT MATRIX:

Dispersal:0

Vicariance:0

Extinction:0

Event Route:

E->E^E->E|E

PROBABILITY:

0.9987

NODE43:

EVENT MATRIX:

Dispersal:2

Vicariance:1

Extinction:0

Event Route:

E->DE->E|D

PROBABILITY:

0.0861

NODE44:

EVENT MATRIX:

Dispersal:2

Vicariance:1

Extinction:0

Event Route:

B->BE->E|B

PROBABILITY:

0.0624

NODE45:

EVENT MATRIX:

Dispersal:0

Vicariance:1

Extinction:0

Event Route:

BC->C|B

PROBABILITY:

0.0957

==========

Dispersal Between Areas:

A->F:1

B->E:1

D->A:1

E->B:1

E->D:1

Speciation Within Areas:

A:1

B:2

D:5

E:8

F:1

Dispersal Table:

	from	to	within
A	1.00	1.00	1
B	1.00	1.00	2
C	0.00	0.00	0
D	1.00	1.00	5
E	2.00	1.00	8
F	0.00	1.00	1

==========

Global Cost:

Global Dispersal: 9

Global Vicariance: 5

Global Extinction: 0

Block of commands used for phylogenetic analyses.

Command blocks were appended at the end of each NEXUS files. The Maximum likelihood analysis on the dataset only containing DNA or morphology data were performed in on W-IQ-TREE.

Table S8. Bayesian Inference – MrBayes – Molecular data only.

```
begin mrbayes;
        charset Subset1 = 1-704 3320-4469\3 3321-4469\3;
        charset Subset2 = 2628-3319 705-2627;
        charset Subset3 = 3322-4469\3;
        partition PartitionFinder = 3:Subset1, Subset2, Subset3;
        set partition=PartitionFinder;
        lset applyto=(1) nst=6 rates=invgamma;
        lset applyto=(2) nst=2 rates=propinv;
prset applyto=(2) statefreqpr=fixed(equal);
        lset applyto=(3) nst=2 rates=gamma;
        prset applyto=(all) ratepr=variable;
        unlink statefreq=(all) revmat=(all) shape=(all) pinvar=(all) tratio=(all);
mcmcp nrun = 2 nchain = 4 ngen = 30000000 samplefr = 1000;
mcmc;
sumt relburnin=yes burninfrac=0.25;
sump relburnin=yes burninfrac=0.25;
END;
```

Table S9. Maximum Parsimony – PAUP – Molecular data only.

```
begin paup;
log start file=Thonalmus_MP_log.log replace=yes;
begin assumptions;
options deftype=unord;
endblock;
set autoclose=yes criterion=parsimony increase=auto;
Pset msTaxa=variable;
hsearch start=stepwise nreps=10000 swap=tbr;
outgroup UPOLA00469_Lycus_sp;
savetrees file=Data_MP.tre root=yes format=altnexus
maxdecimals=6 brlens=yes replace=yes;
contree all/strict=yes treefile=Thonalmus_MP_Consensus.tre;
pscores 1/ ci=yes RI=yes HI=yes RC=yes
scorefile=Thonalmus_MP_Scores.txt replace=yes;
Describetrees all/chglist Opt=acctran root=outgroup apolist=yes;
bootstrap nreps=100 conlevel=50 search=heuristic / nreps=10;
savetrees file=ThonalmusMorphoMP_Bootstrap.tre root=yes format=altnexus
savebootp=both maxdecimals=6 from=1 to=100 brlens=yes replace=yes;
contree all/ indices=yes;
log stop;
end;
```

Table S10. Bayesian Inference – MrBayes – Morphology data only.

```
begin mrbayes;
lset rates=gamma coding=all;
ctype Unordered:all;
outgroup Lycus_arizonensis;
mcmcp ngen=50000000 printfreq=10000 samplefreq=100
mcmcdiagn=yes diagnfreq=500000 stoprule=yes stopval=0.01;
mcmcp nrun = 2 nchain = 4 ngen = 30000000 samplefr = 1000 savebrlens=yes
filename=ThonalmusMorpho_BI+Mk+G;
mcmc;
sumt contype=allcompat conformat=simple relburnin=yes burninfrac=0.25;
sump relburnin=yes burninfrac=0.25;
END;
```

Table S11. Maximum Parsimony – PAUP – Morphology data only.

```
begin paup;
log start file=Thonalmus_MP_log.log replace=yes;
begin assumptions;
options deftype=unord;
endblock;
set autoclose=yes criterion=parsimony increase=auto;
Pset msTaxa=variable;
hsearch start=stepwise nreps=10000 swap=tbr;
outgroup Lycus_arizonensis;
savetrees file=Data_MP.tre root=yes format=altnexus
maxdecimals=6 brlens=yes replace=yes;
contree all/strict=yes treefile=Thonalmus_MP_Consensus.tre;
pscores 1/ ci=yes RI=yes HI=yes RC=yes
scorefile=Thonalmus_MP_Scores.txt replace=yes;
Describetrees all/chglist Opt=acctran root=outgroup apolist=yes;
bootstrap nreps=100 conlevel=50 search=heuristic / nreps=10;
savetrees file=ThonalmusMorphoMP_Bootstrap.tre root=yes format=altnexus
savebootp=both maxdecimals=6 from=1 to=100 brlens=yes replace=yes;
contree all/ indices=yes;
log stop;
end;
```

Table S12. Bayesian Inference – MrBayes – Total evidence analysis.

```
begin mrbayes;
        charset Subset1 = 1-704 3320-4469\3 3321-4469\3;
        charset Subset2 = 2628-3319 705-2627;
        charset Subset3 = 3322-4469\3;
        charset Subset4 = 4470-4546;
        partition PartitionFinder = 4:Subset1, Subset2, Subset3, Subset4;
        set partition=PartitionFinder;
        lset applyto=(1) nst=6 rates=invgamma;
        lset applyto=(2) nst=2 rates=propinv;
prset applyto=(2) statefreqpr=fixed(equal);
        lset applyto=(3) nst=2 rates=gamma;
        lset applyto=(4) rates=gamma coding=all;
        ctype Unordered:all;
        prset applyto=(all) ratepr=variable;
        unlink statefreq=(all) revmat=(all) shape=(all) pinvar=(all) tratio=(all);
mcmcp nrun = 2 nchain = 4 ngen = 30000000 samplefr = 1000 stoprule=yes stopval=0.01;
mcmc;
sumt contype=allcompat conformat=simple relburnin=yes burninfrac=0.25;
sump relburnin=yes burninfrac=0.25;
END;
```

Table S13. Maximum Likelihood Inference – IQTree – Total evidence analysis**.**

iqtree -s Molec.nex -s Morpho.nex -spp partitionfile.txt -nt AUTO -safe -m MFP+MERGE -bb 10000 -wbt -alrt 1000 -abayes -bsam GENESITE

Table S14. Maximum Parsimony – PAUP – Morphology data only.

```
begin paup;
log start file=Thonalmus_MP_log.log replace=yes;
begin assumptions;
options deftype=unord;
endblock;
set autoclose=yes criterion=parsimony increase=auto;
Pset msTaxa=variable;
hsearch start=stepwise nreps=10000 swap=tbr;
outgroup UPOLA00469_Lycus_sp;
savetrees file=Data_MP.tre root=yes format=altnexus
maxdecimals=6 brlens=yes replace=yes;
contree all/strict=yes treefile=Thonalmus_MP_Consensus.tre;
pscores 1/ ci=yes RI=yes HI=yes RC=yes
scorefile=Thonalmus_MP_Scores.txt replace=yes;
Describetrees all/chglist Opt=acctran root=outgroup apolist=yes;
bootstrap nreps=100 conlevel=50 search=heuristic / nreps=10;
savetrees file=ThonalmusMorphoMP_Bootstrap.tre root=yes format=altnexus
savebootp=both maxdecimals=6 from=1 to=100 brlens=yes replace=yes;
contree all/ indices=yes;
log stop;
end;
```

MrBayes dating command blocks

Table S15. MrBayes analysis.

```
begin mrbayes;
charset Subset1= 1-1150\3 2-1150\3;
charset Subset2= 3-1150\3;
partition dating = 2:Subset1, Subset2;
set partition=dating;
lset applyto=(1) nst=6 rates=invgamma;
lset applyto=(2) nst=2 rates=gamma;
        prset applyto=(all) ratepr=variable;
        unlink statefreq=(all) revmat=(all) shape=(all);
[Relaxed clock models]
        prset clockratepr = fixed(0.0115);
        prset igrvarpr = exp(10);
        prset igrvarpr=exp(10);
        outgroup UPOLA00469_Lycus_sp;
        taxset fossils=  Montserrat_estimationdates Leptolycini_fossil;
        constraint root =3;
        constraint Leptolycini= 1 2 13;
        constraint Montserrat= 4 10 14;
        constraint group= 4-12 14;
        constraint ingroup = 1 2 4-14;
[Total Evidence dating]
        calibrate Leptolycini = unif (30,45) Montserrat = unif (2.3,2.6);
```

```
        prset nodeagepr = calibrated;
        prset brlenspr = clock:fossilization;
        prset samplestrat = diversity;
        prset sampleprob = 0.006;
        prset speciationpr = exp(10);
        prset fossilizationpr = beta(1,1);
        prset treeagepr = offsetexp(130,160);
        prset topologypr = constraint (Leptolycini,group,ingroup, Montserrat);
        mcmcp nrun = 2 nchain = 4 ngen = 30000000 samplefr = 1000 stoprule=yes stopval=0.01;
mcmc;
sumt contype=allcompat relburnin=yes burninfrac=0.25;
sump relburnin=yes burninfrac=0.25;
delete fossils;
sumt output = Nofossils.rf;
END;
```

