



IN MEMORIAM

Evert Irving Schlinger
Professor of Environmental Science, Policy, and Management
UC Berkeley
1928-2014

Following a long and difficult battle with Alzheimer's disease, Evert Irving Schlinger passed away during a spectacular lunar eclipse in the early morning hours of Wednesday, October 8, 2014, in Lafayette, Calif. at the home of his daughter Jane and son-in-law Brad Omick.

Born April 17, 1928, in Los Angeles, Ev earned a B.S. degree from the University of California, Berkeley, in 1950 and, under the mentorships of Richard Bohart and Harry Lange, a Ph.D. from the University of California, Davis, in 1957. Ev was a member of Calpha fraternity, a life and charter member of the Cal Aggie Alumni Association, and a recipient of the Award of Distinction by the College of Agriculture and Environmental Sciences, UC Davis; an Honorary Member of the Council of the International Congresses of Dipterology; and a Fellow and Trustee of the California Academy of Sciences.

Ev joined the Berkeley faculty in 1969 where, before retiring in 1986, he served as chair (December 1976-June 1977) and vice-chair (1979-April 1981) of the Department of Entomological Sciences. He was Chair of the Division of Entomology & Parasitology (1975-December 1976). His accomplishments include development of field entomology courses and field arachnology. Over his career, he was instrumental in advancing the sciences of biology, agriculture, biodiversity, and sustainability. His research focused on two diverse yet complimentary areas of science: an innovative approach to biological control of agricultural pests, and the biology, taxonomy, and evolutionary ecology of parasitic flies belonging to the dipterous family Acroceridae, commonly referred to as spider flies, small-headed flies, or, as Ev preferred to call them, "Acros."

His research into biological control began after receiving his Ph.D., when he accepted a position as a research entomologist with the biological control unit at the University of California Citrus Experimental Station, Riverside. Teaming up with Professor Robert van den Bosch and with the critical assistance of two research associates, Jack Hall and Evert Dietrich, his activities involved a multi-year effort to control the newly introduced and highly destructive spotted alfalfa aphid. This pest had no effective natural enemies, was spreading like wildfire in the southern half of the state, leaving in its wake decimated fields as far as the eye could see, and the agricultural sector of the state was in utter panic. The van den Bosch/Schlinger team pinpointed areas in the Middle East where appropriate parasitoids of this pest existed, located and collected them through foreign exploration, guided the parasitoids through strict quarantine, reared them in captivity, tested them on target and nontarget pests under laboratory conditions, released them, and followed their movements and impact in the field. This colossal effort brought the aphids under control. The effort was so successful that, some 55 years later, the spotted alfalfa aphid, although still existing in Southern California, no longer causes problems and is not considered a pest. The amount of money this team saved the alfalfa industry of California certainly adds up to many hundreds of millions of dollars. Moreover, the

methodologies Ev and Van developed during this project proved so effective that, to this day, they form an indispensable part of any classical biological control toolbox.

During his time with the biological control unit at UC Riverside, he, van den Bosch, and their team explored ways to keep a long list of alfalfa pests in check and, in that process, developed and tested a wide array of pest management tools. Their main focus was on manipulating and concentrating naturally occurring predators and parasitoids in the field to reduce pest populations. As an example, by manipulating habitats, they conceived and honed the concept of strip cropping, where harvesting an alfalfa field would be done in stages to provide refuges in the un-mown strips where natural enemies could accumulate and thrive. The next time the field was mown, the previously uncut areas would be harvested. These field experiments helped solidify such far-ranging concepts as cropping systems and intercropping to reduce pest stress, concepts that now underpin the very foundation of agro-ecology. His perceptive knowledge of agricultural ecology, his deep understanding of natural enemy biology, and his native curiosity provided much of the driving force behind the team's pioneering efforts in biological control. Ev and Van were among the early architects of conservation biological control.

The UC Riverside team worked closely with a team at the University of California, Berkeley, which was, at that time, exploring the concept of "supervised control." The Berkeley team, headed by Professor Ray F. Smith, with assistance from Vernon M. Stern, was in the midst of a spectacular breakthrough. The two teams worked collaboratively in developing the emerging science of integrated pest management (IPM). Ev's concepts of cultural manipulation were instrumental and focal in the conception and evolution of the integrated pest management paradigm. Ev's specific contributions are now long forgotten, but during the course of his seven years in the biological control unit at UC Riverside, he played a robust role in the creation of the IPM paradigm. In my opinion, the conceptual framework for IPM was very much in part a product of Ev's inquiry and innovation.

