# California/Nevada Amphibian Populations Task Force 2026 Meeting

## Sierra Nevada Brewery
## Chico, CA

## January 8–9, 2026

## ABSTRACTS

Foothill Yellow-legged Frog (*Rana boylii*) from Marin County, California. Photographed by Kevin Wiseman.

# ORAL PRESENTATIONS

* Indicates presenter(s) in multi-authored presentation

**ALVAREZ, JEFF A.[1]*, MARY A. SHEA[2], SARAH M. FOSTER[3], and ANDREW ISNER[4]**. [1]The Wildlife Project, Sacramento, CA, jeff@thewildlifeproject.com; [2]PO Box 1632, Brentwood, CA; [3]Foster Wildlife Surveys, Sacramento, CA; [4]5505 North El Adobe Drive, Fresno, CA.

**Occurrence of the California Red-legged Frog in Reservoirs Despite Habitat Alterations and Non-Native Predatory Fish**

Losses of declining species can be confounding. Determining the origins of these losses can come from direct observation, literature review, or maybe information passed along from biologist to biologist. A frequently cited literature source related to the natural history of California Red-legged Frog (*Rana draytonii*) may have painted a picture that was not only inaccurate but also has led to the dismissal of numerous opportunities to survey for and document the presence of this threatened species. Our observations from three municipal reservoirs in northern California suggest that California red-legged frogs occupy this habitat despite the putative acceptance of the absence of this species in reservoirs and downstream areas where predatory fish are sympatric. Our conclusion is supported by a previous report from a reservoir in southern California. We found California red-legged frogs syntopic with predatory fishes, both native and non-native, in reservoirs and in downstream habitat. We do not suggest that reservoir construction has no effect on California red-legged frogs. Rather, we contend that it is important to survey reservoirs and associated upstream and downstream habitat for this species when presence/absence surveys are considered.

**BENTEROU, AUBRIE*, BRUCE DELGADO, and LUIS LEON**. U.S. Bureau of Land Management, Marina, CA, jbenterou@blm.gov.

**Two Seasons of American Bullfrog (*Lithobates catesbeianus*) Abatement on Fort Ord National Monument in Monterey County, California**

American bullfrogs (*Lithobates catesbeianus*) are invasive in the western United States and can be found on Fort Ord National Monument in Monterey, CA. American bullfrogs are potentially threatening the local California red-legged frog (CRF) and California tiger salamander (CTS) populations found on the monument through competition or direct predation. In 2024 and 2025, Bureau of Land Management (BLM) staff removed 1,886 bullfrogs and identified their prey items through stomach content analysis. No Federally Threatened animals were found in the analysis, and most prey items were isopods. The BLM aims to continue removing bullfrogs to allow for CRF and CTS numbers to increase over time. This talk will speak about the methodology used to abate bullfrogs, lessons learned, future work plans, and current challenges.

**BRADFORD, DAVID F**. CA/NV Amphibian Populations Task Force, Las Vegas, NV, dbradfo@herpconbio.org.

**Early Days in Recognizing the Worldwide Population Declines of Amphibians**

Among vertebrates, amphibians are considered the most threatened group, with over 40% of species worldwide at risk of extinction. Today, I will tell the story of how this situation became recognized in 1990 as a profound and global phenomenon. For me, this story began with my own observations of dramatic die-offs and disappearances of the Southern Mountain Yellow-legged Frog (*Rana muscosa*) in Sequoia and Kings Canyon National Parks between 1977 and 1989. In 1989, the Board on Biology of the National

Research Council (NRC) encouraged one of its members, David Wake, to compile information from researchers around the world with observations such as mine, and NRC convened a workshop to assess the situation in a scientific defensible manner. The workshop proved pivotal in producing extensive press coverage that alerted the public and scientists, and it led to the formation of the IUCN Declining Amphibian Populations Task Force. The Task Force worked to galvanize the herpetological community worldwide to address the situation by determining the status of populations, identifying causes, and seeking remedies. It did this largely by forming about 100 regional working groups. The CA/NV Amphibian Populations Task Force of today is a descendent of one of these groups.

**CHELLMAN, ISAAC C.* and LESLIE CALL**. California Department of Fish and Wildlife, North-Central Region, Rancho Cordova, CA, isaac.chellman@wildlife.ca.gov.

**Ranid Frog Management and Long-term Monitoring in the Northern Sierra Nevada: Updates from the California Department of Fish and Wildlife High Mountain Lakes Project, North-Central Region**

The California Department of Fish and Wildlife High Mountain Lakes project has been monitoring amphibian populations in the Sierra Nevada for >25 years. Baseline surveys in the late 1990's and early 2000's included most waterbodies throughout the Sierra Nevada. In the North-Central Region (NCR), we have only visited many of these survey locations once or twice to attempt detecting threatened and endangered amphibian populations; since the baseline surveys, most of our monitoring has focused on extant *Rana sierrae* populations. Recently, we were awarded a grant through Section 6 of the Endangered Species Act that includes surveying locations that have not been revisited since baseline surveys, or have likely not been previously surveyed (e.g., lotic habitats and unmapped wetlands), to attempt detecting previously unknown or expanding populations. The NCR also contains other Ranid species of concern, including *R. boylii*, *R. cascadae*, and *R. draytonii*, so our grant also includes monitoring and management of these species. Additionally, we received a State Wildlife Grant that includes funding for environmental DNA sampling and captive-rearing of *R. sierrae* by the San Francisco Zoo. We provide updates on recent Ranid monitoring and management work in the northern Sierra Nevada, plus plans associated with these projects.