Table S16. Total Evidence Bayesian Analysis for Ancestral Area reconstruction.

```
begin mrbayes;
charset Subset1= 1-1150\3 2-1150\3;
charset Subset2= 3-1150\3;
charset Subset3= 1151-1227;

partition dating = 3:Subset1, Subset2, Subset3;
set partition=dating;

lset applyto=(1) nst=6 rates=invgamma;
lset applyto=(2) nst=2 rates=gamma;
lset applyto=(3) rates=gamma coding=all;
ctype Unordered:all;

        prset applyto=(all) ratepr=variable;
        unlink statefreq=(all) revmat=(all) shape=(all);

[Relaxed clock models]
        prset clockratepr = fixed(0.0115);
        prset igrvarpr = exp(10);
        prset igrvarpr=exp(10);
        outgroup UPOLA00469_Lycus_sp;
```

```
        taxset fossils=  Montserrat_estimationdates Leptolycini_fossil;
        constraint root =3;
        constraint Leptolycini= 1 2 23 24;
        constraint DR = 7 8 9 12 13 15 16 17 22;
        constraint Montserrat= 4 10 25;
        constraint group= 4-22 25;
        constraint ingroup = 1 2 4-25;

[Total Evidence dating]
        calibrate Leptolycini = unif (30,45) Montserrat = unif (2.3,2.6);
        prset nodeagepr = calibrated;
        prset brlenspr = clock:fossilization;
        prset samplestrat = diversity;
        prset sampleprob = 0.006;
        prset speciationpr = exp(10);
        prset fossilizationpr = beta(1,1);
        prset treeagepr = offsetexp(130,160);
        prset topologypr = constraint (Leptolycini,group,ingroup, Montserrat, DR);
        mcmcp nrun = 2 nchain = 4 ngen = 30000000 samplefr = 1000 stoprule=yes stopval=0.01;

mcmc;

sumt contype=allcompat relburnin=yes burninfrac=0.25;
sump relburnin=yes burninfrac=0.25;
delete fossils;
```

```
sumt output = Nofossils.rf;



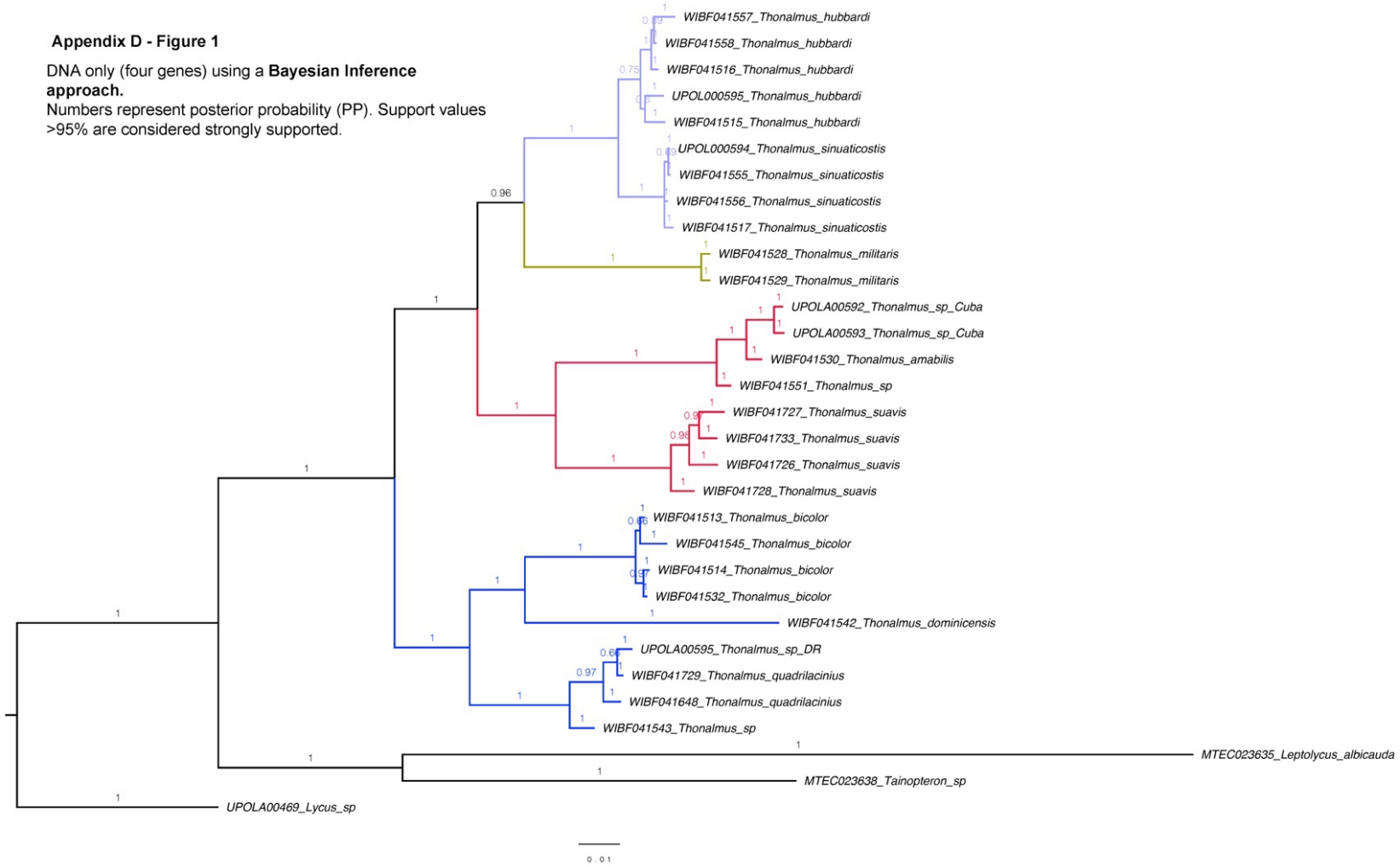
END;
```

APPENDIX D

PHYLOGENETIC TREES AND ANCESTRAL AREA RECONSTRUCTION HYPOTHESES OF *THONALMUS*

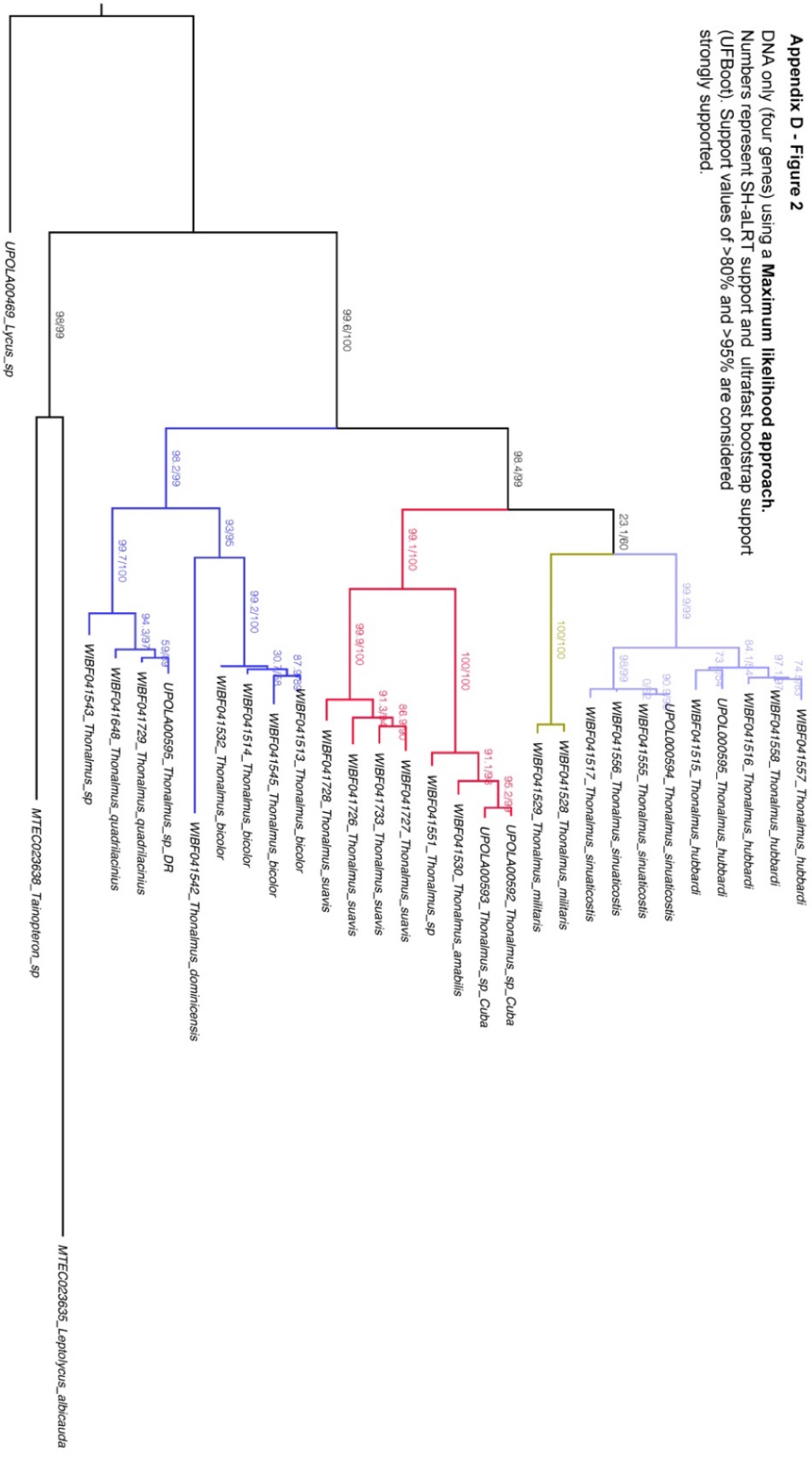
Appendix D - Figure 1

DNA only (four genes) using a **Bayesian Inference approach.**
Numbers represent posterior probability (PP). Support values >95% are considered strongly supported.



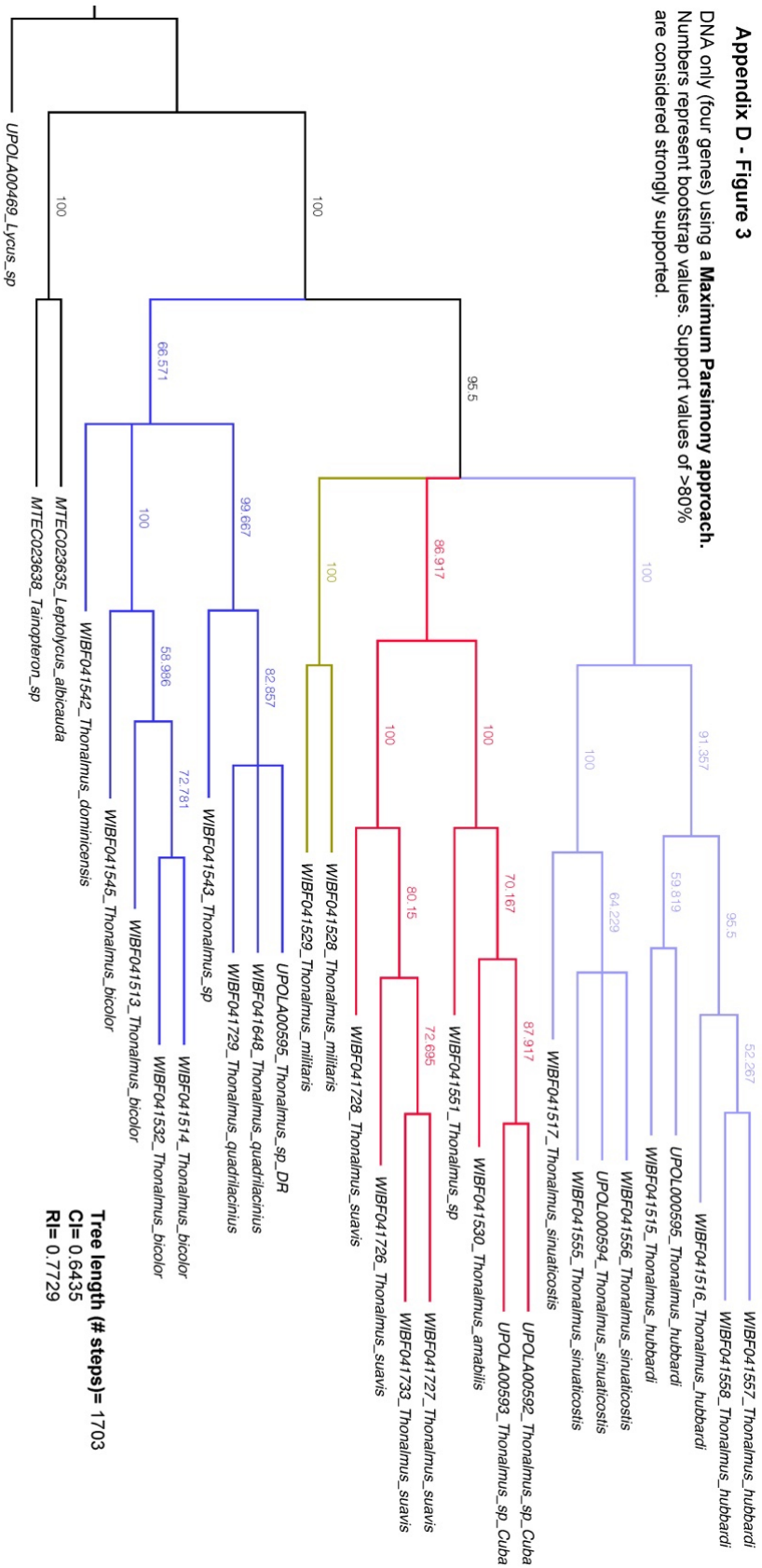
Appendix D - Figure 2

DNA only (four genes) using a **Maximum likelihood approach.**
Numbers represent SH-aLRT support and ultrafast bootstrap support (UFBoot). Support values of >80% and >95% are considered strongly supported.



