



Department of Entomology
College of Natural and Agricultural Sciences
University of California, Riverside

Presents

The 2023 Alfred M. Boyce Lecture

By

Dr. DAVID L. WAGNER

Department of Ecology & Evolutionary Biology
University of Connecticut

**"Insect Decline in the Anthropocene: Death by a
Thousand Cuts"**

In-person and live remote seminar

Location: 1102A Genomics Auditorium

Date: Monday, April. 24, 2023

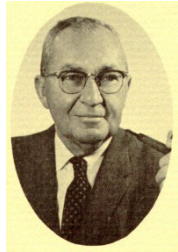
Time: 4:00 pm - 4:50 pm

For remote viewing at the same time and date

Zoom: 938 1040 4405

Passcode: 833289

A reception will follow the seminar at 5:00 p.m.
at the Department of Entomology Courtyard



Alfred M. Boyce
1901-1997

Dr. Alfred M. Boyce began his career in entomology at Cornell University where he earned his B.S. degree in 1926, and M.S. in 1927. In September 1927, he came to the UC Citrus Experiment Station, Riverside, with the appointment of junior entomologist, and he earned his Ph.D from Berkeley in 1931. Dr. Boyce remained on the UC Riverside faculty until his retirement in 1968. He became Professor of Entomology and Entomologist in the Agricultural Experiment Station in 1943. In 1940, he was appointed head, Department of Entomology; in 1952, he became Director of the Citrus Experiment Station, and in 1960, he received the honorary L.L.D. degree (Doctor of Laws Honoris Causa).

During the 1930's and 1940's, Boyce worked on all the insect and mite problems affecting the extensive walnut industry (then over 100,000 acres in southern California), and developed new and/or improved chemical control measures for many species. One of the most exhaustive studies in economic entomology ever made and published by a single entomologist up to that time was his "Bionomics of the Walnut Husk Fly, *Rhagoletis completa*," UC Hilgardia, October 1934. This species was new to science.

Boyce undertook research on insects and mites affecting the citrus industry (then over 300,000 acres) in 1928, which continued until the early 1950's. One of the early successes was the discovery and development of a new dinitrophenol compound for control of several species of mites on citrus and walnuts. This was the first commercially successful organic acaricide for foliar use. Four patents were obtained from this and other research, all dedicated to the public.

Early in his research, he foresaw the need for knowing the fate of chemicals applied to crops - what residues are left and whether they could be harmful to man and other animals. In 1932, he set up a laboratory for residue chemistry, which has since been greatly expanded at UCR.

While Head of the Department of Entomology, Boyce greatly expanded research in many areas, particularly the relatively new areas of insect toxicology, physiology and resistance to insecticides. Because of its eminence in these and other areas of entomology, the UCR Department of Entomology came to be acknowledged as one of the foremost in the world.

Boyce was also greatly interested in biological methods of controlling insect and mite pests. During 1951, he explored many parts of southern Asia, the Middle East, Africa, and Mediterranean countries for beneficial insects that might control scale insects, important pests on many tree fruit crops. He found several new species of parasites and, in conjunction with entomologists at UC Berkeley, two of these were reared and released and have provided a classical example of biological control.

During Boyce's 25 years of active research, he found many new species of insects and mites. Four were named for him when described by specialists. They are *Rhagoletis boycei*, *Parlatoria boycei*, *Cupes boycei*, and *Eriophyes boycei*.

Dr. Boyce was involved in teaching and for many years taught a course in subtropical entomology.

Dr. Boyce's national and international reputation as an entomologist and expert on pesticidal chemicals led to several high appointments: as a consultant to the President's Science Advisor in matters relating to agricultural research; as an advisor to the National Academy of Sciences on pesticides; member of the National Advisory Food and Drug Control, Department of Health, Education and Welfare; consultant to the Foreign Agricultural Service, U.S. Department of Agriculture; and The Rockefeller Foundation's board of agricultural consultants.

Boyce's autobiography was published in 1987, entitled, "Odyssey of an Entomologist - Adventures on the Farm, at Sea, and in the University."

The UC Regents established the Alfred M. Boyce Chair in Entomology at Riverside, an endowed Professorship. The chair is presently held by Dr. Ring Cardé.

Dr. David L. Wagner

Dr. David L. Wagner is a professor of ecology and evolutionary biology with core research interests in the biosystematics of Lepidoptera, insect decline, and invertebrate conservation, but he has also published on bees, dragonflies, insect behavior, insect ecology, and insect taxonomy. He has authored 10 books and 225 scientific papers. Much of his current focus is on the consequences of global insect declines, and especially the role of drought as a primary driver of faunal change across aridlands of the American Southwest and the tropics. While his core research interests are in phylogenetics and taxonomy of Lepidoptera, he has many ecological papers and collaborations that anchor to his four decades of hostplant data for caterpillars. He and coauthors have used this insect-plant database to address matters of ecological specialization, latitudinal diversity gradients, and species packing. Wagner has several publications on the importance of early successional habitats to plants, insects, and other wildlife in forested landscapes, as well as focused studies of various imperiled insect species.

Wagner has served or is currently serving on boards for Connecticut State Museum of Natural History, The Nature Conservancy, Wedge Entomological Foundation, and several state, regional, and national committees assessing the conservation status of insects. In 2020, he led an international group committed to preserving funding for field stations that were shuttered by the COVID-19 pandemic, authoring an opinion in *BioScience* and an editorial in *Science*. As a University of Connecticut Senator, he led a multi-year effort to get Environmental Literacy added to UConn's general education requirements—as of fall 2020, all incoming UConn students must take a course in Environmental Literacy. Currently, he is helping to initiate a consensus study on the global status of insects by the National Academy of Sciences, Engineering, and Medicine. As time allows, he is scratching away at a four-volume (>18,000-page) series on the caterpillars of western North America for Princeton Univ. Press.

“Insect Decline in the Anthropocene: Death by a Thousand Cuts”

“The human population has grown to over 8 billion and anthropogenic activities are affecting marine, terrestrial and freshwater ecosystems from pole to pole. Nature is under siege. Earth’s plant and animal life has been plunged into crisis, with insects among the taxa at the forefront of many recent scientific reports and worldwide media attention. Population trends for insects include reports of both increasing and decreasing trends of varying magnitude that are both temporally and spatially complex, with increasing numbers of studies documenting worrisome declines. While many well-documented declines are from regions of high human settlement or activity, some studies report declines from preserves and wildlands free of obvious anthropogenic stressors such as urbanization or pesticide use. My talk will examine etiology of declines as well as studies documenting stable and increasing insect populations, briefly review annual decline rates, and identify principal stressors. Special emphasis will be placed on the increasing threats of climate change to the biota of the American Southwest, especially changes in hydrology and climate variability.”