**DATTA, ASHWIN N.[1]*, and TYLER J. SCHWENK[2]***. [1]Instinct, Hillsboro, OR, ashwin.datta@instinctenvironmental.com; [2]Trade Routes, San Diego, CA.

**Applying Novel Real-Time Bioacoustics Technology to American Bullfrog (*Lithobates catesbeianus*) Management and Re-introduction of California Red-legged Frog (*Rana dratonii*) on the Santa Rosa Plateau**

The invasive American Bullfrog (*Lithobates catesbeianus*) decimates threatened California Red-legged Frog (*Rana dratonii*; CRLF) populations across California. Bullfrog removal is highly effective for CRLF recovery, but incomplete eradication risks a rebound of bullfrog populations, rendering the strategy ineffective. Furthermore, CRLF re-introduction sites must be kept free of bullfrogs which can migrate from other areas and reproduce rapidly. Therefore, real-time monitoring for rapid response is crucial to facilitating both bullfrog eradication and CRLF re-introduction. Autonomous Recording Units (ARUs) present the option of passive surveying. In collaboration with The Nature Conservancy (TNC), Trade Routes developed a BirdNET-based custom classifier for CRLF. However, the lack of real-time data limits the feasibility of ARUs for rapid response to bullfrog invasion, and CRLF protection. Instinct's Automated Surveying Unit (ASU) is the world's first satellite-enabled, edge-computing ARU for real-time bioacoustic classification. It records audio like ARUs, but then processes and classifies sounds in the recording, and transmits detection counts via satellite so species detections are known within minutes. In 2025, TNC tested the ASU 2 for bullfrog monitoring on the Santa Rosa Plateau, and is testing ASUs with CRLF custom classifiers this winter. Instinct is launching the ASU 3 in time for the bullfrog calling season in Summer 2026.

**DAVISON, KATHRYN*, AUDREY K. OWENS, and IAN M. LATELLA**. Terrestrial Wildlife Branch, Arizona Game and Fish Department, Phoenix, AZ, kdavison@azgfd.gov.

**Management Response to Drought for Chiricahua Leopard Frogs in Arizona**

Water scarcity across Arizona necessitates human intervention in conserving vital habitat and ensuring survivorship of endemic aquatic species. Threatened Chiricahua leopard frogs (CLF) require perennial water in the form of lentic (stock tanks, ponds) and lotic (spring, stream) ecosystems at elevations around 3200-8900 feet. Habitat loss, invasive species, and disease are major obstacles in range-wide CLF population recovery. In response to drought and habitat degradation, Arizona Game and Fish has partnered with federal, state, institutional and non-governmental organizations in order to restore critical sites and increase water retention on the landscape. At drying sites where the population is not replicated elsewhere, we also coordinate CLF salvages to more established water sources. Our management decisions depend on parameters such as impact, ownership, feasibility, funding and compliance. Additionally, coordination with private landowners under our statewide programmatic safe harbor agreement has been instrumental in ensuring population survival and recovery in regions where drought has decreased the availability of suitable aquatic habitat.

**DENNHARDT, ANDREW[1]*, DAVID BLAKE[2,3], DARBY GAFFNEY[2,3], EMILEE HOSKING[2,3], GAVIN HUGHES[2,3], HARLAN LE[2,3], MICHAEL PALERMO[2,3], NATALIE QUAH[2,3], ALIN RANGEL[2,3], JAELENE CLARISSE SALAS[2,3], GRECIA VELASQUEZ[2,3], DAVID DAVERSA[2,3], and H. BRADLEY SHAFFER[2,3]**. [1]U.S. Fish and Wildlife Service, Ventura, CA, andrew_dennhardt@fws.gov; [2]La Kretz Center for California Conservation Science, Institute of the Environment and Sustainability, University of California, Los Angeles, CA; [3]Department of Ecology and Evolutionary Biology, University of California, Los Angeles, CA.

**Managing Invasive Aquatic Predators of the Arroyo Toad (*Anaxyrus californicus*) in Modified Stream Habitats: Preliminary Evidence of Utility at Middle Piru Creek in Southern California**

Invasive species and their impacts to native species are pervasive. California landscapes are no exception to this, and effects often impede recovery of listed species. The U.S. Fish and Wildlife Service reaffirmed this finding in its 2023 status review of the arroyo toad (*Anaxyrus californicus*). Toads encounter invasive aquatic predators (e.g., American bullfrog [*Lithobates catesbeianus*], largemouth bass [*Micropterus salmoides*], and red swamp crayfish [*Procambarus clarkii*]) during multiple life stages in modified streams, some of which are dammed. Because such streams are managed to deliver water to clients, partners deployed a pulse of water to displace invasive predators during periods of toad aestivation and pilot a novel tool. We implemented a before-after-impacts study at 11 stream reaches to assess a controlled water release in Middle Piru Creek. Toad predators were captured, marked, and released prior to 600 $ft^3/s$ of water released from Pyramid Dam. Pre-release, we captured and marked 111 individuals (66 bullfrog, 31 crayfish, and 14 bass) and post-release, bullfrog and crayfish numbers significantly decreased. Results suggest that invasive predators may be displaced by controlled water releases in dammed streams, and we plan to expand this pilot for a more robust evaluation of efficacy and overall utility.