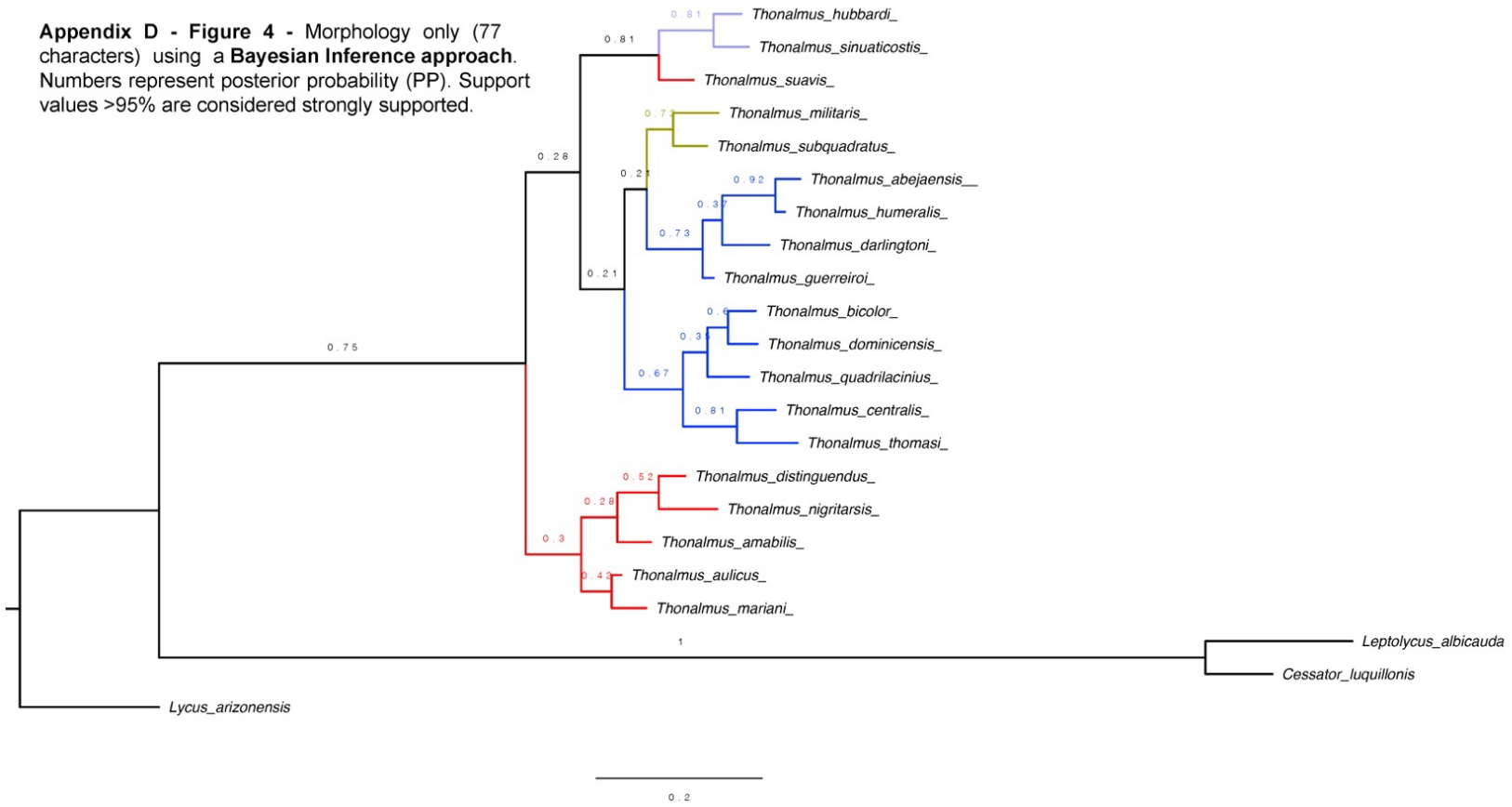
Appendix D - Figure 3

DNA only (four genes) using a **Maximum Parsimony approach.**
Numbers represent bootstrap values. Support values of >80% are considered strongly supported.

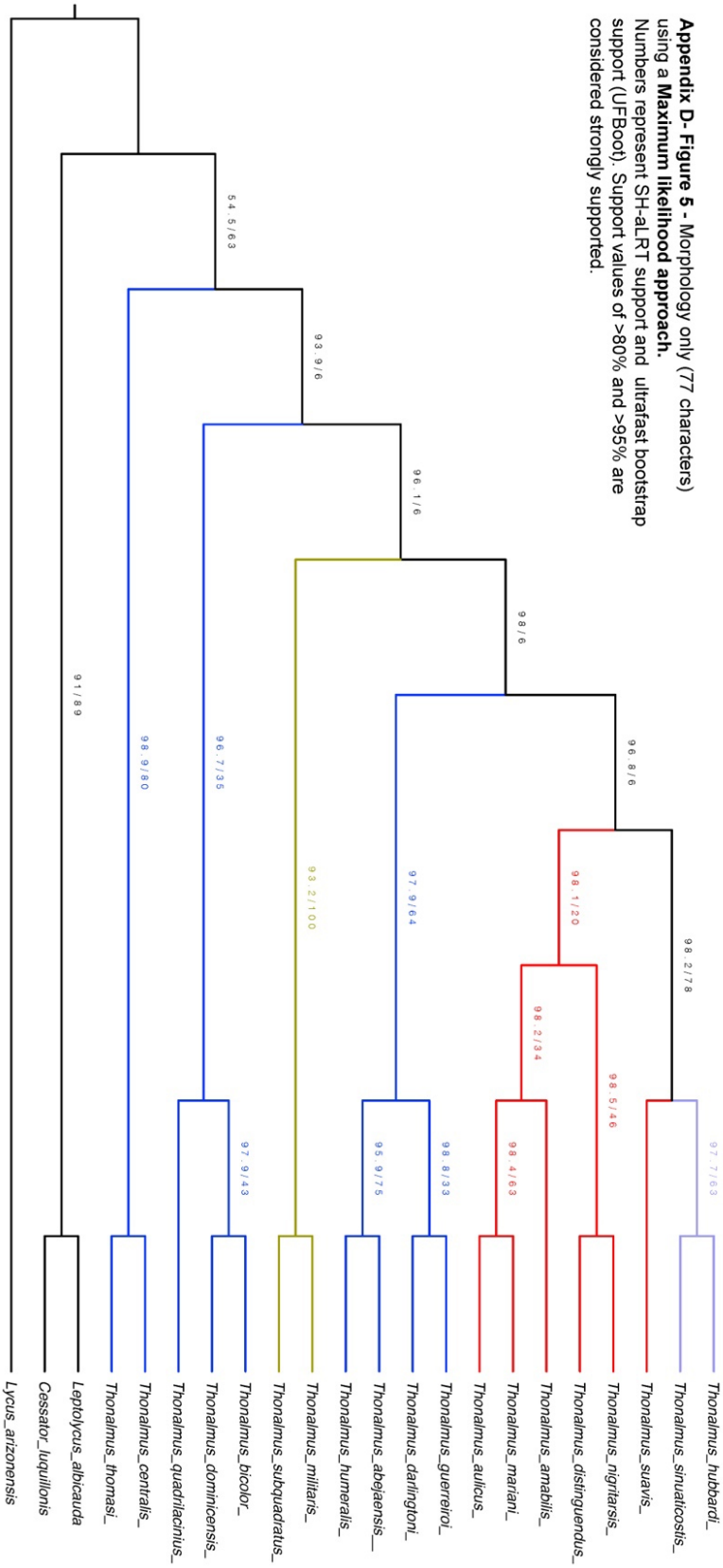


Tree length (# steps)= 1703
CI= 0.6435
RI= 0.7729

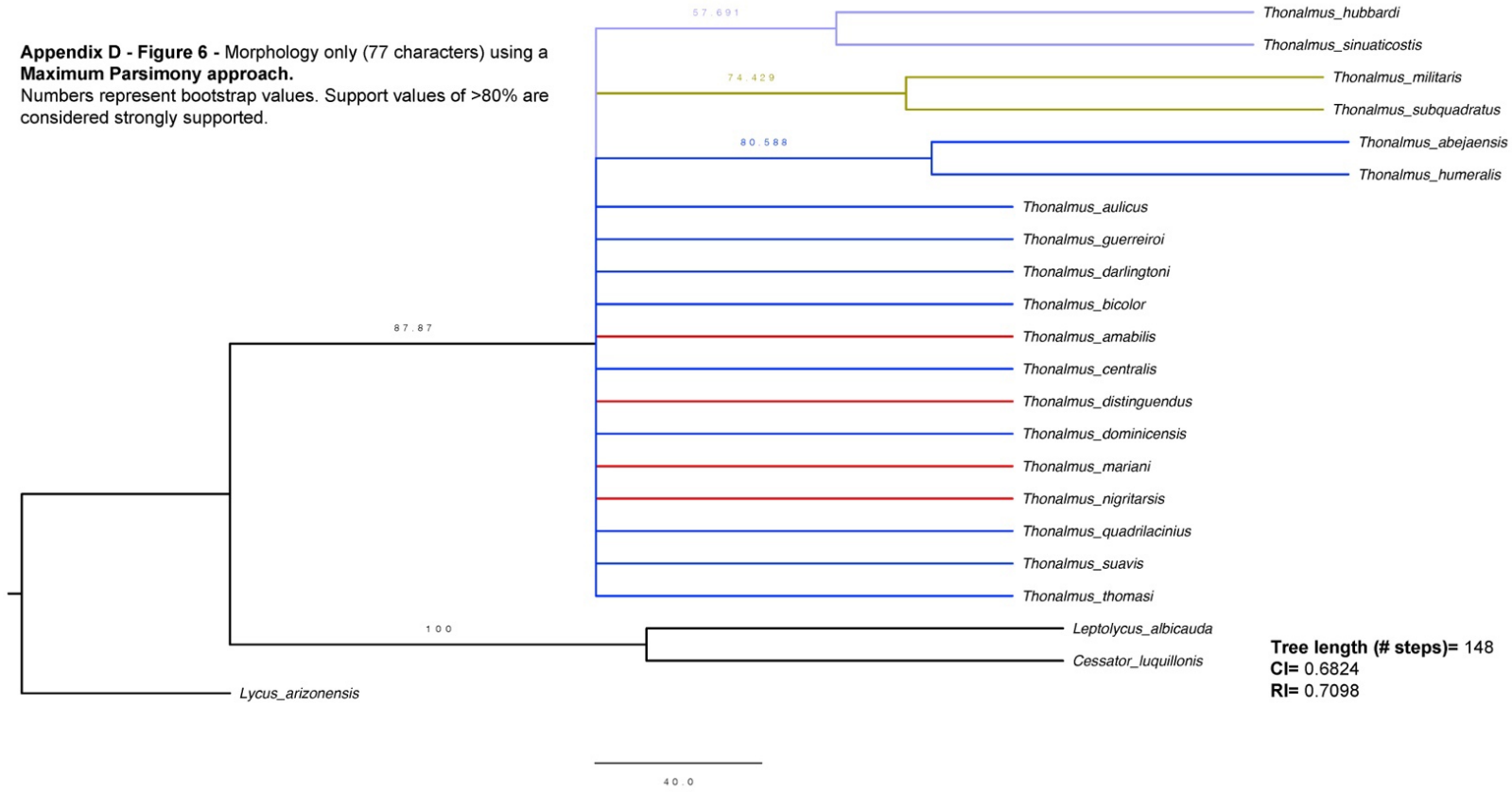
Appendix D - Figure 4 - Morphology only (77 characters) using a **Bayesian Inference approach**. Numbers represent posterior probability (PP). Support values >95% are considered strongly supported.

