

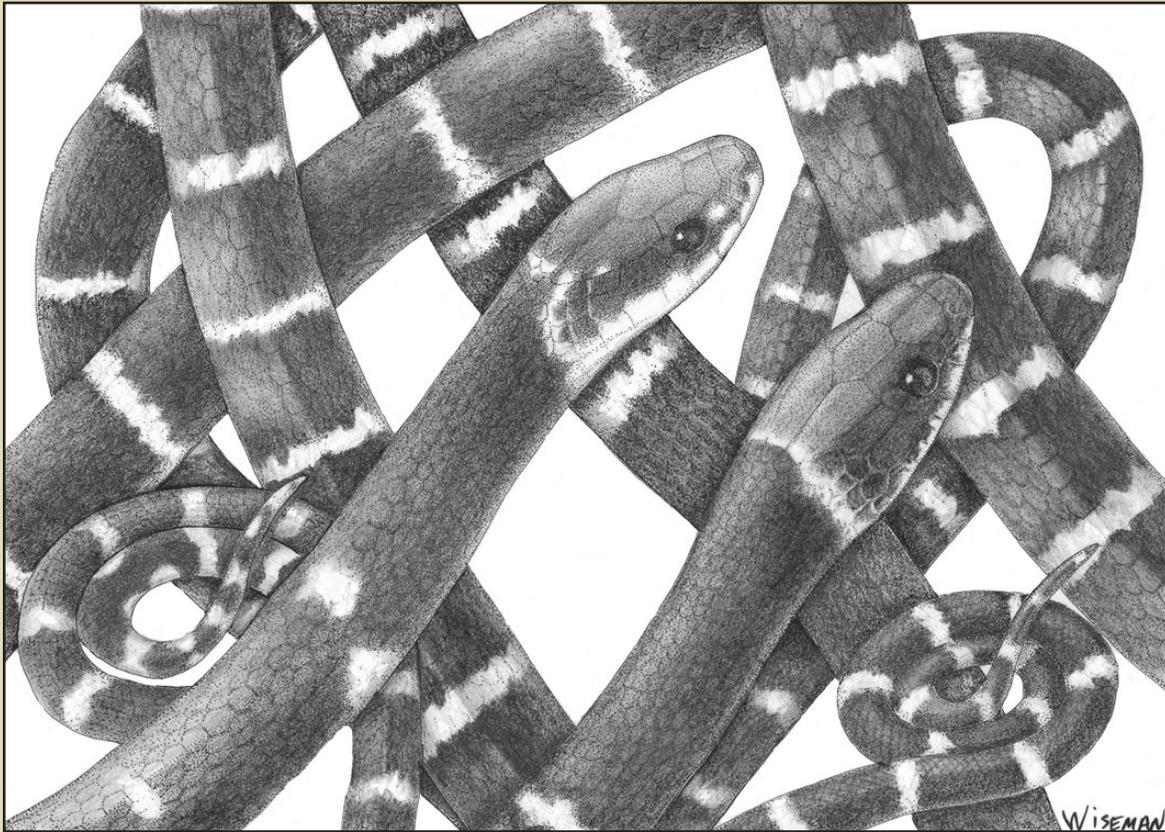
### Foothill Yellow-legged Frog

The Foothill Yellow-legged Frog (*Rana boylei*) is a stream and river-breeding frog that occurs in California, southern Oregon, and (historically) northern Baja California. In the spring and summer, following snowmelt or receding water levels, these frogs may travel great distances to breeding leks, where males (as illustrated above) broadcast calls underwater and through the air to attract the larger females. Baseball-sized egg masses are typically attached to rocky substrates in flowing water, leaving them susceptible to stranding or scouring if water levels change after oviposition. While *R. boylei* has evolved over millions of years to breed in highly chaotic aquatic habitats like rivers, human hydropower endeavors can threaten populations—one ill-timed water release from an upriver dam can devastate an annual cohort of egg masses and young tadpoles can be swept from their shallow water nurseries. Further, dammed rivers favor invasive species such as crayfish and bass, which prey on frogs.

On the regulated North Fork Feather River in the Sierra Nevada of California, where Kevin Wiseman has studied *R. boylei* for the past 17 years, only two fragmented populations persist, each separated by a run-of-the-river dam and reservoir. Over the last two decades, the higher elevation Cresta Reach population has declined to near-extirpation, pushed to the brink by ill-timed “recreational flows” designed for whitewater rafters. In 2017, a multi-agency collaboration was initiated in order to save the Cresta frog population from the brink utilizing in-situ egg mass and tadpole rearing to enhance survivorship. Metamorphs are

then released into previously occupied river-breeding sites, and releases of captive-reared Cresta frogs are planned for future years.