**FORREST, MATTHEW J.[1]* and OLIVER J. MIANO[2]**. [1]Scripps Institution of Oceanography, University of California San Diego, La Jolla, CA, matthewforrest@gmail.com; [2]Private Consultant at Tortoise and Hare Environmental Services, Los Angeles, CA.

**Updated Status of the Dixie Valley Toad (*Bufo* [*Anaxyrus*] *williamsi*)**

The Dixie Valley Toad *Bufo* (*Anaxyrus*) *williamsi* is among the newest addition to the *B. boreas* species complex and has the smallest body size and range within the complex. This diminutive, colorful toad is restricted to four spring-fed wetlands across a range of only 6 $km^2$ near high temperature (~70°C) geothermal springs which they rely on to survive brumation over winter. Our work shows that American bullfrogs (*Lithobates catesbeianus*) within Dixie Valley harbor high levels of the amphibian fungal pathogen *Batrachochytrium dendrobatidis* (Bd). Bullfrogs are voracious predators as well as known vectors for Bd and co-occur with Dixie Valley toads in one location, but we have not detected chytridiomycosis in Dixie Valley toads as of 2023. We have also documented predation by Common Ravens (*Corvus corax*). In April 2022, the US Fish and Wildlife Service announced the emergency listing of the Dixie Valley toad under the Endangered Species Act primarily due to concerns about potential detrimental changes to the flow and temperature of geothermal spring discharges caused by the proposed expansion of a nearby geothermal power plant. Currently, the owners of the geothermal plant are suing the U.S. Government in an attempt to delist the species and continue the planned expansion.

**GARCIA-DEAN, HALE[1]*, JEFF WILCOX[2], DEREK GIRMAN[1], and DAN CROCKER[1]**. [1]Department of Biology, Sonoma State University, Rohnert Park, CA, halegarciadean@gmail.com; [2]Mitsui Ranch Preserve, Sonoma County, CA.

**Patterns of Dispersal and Short-term Survivorship in Post-Metamorphic California Red-legged Frogs (*Rana draytonii*)**

We examined patterns of dispersal undergone by recently metamorphosed California Red-legged frogs (*Rana draytonii*), a federally threatened species. We used radio telemetry techniques to track the movement patterns and habitat use of metamorphs dispersing from an established breeding pond in an oak-savannah habitat in Sonoma County, CA over the course of two field seasons (2022-2023 and 2023-2024). By sampling multiple times in a 24-hour period, we were able to evaluate the effects of weather (daily precipitation accumulation, daily relative humidity, daily average wind speed, daily average temperature) and time of day on movement rates (m/hr) demonstrated by dispersing metamorphs. Additionally, we examined the difference in dispersal strategies undergone by froglets (dispersing away to a secondary site or remaining resident of the breeding pond). We found that movement patterns changed with respect to time of day, body condition, and moisture-related weather patterns. Despite their naivete, metamorphs demonstrated a non-random orientation away from the pond, suggesting a preference for specific landscape features.

**GARWOOD, JUSTIN M.*** California Department of Fish and Wildlife, Inland Fisheries, Arcata, CA, justin.garwood@wildlife.ca.gov.

**Using Intensive and Extensive Monitoring of Amphibians and Fishes to Guide Rapid Recovery Actions for the Cascades Frog in California**

This is an overview of California Department of Fish and Wildlife's (CDFW) core monitoring and management actions for northern California's high-elevation fisheries and amphibians with the Cascades Frog (*Rana cascadae*) being a focal species. In California, Cascades Frogs inhabit high-elevation wetlands in the Klamath Mountains and Cascades Range. Populations have been declining, and they are a Candidate Species pursuant to the California Endangered Species Act. Three dominant and interacting risk factors

include the deadly pathogen *Batrachochytrium dendrobatidis*, climate driven habitat loss, and introduced predatory salmonid fishes. CDFW has been monitoring some Cascades Frog populations for >20 years. Additionally, CDFW has conducted visual encounter surveys for fish and herpetofauna across 1600 sites in California's Klamath and Cascades ranges over the past five years. These surveys used identical methods as a previous large-scale survey (1999-2002) so trends in species distribution and abundance could be assessed. To address impacts of predatory fishes on Cascades Frogs, CDFW reduced stocking waters with trout starting in the early 2000s and ceased stocking by 2019. Based on recent surveys of over 300 lakes, this policy has reduced trout populations in lakes by 30% since the late 1990s. Data from these studies are guiding landscape-scale recovery actions.

**HARDY, BENNETT M.[1]*, ANNY PERALTA-GARCÍA[2], JORGE H. VALDÉZ-VILLAVICENCIO[2], JESSICA BARBA[1], and BRADFORD D. HOLLINGSWORTH[1]**. [1]Herpetology Department, San Diego Natural History Museum, San Diego, CA, bhardy@sdnhm.org; [2]Fauna del Noroeste, Ensenada, BC, Mexico.

**Reproductive Phenology and Oviposition Characteristics of *Rana draytonii* from a Restoration Site at the Southern Range Edge in Baja California, Mexico**

Variation in amphibian reproduction across a species' range can be important for understanding differences in life histories and potentially informing conservation and surveying strategies. We present data from six years of egg mass surveys from a population of threatened California red-legged frogs (*Rana draytonii*) from a restoration site at the southern edge of their range in Baja California, Mexico. A total of 551 egg masses were recorded from 2020-2025, with the earliest egg mass found on 2 January, and the latest on 11 March. Egg masses were located in off-channel ponds (60.4% of all egg masses), in a natural stream channel (23.6%), and in an in-channel pond (16%). Egg mass counts increased year-over-year for the first five years, and there appeared to be a within-season temporal trend where egg masses were predominantly laid in off-and-in-channel ponds early, with stream egg mass deposition gradually increasing over the first six weeks. On average, egg mass detections decreased following the sixth calendar week of the year. Eggs were deposited in relatively shallow waters, close to the water surface, and generally away from shore. Our findings highlight the successful restoration efforts conducted at this site and provide information about reproductive characteristics of *R. draytonii* at the southern edge of their range.