His research focus pivoted in 1963, when he was awarded a professorship in systematics in the newly formed Department of Entomology at UC Riverside. That proved a milestone in his career, directing his thoughts and energies into systematic research, teaching, and administration.

His study of spiders and acrocerid flies, their obligate parasites, began when he was a child and has been a driving force throughout his career and life. His Ph.D. dissertation delved into the systematics of *Ogcodes*, a genus of Acroceridae found throughout the world. His research on acros was aimed at understanding big-picture questions about them: their evolution, biogeography, and their fastidious and intricate relationships with spiders. He approached the problem of understanding these flies from multiple perspectives, each complementing the other. He strived to develop a basic phylogeny. Towards the end of his career, he began to preserve material for DNA analyses because, in his forward-thinking way, he believed that might uncover additional clues for understanding their evolution. He was concerned with the evolution of the entire family, and, because the Acroceridae is an extremely old family of flies, he examined them from around the world. Acros are rare in collections, so he organized and participated in numerous large-scale expeditions to areas where these flies occur. These expeditions were mostly geared to the world's biologically diverse "hot spots," such as New Caledonia, Australia, New Zealand, Chile, Madagascar, South Africa, and Fiji, to name a few. He enjoyed fieldwork and was continually searching out unexplored places for collecting. Until he was overtaken with Alzheimer's, he suggested venues and was an active participant on these expeditions. I consider myself fortunate to have been a member of most.

Acrocerids are not only rare in collections, they are also difficult to collect as adults in the field. One of his approaches to obtain adult flies was to rear them from spiders, not a quick or easy task given that some spiders take several years to mature. Throughout his career, he maintained thousands of spiders in captivity. His passion for acros was so overpowering that he reared spiders during the seven years he pursued a career in biological control and even after he retired. He collected specimens on 37 insect-spider expeditions in 40 countries. His World Spider-Endoparasitoid Lab, located in Santa Ynez, CA, was most recently associated with the UC Santa Barbara Department of Biology. The UC Berkeley Essig Museum houses the [Evert I. Schlinger Aphid Parasitoid Collection](#).

Ev compiled a collection of historically rich and extremely rare literature on flies, spiders, biogeography, evolution, and the geological forces that shaped the flies' evolution: orogenesis, plate tectonics, continental drift, and terranes. He also assembled significant literature holdings on the biota of special environments and had expanded his literature collection to include biodiversity and topics associated with conservation biology. In the end, he had a vast, focused, and inspiring collection of books. What is more, he read them and was on

top of all these subjects. I believe Ev to have been one of the most broadly informed researchers in the natural sciences.

Ev was modern in approach and anticipatory in his thinking. Methods that constitute modern systematics were, to some degree, pioneered by Ev and his students. He inspired all students towards innovation in their research. Before the term “informatics” was coined, before “databasing” was a regularly used tool in systematics, and during the early years of computers when bulky mainframe giants started to appear at the larger universities, Ev inspired his students to delve into those areas while conducting their dissertation research. He led graduate seminars that probed the philosophical underpinnings of cladistics and the phylogenetic approach developed by Willi Hennig, even before the concept was formally translated into English.

I can imagine no better mentor than Ev: understanding, interactive, knowledgeable, yet unassuming. He was the mentor who gently pushed but never shoved. His personal knowledge base inspired those around him to become more informed, not just about science, but about all aspects of life. He made learning exciting and inspired students to new heights, to arm themselves with new knowledge and honed skills. He brought pertinent knowledge to bear on problems of the day and conveyed this to students. Ev was so convinced that knowledge of the outdoors is critical to making sound decisions regarding the environment that he actively organized and led field trips for students, even though those activities took time from his personal life. His students are now professors in esteemed universities, systematists in the nation’s most prestigious museums, and prominent in a variety of other positions. Students of his students, his grand- students you might say, are among the most respected of the current dipterological and arachnological communities.

