



The Cerambycidae or Longicorn beetles of Montana
by C Wilfred Shockley

A THESIS Submitted to the Graduate Committee in partial fulfillment of the requirements for the
Degree of Master of Science in Entomology
Montana State University
© Copyright by C Wilfred Shockley (1936)

Abstract:
no abstract found in this volume

THE CERAMBYCIDAE OR LONGICORN BEETLES
OF MONTANA

by

C. Wilfred Shockley

A THESIS

Submitted to the Graduate Committee in partial fulfillment
of the requirements for the Degree of
Master of Science in Entomology
at Montana State College

Approved:

Harlow B. Mills

In Charge of Major Work

A. W. Strong

Chairman Examining Committee

F. B. Peterson

Chairman Graduate Committee

Bozeman, Montana

December, 1936

MONTANA

STATE COLLEGE

N378
Sh72c

TABLE OF CONTENTS

	Page
INTRODUCTION	1
BIOLOGY	2
MORPHOLOGY	2
Head	2
Antennae	2
Eyes	3
Mouth Parts	3
Thorax	4
Pronotum	4
Legs	5
Wings	5
The Stridulating Organ	6
Abdomen	6
LITERATURE	7
CLASSIFICATION OF CERAMBYCIDAE OF NORTH AMERICA	8
Key to the Sub-families of the Cerambycidae	15
PRIONINAE	15
Callipogonini	15
<u>Ergates</u>	16
<u>spiculatus</u> Lec.	16
<u>spiculatus</u> var. <u>neomexicanus</u> Csy.	16
Prionini	17
<u>Prionus</u>	17
<u>californicus</u> Mots.	18
<u>imbricornis</u> (Linn.)	18
<u>fissicornis</u> Hald.	19
Anacolini	19
<u>Tragosoma</u>	19
<u>depsarium</u> (L.)	19
<u>depsarium</u> var. <u>harrisi</u> Lec.	20
CERAMBYCINAE	20
Spondylini	21
<u>Spondylis</u>	21
<u>apiformis</u> Mamm.	21
Asemini	22
<u>Asemum</u>	22
<u>atrum</u> Esch.	23
<u>mokolunne</u> (Csy.)	23
<u>Tetropium</u>	24
<u>velutinum</u> Lec.	24
<u>Crioccephalus</u>	24
<u>asperus</u> Lec.	25

As 2537 g

57201

III

	Page
<u>Criocephalus</u> (cont'd.)	
<u>productus</u> Lec.	25
<u>arrestis</u> (Kby.)	26
<u>asperatus</u> Lec.	26
<u>Lepturini</u>	26
<u>Pidonia</u>	28a
<u>scripta</u> Lec.	28a
<u>Grammoptera</u>	29
<u>subargentata</u> (Kby.)	29
<u>filicornis</u> (Casy.)	30
<u>Alosterna</u>	30
<u>capitata</u> (Newn.)	30
<u>Leptura</u>	30
<u>plagifera</u> Lec.	31
<u>propinqua</u> Eland.	32
<u>obliterata</u> Hald.	32
<u>Typocerus</u>	33
<u>balteatus</u> Horn	33
<u>sinuatus</u> (Newn.)	34
<u>Anoplodera</u>	35
<u>carbonata</u> (Lec.)	38
<u>nigrella</u> (Say)	38
<u>quadrata</u> (Lec.)	39
<u>knilli</u> S. and H.	39
<u>instabilis</u> (Hald.)	40
<u>sexmaculata</u> (Linn.)	40
<u>tribalteata</u> (Lec.)	41
<u>tibialis</u> (Lec.)	41
<u>crassipes</u> (Lec.)	42
<u>aspera</u> (Lec.)	42
<u>sanguinea</u> (Lec.)	43
<u>laetifica</u> (Lec.)	43
<u>mimmosotata</u> (Csy.)	43
<u>canadensis</u> (Oliv.)	44
<u>chrysocoma</u> (Kby.)	44
<u>Stenocorus</u>	45
<u>lineatus</u> (Oliv.)	45
<u>Leptalia</u>	46
<u>macilentata</u> (Mamm.)	46
<u>Centrodera</u>	46
<u>spurca</u> Lec.	46
<u>Toxotus</u>	47
<u>virgatus</u> (Lec.)	47
<u>obtusus</u> (Lec.)	48
<u>Pachyta</u>	48
<u>armata</u> Lec.	49
<u>liturata</u> Kby.	49
<u>Leptacmaeops</u>	50
<u>subpilosa</u> (Lec.)	50