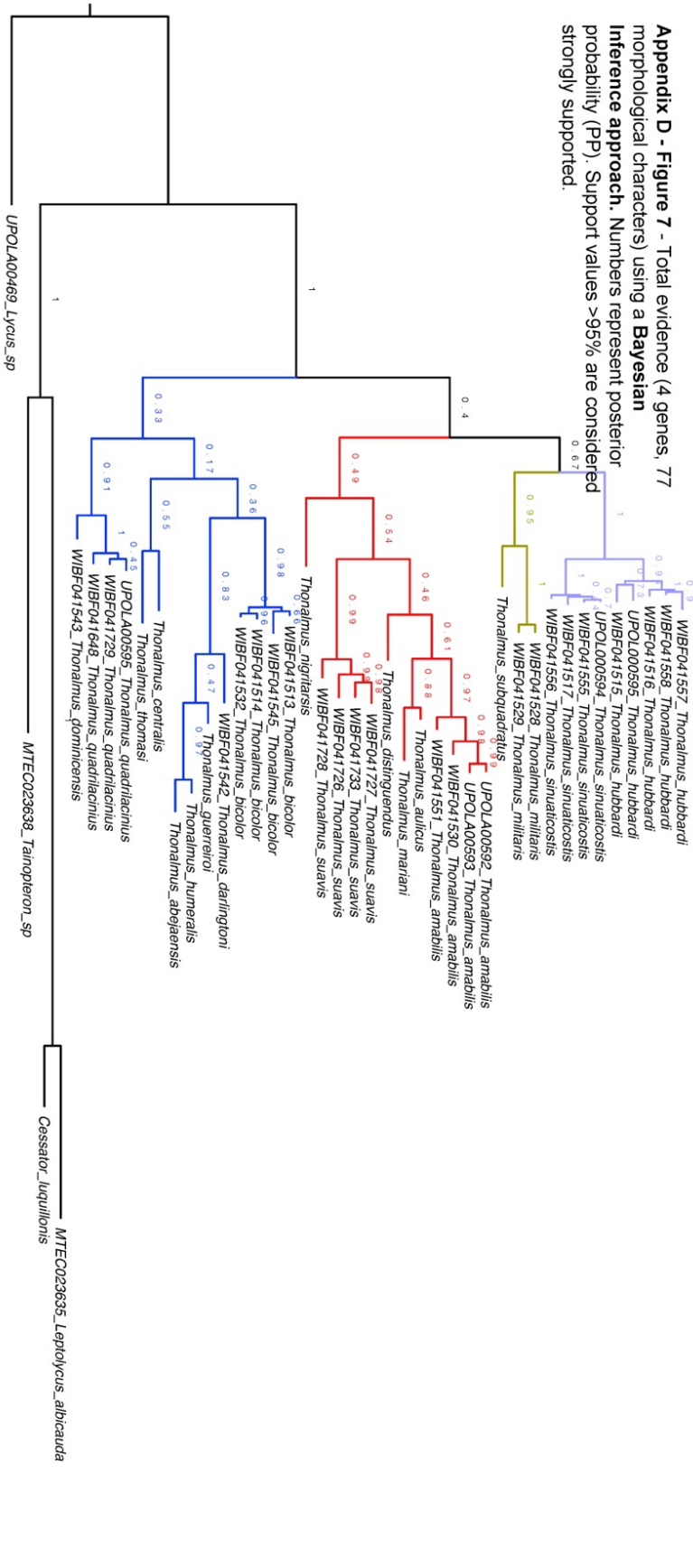


Appendix D- Figure 5 - Morphology only (77 characters) using a **Maximum likelihood approach.** Numbers represent SH-aLRT support and ultrafast bootstrap support (UFBoot). Support values of >80% and >95% are considered strongly supported.



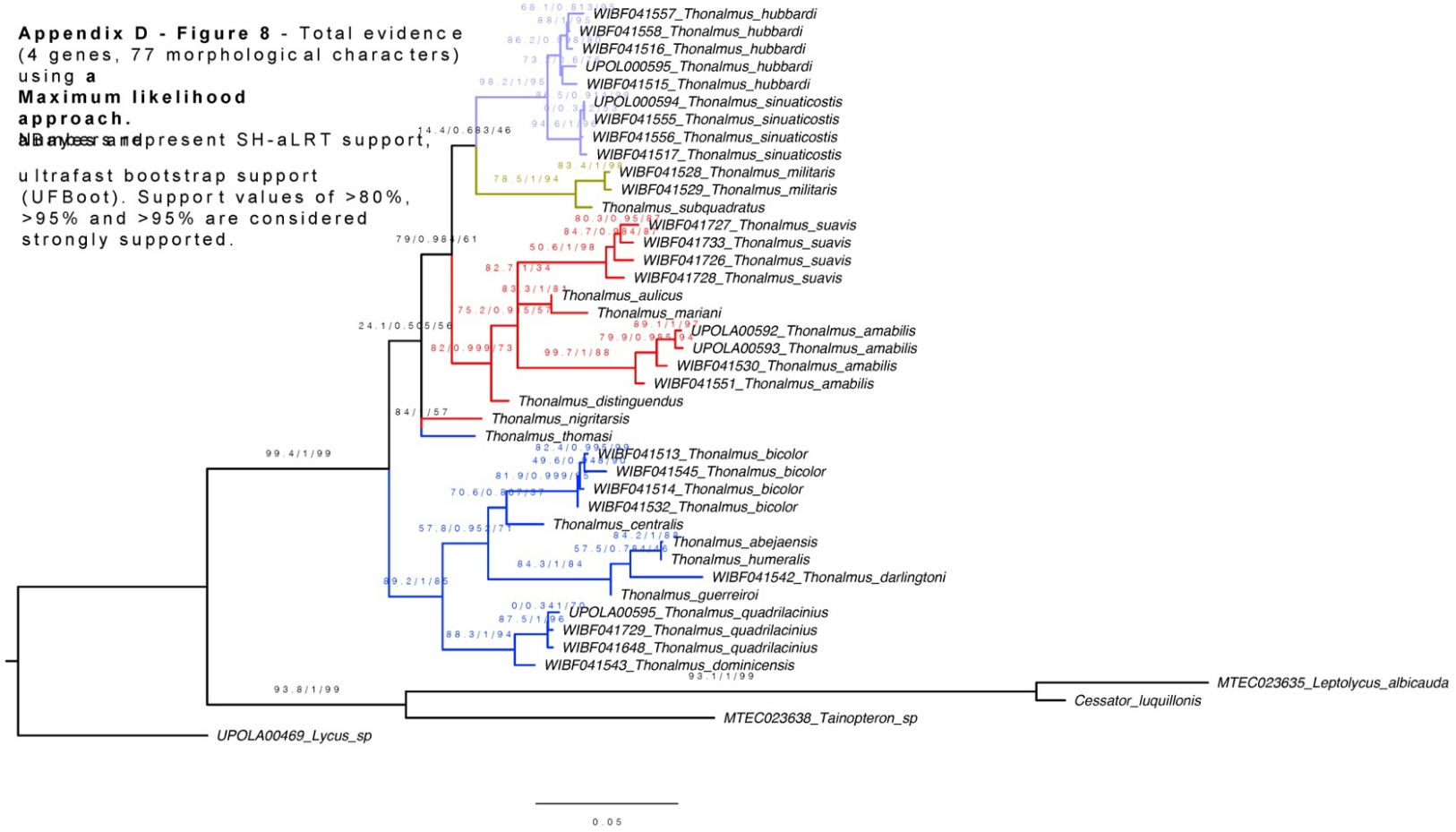
Appendix D - Figure 6 - Morphology only (77 characters) using a **Maximum Parsimony approach.**
Numbers represent bootstrap values. Support values of >80% are considered strongly supported.