**HOBBS, MICHAEL T**. Hobbs Ecology, San Jose, CA, mhobbs2928@gmail.com.

**Comparing AHDriFT with HALT Camera Traps for Automated Monitoring and Individual Identification of Ground-dwelling Amphibians**

Effective monitoring of nocturnal ground-dwelling amphibians requires reliable detection methods, particularly in thermally homogeneous environments. We compared two camera-trap systems—four AHDriFT and three HALT units—deployed side by side along a 24-m drift fence during the 2024–2025 California tiger salamander (*Ambystoma californiense*) winter-breeding season in Stanford, California. Detection rates, species richness, and community composition differed markedly between systems. HALT detected higher species richness and a broader community, including small amphibians and large invertebrates, whereas AHDriFT effectively captured mammals but exhibited reduced detection of ectothermic taxa within thermally homogeneous zones where passive infrared sensors are limited by low thermal contrast. Individual identification was achievable using HALT but not AHDriFT. Despite these differences, AHDriFT remains a viable option depending on study objectives. Our results highlight how trigger mechanisms influence detection outcomes and inform camera-trap selection for nocturnal amphibian monitoring.

**HOLLIS, JONATHAN*, JAMES RAY, JAYMES SILVEIRA, and MICHAEL VAN HATTEM**. California Department of Fish and Wildlife, Eureka, CA, jonathan.hollis@wildlife.ca.gov.

**An Integrated Strategy for American Bullfrog (*Lithobates catesbeianus*) Control – and Native Anuran Re-introduction – at Rattlesnake Lake, Smith River Basin, California, USA**

Monitoring conducted from 2010-2021 by the California Department of Fish and Wildlife (CDFW) revealed a single well-established population of invasive American bullfrogs (*Lithobates catesbeianus*) in the Smith River Basin, at Rattlesnake Lake. The isolated nature of this population, and the lake's structural and vegetative complexity, presented a challenging opportunity to test an integrated pest-management control strategy targeting each life stage. Beginning in June 2023, CDFW piloted a control effort centered on adult and subadult bullfrog removal with air rifles, and to a lesser extent, larval removal using multiprong spears. Wildfire in August prevented access for the remainder of the season, resulting in the removal of 838 bullfrogs in 2023. Beginning in April 2024, CDFW began a biweekly effort incorporating fyke nets – chiefly aimed at removing larvae, though also proving useful for subadults – and air rifles for the removal of adults and subadults. In total, CDFW removed 5,953 bullfrogs between April and September 2024. We followed a similar approach in 2025, removing 1,235 bullfrogs between April and October. This represents a dramatic decrease in catch-per-unit-effort and strong indication the strategy is succeeding. Following bullfrog eradication, CDFW will attempt egg mass translocation from a neighboring Northern Red-legged frog (*Rana aurora*) population.

**JACOBS, LEAH E.*, T. H. HAMMOND, M. J. CURTIS, S. CHANCELLOR, T. PAYNE, M. CUNNINGHAM, and D. M. SHIER**. San Diego Zoo Wildlife Alliance, Mountain Yellow-legged Frog Recovery Program, Escondido, CA, ljacobs@sdzwa.org.

**Adaptive Recovery of the Southern Mountain Yellow-legged Frog (*Rana muscosa*)**

The southern mountain yellow-legged frog (*Rana muscosa*) is one of the most endangered amphibians in North America. The recovery program at San Diego Zoo Wildlife Alliance (SDZWA) began in 2006 as an emergency salvage effort and has since evolved into a comprehensive, cross-institutional conservation breeding and reintroduction program integrating ex situ management, assisted reproductive technologies (ARTs), and post-release research. Small founding populations, geographic isolation, and limited gene flow have resulted in low reproductive viability and substantial genetic management challenges. To address these constraints, the program employs a multifaceted approach that includes optimized husbandry, brumation, hormone induction, artificial fertilization, cryobanking through the SDZWA Frozen Zoo, and lineage-informed genetic pairing. Ex situ research further supports reintroduction success through predator training, natal habitat matching, immune priming, and soft-release strategies designed to improve post-release survival and site fidelity. Post-release monitoring integrates detection research and in situ health assessments to evaluate translocation outcomes and guide adaptive management. Together, these efforts demonstrate how conservation breeding programs can function as experimental systems, where incremental, data-driven refinements across reproduction, genetics, and behavior accumulate to support species recovery under real-world conservation constraints.

**LAND, PARKER R.[1]*, GEORGIA Q. LATTIG[1], LEONIE M. WALDERICH[1,] JACOB W. STAINES[2], FOREST D. PERI[1], and ROLAND A. KNAPP[1,2].** [1]Sierra Nevada Aquatic Research Laboratory, University of California, Santa Barbara, CA, parkerland29@gmail.com; [2]Resilience Institute Bridging Biological Training and Research, Quito, Ecuador.