IV

	Page
<u>Leptacmaeops</u> (cont'd.)	
<u>longicornis</u> (Kby.)	51
<u>ligata</u> (Lec.)	51
<u>vinota</u> (Lec.)	52
<u>Anthophilax</u>	52
<u>mirificus</u> Bland.	52
<u>Acmaeops</u>	53
<u>atra</u> Lec.	53
<u>proteus</u> (Kby.)	54
<u>pratensis</u> (Laich.)	55
<u>Callidiini</u>	55
<u>Gonocallus</u>	56
<u>collaris</u> (Kby.)	57
<u>Semanotus</u>	57
<u>lignea</u> (Fab.)	57
<u>nicolas</u> White	58
<u>Callidium</u>	58
<u>janthinum</u> Lec.	58
<u>subopacum</u> Swains	59
<u>Phymatodes</u>	60
<u>dimidiatus</u> (Kby.)	60
<u>Xylocrius</u>	60
<u>agassizi</u> (Lec.)	61
<u>Clytini</u>	61
<u>Cyllene</u>	62
<u>decora</u> (Oliv.)	63
<u>Xylotrechus</u>	63
<u>undulatus</u> (Say)	64
<u>amosus</u> (Say)	65
<u>nauticus</u> (Mamm.)	65
<u>Neoclytus</u>	65
<u>muricatus</u> (Kby.)	66
<u>Stenaspini</u>	66
<u>Crossidius</u>	67
<u>punctatus</u> Lec.	67
<u>pulchellus</u> Lec.	68
<u>discoideus</u> (Say)	68
<u>Patyle</u>	69
<u>ignicolis</u> (Say)	69
<u>Patyleoma</u>	69
<u>suturale</u> (Say)	69
LAMINAE	70
<u>Dorcadionini</u>	70
<u>Moneilema</u>	70
<u>annulatum</u> Say	71
<u>annulatum</u> var. <u>montanum</u> Psota	71
<u>Monocharini</u>	71
<u>Monocharus</u>	72
<u>maculosus</u> Hald.	73

	Page
<u>Monochamus</u> (Cont'd.)	
<u>oregonensis</u> Lec.	73
<u>scutellatus</u> (Say)	74
<u>Plectrodera</u>	74
<u>scalator</u> (Fab.)	74
<u>Acanthocinini</u>	74
<u>Leiopus</u>	75
<u>variegatus</u> (Hald.)	75
<u>Acanthocinus</u>	76
<u>obliquus</u> Lec.	76
<u>spectabilis</u> (Lec.)	77
<u>Hyperplatys</u>	77
<u>maculata</u> Hald.	77
<u>Dectes</u>	78
<u>spinosus</u> (Say)	78
<u>spinosus</u> var. <u>alticola</u> Csy.	78
<u>Pogonocherini</u>	79
<u>Poliaemus</u>	79
<u>oregonus</u> (Lec.)	79
<u>Pogonocherus</u>	80
<u>penicillatus</u> Lec.	80
<u>propinquus</u> Fall	81
<u>pictus</u> Fall	81
<u>mixtus</u> Hald.	82
<u>parvulus</u> Lec.	82
<u>Saperdini</u>	83
<u>Saperda</u>	83
<u>candida</u> Fab.	83
<u>calcarata</u> Say	84
<u>populnea</u> var. <u>moesta</u> Lec.	84
<u>Phytoeciini</u>	84
<u>Oberea</u>	85
<u>quadricollata</u> Lec.	85
<u>basalis</u> Lec.	85
<u>Tetraopini</u>	86
<u>Tetraopes</u>	86
<u>canescens</u> Lec.	86
<u>femoratus</u> Lec.	87
<u>femoratus</u> var. <u>femoratus</u> Lec.	87
<u>femoratus</u> var. <u>basalis</u> Lec.	87
<u>femoratus</u> var. <u>oregonensis</u>	87
BIBLIOGRAPHY	88

-1-
INTRODUCTION

Although individual Montana records frequently occur in the lists of North American Coleoptera, no previous attempt has been made to record systematically the species of any one family occurring within the state. The reports of Dr. George H. Horn (1871-72 and 1872-73) listed nine and eight species respectively as occurring in Montana. Dr. M. H. Hatch (1933) lists, with distributional data, two hundred forty one species and subspecies in nine families of this order. These three papers constitute the literature of Montana coleopterology.

In the collections of the Montana Experiment Station there are upwards of seventeen hundred species of Coleoptera. Bearing in mind the scarcity of Montana literature and the rather large number of species with which to work, this study of the Cerambycidae of Montana was undertaken. This family is one of the larger families in the order Coleoptera, and is generally considered as one of the more difficult with which to work. The state collections and published lists of Coleoptera record ninety-four species and subspecies in forty one genera as occurring in the state. In all probability many species will be added to the present list, but, if the keys and descriptions here presented are of any service to the collectors of the state, or, if the paper serves as a stimulus to additional work in this large order of Montana insects, then any effort that has been put forth in its preparation will have been well spent.

The writer wishes to express his appreciation to the several persons who have given so generously of their time and knowledge whenever called upon for assistance. Particularly to Dr. Harlow B. Mills who has supervised the work and without whose assistance little would have been

accomplished; and to Mr. Ralph Hopping and Mr. George R. Hopping, of Vernon, British Columbia, who have graciously and quickly determined all specimens sent to them for determination.

BIOLOGY

Not a great deal is known concerning the biology of the group, but the majority of the species are wood borers in the larval stage. Some species may breed in many species of trees, rarely in both coniferous and deciduous. Some (Tetraopes) breed in milkweed (Asclepias sp.), others (Moneilema) in several species of cacti. Certain other species breed in gooseberry, raspberry, mesquite, apple and various other woody plants. The adults of many species are commonly found on flowers while others can be found in lumber or wood yards, on living or dead trees or flying about bright lights at night.

Probably the best account of the biology of this family is given in Craighead's "North American Cerambycid Larvae" (1923).

MORPHOLOGY

A complete discussion of the morphology of such a large and variable group would require much more space and time than is now available. For that reason only the more important characters utilized in the separation of subfamilies, tribes, genera and, in a few cases, species of Montana will be given here.