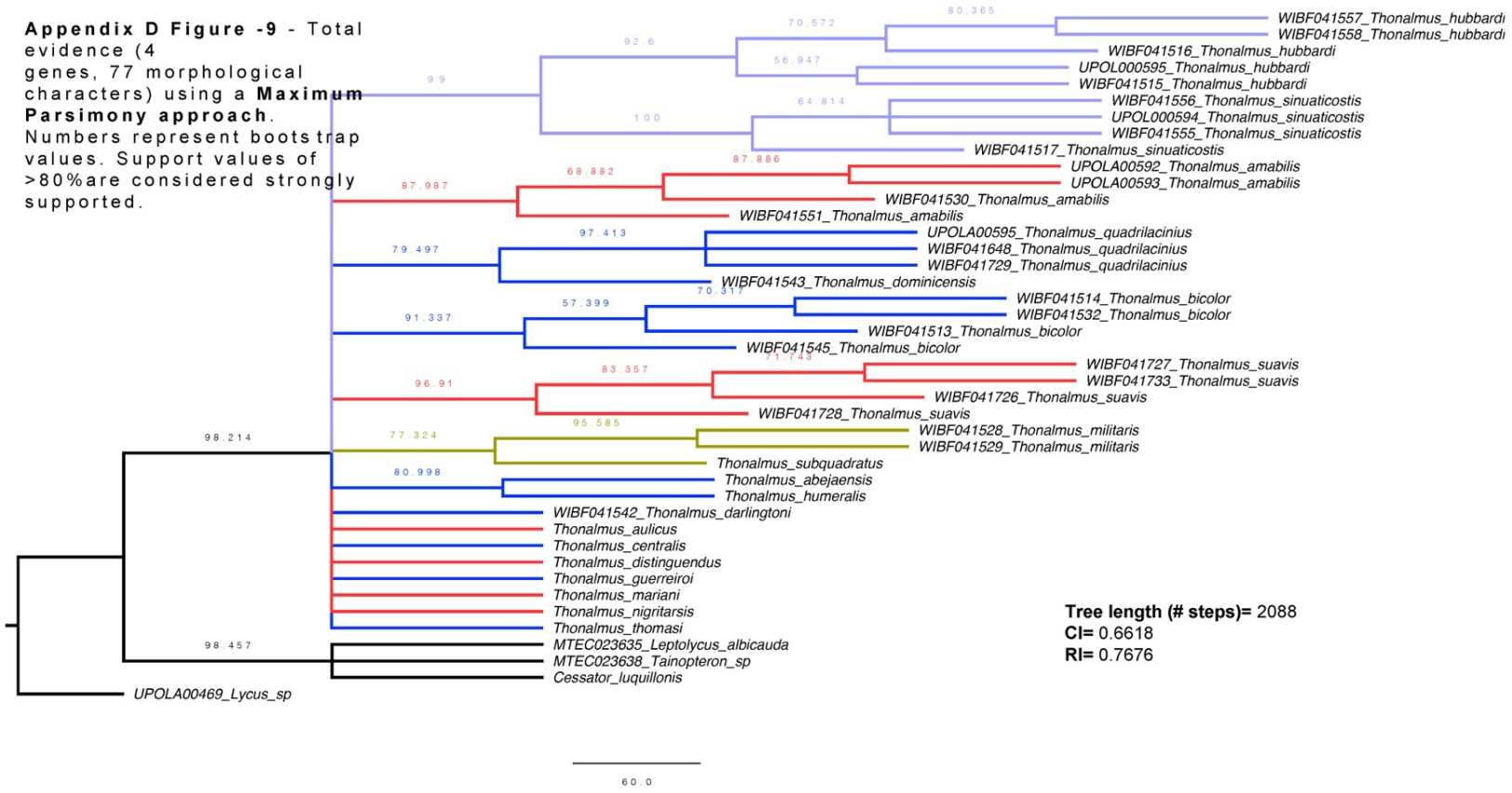


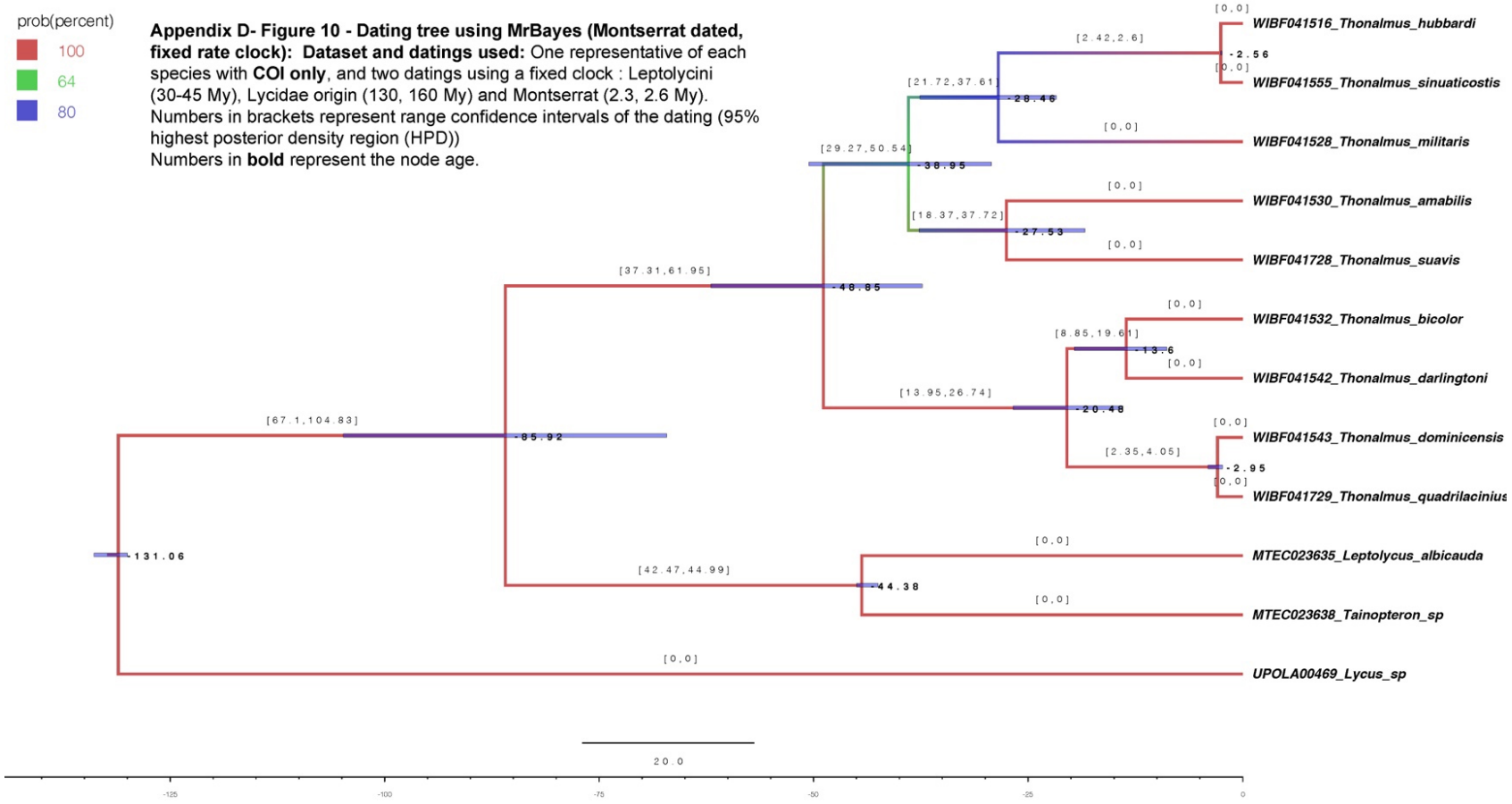
Appendix D - Figure 7 - Total evidence (4 genes, 77 morphological characters) using a **Bayesian Inference approach**. Numbers represent posterior probability (PP). Support values >95% are considered strongly supported.

Appendix D - Figure 8 - Total evidence (4 genes, 77 morphological characters) using a **Maximum likelihood approach.** Numbers at nodes represent SH-aLRT support, aBayesian and ultrafast bootstrap support (UFBoot). Support values of >80%, >95% and >95% are considered strongly supported.