**The First Description of Mount Lyell Salamanders (*Hydromantes platycephalus)* Occupying Lakes in California's Sierra Nevada Mountains**

The Mount Lyell salamander (*Hydromantes platycephalus*) is endemic to the Sierra Nevada mountains of California, where it is associated with upland seeps, stream margins, and waterfall spray zones. Despite the abundance of lakes and ponds in the higher elevations of the Sierra Nevada, many with rocky shorelines that seem suitable for *H. platycephalus*, there are no published accounts describing *H. platycephalus* utilizing lentic habitats. Here, we provide the first unambiguous description of the species occupying lakeshores and even underwater littoral habitats. Our observations were made during nocturnal surveys at lakes in three distinct areas of the Sierra Nevada: one each in Yosemite, Kings Canyon, and Sequoia National Parks. The unusually high abundance of *H. platycephalus* we observed along lake shores during some surveys (>60 individuals in one instance) suggests the previously unrecognized importance of these lentic habitats for this poorly understood species. For *H. platycephalus* west of the Sierra Nevada crest, our observations in Sequoia National Park also extend the known range of *H. platycephalus* south by 3.9 km. More than a century after the discovery of *H. platycephalus*, our understanding of its distribution and habitat associations remains remarkably incomplete, highlighting the need for additional studies of this unique salamander.

**LATELLA, IAN M.*, AUDREY K. OWENS, and KATHRYN DAVISON**. Terrestrial Wildlife Branch, Arizona Department of Game and Fish Department, Phoenix, AZ, ilatella@azgfd.gov.

**Tarahumara Frog (*Rana tarahumarae*) Conservation in Arizona**

The Tarahumara frog (*Rana tarahumarae*) was historically widespread in tinaja and bedrock stream habitats throughout northern Mexico and was known to occupy only seven drainages in extreme south-central Arizona near the U.S.-Mexico border. Declines of U.S. populations of this species were observed starting in 1974, with moribund and dying frogs observed in Sycamore Canyon. The last known wild individual was found dead in Big Casablanca Canyon in 1983. While the cause of the declines was originally tied to heavy metal contamination, later histological examinations of specimens collected during the 1974 die-off showed that individuals were infected with chytridiomycosis. Conservation efforts for this species began in 1992 with the development of the multi-agency Tarahumara Frog Conservation Team (TFCT), with the goal of reintroducing this species into sites across its historical range in Arizona. This presentation will summarize the past conservation efforts of the TFCT, the current status of the species in Arizona, and our plans for future conservation action in Arizona.

**LEISEROWITZ, ERICA.** California Department of Fish and Wildlife, Rancho Cordova, CA, ebevowitz@gmail.com.

**Reintroduction of Sierra Nevada Yellow-legged Frogs in Five Lakes Basin, Nevada County, CA**

Sierra Nevada Yellow-legged Frogs (*Rana sierrae*; RASI) are listed as endangered under both federal and California Endangered Species Acts. The High Mountain Lakes (HML) team in the California Department of Fish and Wildlife focuses on recovering RASI populations. In this presentation, I will talk about HML's efforts to reintroduce RASI to Five Lakes Basin, an area in Nevada County. RASI were historically found in Five Lakes Basin, but the population dwindled and was extirpated likely by 2009. In the summer of 2025, CDFW, along with the San Francisco Zoo, and the Tahoe National Forest, released ~200 zoo-reared RASI

adults into Five Lakes Basin. I will provide a summary on the efforts involved leading up to this day, and our plans for monitoring this population in the future.

**LOUCKS, BENNIE[1]*, MATTHEW RENO[2], TYLER WOOLLARD[3], SKY WETHERBY[3], JONAH PIOVIA-SCOTT[4], RYAN WAGNER[4], KAREN POPE[5], and JUSTIN GARWOOD[6]**. [1]Collins Pine Company, Chester, CA, bloucks@collinsco.com; [2]Sierra Pacific Industries, Chico, CA; [3]U.S. Forest Service, Lassen National Forest, Chester, CA; [4]Washington State University, Vancouver, WA; [5]U.S. Forest Service, Pacific Southwest Research Station, Arcata, CA; [6]California Department of Fish and Wildlife, Arcata, CA.

**An Update on Cascades Frogs (*Rana cascadae*) Monitoring and Recovery Actions in the Lassen Region of Northern California**

Cascades frogs occur in Northern California and are a candidate species under the California Endangered Species Act due to declining populations from a variety of threats. Within the Lassen Region of Northern California, few extant populations exist, and population numbers are generally low across these sites. For many years, monitoring has been occurring at sites with extant populations to assess population trends and disease impacts, and to identify potential conservation actions to help maintain and improve these populations. This talk will provide an update on Cascades frog monitoring activities in the Lassen Region, conservation measures that have been implemented, potential next steps across sites, and how a collaborative, cross-boundary approach to species conservation is a necessary step for the persistence of at-risk species.

**MURPHY, RYAN K.*, JENNIFER L. HOY, and CHRIS R. FELDMAN**. University of Nevada, Reno, NV, rkmurphy@unr.edu.

**Behavioral Responses of Pacific Newts (*Taricha*) to Natural and Anthropogenic Disturbances**

Pacific newts (*Taricha* spp.) are charismatic western salamandrids, and key components of many terrestrial and aquatic communities. However, some populations appear to be declining due to a host of anthropogenic threats including invasive species, pollution, and habitat alteration. Understanding how newts respond to such pressures is essential for predicting resilience and informing conservation strategies. Here, we assess the ability of newts to respond to natural and artificial threats. In controlled lab settings, we quantified the behavioral responses of adult newts of three species (*T. granulosa*, *T. torosa*, *T. sierrae*) to the odor cues of native snake, non-native crayfish, native fish, non-native fish, herbicide (glyphosate), fertilizer (ammonium nitrate), and fire (ash) compared to control (no odor). Among biotic cues, we found that the scent of garter snakes elicited the strongest aversive reactions, followed by fish, while trials with crayfish cues were no different than controls. Abiotic cues did not elicit the same level of aversive responses as the biotic cues, with ammonium nitrate producing stronger effects than glyphosate or ash. Pacific newts appear sensitive to some novel anthropogenic chemical stimuli, but not all.