Head

Antennae. - With the exception of the genus Prionus, the antennae of all cerambycids are composed of eleven segments. Those of the afore-

mentioned genus are composed of from twelve to thirty segments, depending upon the species. Males of many species have serrate antennae. This type of antennae is far less common in the females. The scape or first segment in some genera (Poliaenus) is normal and slender, in some (Pogonocherus) it is clavate, and in other genera variations between these are to be found. The tribe Monochamini is separated from the rest of the Laminiinae by the presence of a closed cicatrice or scar on the outer end of the scape. In this subfamily (Laminiinae) there is often a great elongation of the segments of the antennae, lengthening these organs to about five or six times the length of the body. The outer segments of the antennae of Typocerus and Strangalina have indented poriferous spaces with definite margins on one or two sides. These spaces are usually elongate and are thought to be special sense organs. The chief systematic value of these areas is based on the fact that in the genus Typocerus two groups of species can be easily separated, since in one the poriferous areas begin on the sixth segment and in the other they begin on the seventh segment.

Eyes.- The eyes of the Cerambycidae are usually transverse, frequently emarginate and at times partially surround the antennal sockets. Divided eyes are uncommon but occur in the genera Tetropium and Tetraopes. The varying sizes of the facets of the compound eyes have given rise to the terms finely granulated and coarsely granulated. To those eyes having small, close-set facets, the first term is applied, and to those having larger facets, set farther apart, the latter term is applied.

Mouth parts.- The mandibles may be acute (Lepturini, fig.1), simple (Desmocerus, fig.2), or emarginate (Crossidius, fig.3) at the tip.

However, the mandibles are little used in the classification of the family. The labial palpi are composed of three segments. The third segment may be acute at the tip and subcylindrical (Lamiinae, fig.4), or it may be more flattened and not cylindrical (Cerambycinae, fig.5). The ligula (central sclerite of the labium, borne upon the mentum) may be membranous (Asemini) or chitinous (Callidiini). Most genera of the above tribes are quite dissimilar in appearance, but the genus Xylocrius of the tribe Callidiini is superficially very much like the genus Asemmum of the tribe Asemini and can be separated from the members of the latter tribe by removing the labium and examining the ligula.

Thorax

Many characters exhibited by the thorax are used in the separation of nearly all groups of the family. The various parts will be briefly discussed separately.

Pronotum.-- The pronotum may be margined (Prioninae) or not (Cerambycinae and Lamiinae). The depth, size and number of punctuations on the disc as well as callosities and rugose conditions of the parts of the pronotum are valuable characters in separating genera and species. The hind angles in some species and genera are produced over the humeri (Grammoptera, fig.6). In others such as Anoplodera (fig.7) they are not so produced. In A. nigrella and A. instabilis they are acute and laminate and in A. aspera they are obtuse. The shape of the pronotum is described as being campanulate, trapezoidal, quadrate, narrowed in front, etc. as the case may be. It may be spined, tuberculate, or rounded at the sides, and may be pubescent or glabrous in part or in toto.

Legs.- The coxae may be conical (Lepturini, fig. 8), globose, or not conical and transverse (Asemini, fig. 9). They are inserted into coxal cavities that may be open (fig.10) or closed (fig.11), depending upon the species. The femora of some species are clavate and flattened, those of other species are cylindrical and straight-sided. The grooved front tibiae of the Laminae separate that subfamily from the Cerambycinae. The tibial spurs may be terminal (Leptacmaeops, fig.12) or not so (Toxotus, fig.13). The males of Anoplodera crassipes are unique in that they have but one well developed tibial spur on each of the hind tibiae. The tarsal segments are five in number with the fourth being more or less inconspicuous. Segments one to three are generally furnished beneath with brushes of hair, three is more often bilobed and the claws are generally simple. The latter are cleft in the genus Tetraopes.

Wings.- Flight wings are present in all genera except Moneilema. In this family wing venation is a character used at present only in the tribe Lepturini. Several genera (Leptacmaeops, Stenocorus, Centrodera, Xylosteus, Anthophilax, Pachyta and Piodes) are separated from the remaining genera of the tribe by the presence of a closed cell in the anal region (fig. 14). Swaine and Hopping (1928) discuss and figure the venation of this tribe. They have included the genera Xylosteus and Piodes in this group on other characters, not having examined their wing venation.

The elytra present many reliable generic and specific characters. Color markings thereon are too variable to be regarded as positive characters, and their use as such is limited to a very few species. More constant characters are the truncate, rounded, or pointed tips; the costate condition,

if it is present; the hairy or glabrous condition of the disc, and the spines at the apex of the elytra. Generally speaking, the terminology applied to the elytra is quite descriptive and self-explanatory.

The Stridulating Organ.- Many species will, when irritated, make a peculiar squeaking or stridulating noise. This noise is produced by moving the prothorax upon the mesonotum. In those species having the stridulating organ, it is found on the top and sides of the mesonotum. It is composed of a number of fine, elevated lines, extending across the notum. These lines may be divided by a longitudinal line as in Xylocrius (fig.15), or they may be entire as in Phymatodes and Gonocallus.