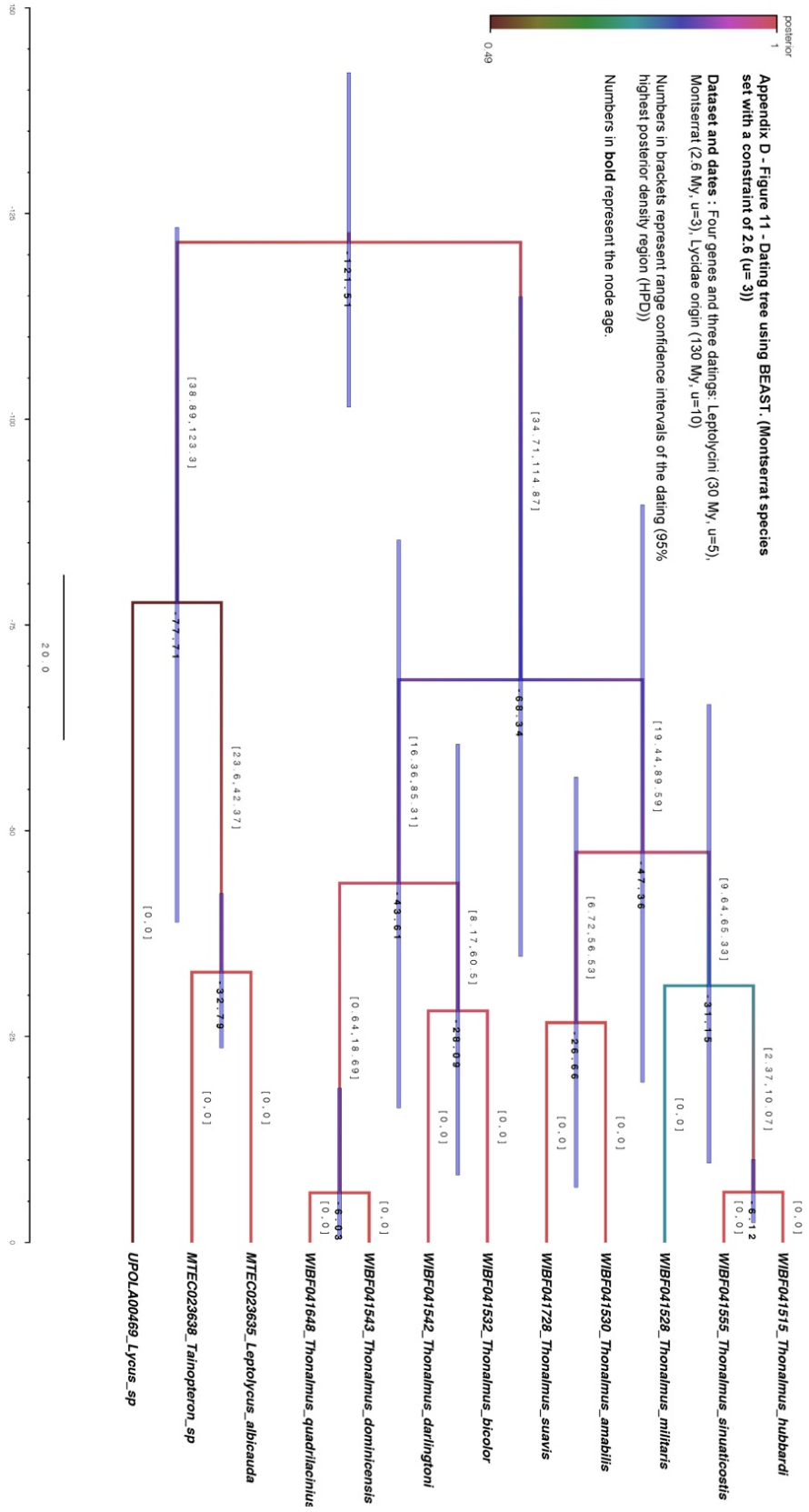


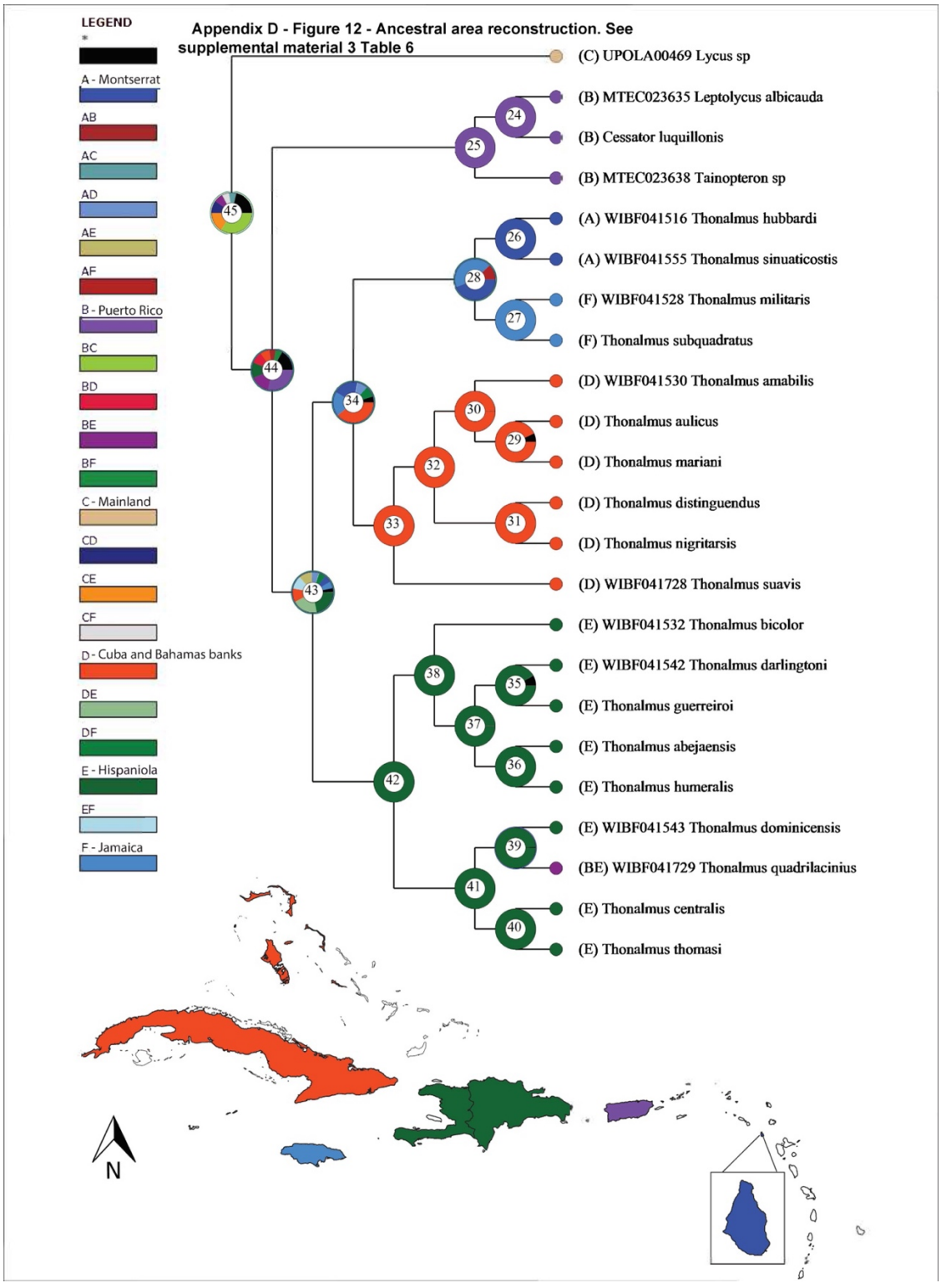
Appendix D Figure -9 - Total evidence (4 genes, 77 morphological characters) using a **Maximum Parsimony approach**. Numbers represent bootstrap values. Support values of >80% are considered strongly supported.

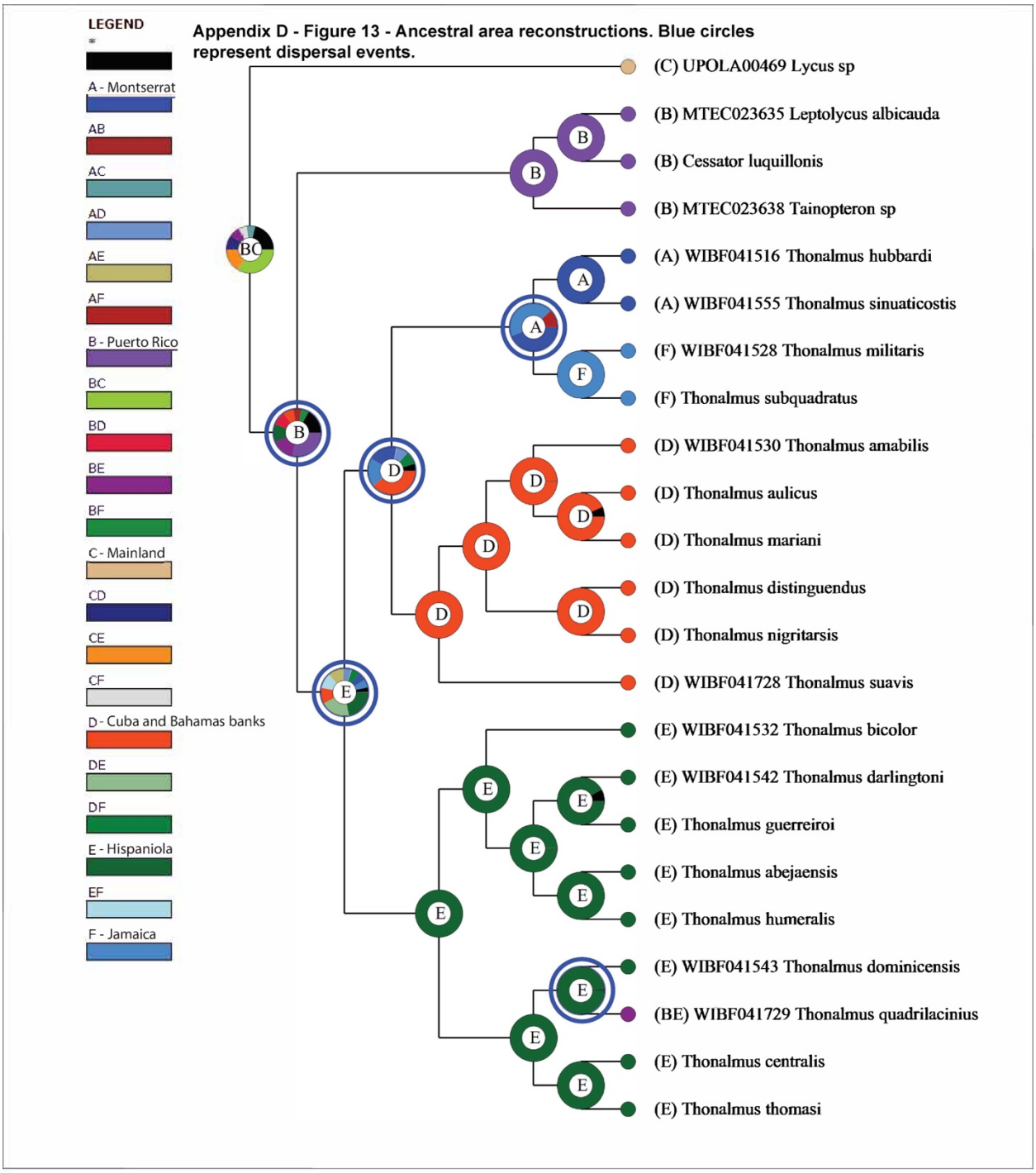




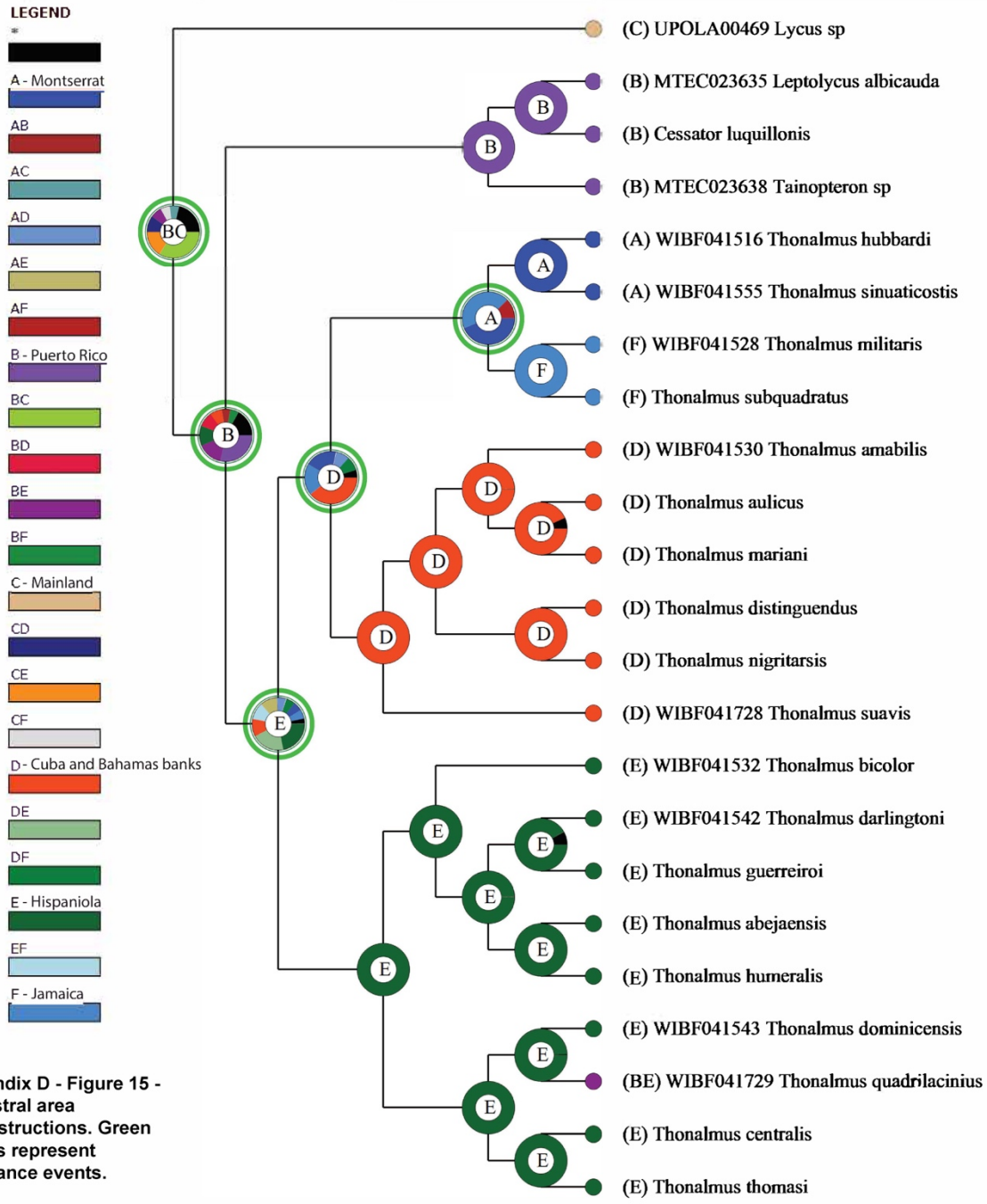
Appendix D- Figure 10 - Dating tree using MrBayes (Montserrat dated, fixed rate clock): Dataset and datings used: One representative of each species with **COI only**, and two datings using a fixed clock : Leptolycini (30-45 My), Lycidae origin (130, 160 My) and Montserrat (2.3, 2.6 My).
Numbers in brackets represent range confidence intervals of the dating (95% highest posterior density region (HPD))
Numbers in **bold** represent the node age.


posterior
1
0.49
Appendix D - Figure 11 - Dating tree using BEAST. (Montserrat species set with a constraint of 2.6 (u= 3))
Dataset and dates : Four genes and three datings: Leptolycini (30 My, u=5), Montserrat (2.6 My, u=3), Lycidae origin (130 My, u=10)
Numbers in brackets represent range confidence intervals of the dating (95% highest posterior density region (HPD))
Numbers in bold represent the node age.
[0.0]
WIBF041515_Thonalmus_hubbardi
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[0.0]
WIBF041555_Thonalmus_sinuaticostis
[2.37,10.07]
31.15
[0.0]
WIBF041528_Thonalmus_militaris
[9.64,65.33]
47.36
[0.0]
WIBF041530_Thonalmus_amabilis
[19.44,89.59]
26.66
[0.0]
WIBF041728_Thonalmus_suavis
[6.72,56.53]
[0.0]
WIBF041532_Thonalmus_bicolor
[8.17,60.5]
28.09
[0.0]
WIBF041542_Thonalmus_darlingtoni
[34.71,114.87]
60.34
[0.0]
WIBF041543_Thonalmus_dominicensis
[16.36,85.31]
43.61
[0.64,18.69]
-8.03
[0.0]
WIBF041648_Thonalmus_quadrilacinius
[0.0]
MTEC023635_Leptolycus_albicauda
[23.6,42.37]
32.79
[0.0]
MTEC023638_Tainopteron_sp
[38.89,123.3]
77.71
[0.0]
UPOLA00469_Lycus_sp
121.51
200
150
125
100
75
50
25
0