**NORDSTROM, AMANDA[1]*, BRADEN HERMAN[2]*, and JUSTIN GARWOOD[1]**.
[1]California Department of Fish and Wildlife, Inland Fisheries, Arcata, CA, amanda.nordstrom@wildlife.ca.gov; [2]California Department of Fish and Wildlife, Fortuna, CA.

**Reversing Widespread Legacy Impacts of Introduced Sportfish on Declining Amphibians in Glacial Lake Basins of the Klamath Mountains**

Based on an extensive survey of aquatic habitat throughout the Klamath Mountains of northern California (2021–present), the California Department of Fish and Wildlife (CDFW) is removing historically stocked,

now naturalized, Brook Trout (*Salvelinus fontinalis*) populations in the Klamath Mountains through the implementation of a multi-criteria decision analysis (MCDA). This MCDA considers multiple interest groups (trout population health, amphibians, anglers, restoration feasibility) to identify fish bearing waterbodies with the highest potential for providing resilient amphibian habitat while maintaining high-value fisheries for recreational anglers. Of the lakes identified as potential restoration sites by the MCDA, nine waters were selected. Restoration began in 2023, removing Brook Trout via gill nets to ensure long-term, fishless habitat persistence for the Cascades Frog (*Rana cascadae)*, Long-toed Salamander (*Ambystoma macrodactylum*), and other amphibians as more shallow auxiliary fishless waterbodies and wetlands become less suitable in a drier and less predictable climate. To date, 7,228 Brook Trout have been removed across the nine restoration lakes. Two lakes were confirmed fishless by 2025 and seven are ongoing. Here, we provide an overview of the MCDA and its implementation, an update on the current progress of restoration efforts, and lessons learned from three seasons of Brook Trout removal.

**O'BRIEN, SEAN M.*, and BRENT P. HELM**. [1]Westervelt Ecological Services, Sacramento, CA, seanobrien1342@gmail.com.

**Minimum Hydroperiod for Metamorphosis in the California Tiger Salamander, *Ambystoma californiense***

The California Tiger Salamander (CTS, *Ambystoma californiense*) is a federally- and state-listed California endemic species that exhibits a biphasic life history, requiring both upland and aquatic breeding habitats. Past studies have examined hydroperiods required for CTS to complete metamorphosis, which can advise management recommendations for determining suitable and successfully used breeding habitat. We observed CTS larvae of adequate size to metamorphose in just 53 days, suggesting that CDFW and USFWS recommendations on minimum ponding durations for suitable aquatic breeding habitats be reduced from 70 days (ten weeks) to at least 56 days (eight weeks). This recommendation will increase the number of aquatic habitats considered potential to support CTS breeding.

**OWENS, AUDREY K.[1]*, ROBERT D. DENTON[2], IAN M. LATELLA[1], and KATHRYN DAVISON[1]**. [1]Terrestrial Wildlife Branch, Arizona Game and Fish Department, Phoenix, AZ, aowens@azgfd.gov; [2]Department of Biology, Ball State University, Muncie, IN.

**Developing a Chiricahua Leopard Frog Genetic Management Plan**

The Chiricahua leopard frog (CLF), federally listed as threatened in 2002, had declined by as much as 80% range-wide at the time of listing, due mainly to predation by nonnatives, die-offs caused by the fungal disease chytridiomycosis, and habitat loss and degradation. The 2007 Recovery Plan outlined a multi-pronged recovery approach that included the need for a genetic management plan. Initial genetic assessments using microsatellite NextGen sequencing produced disconcerting results: genetic diversity of an unmanaged CLF population decreased rapidly over time; most CLF sites sampled across the range showed signals of excess heterozygosity, suggesting rapid bottlenecks; and although allelic richness was moderate across the range, site-specific allelic richness was consistently low. A more in-depth genetic assessment using genomics found relatively little differentiation between CLF populations across Arizona and New Mexico, and, importantly, no monophyletic northern or southern group, suggesting CLF is one monophyletic species. Our genomic work delineates the phylogenetic relationships among populations allowing for informed genetic management decisions while reducing the risk of outbreeding depression. Our next step is a grant-funded project in which we will experimentally mix populations of increasing genetic distance over five years to measure offspring fitness while looking for signs of outbreeding depression.

**SARON, GABE*, NICK BRINTON, BRIAN FRIERMOUTH, ERIK SMITH, and COLE AYTON.** WRA, Inc., San Rafael, CA, gabe.saron@wra-ca.com.

**Lessons Learned from Year 2 of Bullfrog Eradication Efforts in Malakoff Diggins State Historic Park, California**

In 2025, we conducted a year of focused bullfrog eradication efforts in Malakoff Diggings State Historic Park, located in the Sierra Nevada foothills, California. Bullfrog eradication is a proven strategy for facilitating native amphibian recolonization in California. Here, we report the methods, findings and lessons learned after an impactful first year. We used air rifles as the primary method of take to minimize effects on northwestern pond turtles also present in the park. We also report on the use of passive acoustic monitoring as a cost-effective strategy for tracking bullfrog abundance and reproductive phenology, and to plan the timing of further eradication efforts.