Abdomen

The abdomen is of six segments, five being visible. It is of little value in classification except in a few instances. Anoplodera proxima and A. minnesotana are separated by the shape and carinations of the last abdominal segment. This character is discussed in the description of the latter species and will not be repeated here. The genera Acanthocinus, Ceratographis, and Nyssodrys are separated from the remaining genera of the tribe Acanthocinini by the elongated ovipositor of the female.

Summarizing, the principal characters of the Cerambyoidae are: Labial palpi three-segmented; maxillae with two lobes, clothed at the tip with bristles; mandibles usually curved and acute at tip, at times emarginate; eyes large, transverse, at times deeply emarginate or even entirely divided; antennae inserted either in front of or between the eyes,

often borne on large frontal tubercles, their sensitive surfaces differing in the tribes; thorax not margined except in the Prioninae; elytra usually with distinct epipleurae and covering the abdomen, the latter with five free ventral segments, the sixth visible in many males and at times in both sexes; legs usually slender, hind coxae transverse; tarsi five segmented, segments one to three with brushes of hair beneath, third segment emarginate or bilobed; fourth small, rounded, inconspicuous and united with the fifth; claws simple, rarely cleft.

LITERATURE

The literature dealing with the North American species is voluminous and scattered. A number of papers have been of especial value to the writer in the preparation of this paper and, although each is included in the appended bibliography, a list of the more general works is given here for the convenience of any interested workers. They are:

- Leng, C.W., "Synopsis of Cerambycidae" in *Bul. Brooklyn Ent. Soc.* VII, 1884-85, and *Ent. Americana* I, II, III, and IV, 1885-90.
- Swaine, J.M. and Hopping, Ralph, "The Lepturini of America North of Mexico, Part I", *Can. Dept. of Mines Bul. No. 52, Biol. Series No. 14*, 1928.
- Felt, E.P. and Joutel, L.H. "Monograph of the Genus *Saperda*", *Bul. No. 74, N.Y. State Mus.*, 1904.
- Hopping, Geo. R., "A Revision of the Clytini of Boreal America", *Ann. Ent. Soc. Am.* XXV:529-578, 1932.
- Hopping, Ralph, "A Review of the Genus *Monochamus* Serv.", *Can. Ent.* LIII:252-258, 1921.
- Leng, C.W. and Hamilton, John, "Synopsis of Cerambycidae, part III, Laminae", *Trans. Am. Ent. Soc.* XXIII:101-178, 1896.
- Linsley, E. Gorton, "Pogonocherini of North America", *Ann. Ent. Soc. Am.* XXVIII:73-101, 1935.

CLASSIFICATION OF CERAMBYCIDAE OF NORTH AMERICA

The classification used is, with few exceptions, that of Mr. Leng's "Catalogue of the Coleoptera of America, North of Mexico." The exceptions are in those groups where recent investigations have made changes necessary.

Order Coleoptera

Suborder Polyphaga

Series Phytophaga or Cerambycoidea

Family Cerambycidae

Subfamily Prioninae

Tribe Parandriini

Genus Parandra Latr.

Tribe Macrotomini

Genus Strongylaspis Thoms.

Genus Archodontes Lmr.

Genus Stenodontes Serv.

Tribe Callipogonini

Genus Ergates Serv.*

Tribe Derancistrini

Genus Derancistrus Serv.

Tribe Prionini

Genus Derobrachus Serv.

Genus Prionus Fab.*

Tribe Anacolini

Genus Tragosoma Serv.*

Subfamily Cerambycinae

Tribe Disteniini

Genus Distenia Serv.

Tribe Smodicini

Genus Smodicum Hald.

Tribe Spondylini

Genus Scaphinus Lec.

Genus Spondylis Fab.*

Tribe Asemini

Genus Asemum Esch.*

Genus Tetropium Kby**

Genus Criocephalus Muls.*

Tribe Saphanini

Genus Opsimus Thoms.

Genus Dicentrus Lec.

Tribe Oemini

Genus Eucrossus Lec.

Genus Oeme Newm.

Genus Haplidus Lec.

Genus Eudistenia Fall.

* - Genera indicated by the asterisk occur in Montana.

Genus Malacopterus Serv.

Genus Dryobius Lec.

Tribe Methiini

Genus Styloxus Lec.

Genus Methia Newm.

Genus Tassaropa Hald.

Tribe Achrysonini

Genus Achryson Serv.

Tribe Cerambycini

Genus Hamaticherus Serv.

Genus Atylostagma White

Tribe Hesperophanini

Genus Osmidus Lec.

Genus Chrotoma Csy.

Genus Zamodes Lec.

Genus Tylonotus Hald.

Genus Stromatium Serv.

Genus Gnaphalodes Thoms.

Genus Chion Newm.

Genus Brothylus Lec.

Genus Pantomallus Lec.

Tribe Eburiini

Genus Eburia Serv.

Tribe Phoracanthini or Elaphidionini

Genus Romaleum White

Genus Eustromula Ckll.

Genus Elaphidion Serv.

Genus Anelaphus Linsley

Genus Anopliomorpha Linsl.

Genus Anoplium Hald.

Genus Elaphidionopsis Linsl.

Tribe Sphaerionini

Genus Anexstinus Lec.

Genus Aneflus Lec.

Genus Anephomorpha Csy.

Genus Anepsyra Csy.

Genus Stenelaphus Linsl.

Genus Stenosphenus Hald.

Genus Psyrasa Pascoe

Tribe Piezocerini

Genus Piezocera Serv.