LEGEND
*
A - Montserrat
AB
AC
AD
AE
AF
B - Puerto Rico
BC
BD
BE
BF
C - Mainland
CD
CE
CF
D - Cuba and Bahamas banks
DE
DF
E - Hispaniola
EF
F - Jamaica
Appendix D - Figure 12 - Ancestral area reconstruction. See supplemental material 3 Table 6
(C) UPOLA00469 Lycus sp
(B) MTEC023635 Leptolycus albicauda
(B) Cessator luquillonis
(B) MTEC023638 Tainopteron sp
(A) WIBF041516 Thonalmus hubbardi
(A) WIBF041555 Thonalmus sinuaticostis
(F) WIBF041528 Thonalmus militaris
(F) Thonalmus subquadratus
(D) WIBF041530 Thonalmus amabilis
(D) Thonalmus aulicus
(D) Thonalmus mariani
(D) Thonalmus distinguendus
(D) Thonalmus nigritarsis
(D) WIBF041728 Thonalmus suavis
(E) WIBF041532 Thonalmus bicolor
(E) WIBF041542 Thonalmus darlingtoni
(E) Thonalmus guerreiroi
(E) Thonalmus abejaensis
(E) Thonalmus humeralis
(E) WIBF041543 Thonalmus dominicensis
(BE) WIBF041729 Thonalmus quadrilacinius
(E) Thonalmus centralis
(E) Thonalmus thomasi
N



Appendix D - Figure 13 - Ancestral area reconstructions. Blue circles represent dispersal events.



Appendix D - Figure 15 - Ancestral area reconstructions. Green circles represent vicariance events.

APPENDIX E

DNA VOUCHERS, ALIGNMENT, GENETIC DISTANCES AND PHYLOGRAM WITH SUPPORT LEVEL FOR ALL BRANCHES OF TAXA TREATED IN CHAPTER THREE

S1. Leptolycini taxa for which COI locus was sequenced.

WIBF051537_LarvaBeta	MW560932
WIBF051507LarvaBeta	MW560933
WIBF051506LarvaY	MW560934
WIBF051532Leptolycus_heterocornis	MW560935
WIBF041693_Larva1	MW560936
WIBF041667Leptolycus_heterocornis	MW560937
MTEC023636Leptolycus_heterocornis	MW560938
WIBF051534Leptolycus_puellus_yelloqcx	MW560939
WIBF051533Leptolycus_puellus_blackleg	MW560940
WIBF041665Leptolycus_puellus	MW560941
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WIBF051525Cessator_luquillonis	MW560943
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WIBF041696Larva3	MW560947
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WIBF041695Larva3	MW560949
MTEC023648Larva3	MW560950
MTEC023637Cessator_spnovD	MW560951
WIBF051523LarvaX	MW560952
MTEC023640LarvaX	MW560953
WIBF041511Larva8	MW560954

S2. Alignment of the COI sequences performed using MAFFT 7 under the G-INS-i algorithm for highly conserved sequences implemented in the MAFFT server. After the alignment, sequences were manually inspected in Geneious.

>ASCMT059-11|Calopteron reticulatum|COI-5P|JN288183
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S3. Pairwise genetic distances calculation implemented in Geneious percentage identity (PC) criterion.

	ASCMT059-11|Calopteron	WIBF051537_LarvaBeta	WIBF051507_LarvaBeta	WIBF051506_LarvaY	WIBF051532_Leptolycus_heterocornis	WIBF041693_Larva1	WIBF041667_Leptolycus_heterocornis	MTEC023636_Leptolycus_heterocornis	WIBF051534_Leptolycus_puellus_yelloqcx	WIBF051533_Leptolycus_puellus_blackleg	WIBF041665_Leptolycus_puellus	MTEC023635_Leptolycus_puellus	WIBF051525_Cessator_luquillonis	WIBF051498_Larva2	WIBF051497_Larva2	WIBF041694_Larva2	WIBF041696_Larva3	MTEC023638_Cessator_newspecies A_minutus	WIBF041695_Larva3	MTEC023637_Cessator_newspecies D	WIBF051523_LarvaX	MTEC023640_LarvaX	WIBF041511_Larva8
ASCMT059-11|Calopteron		78	78	78	78	79	79	78	79	79	78	78	78	78	77	77	79	79	80	77	75	76	76
WIBF051537_LarvaBeta	78		100	100	100	99	99	100	87	87	87	87	78	78	78	77	79	79	79	77	77	76	77
WIBF051507_LarvaBeta	78	100		100	100	100	100	100	87	87	87	87	78	78	78	77	79	79	79	77	77	76	77
WIBF051506_LarvaY	78	100	100		100	100	100	100	87	87	87	87	79	79	79	77	79	79	79	77	77	76	77
WIBF051532_Leptolycus_heterocornis	78	100	100	100		100	100	100	87	87	87	87	78	78	78	77	79	79	79	77	77	76	77
WIBF041693_Larva1	79	99	100	100	100		100	100	87	87	87	87	77	77	77	77	79	79	79	77	76	76	77
WIBF041667_Leptolycus_heterocornis	79	99	100	100	100	100		100	87	87	87	87	77	77	77	77	79	79	79	77	76	76	77
MTEC023636_Leptolycus_heterocornis	78	100	100	100	100	100	100		87	87	87	87	77	77	77	77	79	79	79	77	76	76	77
WIBF051534_Leptolycus_puellus_yelloqcx	79	87	87	87	87	87	87	87		99	99	99	77	77	76	76	79	79	78	77	77	77	77
WIBF051533_Leptolycus_puellus_blackleg	79	87	87	87	87	87	87	87	99		100	100	78	78	77	77	79	79	79	77	77	77	78
WIBF041665_Leptolycus_puellus	78	87	87	87	87	87	87	87	99	100		100	77	78	77	77	79	79	79	77	78	78	78
MTEC023635_Leptolycus_puellus	78	87	87	87	87	87	87	87	99	100	100		77	77	77	77	79	79	79	78	78	78	78
WIBF051525_Cessator_luquillonis	78	78	78	79	78	77	77	77	77	78	77	77		77	100	100	82	82	82	81	77	77	77
WIBF051498_Larva2	78	78	78	79	78	77	77	77	77	78	77	77	77		99	99	82	82	82	81	77	77	77
WIBF051497_Larva2	77	78	78	78	78	77	77	77	77	77	77	77	100	99		98	82	82	82	81	77	76	77
WIBF041694_Larva2	77	77	77	77	77	77	77	77	76	77	77	77	100	99	98		82	82	82	81	77	77	76
WIBF041696_Larva3	79	79	79	79	79	79	79	79	79	79	79	79	82	82	82	82		100	100	81	76	76	76
MTEC023638_Cessator_newspecies A_minutus	79	79	79	79	79	79	79	79	79	79	79	79	82	82	82	82	100		100	80	76	76	75
WIBF041695_Larva3	80	79	79	79	79	79	79	79	79	79	78	79	79	82	82	82	100	100		80	76	76	75
MTEC023637_Cessator_newspecies D	79	79	79	79	79	79	79	79	79	79	79	79	81	81	82	82	100	100	100		78	77	78
WIBF051523_LarvaX	77	77	77	77	77	77	77	77	77	78	77	77	81	81	77	77	76	76	80	80		98	83
MTEC023640_LarvaX	75	77	77	77	77	76	76	76	77	78	77	77	77	77	76	76	76	75	80	75	78		83
WIBF041511_Larva8	76	76	76	76	76	76	76	76	77	78	78	78	77	77	77	76	76	76	75	76	77	83	

S4. Pairwise genetic distances calculation implemented in MEGA 10.0.8 using the Jukes-Cantor (JC) test.

	ASCMT059-11|Calopteron_reticulatum|COI-5P|JN288183	WIBF051537_LarvaBeta	WIBF051507_LarvaBeta	WIBF051506_LarvaY	WIBF051532_Leptolycus_heterocornis	WIBF041693_Larva1	WIBF041667_Leptolycus_heterocornis	MTEC023636_Leptolycus_heterocornis	WIBF051534_Leptolycus_puellus_yellogcx	WIBF051533_Leptolycus_puellus_blackleg	WIBF041665_Leptolycus_puellus	MTEC023635_Leptolycus_puellus	WIBF051525_Tainopteron_milleri	WIBF051498_Larva2	WIBF051497_Larva2	WIBF041694_Larva2	WIBF041696_Larva3	MTEC023638_Cessator_sp	WIBF041695_Larva3	MTEC023648_Larva3	MTEC023637_Cessator_luquinollis	WIBF051523_LarvaX	MTEC023640_LarvaX	WIBF041511_Larva8
ASCMT059-11|Calopteron_reticulatum|COI-5P|JN288183																								
WIBF051537_LarvaBeta	0.253																							
WIBF051507_LarvaBeta	0.251	0.003																						
WIBF051506_LarvaY	0.247	0.003	0																					
WIBF051532_Leptolycus_heterocornis	0.248	0.005	0.002	0.002																				
WIBF041693_Larva1	0.246	0.005	0.002	0.002	0																			
WIBF041667_Leptolycus_heterocornis	0.246	0.005	0.002	0.002	0	0																		
MTEC023636_Leptolycus_heterocornis	0.249	0.004	0	0	0.002	0.002	0.002																	
WIBF051534_Leptolycus_puellus_yellogcx	0.244	0.145	0.145	0.145	0.146	0.147	0.147	0.147																
WIBF051533_Leptolycus_puellus_blackleg	0.241	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.008															
WIBF041665_Leptolycus_puellus	0.249	0.142	0.142	0.142	0.141	0.141	0.141	0.141	0.009	0														
MTEC023635_Leptolycus_puellus	0.249	0.142	0.142	0.142	0.141	0.141	0.141	0.141	0.009	0	0													
WIBF051525_Tainopteron_milleri	0.265	0.254	0.254	0.247	0.253	0.271	0.271	0.271	0.27	0.26	0.266	0.266												
WIBF051498_Larva2	0.266	0.254	0.254	0.247	0.254	0.269	0.269	0.269	0.271	0.261	0.264	0.264	0.005											
WIBF051497_Larva2	0.273	0.255	0.255	0.253	0.256	0.275	0.275	0.275	0.274	0.264	0.272	0.272	0.005	0.01										
WIBF041694_Larva2	0.276	0.274	0.274	0.267	0.275	0.275	0.275	0.275	0.281	0.27	0.27	0.27	0.011	0.009	0.016									
WIBF041696_Larva3	0.24	0.237	0.237	0.235	0.239	0.239	0.239	0.241	0.244	0.239	0.239	0.239	0.205	0.203	0.202	0.203								
MTEC023638_Cessator_sp	0.24	0.239	0.239	0.237	0.241	0.241	0.241	0.243	0.247	0.241	0.241	0.241	0.205	0.203	0.202	0.203	0.002							
WIBF041695_Larva3	0.238	0.242	0.242	0.24	0.243	0.243	0.243	0.246	0.244	0.239	0.239	0.239	0.207	0.206	0.205	0.205	0.003	0.002						
MTEC023648_Larva3	0.248	0.24	0.24	0.238	0.242	0.241	0.241	0.243	0.25	0.244	0.241	0.241	0.206	0.207	0.204	0.203	0.002	0	0.002					
MTEC023637_Cessator_luquinollis	0.271	0.272	0.272	0.272	0.269	0.269	0.269	0.272	0.264	0.253	0.253	0.253	0.212	0.212	0.219	0.214	0.222	0.224	0.224	0.224				
WIBF051523_LarvaX	0.303	0.27	0.275	0.271	0.276	0.282	0.282	0.282	0.266	0.259	0.264	0.264	0.275	0.275	0.276	0.28	0.29	0.293	0.293	0.298	0.26			
MTEC023640_LarvaX	0.291	0.279	0.284	0.28	0.285	0.285	0.285	0.285	0.271	0.263	0.26	0.26	0.281	0.28	0.285	0.281	0.291	0.293	0.291	0.295	0.267	0.016		
WIBF041511_Larva8	0.288	0.268	0.27	0.269	0.268	0.27	0.27	0.273	0.269	0.262	0.26	0.26	0.277	0.278	0.274	0.291	0.296	0.298	0.296	0.308	0.257	0.193	0.196	

S5. Pairwise genetic distances calculation implemented in MEGA 10.0.8 using the uncorrected p-distances (PD) test.

