



IN MEMORIAM

George Webber Barlow
Professor of Integrative Biology, Emeritus
UC Berkeley
1929 – 2007

George Barlow was born in Long Beach, California, on June 15, 1929, and died in Monterey, California, on July 14, 2007. He was a member of the University of California, Berkeley, faculty from 1966 until his retirement in 1993, but remained an active participant in the Department of Integrative Biology during his years as professor emeritus. George was internationally recognized as an animal behaviorist and ichthyologist, and played a crucial role on the Berkeley campus, both as a researcher in those disciplines, and as a teacher for generations of undergraduate and graduate students.

George Barlow's interest in the natural world developed early in life, when he lived next to the sand and surf of southern California. In his words: "My earliest memories are of trying to keep sea anemones and hermit crabs alive in a small bowl and fishing from the local dock. Birds, however, were to become my passion. And eventually all my time, and the little money I made from delivering newspapers in the wee hours of the morning, were invested in racing pigeons. I spared enough money, however, to indulge in tropical fishes, including cichlids." This group of fishes was to become a particular focus of George Barlow's adult life, but it was not until the second year of college at the University of California, Los Angeles (UCLA), that George considered a career in biology, with an emphasis on ichthyology. He had entered college as a premedical student, but graduated with an A.B. in biology in 1951. As this was during the Korean War, George elected to enlist in the Coast Guard, reasoning that he "would have more responsibility for boat handling than [he] would have found in the Navy." Assigned to the Central Pacific at his request, George spent two years in the Coast Guard before returning to graduate school at UCLA.

After receipt of his M.A. (1955) and Ph.D. (1958), and determined to learn the study of behavior, as practiced by European ethologists, George obtained a postdoctoral fellowship from NIMH. George and his wife Gerta, whom he met at UCLA and married in 1955, were to spend two years at Seewiesen, in Bavaria, where George worked in the laboratory of Konrad Lorenz. He returned to the United States as one of a small number of individuals in this country fully steeped in the European ethological traditions, which emphasized genetic underpinnings of behavior, but also aware of the study of behavior as practiced in North America, where there was a central concern with mechanisms of learning. He was therefore ideally positioned to embark on an academic career, beginning as an assistant professor of zoology at the University of Illinois, Urbana, in 1960, and remaining there for six years, with promotion to associate professor in 1963. He subsequently accepted a position as associate professor of zoology at UC Berkeley, and was also appointed research ethologist in the University's Museum of Vertebrate Zoology. In 1973-74, George spent a sabbatical year at Oxford University, working with Nikolaas Tinbergen. It was the year that Lorenz, Tinbergen and Karl von Frisch shared the Nobel Prize, and George described it as "an exciting experience." He was promoted to professor of zoology in 1970.

Back in Berkeley after his sabbatical, George was the driving force in organizing a team-taught, upper-division animal behavior course. Two of the writers of this memorial (RLC and SEG) participated in that course. George's lectures were knowledgeable and beautifully organized. They were informed by his years with Lorenz and Tinbergen, but updated to include new perspectives, as they emerged during the transition from a focus on "what-was-good-for-the-species" to "what-was-good-for-individual-members-of-that-species-and-their-genetic-descendants," i.e., from classical ethology to sociobiology to contemporary behavioral ecology.

George Barlow also taught the upper-division course in ichthyology. One of us (SEG) audited that course in the 1970s, accompanying George's classes on field trips. George loved and was fascinated by fish, in all their diversity, and this enthusiasm was communicated to his students. He offered a variety of graduate seminars and was a major sponsor and contributor to the long-running graduate discussion group called Research Reviews in Animal Behavior, a forum in which all three of us also participated. He was devoted to undergraduates and, even during his retirement years, undergraduate students were working in his laboratory before proceeding to graduate study.

One of George's lasting legacies to the campus was the Richard B. Gump South Pacific Biological Research Station. He was a member of the survey team of five that traveled to Moorea in 1980 to discuss with the department store magnate Richard Gump the possibility of establishing a biological station on that island in French Polynesia. George chaired the original advisory committee that established the station in 1981. Without his contributions to developing the station, hundreds of Berkeley undergraduates, graduate students, and faculty would not have had the opportunity to study and conduct research in Moorea. He served as the research station's first director, and even into his retirement continued to teach in an undergraduate course offered at the station each fall (Integrative Biology 158).