Tribe Ibidionini

Genus Compsa Perty.

Genus Heterachthes Newm.

Genus Ibidion Serv.

Genus Malobidion Schffr.

Tribe Callidiopini

Genus Cylindera Newm.

Tribe Curiini

Genus Curius Newm.

- Genus Anoplocurius Fisher
Genus Plectromerus Lec.
- Tribe Graciliini
Genus Hypexilis Horn
Genus Gracilia Serv.
Genus Lianema Fall
- Tribe Oabriini
Genus Oabrium Curt.
Genus Eumichthus Lec.
- Tribe Lepturini
Genus Pseudopachyta S. and H.
Genus Pidonia Muls.*
Genus Idiopidonia S and H.
Genus Grammoptera Serv.*
Genus Alosterna Muls.
Genus Pseudostrangalia S and H.
Genus Leptura Linn.*
Genus Tyrocerus Lec.*
Genus Charisalia Csy.
Genus Anoplodera Muls.*
Genus Stenocorus Geoff.*
Genus Leptalia Lec.*
Genus Centrodera Lec.*
Genus Xylosteus Friv.
Genus Toxotus Dej.*
Genus Pachyta Dej.*
- Genus Evodinus Lec.
Genus Leptacmaeops Csy.*
Genus Anthophilax Lec.*
Genus Piodes Lec.
Genus Gaurotes Lec.
Genus Acmeaops Lec.*
Genus Ophistomis Thoms.
(Cyphonotida Csy.?)
Genus Bellamira Lec.
Genus Strangalina Auriv.
Genus Pyrotrichus Lec.
Genus Euryptera Serv.
Genus Neobellamira S and H.
Genus Encyclops Newm.
- Tribe Dorcasomini
Genus Desmocerus Serv.
- Tribe Nocydalini
Genus Ulochaetes Lec.
Genus Nocydalis Linn.
- Tribe Molorchini
Genus Molorchus Fab.
Genus Callimoxys Kr.
Genus Callimus Muls.
Genus Poecilobrium Horn
Genus Hybodera Lec.
Genus Megobrium Lec.

Tribe Rhinotragini

Genus Acyphoderes Serv.

Tribe Callichromini

Genus Callichroma Latr.

Genus Plinthocoelium Schmidt

Tribe Compsocerini

Genus Rosalia Serv.

Tribe Callidiini

Genus Conocallus Leo.*

Genus Physocnema Hald.

Genus Ropalopus Muls.

Genus Hylotrupes Serv.

Genus Elatotrypes Fisher

Genus Semanotus Muls.*

Genus Merium Kby.

Genus Callidium Fab.*

Genus Phymatodes Muls.*

Genus Xylocrius Lec.*

Tribe Clytini

Genus Tylcus Csy.

Genus Megacheuma Mickel

Genus Cyllene Newm.

Genus Megacyllena Csy.

Genus Arhopalus Serv.

Genus Glycobius Lec.

Genus Calloides Lec.

Genus Xylotrechus Chev.*

Genus Neoclytus Thoms.*

Genus Euryscelis Chev.

Genus Rhopalopachys Chev.

Genus Anthoboscus Chev.

Genus Clytoleptus Csy.

Genus Clytus Laich.

Genus Triodoclytus Csy.

Genus Microclytus Csy.

Genus Cyrtophorus Lec.

Tribe Michthysomini

Genus Michthysoma Lec.

Tribe Tillomorphini

Genus Pentanodes Schffr.

Genus Tetranodus Linell.

Genus Euderoes Lec.

Genus Tilloclytus Bates

Tribe Cleomenini

Genus Dihammaphora Chev.

Tribe Rhopalophorini

Genus Rhopalophora Serv.

Tribe Heteropsini

Genus Stenosphenus Hald.

Tribe Agallissini

Genus Agallissus Dalm.

Genus Zagymmus Lec.

Tribe Ancylocerini

Genus Ancyloocera Serv.

Tribe Atimini

Genus Atimia Hald.

Genus Paratimia Fisher

Tribe Pteroplatini

Genus Elytroleptus Duges

Genus Holopleura Lec.

Tribe Stenaspini

Genus Crioprosopus Serv.

Genus Stenaspis Serv.

Genus Tragidion Serv.

Genus Purpuricemus Germ.

Genus Metaleptus Bates

Genus Aethecerinus Ckll.

Genus Oxoplus Lec.

Genus Schizax Lec.

Genus Tylosis Lec.

Genus Crossidius Lec.*

Genus Sphaenothecus Dupont

Genus Perarthrus Lec.

Genus Mannophorus Lec.

Genus Anammus Lec.

Genus Batyle Thoms.*

Genus Batyleoma Csy.*

Tribe Trachyderini

Genus Dendrobias Serv.

Tribe Lissonotini

Genus Lissonotus Dalm.

Tribe Megaderini

Genus Megaderus Germ.

Subfamily Lamiinae

Tribe Dorcadionini

Genus Plectrura Mann.

Genus Ipochnis Lec.

Genus Parmenosoma Schffr.

Genus Moncilema Say.*

Tribe Cyrtini

Genus Cyrtinus Lec.

Tribe Monochamini

Genus Monochamus Serv.*

Genus Ptychodes Serv.

Genus Hammoderus Thoms.

Genus Goes Lec.

