

OBITUARIES

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Gary Fellers, 1948–2019

Gary Marvin Fellers was born in 1948 in Alameda, California. Members of his family had lived in California for generations, and one of his ancestors was born in the old mining town of Bodie, on the east side of the California Sierra Nevada. Gary grew up in Livermore, California, and even as a child he had a penchant for exploring the outdoors, including Yosemite National Park where his family would rent burros and pack in for extended camping trips during the summer (Fig. 1).

Gary attended the University of California, Berkeley campus as an undergraduate where he took classes from notable herpetologists Robert Stebbins and David Wake. R. Bruce Bury was Gary's teaching assistant for the Herpetology course, and Gary's first peer-reviewed publication came from a field trip that Bruce, Gary, and Stephen Ruth took in northwestern California where they documented the first California record of Dunn's Salamander (*Plethodon dunni*) and reported several range extensions (Bury et al. 1969). According to Bury, "I recall that we worked up a rough draft in the field and almost submitted it while on the road; however, we had no typewriter along." Berkeley was also where Gary met his future wife, Joan. They got to know one another during a Herpetology class field trip to the Mojave Desert. They married in 1971 and shared 48 years together in a life filled with science. Gary and Joan co-authored publications together including one article in the journal *Science* that demonstrated tool use by ants (Fellers and Fellers 1976).

Gary began graduate school at the University of Michigan in Ann Arbor where he completed a M.S. in Zoology in 1972. He began work on his doctoral degree the same year at University of Maryland at College Park under the direction of Richard Highton. Gary, Joan, and other graduate students accompanied Highton on one of his epic collecting trips for salamanders that took them through the Great Smoky Mountains and as far afield as Texas. Joan recalled, "The trip became a spirited competition to determine who could catch the most salamanders. The other students and I couldn't begin to keep up with Highton, a master collector. Gary, however, was right behind Highton all the way

PHOTO BY MARK CROSES



FIG. 1. Gary Fellers surveying for amphibians in Yosemite National Park, 2005, a place where he spent much time on extended family camping trips as a child.

and finished a close second. The two of them spotted salamanders under logs where the rest of us saw nothing!" In 1974, Bruce Bury hired Gary as a technician to work on various museum projects at the U.S. Fish and Wildlife Service's National Fish and Wildlife Lab (at the National Museum of Natural History, Washington, D.C.). Here they collaborated on the first national review of amphibians in the United States (Bury et al. 1980). Gary earned his doctorate in 1976 for his study on behavioral interactions in North American treefrogs (Fellers 1976).

The Fellers moved back to California in 1977 where Gary taught biology at California State University, Sacramento for a year before beginning his career with the federal government. He worked briefly for the Bureau of Land Management as an Endangered Species Specialist before becoming the Assistant Regional Chief Scientist in the Pacific West Region of the National Park Service (NPS) in San Francisco. In 1983 Gary was hired as a Research Scientist for the NPS at Point Reyes National Seashore in what became his home base for research in California and beyond for the following 30 years of his career.

Working for the NPS based at Point Reyes National Seashore was a perfect fit for Gary because it allowed him to work with a broad range of species that matched his varied interests in biology. In 1981, he initiated an ecological study of the threatened endemic Island Night Lizards (*Xantusia riversiana*) on Santa Barbara Island in the southern California Channel Islands. The study continued and expanded to San Nicolas Island, one of the other two islands where the lizards are found, and it was also when longtime collaborator Charles Drost first worked for Gary as a technician (Fig. 2). Knowledge gained from these studies eventually led to the delisting of the species in 2014. "Neither Gary nor I imagined during that first year on Santa Barbara Island that the research would end up spanning decades of our lives, studying a species with an almost equally long lifespan," said Drost who now works as a Research Zoologist with the U.S. Geological Survey (USGS).

