Made available through Montana State University's ScholarWorks

On innovation and entomology: a path to renewed relevance and the future

Robert K D Peterson

This is a pre-copyedited, author-produced PDF of an article accepted for publication in Annals of the Entomological Society of America following peer review. The version of record [On innovation and entomology: a path to renewed relevance and the future. Annals of the Entomological Society of America 117, 4 p207-208 (2024)] is available online at: https://doi.org/10.1093/aesa/saae015.

Accessibility Disclaimer:
For a more accessible version of this document, please submit an accessibility request form through the Montana State University Library website.

Annals of the Entomological Society of America, XX(X), 2024, 1–2
https://doi.org/10.1093/aesa/saae015
Editorial

ENTOMOLOGICAL SOCIETY OF AMERICA
SHARING INSECT SCIENCE GLOBALLY

OXFORD

Downloaded from https://academic.oup.com/aesa/advance-article/doi/10.1093/aesa/saae015/7687948 by Montana State University - Bozeman user on 05 June 2024

Editorial

On innovation and entomology: a path to renewed relevance and the future

Robert K. D. Peterson[1,2,*]

[1]Past-President of the Entomological Society of America, [2]Department of Land Resources & Environmental Sciences, Montana State University, Bozeman, Montana, USA *Corresponding author, mail: bpeterson@montana.edu

This editorial is, in part, based on several of my 2019 ESA President's Corner commentaries that appeared and are archived at www.entsoc.org.

Subject Editor: David Onstad

Received on 12 April 2024; revised on 12 April 2024; accepted on 22 May 2024

In 2019, I was honored to be president of the Entomological Society of America (ESA). In choosing my theme for 2019 a year or so before that, I wrestled with whether to stick with what had been on my email signature line for a few years, *Advocate Entomology!* or change it to what I was obsessing over at the time: *Innovation*. I stuck with *Advocate Entomology!* but it quickly became apparent that advocacy and innovation were inextricably intertwined.

During 2019, we devoted several initiatives to innovation, and the basis for focusing on innovation was the empowerment of all entomologists. Even more so now than 5 years ago because of advances in generative artificial intelligence, every entomologist has the ability not only to think about solutions to problems but also to create tangible products that come from their thoughts. Arguably more important, these products can be shared with billions of people in microseconds. Those people can then give feedback and share their own ideas, and the cycle can continue.

With the goal of creating and nurturing a lasting culture of innovation for the betterment of entomology, the ESA volunteer leadership and staff focused on several activities. We had an Innovation Day in which we generated and shared ideas that have the potential to reshape entomology. The focus for the day was on positivity, possibility, visionary thinking, and inspirational ideas. We discussed technologies and societal changes that can empower us to be better educators, researchers, influencers, and collaborators—changes that may very well radically alter how, when, where, and why we do our work.

Antlion Pit is a competition for entomologists to pitch their innovative ideas for an entomology-related product, technology, solution, process, or service—think *Shark Tank*, but for entomology. This competition develops the entrepreneurial spirit through idea leadership and teamwork. The inaugural competition culminated at the annual meeting in 2019 and was highly successful. The 2019 winner created LeafByte, an app to quickly measure leaf area and insect herbivory. The COVID-19 pandemic stymied the momentum, but 2023 saw another successful competition. The 2023 winners created the Insect Eavesdropper, a machine-learning acoustic system that can detect, identify species, and count insects feeding on plants.

But enough of the past. Where are innovation and entomology now and where are they going. For many years, we have been experiencing breathtaking advances in technology, sobering changes in demography, and exciting disruption of hierarchical structures in nearly every sphere. Imaging, sensors, data analytics, artificial intelligence, and other tools, when combined with the creativity of entomologists, will allow us to make new discoveries and solve wicked problems. In only the last year or so, generative artificial intelligence in the form of large-language models is pointing the way to research and presentation tools of unprecedented power. We are on the cusp of introducing hyperrealistic simulated worlds and dramatic robotic interventions of the real world, but we have little idea what this will mean.

Entomologists, at least as a group, possess immense intellectual capital. Our discipline will need this capital as we navigate an astonishing and uncertain future. This intellectual capital brought to bear for innovation in entomology will benefit entomologists, the discipline, and society—and ensure its longevity.

Because this editorial is published in the *Annals of the Entomological Society of America*, it is appropriate to briefly touch on the role of ESA and other entomological scientific societies in nurturing a culture of innovation for their entomologist members. Our discipline's professional societies can serve as synergizing platforms for us to rethink and reshape entomology. These platforms have the clout and credibility to provide a stage where members and nonmembers can undergo transformational change. More broadly, these platforms can and must serve as bastions of inclusion where *all* are empowered to not only innovate, but also to advocate, influence, and lead for all things entomological.

Let's return to the relationship between innovation and advocacy. By advocating entomology, we bring attention to the value

© The Author(s) 2024. Published by Oxford University Press on behalf of Entomological Society of America. All rights reserved. For commercial re-use, please contact reprints@oup.com for reprints and translation rights for reprints. All other permissions can be obtained through our RightsLink service via the Permissions link on the article page on our site—for further information please contact journals.permissions@oup.com.

of discoveries in our discipline. And the value of discoveries in our discipline is dependent on innovation. We need a lasting culture of innovation in entomology to advocate well for our discipline and we need to advocate to be able to continue to innovate so that entomology stays relevant and highly valued by society.

As entomologists, we must be the prime movers for our discipline. Others should have input into how our discipline evolves, but we need to take primary responsibility for navigating our future. If we don't, others will do it for us—and we probably won't like the outcome. Massive disruption of education, research, and communications that help define our profession is accelerating. Entomological research and communication are being transformed by big data and artificial intelligence. Journals, copyrights, and media formats are being rethought. Education is being transformed by demographics, increased access, and artificial intelligence. There will be no let-up. We must be the disrupters, not the disrupted. To do that, we must take the time to imagine the future and act to make the future happen. As author Jane McGonigal writes in her book *Imaginable: How to Create a Hopeful Future*, 'Any useful statement about the future should at first seem ridiculous'. A strong and lasting culture of innovation among entomologists is the key to remaining relevant and vital to the public.

Downloaded from https://academic.oup.com/aesa/advance-article/doi/10.1093/aesa/saae015/7687948 by Montana State University - Bozeman user on 05 June 2024