Genus Microgoes Csy.

Genus Cacoplia Lec.

Genus Plectrodera Lec.*

Tribe Mesosini

Genus Synaphaeta Thoms.

Tribe Dorcaschematini

Genus Dorcaschema Lec.

Genus Hetoemis Hald.

Tribe Tapeinini

Genus Peritapnia Horn

Tribe Adetini

Genus Parmenonta Thoms.

Genus Sicyobius Horn

Tribe Ataxiini

Genus Aporataria Ham.

Genus Ataxia Hald.

Genus Diaxenes Waterhouse

Tribe Desmiphorini

Genus Desmiphora Serv.

Tribe Apodasyini

Genus Eupogonius Lec.

Genus Hoplosia Muls.
(Oplosia auct.)

Genus Psenocerus Lec.

Tribe Estolini

Genus Estola Fairm.

Genus Pygmaeopsis Schfft.

Tribe Pogonocherini

Genus Zaplous Lec.

Genus Lypsimena Lec.

Genus Callipogonius Linsl.

Genus Poliaemus Bates*

Genus Ecteneolus Bates

Genus Ecyrus Lec.

Genus Sarillus Bates

Genus Lophopogonius Linsl.

Genus Pogonocherus Zett.*

Tribe Onciderini

Genus Oncideres Serv.

Genus Taricamus Thoms.

Tribe Hippopsini

Genus Hippopsis Serv.

Tribe Spalacopsini

Genus Spalacopsis Thoms.

Genus Dorcata Pascoe

Tribe Anisocerini

Genus Thryallis Thoms.

Tribe Acanthoderini

Genus Aethiopoctines Thoms.

Genus Steirastoma Serv.

Genus Acanthoderes Serv.

Tribe Acanthocinini

Genus Coenopoeus Horn

Genus Lagochirus Er.

Genus Glaucotes Csy.

Genus Astylidius Csy.

Genus *Astylopsis* Csy.

Genus *Leptostylus* Lec.

Genus *Leiopus* Serv.*

Genus *Dectes* Lec.*

Genus *Lepturgoides* Schffr.

Genus *Valemus* Csy.

Genus *Lepturges* Bates

Genus *Hyperplatys* Hald.*

Genus *Probatius* Thoms.

Genus *Ceratographis* Cahan

Genus *Nyssodrys* Horn

Genus *Acanthocinus* Steph. or Hoffm.*

Tribe Cyrtinini

Genus *Cyrtinus* Lec.

Tribe Saperdini

Genus *Saperda* Fab.*

Genus *Eutetrappa* Bates

Tribe Phytoeciini

Genus *Oberea* Muls.*

Genus *Mecas* Lec.

Tribe Tetraopini

Genus *Tetrops* Steph.

Genus *Tetraopes* Serv.*

Tribe Hemilophini

Genus *Hemierana* Auriv.

Genus *Cathopteron* Ham.

Key to the Sub-families of the Cerambycidae

- 1. Pronotum margined; labrum connate A. Prioninae. Page 15
- Pronotum not margined; labrum free 2
- 2. Front tibiae not grooved; palpi not acute
 at tip B. Cerambycinae. Page 20
- Front tibiae grooved; last palpal segment
 cylindrical and pointed C. Lamiinae. Page 70

A. PRIONINAE

Casey '12; Lameere '13

Key to the Tribes.

- 1. Antennae short and of simple segments, not extending
 beyond the base of the pronotum . 1. Parandrini. Parandra Latr.
- Antennae elongate, extending beyond the base of the
 pronotum, the segments dissimilar or
 complicated 2
- 2. Each side of the pronotum contracted basally,
 and usually with a posterior angle, the
 sides crenulate; eyes not or but feebly
 emarginate 2. Macratomini.
- Sides of the pronotum not contracted basally,
 without posterior angles, but usually
 with a median angle; eyes more or less
 strongly emarginate 3
- 3. Eyes surrounding the antennal sockets beneath . . . 6. Anacolini. Page 19
- Eyes not surrounding the antennal sockets beneath 4
- 4. Lateral margin of the pronotum entire, crenulate
 or multispinose 5
- Lateral margin of the pronotum tridentate, or at
 least one median tooth 5. Prionini. Page 17
- 5. Head not excavated above in a depression extended
 to the occiput; eyes strongly granulate. 3. Callipogonini. Page 15
- Head excavated above in a depression extended
 to the occiput; eyes finely granulate . 4. Deranoistrini.

Tribe Callipogonini

The tribe is represented in Montana by the single genus, Ergates.

Genus Ergates Serville 32-113

Trichocnemis Lec. 52-110.

Large beetles, with prothorax broad and finely punctured in the males; narrower, more coarsely punctured, and with the small lateral teeth longer and more acute in the females. Antennae eleven segmented and not attaining more than two-thirds of the length of the body.

*14078. Ergates spiculatus Lec. 52-110
californicus White 53-37
spiculiger White 53-39

Of large size, 55-63 mm. long by 14-20 mm. wide. Head small, eyes reniform and coarsely granulated; antennae eleven segmented, slender, two-thirds the length of the body in male, about one-half the length in the female, rough with elevated punctures and the third segment as long as the three following united. Prothorax broader in the male than in the female and finely punctured; in the female the sculpture is very coarse and the small teeth of the lateral margin are longer and more acute, varying in length and number. Elytra shining brown, with three distinct costae extending nearly the full length of each elytron; an acute sutural spine at the apex in most cases.