Ev was passionate about life. He had the mental and physical capacity to do almost anything he wanted. He was an enthusiastic and excellent gardener. He loved food and wine, especially wine. He took joy from listening to classical music and to opera in particular. He had an enormous collection of records, tens of shelf feet of them, from 78’s through to 33 1/3, all on vinyl. He played them often and sang along with them with what I thought was a good voice. The few times I heard him play the piano, I was impressed, particularly so because I don’t think he ever practiced.

He was a determined, talented athlete. During his undergraduate days at UC Davis, he was on the track team and played end for the football team. He was so talented and so well appreciated at football that his jersey shirt number was retired. To my knowledge, that is the only jersey number to be retired in the entire history of UC Davis football. When, in the fall of 1963, I arrived in Riverside as Ev’s first graduate student, he played badminton over the noon hour. A few other entomologists took part, including Roy Fukuto and Jack Hall. I joined the group, as did Peter Rauch, and found that although Ev was a gracious sport, he was an even more awesome competitor; he almost never lost. The competitive streak emerging from Ev’s athletic prowess manifested itself in another aspect of Ev’s character. He was a fierce debater, arguing over almost anything. As the years went by, his argumentative streak increased. In the later years, he argued to the point that his opponent simply gave up, allowing Ev to win by default. He prided himself on this trait and once told me that his mother taught him how to debate and to stick with it until he came out ahead. It simply didn’t matter which side of the issue he was on.

Ev’s father was one of the original founders of United Parcel Service, who, during WWII, was often paid in preferred stock rather than cash. Ev did not grow up in a prosperous household. By the time Ev was a faculty member at UC Riverside, the stock began to soar, split, and soar some more, and the Schlinger family became quite well off. Ev’s parents eventually placed some of the preferred stock into a family foundation. They endowed the Schlinger Chair of Systematics at Berkeley and another chair at Cal Tech, where Ev’s older brother, Warren, had studied. When Ev’s parents died, the Foundation was passed down to Ev and Warren. They ran it jointly for a while, but Ev preferred it be used to support research, while Warren wanted it to fund higher education, including scholarships. They eventually split the foundation in two, with each controlling one of the two new foundations.

As President of the newly formed Schlinger Foundation, Ev ensured that funds were made available for research in dipterology, arachnology, biodiversity, biosystematics, and evolutionary biology. Over the years, the foundation awarded five endowed chairs to institutions in California (arachnology and dipterology at the California Academy of Science; systematic entomology at the University of California, Berkeley [funded by Ev’s parent foundation]; systematic entomology at the University of California, Davis; systematic entomology at the Santa Barbara Museum of Natural History), and one in dipterology at the Australian National Insect Collection, CSIRO, Canberra. It funded research programs in Diptera systematics; helped in

the construction and running of biological stations in remote but biologically important parts of the globe; initiated an internship program to train young scientists in the skills of field entomology and arthropod curation from countries with severely threatened biota; and provided support for the International Congresses of Dipterology and treatises on Diptera. He encouraged and initiated long- term insect surveys in Madagascar, Fiji, New Caledonia, Australia, India, and elsewhere. These activities bode well for the sciences of arachnology and dipterology and for systematics and entomology as a whole. Ev can take full credit for all the good this small family foundation has done. He most certainly held the long- term health of planet Earth front and center.

Ev spent a lifetime in the dedicated service of entomology, agriculture, biological control, and systematics. This service is punctuated with inspiration, dedication, and vision, and with important and lasting innovation and discovery. He was an inspiring teacher and mentor, has served key leadership roles in entomology and the broader science arena, and, through his research foundation, has provided resources to enrich the prospects of systematics and biodiversity well into the future. He ushered in a new generation of dipterists, arachnologists, educators, entomologists, and conservation biologists who have collectively built onto the foundations he laid, and his second- generation students are currently becoming today's leaders. The impact his students and their students have had and are having on science, agriculture, and systematics is substantial.

Ev was a giant of a man in both stature and accomplishment. He had a noble heart, held a deep trust in people, and participated fully in life. Perhaps one might call him a gentle giant. He is survived by his brother Warren and sister- in- law Katie Schlinger, his four children Pete, Mathew, Jane, and Brian, and his 11 grandchildren.

Michael E. Irwin, professional scientist emeritus, Illinois Natural History Survey