Gary began working with bats at Point Reyes around this time as well, conducting regular exit counts on one of the largest maternal breeding colonies of Townsend's Big-eared Bats (*Corynorhinus townsendii*) in California, as well as radio-tracking them to learn about their movement ecology. His interests with bats extended to their echolocation calls, and he set up a system of automated call detectors at many San Francisco Bay area NPS parks to compile species presence lists and document seasonal

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FIG. 2. Gary Fellers and Charles Drost performing field work in the Channel Islands, 2009.

use. He also studied the southernmost coastal population of Mountain Beavers (*Aplodontia rufa phaea*) located at Point Reyes and documented their responses to the Vision Fire of 1995 that burned a third of the Seashore and much of the dense coastal scrub that is home to their warren of burrows (Fellers and Osbourn 2009).

After concerns about worldwide declines in amphibian populations were raised at the inaugural meeting of the World Congress of Herpetology in 1989 in England, Gary and Charles Drost decided to see if declines were occurring in California by retracing the steps of Joseph Grinnell. Grinnell and his colleagues from the Museum of Vertebrate Zoology had surveyed a transect of sites from the Central Valley through Yosemite National Park to Mono Lake in the early 1900s (Grinnell and Storer 1924). Thanks to Grinnell's detailed observations, Gary and Charles were able to demonstrate that five of the seven anuran species in the area had suffered dramatic population declines; this was the first well-documented study of the collapse of a regional frog fauna in this part of the world (Drost and Fellers 1996). This finding spurred Gary to secure funding to document the current state of amphibians in the Sierra Nevada and led to a renewed focus on amphibians in his career. In 1992 Gary launched the California-Nevada Workgroup of the international Declining Amphibian Population Task Force, which he chaired for 10 years. This working group later became the California-Nevada Population Task Force (<http://www.canvamphibs.com/>), which today draws hundreds of amphibian experts yearly to exchange ideas and give presentations about research and conservation in the two-state region.

Change was in the air in 1993 when the Department of Interior decided to reorganize research scientists from its various agencies into one newly created agency: the National Biological Survey, which soon became the National Biological Service (NBS). In 1996 the NBS was transferred into the USGS, where Gary worked for the remainder of his career as a Research Wildlife Biologist. Throughout that time, Gary simply replaced the placard on his office door with each organizational change and continued to pursue his research goals, largely uninterrupted.

In 2000, the U.S. Congress provided funding to investigate ongoing amphibian population declines in the nation through

the creation of the Amphibian Research and Monitoring Initiative (ARMI, <https://armi.usgs.gov/>) within the USGS. Gary was among the core group of principal investigators who fleshed out how this daunting task could be carried out in a meaningful way from the Florida swamps to the high Sierra Nevada. To date, ARMI researchers have published over 650 peer-reviewed publications, advanced statistical methods to compare changes in occupancy between widely divergent habitats, answered many aspects of the complex question of why amphibian populations are declining in the United States, and informed management and conservation. Reflecting on Gary's role as a scientist in the collaborative ARMI program, USGS hydrologist Chauncey Anderson said: "He was an old-school field biologist with a new school appreciation of ideas and new approaches—a great combination!"

The 2000s were a productive decade for Gary's amphibian research. Locally, he examined the ecology of California Red-legged Frogs (*Rana draytonii*) at Point Reyes by using radio-telemetry to study habitat use and movement (Fellers and Kleeman 2007), and he compared the efficacy of population monitoring with egg mass counts and capture-mark-recapture techniques (Fellers et al. 2017). Further afield in California, Gary and collaborators studied the possible role of contaminants in amphibian population declines, especially for species in the Sierra Nevada (Sparling and Fellers 2009). This research became part of a growing body of evidence that led the Environmental Protection Agency (EPA) to phase out the pesticide Endosulfan beginning in 2010. This was a boon not only to the non-target wildlife threatened by the toxic pesticide, but also to the farmworkers who applied it to crops.

It was at this point in Gary's career that he began to play a role in the next generation of scientists near and far. Within USGS Gary informally mentored promising scientists: "Gary was a good mentor for me," said Erin Boydston, "and I enjoyed following him on some nighttime field work during 2001–2003, sitting and counting bats or watching his amazing frog-catching abilities when he would strike like a heron. Several of his bits of advice to me then as a new employee have stayed with me word for word."