Montana distribution: Victor, Hamilton, Ravalli, Kalispell, Como, Lake Ronan, and Ravalli County.

14078a. Ergates spiculatus var. neomexicanus Csy. 90-491

Ergates spiculatus var. marmoratus Cockerell 90-161.

Similar to spiculatus but the prothorax is much darker, being almost black in some specimens. The elytra are marmorated with the lighter

* Numbers refer to Leng's "Catalogue of the Coleoptera".

areas much larger in some than in others, the darker areas are deeper brown than in spiculatus, and in the specimens at hand the costae are broader and more distinct than in the former species.

Casey (12-221) gives this variety specific rank and insists that the genus Trichocnemis is distinct from Ergates and that it should be restored.

Montana distribution: Fishtail, Big Horn County.

Tribe Prionini

Key to the Genera

- Elongate, parallel; apex of each antennal segment simple,
the apical segments elongate, not imbricate Derobrachus
- Stout species; antennal segments often all overlapping,
and at least the apices of the more apical ones
produced into lobes, the apical segments not
elongate Prionus Fab. Page 17

Genus Prionus Fab. 75-159

Body relatively broad, giving the various species a stout appearance. Mandibles moderate in size, acute, and similar in both sexes. Eyes coarsely granulated. Antennae heavily imbricate in males, more slender and serrate in the females, and from 12 to 30 segments, varying with the species and sex. The prothorax is tri-dentate or less. Elytra are broadly rounded at the apex and ornamented with raised lines. The legs are slender and compressed. All Montana species are of a uniform light or dark brown color.

Key to the Species

- 1. Antennal segments 12; sples of hind tarsi densely pubescent 2
- Antennal segments more than 12; soles of the hind tarsi
with scattered hairs 4

2. Elytra at base not wider than prothorax laticollis (Drury)
Elytra at base wider than prothorax 3
3. First two thoracic teeth prominent, not reflexed . . . pocularis Dalm.
First two thoracic teeth very acute and reflexed . . .
. . . californicus Mots. Page 18
4. Antennal segments female 18, male 18-20 . . . imbricornis (Linn). Page 18
Antennal segments female 25, male 27-30 . . . fissicornis Hall. Page 19

Of the five species mentioned in the key, laticollis and pocularis have not been recorded from Montana.

14086. Prionus californicus Mots. 45-89

Prionus crassicornis Lec. 52-108.

Distinguished by the very acute and strongly reflexed teeth of the prothorax. Further distinguished from the other Montana species by having but 12 segments in the antennae. Hind tarsal segments densely pubescent or spongy beneath, with a smooth median channel. The color is dark to light brown, it being generally lighter than the other species before me. Length, 36-47 mm.

Montana distribution: Reed Point, Bridger Canyon, Ravalli County.

14089. Prionus imbricornis (Linn.) Syst. Nat. Ed. xii-622.

Thoracic teeth much less prominent than in californicus, less acute. Antennal segments vary from 18-20 in the males and are generally 18 in number in the females. In the males each segment is conical and hollowed to receive the succeeding segment and has the lower edge prolonged; in the females the segments are more slender and the antennae are simply serrate. The elytra of the females are more convex than those of the males. The covering of hair on the hind tarsi is very thin and the channel very narrow.

Montana distribution: Phillips Co., Big Horn Co., Forsyth.

14090. Prionus fissicornis Hald. 45-125

Thoracic teeth as in imbricornis. Antennal segments female 25, male 27-30. Each segment V-shaped, the posterior branch the longer and with its apex curved; serrate in the female. Segments of the hind tarsi more slender than in other species and the pubescence is as in imbricornis.

Montana distribution: Enid, Phillips Co., Powderville, Telegraph Creek, Musselshell Co.

Tribe Anacolini

Genus Tragosoma Serv. 32-159.

This genus is represented in Montana by a single species and a variety of that species. They are separated as follows:

Sides of the prothorax broadly rounded with the lateral process spiculiform and abruptly projecting from the arcuate limb depsarium (Linn.) Page 19

Sides of the prothorax acutely triangular between the apical and basal angles, with the sides nearly straight and the lateral process anguliform, broadening continuously from its apex var. harrisi Lec. Page 20

14097. Tragosoma depsarium (L.) 67-624

Elytral sculpture uniform throughout, the punctures coarse and subconfluent; antennae glabrous. The anterior tarsi are rather strongly dilated in the male. Prothorax nearly twice as broad as the head and conspicuously hairy, sides of the prothorax broadly rounded with the lateral process spiculiform and abruptly projecting from the arcuate limb (area

surrounding disc.) Elytra about twice as long as broad, the side margins rather widely and very distinctly reflexed.

Length: 22-31 mm.

Montana distribution: Bridger Mountains, Hamilton, Bozeman, Victor, Park Co., Dawson Co., Lincoln Co.

14097a. Tragosoma deparium var. harrisi Lec. 52-107.

Similar to deparium except that the sides of the prothorax are acutely triangular between the apical and basal angles with the sides of the triangle nearly straight and the lateral process anguliform, broadening continuously from the apex of the angle.

Length: 22-33 mm.

Montana distribution: Darby, Bozeman, Hamilton, Lake Ronan, Centennial Valley.