	ASCMT059-11|Calopteron_reticulatum|COI-5P|JN288183	WIBF051537_LarvaBeta	WIBF051507_LarvaBeta	WIBF051506_LarvaY	WIBF051532_Leptolycus_heterocornis	WIBF041693_Larva1	WIBF041667_Leptolycus_heterocornis	MTEC023636_Leptolycus_heterocornis	WIBF051534_Leptolycus_puellus_yelloqcx	WIBF051533_Leptolycus_puellus_blackleg	WIBF041665_Leptolycus_puellus	MTEC023635_Leptolycus_puellus	WIBF051525_Tainopteron_milleri	WIBF051498_Larva2	WIBF051497_Larva2	WIBF041694_Larva2	WIBF041696_Larva3	MTEC023638_Cessator_sp	WIBF041695_Larva3	MTEC023648_Larva3	MTEC023637_Cessator_luquinollis	WIBF051523_LarvaX	MTEC023640_LarvaX	WIBF041511_Larva8
ASCMT059-11|Calopteron_reticulatum|COI-5P|JN288183																								
WIBF051537_LarvaBeta	0.215																							
WIBF051507_LarvaBeta	0.213	0.003																						
WIBF051506_LarvaY	0.21	0.003	0																					
WIBF051532_Leptolycus_heterocornis	0.212	0.005	0.002	0.002																				
WIBF041693_Larva1	0.21	0.005	0.002	0.002	0																			
WIBF041667_Leptolycus_heterocornis	0.21	0.005	0.002	0.002	0	0																		
MTEC023636_Leptolycus_heterocornis	0.212	0.004	0	0	0.002	0.002	0.002																	
WIBF051534_Leptolycus_puellus_yelloqcx	0.208	0.132	0.132	0.132	0.132	0.133	0.133	0.133																
WIBF051533_Leptolycus_puellus_blackleg	0.206	0.129	0.129	0.128	0.128	0.129	0.129	0.129	0.008															
WIBF041665_Leptolycus_puellus	0.212	0.13	0.13	0.129	0.129	0.129	0.129	0.129	0.009	0														
MTEC023635_Leptolycus_puellus	0.212	0.13	0.13	0.129	0.129	0.129	0.129	0.129	0.009	0	0													
WIBF051525_Tainopteron_milleri	0.223	0.215	0.215	0.211	0.215	0.227	0.227	0.227	0.227	0.22	0.224	0.224												
WIBF051498_Larva2	0.224	0.216	0.216	0.211	0.216	0.226	0.226	0.226	0.227	0.22	0.223	0.223	0.005											
WIBF051497_Larva2	0.229	0.216	0.216	0.215	0.217	0.23	0.23	0.23	0.229	0.223	0.228	0.228	0.005	0.01										
WIBF041694_Larva2	0.231	0.229	0.229	0.225	0.23	0.23	0.23	0.23	0.235	0.227	0.227	0.227	0.01	0.009	0.016									
WIBF041696_Larva3	0.205	0.203	0.203	0.201	0.204	0.204	0.204	0.206	0.208	0.204	0.204	0.204	0.179	0.178	0.177	0.178								
MTEC023638_Cessator_sp	0.205	0.205	0.205	0.203	0.206	0.206	0.206	0.208	0.21	0.206	0.206	0.206	0.179	0.178	0.177	0.178	0.002							
WIBF041695_Larva3	0.204	0.207	0.207	0.205	0.208	0.208	0.208	0.208	0.21	0.208	0.204	0.204	0.181	0.18	0.179	0.179	0.003	0.002						
MTEC023648_Larva3	0.211	0.205	0.205	0.204	0.207	0.206	0.206	0.208	0.212	0.208	0.206	0.206	0.18	0.181	0.179	0.178	0.002	0	0.002					
MTEC023637_Cessator_luquinollis	0.227	0.228	0.228	0.228	0.226	0.226	0.226	0.228	0.222	0.215	0.215	0.215	0.185	0.185	0.19	0.186	0.192	0.194	0.194	0.194				
WIBF051523_LarvaX	0.25	0.227	0.23	0.228	0.231	0.235	0.235	0.235	0.224	0.219	0.222	0.222	0.23	0.23	0.231	0.234	0.241	0.242	0.242	0.246	0.219			
MTEC023640_LarvaX	0.241	0.233	0.236	0.234	0.237	0.237	0.237	0.237	0.228	0.222	0.22	0.22	0.235	0.234	0.237	0.234	0.241	0.243	0.241	0.244	0.225	0.016		
WIBF041511_Larva8	0.239	0.225	0.227	0.226	0.225	0.227	0.227	0.229	0.226	0.221	0.22	0.22	0.231	0.232	0.23	0.241	0.244	0.246	0.244	0.253	0.218	0.17	0.172	

S6. Pairwise genetic distances calculation implemented in MEGA 10.0.8 using the Kimura's 2-parameter (K2P) test.

	ASCMT059-11|Calopteron_reticulatum|COI-5P|JN288183	WIBF051537_LarvaBeta	WIBF051507_LarvaBeta	WIBF051506_LarvaY	WIBF051532_Leptolycus_heterocornis	WIBF041693_Larva1	WIBF041667_Leptolycus_heterocornis	MTEC023636_Leptolycus_puellus_yelloqcx	WIBF051534_Leptolycus_puellus_blackleg	WIBF041665_Leptolycus_puellus	MTEC023635_Leptolycus_puellus	WIBF051525_Tainopteron_milleri	WIBF051498_Larva2	WIBF051497_Larva2	WIBF041694_Larva2	WIBF041696_Larva3	MTEC023638_Cessator_sp	WIBF041695_Larva3	MTEC023648_Larva3	MTEC023637_Cessator_luquinollis	WIBF051523_LarvaX	MTEC023640_LarvaX	WIBF041511_Larva8
ASCMT059-11|Calopteron_reticulatum|COI-5P|JN288183																							
WIBF051537_LarvaBeta	0.253																						
WIBF051507_LarvaBeta	0.251	0.003																					
WIBF051506_LarvaY	0.247	0.003	0																				
WIBF051532_Leptolycus_heterocornis	0.249	0.005	0.002	0.002																			
WIBF041693_Larva1	0.246	0.005	0.002	0.002	0																		
WIBF041667_Leptolycus_heterocornis	0.246	0.005	0.002	0.002	0	0																	
MTEC023636_Leptolycus_heterocornis	0.249	0.004	0	0	0.002	0.002	0.002																
WIBF051534_Leptolycus_puellus_yelloqcx	0.245	0.146	0.146	0.146	0.146	0.147	0.147	0.147															
WIBF051533_Leptolycus_puellus_blackleg	0.241	0.141	0.141	0.141	0.141	0.142	0.142	0.142	0.008														
WIBF041665_Leptolycus_puellus	0.249	0.143	0.143	0.142	0.142	0.142	0.142	0.142	0.009	0													
MTEC023635_Leptolycus_puellus	0.249	0.143	0.143	0.142	0.142	0.142	0.142	0.142	0.009	0	0												
WIBF051525_Tainopteron_milleri	0.266	0.255	0.255	0.249	0.254	0.272	0.272	0.272	0.272	0.262	0.267	0.267											
WIBF051498_Larva2	0.267	0.255	0.255	0.249	0.255	0.271	0.271	0.271	0.273	0.263	0.265	0.265	0.005										
WIBF051497_Larva2	0.274	0.256	0.256	0.254	0.257	0.276	0.276	0.276	0.276	0.266	0.273	0.273	0.005	0.01									
WIBF041694_Larva2	0.278	0.275	0.275	0.269	0.277	0.277	0.277	0.277	0.283	0.271	0.271	0.271	0.011	0.009	0.016								
WIBF041696_Larva3	0.241	0.237	0.237	0.235	0.239	0.239	0.239	0.242	0.245	0.239	0.239	0.239	0.207	0.205	0.204	0.205							
MTEC023638_Cessator_sp	0.241	0.24	0.24	0.238	0.242	0.242	0.242	0.244	0.248	0.242	0.242	0.242	0.207	0.205	0.204	0.205	0.002						
WIBF041695_Larva3	0.238	0.242	0.242	0.24	0.244	0.244	0.244	0.246	0.245	0.239	0.239	0.239	0.209	0.207	0.207	0.207	0.003	0.002					
MTEC023648_Larva3	0.248	0.241	0.241	0.239	0.242	0.242	0.242	0.244	0.251	0.245	0.242	0.242	0.208	0.209	0.206	0.205	0.002	0	0.002				
MTEC023637_Cessator_luquinollis	0.272	0.273	0.273	0.273	0.271	0.271	0.271	0.273	0.266	0.255	0.255	0.255	0.213	0.213	0.221	0.216	0.224	0.226	0.227	0.226			
WIBF051523_LarvaX	0.308	0.273	0.278	0.274	0.279	0.284	0.284	0.284	0.269	0.261	0.266	0.266	0.277	0.277	0.279	0.282	0.293	0.296	0.296	0.301	0.262		
MTEC023640_LarvaX	0.294	0.281	0.286	0.283	0.287	0.287	0.287	0.287	0.274	0.265	0.262	0.262	0.284	0.282	0.288	0.283	0.293	0.296	0.293	0.298	0.27	0.016	
WIBF041511_Larva8	0.29	0.269	0.271	0.27	0.269	0.27	0.27	0.27	0.273	0.27	0.263	0.261	0.261	0.279	0.28	0.276	0.292	0.298	0.3	0.298	0.31	0.259	0.195	0.198

S7. Maximum-likelihood topology of the generated COI sequences and a mainland *Calopteron* Branches in color represent matches between adult males and larvae. Number represents SH-aLRT (left) and Ultrafast Bootstrap (UFboot) (right). Support levels for all relationships presented.