In terms of his personal research, George Barlow published 163 papers and three books. Examining George's bibliography, one is struck by the range of species and topics under study, from early articles on the social behavior of desert pupfish and a South American leaf fish, through research on oxygen consumption and systematics in gobiid fishes, and on to his lifelong concern with the social behavior of cichlid fish. Influential theoretical papers and reviews are interspersed with reports of experimental observations on fish in nature and in the laboratory. However, as summarized by George on his webpage: "My research has centered on the evolution of social behavior in fishes, and the mechanisms supporting their behavior.... (and) the bulk of my efforts have been devoted to the study of those incredible cichlid fishes." In 2000, George published *Cichlid Fishes: Nature's Grand Experiment in Evolution* (Perseus Books, Cambridge). It drew abundant praise from his fellow biologists and from reviewers. For example, Marian Stamp Dawkins described *Cichlid Fishes* as: "A wonderful book. Written with a bubbling enthusiasm that will capture everyone from fish hobbyists to theoretical biologists, it is extraordinarily easy to read, very funny (I laughed out loud throughout), and at the same time manages to convey important ideas in evolutionary biology in a completely understandable way." And a reviewer for *Natural History* concluded: "In sum, *The Cichlid Fishes* is a marvelous narrative about an extraordinary family of creatures. Barlow's fertile synthesis belongs in the pantheon of natural history classics..." It seems appropriate that Professor Ken McKaye (University of Maryland), one of George Barlow's graduate students, named an African cichlid from Lake Malawi *Metriclima barlowi*, after his mentor.

George Barlow's contributions were recognized by his colleagues through his election in 1979 as president of the Animal Behavior Society and his service as a member of the board of governors of the American Society of Ichthyologists and Herpetologists (1970-1975). Besides these two professional organizations, he was active in the American Society of Zoologists and served on the psychobiology panel for the National Science Foundation (1965-1968). He also was editor of *Ethology* (1987-1990) and served as a member of the editorial boards for other major and minor journals and book publishers. He co-organized a yearlong conference on behavioral development held at the University of Bielefeld in Germany (1977-1978). George was frequently in demand as an invited speaker at conferences, symposia, and workshops. Even amateur aquarium groups sought him out as a consultant and speaker, and he responded to them with enthusiasm. He was honored by election as fellow of the Animal Behavior Society, the American Association for the Advancement of Science (1965), and the California Academy of Sciences (1976). In 1970-1971 he received a professorship in the Miller Institute for Basic Research in Science. George was an active participant in the business of the Department of Zoology, later the Department of Integrative Biology, and the Museum of Vertebrate Zoology. For the university, he had the unique role of chairman of the Diving Control Board for several years.

George Barlow was a complex human being with wide- ranging interests, from his participation as a member of the water polo team at UCLA (plus long- term involvement with Berkeley's team); through his participation as a member of a group that lived in an underwater habitat in Costa Rica for several weeks; and on to a vigorous and affectionate family life. These aspects of George Barlow are, perhaps, best summarized by three of his graduate students (David L. G. Noakes, Jeffrey R. Bayliss, and Judy A. Stamps). In an affectionate retrospective, published in the Animal Behavior Society's newsletter in 2008, they wrote: "We are the lucky ones, for we knew George Barlow. We were his students, his friends, his colleagues, and his family. His immediate family included his wife of more than 50 years, Gerta, and his daughters Linda, Bicka and Nora. We had shared the experience of 'Barlowing' (the word is both a noun and a verb). It refers to the act, and the action, of exuberant and animated discussions, typically around the dinner table, featuring current events, national politics, sports, fishes, animal behavior, ecology, evolution, and everything that the dog did that day." There were actually several dogs that graced the Barlow home on Wildcat Canyon Road and they were witnesses, not just to those stimulating dinner conversations, but to numerous seminars and post-seminar gatherings. Those were memorable occasions. In addition to his daughters, George is survived by his wife Gerta and six grandchildren.

Stephen E. Glickman
Roy L. Caldwell
William Z. Lidicker Jr.