**WEINMANN, SOPHIA L.** California Department of Fish and Wildlife, North Central Region, Rancho Cordova, CA, sophia.weinmann@wildlife.ca.gov.

**CDFW's Foothill Yellow-legged Frog (*Rana boylii*) Population and Habitat Monitoring in Response to Wildfire in North Central Region**

Foothill yellow-legged frogs (*Rana boylii,* FYLF) from four distinct population segments are present in the California Department of Fish and Wildlife's (CDFW) North Central Region and range in conservation status from unprotected to endangered. As wildfire severity and frequency increases, understanding the impacts of wildfire on FYLF and lotic habitat is critically important. Since 2022, CDFW has monitored FYLF population distribution and abundance across the burn scars of the Mendocino Complex Fire (2018), LNU Lightning Complex Fire (2020), Caldor Fire (2021), and Mosquito Fire (2022) to understand how FYLF populations respond after wildfire. Visual encounter surveys (VES) have been conducted at more than forty distinct sites. As a complement to VES, diverse data collection modalities including water quality monitoring, stream soil and sediment assessments, and time lapse cameras are being utilized to assess how FYLF habitat changes in the years following wildfire. This work is ongoing and may be used to inform future mitigation and population management work.

**WESTPHAL, MICHAEL F**. Central Coast Field Office, U.S. Bureau of Land Management, Marina, CA, mwestpha@blm.gov.

**Pond Array Study of Overwintering in the Rough-skinned Newt, *Taricha granulosa***

Overwintering larvae of the rough-skinned newt, *Taricha granulosa*, consume eggs of the California red-legged frog, *Rana draytonii*. It is unknown whether larvae that overwinter have longer-than-reported development or are holdovers from eggs laid in late fall. We hypothesized that smaller larvae in the fall would be more likely to overwinter than larger larvae. We planted 200 larvae from two sizes classes in an array of recently created size-and-depth matched ponds near the natal pond. We placed 50 individuals from a "small" and "large" size class into each of four ponds per treatment. We took weekly size measurements and noted stage of metamorphosis in a sample from each pond. Larvae transformed incrementally throughout the late fall. By early December, comprehensive sampling of all ponds revealed one remaining larva. Sampling of the natal pond on the same day revealed numerous remaining larvae, none undergoing metamorphosis. The striking difference between the natal pond and the pond array may be the result either of the array larvae experiencing stress from the transfer; or the environment of the smaller ponds not being conducive to the larvae staving off metamorphosis. Under either hypothesis, it seems likely that newts exhibit developmental plasticity in timing of metamorphosis.

**WITZKE, BEN*, MATTHEW WEEKS*, TIFFANY MAY*, JAMIE McNELLIS, MIKAELA WILEY, ROSALIE TANG, JAE RENDALL, and ROCHELLE STILES**. San Francisco Zoo and Gardens, San Francisco, CA, rochelles@sfzoo.org.

**Developing Zoo Head-starting for Two Imperiled California Anurans**

Zoo-based rearing has supported amphibian recovery for more than three decades, with many zoos across the United States now participating in captive breeding and rearing for release. While these efforts have advanced husbandry knowledge and improved short-term survival, relatively few programs have resulted in self-sustaining wild populations. At San Francisco Zoo & Gardens, in partnership with the National Park Service, U.S. Forest Service, Sierra Nevada Aquatic Research Laboratory, and other essential collaborators, this approach has successfully established California Red-legged Frogs in Yosemite National Park and Sierra Nevada Yellow-legged Frogs across their range. Building on this experience, we apply zoo-based rearing to two lesser-known conservation efforts: Yosemite Toads (*Anaxyrus canorus*) and Foothill Yellow-legged Frogs (*Rana boylii*). Yosemite Toads have proven to be a challenging species, requiring iterative refinement of rearing and release protocols to improve early-life survival, reduce disease risk, and support post-release survival. Foothill Yellow-legged Frogs represent a new initiative, with the first egg masses collected in 2025 and early work focused on building on husbandry standards developed by Oakland Zoo. Together, these programs demonstrate how zoo rearing, applied research, and strong interagency collaboration can advance amphibian conservation and support long-term population resilience in California.

**WOODALL, JAKOB* and VANCE VREDENBURG**. Amphibian Conservation Lab, Department of Biology, San Francisco State University, San Francisco, CA, jwoodall@sfsu.edu.

**A Year of Research on the Post-metamorphic Life Stage of the Northern Population of Western Spadefoot (*Spea hammondii*)**.

Many aspects of the post-larval ecology of the western spadefoot (*Spea hammondii*) remain understudied, particularly within the northern clade. We investigated *Batrachochytrium dendrobatidis* (Bd) infection dynamics in this clade and examined the factors influencing terrestrial activity in juveniles and adults. To assess historical Bd prevalence, we screened all post-metamorphic northern clade specimens available in museum collections (n = 208), representing eleven decades of sampling. For contemporary patterns, we sampled individuals (n = 272) across three sites spanning four counties in the central portion of the northern clade. At one focal site—Carnegie State Vehicular Recreation Area—we conducted frequent, standardized swabbing surveys for a year. Here, we report historical and contemporary Bd prevalence in *S. hammondii* and present preliminary findings on environmental drivers of terrestrial activity and seasonal variation in body condition.