B. CERAMBYCINAE.

Key to the Tribes

- 1. Tibiae compressed and dentate behind Spondyliini. Page 21
Tibiae unarmed behind 2
- 2. Bases of the antennae not enveloped by the eyes 3
Bases of the antennae partly enveloped by the eyes;
front coxae not conical 11
- 3. Front coxae conical 8
Front coxae not conical 4
- 4. Front coxae transverse, not prominent 5
Front coxae globose, prominent Distenini
- 5. Ligula chitinated; eyes variable 6
Ligula membranous; eyes finely granulated Callidiini. Page 55
- 6. Epimera of mesothorax acutely pointed within Smodicini
Epimera of mesothorax truncate at inner end, normal 7

- 7. Base of pronotum emarginate, filled by a thin plate Saphanini
Base of pronotum normal Asemini. Page 22
- 8. Elytra abbreviated 9
Elytra not abbreviated 10
- 9. First segment of hind tarsus longer than others united Necydalini
First segment of hind tarsus as long or nearly as long
as all the others united Methiini
- 10. Mandibles acute, fringed on the inner margin Lepturini. Page 26
Mandibles simple, not fringed Dorcasomini Desmocerus
- 11. Scutellum acutely triangular, pronotum not lobed Stenaspini. Page 66
Scutellum rounded, middle coxal cavities open behind Clytini. Page 61

Tribe Spondylini
(Spondylidae of LeConte)

Key to the Genera

- Second antennal segment nearly as long as the third, the following segments transverse, each with two very large foveae beneath; legs very stout; third tarsal segment feebly emarginate Scaphinus. Lec.
- Second antennal segment about half as long as the third, the following segments oval, each with two small subapical foveae beneath; third tarsal segment bilobed Spondylis Fab. Page 21

Genus Spondylis Fab. 75-159

A single extremely variable species occurs in Montana. It is

Spondylis upiformis Mann.

14100. Spondylis upiformis Mann.

Entirely black, shining, legs piceous black. Head with large punctuations, subconfluent in part; a median transverse impression extends nearly the full length of the head, the punctuations sparse in this region; antennae black, attaining the basal fifth or sixth of the elytra. Prothorax coarsely punctate, widest at about the middle, behind this, somewhat sinuate and becoming narrowest at the base. Each elytron with three well defined

costae, coarsely, finely, punctate.

Length: 8-16.5 mm.; width: 2.75-6 mm.

Due to the extreme variations in size in this species, Col. Casey has described several new western species, none of which is good, according to Ralph Hopping, of Vernon, B.C.

Montana distribution: Lake Ronan, Lake Co., Gallatin Co., LoLo, Darby, Park Co., Como, Stevensville, Camas Prairie.

Tribe Asemini
(Aseminae Craighead 15-8)

Key to the Genera

- 1. Eyes divided, rather finely granulated Tetropium Kby. Page 24
- Eyes not divided, at times more or less emarginate 2
- 2. Eyes hairy, finely granulated, moderate size,
 transverse; antennae finely pubescent Asemmum Esch. Page 22
- Eyes hairy or not, coarsely granulated, large;
 more elongate species Criocephalus Muls. Page 24

Genus Asemmum Esch. 30-56

Moderately stout in form, with the antennae short. Head and mandibles are small and inconspicuous. The prothorax is rounded or angulated at the sides and unarmed. The eyes are transverse, finely granulated and hairy. The antennae are finely pubescent. There are two species in Montana.

Key to the Species

- Fore coxae very narrowly separated or contiguous, the
 process acute; a less shining and variable species atrum Esch. Page 23
- Fore coxae more widely separated, the process not
 acute; shining species; brown or black mokolumne (Csy.) Page 23

1112. Asemm atrum Esch. 30-56.

Asemm moestum Hald. 47-35
obsoletum Hald. 47-35
brunneum Hald. 47-35
substriatum Hald. 47-36
fuscum Hald. 47-36
striatum Kby. 37-171
gracilicorne Csy. 12-258
ebenum Csy. 12-258
curtipenne Csy. 12-258
amputatum Csy. 12-259
parvicorne Csy. 12-260
fulvipenne Csy. 12-260
costulatum Csy. 12-260
pupetatum Csy. 12-261
brevicorne Csy. 12-261
carolinum Csy. 24-227
stooktonense Csy. 24-227

(Synonymy fide Ralph Hopping 31-235.)

Black, densely and finely pubescent; elytra of the male very dark, often black, of the female, often testaceous; obsolete striate and with three well developed costae. Thorax variously sculptured and rounded or obtusely angulated at the sides, deeply punctured. Antennae in both sexes serrate.

Length: 10-17 mm.

Montana distribution: Bozeman, Corvallis, Joliet, Missoula, Hamilton, East Shore Flathead Lake, Specimen Creek, Lake Ronan, Ravalli Co., Gallatin Co., Huntley, Stevensville, Florence, Hill Co., Billings, Darby, Superior, Sheridan, LoLo, Lake Co.

1119. Asemm (Liasemum) mokelumne (Csy.) 12-262.

Blackish-piceous to brown, rufescent beneath. Head three-fourths as wide as the prothorax; antennae short, rather stout. Prothorax somewhat transverse, scarcely a third wider than long, shining and finely, deeply punctate, the median line faintly impressed for a short distance at the