Wiseman is a herpetologist with Garcia and Associates and a Field Associate with the Department of Herpetology, California Academy of Sciences in San Francisco, California. His interest in natural history was sparked early by his critter-catching uncle, Dwight Wiseman, and later stoked by his field biology teacher, Rolland Carlson, at Granada High School in Livermore, California. As part of his curriculum, students were introduced to Robert C. Stebbins' *Reptiles and Amphibians of the San Francisco Bay Region* (1959), later leading to a purchase of *A Field Guide to Western Reptiles and Amphibians* (1985), which Wiseman read and revered, especially on long car rides. Stebbins' masterful illustrations, which married art and science so beautifully, inspired Wiseman to begin making his own. His cartoons soon evolved into Cambrian creatures inspired by Stephen Jay Gould's *Wonderful Life* (1989) for Carlson's lecture handouts, and later, herp subjects for newsletter covers of the Northern California Herpetological Society. While an undergraduate at U.C. Berkeley, Kevin illustrated beetles and moths for the Essig Museum of Entomology, and collaborated with his advisor Harry Greene at the Museum of Vertebrate Zoology on the feeding ecology of the California Kingsnake (*Lampropeltis californiae*). After visiting Indonesia, he completed illustrations for the book *Diving Bali: The Underwater Jewel of Southeast Asia* by David Pickell and Wally Siagian (2010).



### ***Bungarus* — *Lycodon***

The Many-banded Krait (*Bungarus wanghoatingi*) is a highly venomous elapid native to Myanmar (Burma) and southern China. The White-banded Wolf Snake (*Lycodon septentrionalis*) is a harmless colubrid that is a Batesian mimic of the krait, which is differentiated by the peculiar hexagonal-shaped row of dorsal scales with a middorsal ridge, and the absence of the tiny loreal scale anterior to the eye. The juvenile krait illustrated here (CAS 221526, at left) and its wolf snake mimic (CAS 221527) were collected at night near Rabaw village in northern Myanmar on 10 September 2001. The following morning, just hours before planes would crash into the World Trade Center in New York City, Joseph B. Slowinski was bitten by this krait, mistaken for the wolf snake at right, tragically ending his life at age 38. Slowinski, a Curator of Herpetology at the California Academy of Sciences from 1997-2001, was an influential mentor and friend to Wiseman, taking him on several collecting trips to Myanmar in the late 1990s. On these trips, Slowinski introduced Wiseman to Southeast Asian herpetofauna—together they collected hundreds of specimens including the Burmese Spitting Cobra (*Naja mandalayensis*) and holotypes of Zaw's Wolf Snake (*Lycodon zawii*) and the bent-toed gecko that would later be named *Cyrtodactylus slowinskii*. In addition to playing a major role in our understanding the herpetofauna of Myanmar, Slowinski's contributions included publications on phylogenetics, evolutionary theory, and elapid systematics. Slowinski was deeply interested in snake mimicry—a phenomenon that played a significant role in his own death, and which Wiseman elected to explore here in honor of Slowinski's life and legacy.

These illustrations follow the old technique of stippling, which Wiseman accomplished using black India ink in a 0.13-mm Rapidograph® pen. While the frog illustration was rendered using this technique alone, pencil and charcoal were added to the ink for the krait-wolf snake piece. He began with his own reference photos taken during fieldwork with *R. boyliei* (pictured is 'M-1' from a 15-yr mark-recapture effort on the North Fork Feather River, who was first captured in 2004), or by photographing snake specimens in the Herpetology Collection at the California Academy of Sciences and working from that material for the *Bungarus* and *Lycodon* piece. Prior to inking, a pencil drawing is created on Crescent® hot-press illustration board, indicating outline, scalation, positions of eyes, tympanum and other more complex surface textures like the warty, 'pachydermous' skin of *R. boyliei*. The illustration is then carefully inked, with stippling applied in light, successive layers across the whole drawing, each layer building upon the last, allowing values, surface texture and contrast to slowly come forth.

In 1999, while on a collecting trip with Slowinski, Jens Vindum, and other scientists in Alaungdaw-Kathapa National Park in Myanmar, Wiseman contracted falciparum (cerebral) malaria, which is often fatal. High-fever bouts led to strange visions of another world, which inspired a deep vein of work—his eerie charcoal drawings attempt to document this world, one both alien yet oddly familiar. His art can be found on his website: [kevinwisemanart.com](http://kevinwisemanart.com) and on Instagram @wiseman\_art. He can be contacted at [kwiseman@garciaandassociates.com](mailto:kwiseman@garciaandassociates.com).