**WUNDERLICH, VERONICA**. California Department of Water Resources, West Sacramento, CA, veronica.wunderlich@water.ca.gov.

**Monitoring Amphibians and Reptiles along California Department of Water Resources Infrastructure**

The State Water Project (SWP), operated by the California Department of Water Resources (DWR), is made up of water conveyance infrastructure, such as aqueducts, pumping plants and reservoirs spanning much of the state of California. Portions of the infrastructure, surrounding lands and rights-of-way provide valuable habitat for a variety of special-status species and have the benefit of being protected in perpetuity from development beyond routine maintenance and improvement of the SWP. California red-legged frog (CRLF; *Rana draytonii*) and Northwestern pond turtle (NWPT; *Actinemys marmorata*) are among the species found on these lands. As part of the effort to document and better understand the current state of these populations

within DWR lands and rights-of-way and to improve sustainability and protection of those populations during project and maintenance activity planning and implementation, annual survey monitoring efforts were initiated for CRLF in 2022 and NWPT 2023. Today I will share some results of these survey efforts, and discuss how these efforts have continued to evolve, as well as plans for future refinement and expansion of these surveys.

## POSTERS

**FEE, MEGAN, and RICK EVANS**. Stantec, Nevada City, CA, megan.fee@stantec.com.

**Environmental DNA (eDNA): Applications, Methods, and Insights from Amphibian Monitoring**

The use of environmental DNA (eDNA) is in its infancy, as hundreds of researchers around the world begin to develop a huge diversity of techniques and applications. eDNA sampling has been increasing out of a recognized need for early detection of target species (Lodge et al. 2006, Ficetola et al. 2008). This type of sampling allows for non-invasive sampling of target species, or the characterization of entire communities based on barcoding genes. Initial eDNA efforts attempt to sample in locations with presumably the highest probability of detection if the target species was present, such as downstream from where a species would likely aggregate and where DNA might accumulate in the water column (Jerde et al. 2011). Stantec has used eDNA sampling in a variety of projects with a variety of target amphibian species across different environments. This poster will focus on how eDNA can be utilized as a tool to detect, protect, and monitor amphibians through the application of various sampling techniques and methodologies across a range of environments. Brief summaries of specific sampling efforts conducted by Stantec will be provided to reference the success and challenges faced while monitoring amphibian species.

**MAY, TIFFANY[1]*, NINETTE DANIELS[2], VANESSA LOZANO[3], DESTINY SAUCEDO[4], VICTORIA BRUNAL-BYRD[5,6], SOPHIA WEINMANN[7], HANNA NOTTNAGEL[8], and ROCHELLE STILES[1]**. [1]San Francisco Zoo, San Francisco, CA, aurora6853@gmail.com; [2]National Parks Service, Yosemite National Park, CA; [3]Endemic Environmental Services, Sacramento, CA; [4]Catalina Island Conservancy, Avalon, CA; [5]Safari West, Santa Rosa, CA; [6]Mitsui Ranch Preserve, Petaluma, CA; [7]California Department of Fish and Wildlife, CA; [8]Dokken Engineering, Folsom, CA.

**HERpetologist et. al. Retreat – Conservation Needs Us All**

HERpetologist et al. is an initiative to provide further resources and support for women, trans, and gender-queer individuals in the field of herpetology. The group was created as a result of discussions by attendees of the California/Nevada Amphibian Populations Task Force Meeting (APTF) in 2023. Historically, the field of herpetology has been male dominated, with a recent Membership Diversity Survey conducted by The Society for the Study of Amphibians and Reptiles (SSAR) in 2021 revealing that women were underrepresented in the SSAR membership, with 25.8% of respondents identifying as female and 69.7% identifying as male. A separate study by Rock et al. (2021) examining authorship in herpetology publications found that male authors outnumbered female authors by more than two to one, despite steady increases in female authorship since 2000. These results highlight that SSAR, and the field more broadly, have yet to overcome long-standing gender disparities. We can support further participation and representation of women, trans, and gender-queer individuals through initiatives such as HERpetologists et al., which provide mentorship, professional development opportunities, and a sense of belonging for marginalized groups. Initiatives and affinity groups such as these are an essential part of increasing diversity and inclusion and strengthening retention and success of marginalized groups in the field of herpetology.

**ROY, JOSHUA, and MARINA M. GERSON***. Biological Sciences, CSU Stanislaus, Turlock, CA, mgerson@csustan.edu

**Sublethal Effects of Chronic Pyrethroid Insecticide Exposure on the Morphology of Pacific Tree Frog Tadpoles**

Milder winters and extended growing seasons associated with climate change may shift agricultural influences to have greater overlap with the amphibian breeding season, with the potential for multiple applications of both fertilizers and pesticides to occur while egg masses and tadpoles occupy neighboring aquatic habitats. This laboratory study examined the effects of chronic exposure to a commercially available pyrethroid pesticide, λ-cyhalothrin, on the development of *Pseudacris regilla* tadpoles. Tadpoles exposed to λ-cyhalothrin were significantly larger by Gosner stage 41 in all metrics, compared to control tadpoles; there were no notable differences in liver morphology. An examination of the mechanisms that underlie these results is recommended. As the phenologies of both natural and anthropogenic activities shift with climate change, reexamination of the impacts of pesticides in regular use should be the subject of new studies, to assess the effects of changing practices involving chemical agents approved decades ago under different environmental regimes.