Around this time Gary traveled to Chengdu, China to exchange ideas with biologists about monitoring amphibians in the Zoige wetlands, and in 2003 he was invited to lecture at Tunghai University in Taiwan by Yeong-Choy Kam. The visit to Taiwan began a years-long collaboration between Gary and Kam's herpetology lab (Liu et al. 2011). According to Kam, "We had such a great time working together in Taiwan. We traveled to many different places and had some wonderful frogging nights. His easy-going and warm character made him a popular foreign visitor in the lab. We ended up publishing several interesting frog papers on ecology and biodiversity subjects."

Although Gary retired from the USGS in 2013, he continued to work with long-term data sets that he began collecting decades earlier. He published an article on a 25-year study of Townsend's Big-eared Bats at Point Reyes (Fellers and Halstead 2015). He merged 20 years of his amphibian surveys in Yosemite National Park with Roland Knapp's (UC Santa Barbara) extensive surveys in the Park to show that Sierra Nevada Yellow-legged Frogs (*Rana sierrae*) were recovering there despite being exposed to multiple stressors including fish, chytridiomycosis, and pesticides (Knapp et al. 2016). It was a fitting capstone to a career that was dedicated to animals and places like Yosemite that Gary loved since he was a child.

The legacy of Gary's scientific endeavors will reverberate for years to come, and thankfully the research that Gary began moves forward under the direction of Brian Halstead to whom Gary passed the baton to when he retired, "Gary's trust in me to help carry on a portion of his research is the greatest professional honor I've received," said Halstead. "He was a valued mentor whose waders are too big to be filled."

Gary's work was shaped by his adventurous spirit of inquiry. In a 2018 interview, he recounted a family road trip when he spotted a porcupine walking near the side of the road. He got out and convinced his wife Joan to distract it while he petted it. When else was he going to have this opportunity? It's a moment that captured Gary's attitude toward studying wildlife and trying new things—when else but now? And when "now" lasts 50 years, one can accomplish an awful lot.

A complete list of Gary Fellers' publications can be found at: https://www.usgs.gov/staff-profiles/gary-fellers?qt-staff_profile_science_products=3#qt-staff_profile_science_products

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CURRENT RESEARCH

The purpose of Current Research is to present brief summaries and citations for selected papers from journals other than those published by the American Society of Ichthyologists and Herpetologists, The Herpetologists' League, and the Society for the Study of Amphibians and Reptiles. Limited space prohibits comprehensive coverage of the literature, but an effort will be made to cover a variety of taxa and topics. To ensure that the coverage is as broad and current as possible, authors are invited to send reprints to the Current Research section editors, Ben Lowe or Chava Weitzman; e-mail addresses may be found on the inside front cover.

Fossil Evidence of Lissamphibian Discovered in Antarctica

It has been established that the Gondwanan continents of Australia, Antarctica, and South America shared connections well into the Cenozoic, during which time Antarctica remained temperate. During this time, Antarctica has been hypothesized as being an important dispersal route for several taxa, including marsupials and anurans. The authors of this paper present their discovery of fossil material representing evidence of the first modern amphibian (Lissamphibia) known from Antarctica. Indeed, this represents the first evidence of a non-marine ectotherm from Cenozoic Antarctica. The authors assign the material to the extant monotypic genus *Calyptocephalella* (Calyptocephalellidae) that is presently endemic to the central

Chilean Andes but which has a robust fossil record that indicates a presence in Argentine Patagonia as recently as the Miocene. The five Calyptocephalellidae species are endemic to South America and belong to the clade Australobatrachia, which also includes two Australasian families: Myobatrachidae and Limnodynastidae. As such, this new discovery lends further credence to the importance of Antarctica in anuran biogeography. This material was discovered on Seymour Island, which lies at the northern tip of the Antarctic Peninsula. Other fossils from the site indicate it was a marsh or estuary, with a mix of terrestrial, freshwater, and shallow saltwater inhabitants. Intriguingly, southern beech (*Nothofagus*) fossil material was present. *Nothofagus*, which is of great biological interest for its expansive fossil record and relictual distribution, is associated with *Calyptocephalella* habitats in present-day Chile. Almost impossibly, evidence of another