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Abstracts

Oral Presentations

LATE SEASON OBSERVATIONS OF A BLUNT-NOSED LEOPARD LIZARD (*GAMBELIA SILA*)

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Blunt-nosed leopard lizards (*Gambelia sila*), a federal and state endangered species that is also fully protected under California Fish and Game Code, are generally active from mid-spring to early fall, entering a period of brumation over the winter months. After no observations were recorded during surveys following California Department of Fish and Wildlife's recommended methodology to detect blunt-nosed leopard lizards, McCormick Biological, Inc. staff detected one individual, possibly young of the year, during site preparation work for a project. To ensure avoidance, we monitored the lizard daily between and dusk as it foraged in nearby habitat. Biologists noted predation events, nightly burrow selection, and daily movements until the individual discontinued its daily emergence from the dawn previous night's burrow over an extended period. This species has been found to be an opportunistic forager, lying in wait for insects and occasionally consuming other lizards. In addition to insects, the blunt-nosed leopard lizard that we observed attempted to consume more lizards than we expected, pursuing several over the observation period. Daytime activity continued late into the season, with observed daytime and nighttime temperatures lower than expected. Burrow construction and use of existing burrows were both observed. These observations are valuable in understanding activity extremes and habitat that may be used by this species.

BLUNT-NOSED LEOPARD LIZARDS (*GAMBELIA SILA*) HAVE THE CAPACITY FOR GREATER SEASONAL ACTIVITY THAN COMMONLY ASSUMED

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Blunt-nosed Leopard Lizards (*Gambelia sila*) are federal- and state-listed endangered species endemic to California's San Joaquin Desert. One adaptation for living in harsh desert habitats is an abbreviated active season in spring and early summer. However, their capacity for activity in the "off season" during late summer and winter is not well understood. Understanding the seasonality and timing of emergence from winter torpor of this endangered species is critical for in situ monitoring. The *G. sila* assurance colony housed at Fresno Chaffee Zoo's Conservation Action Center (FCZ/CAC) provides a unique opportunity for understanding activity patterns, especially during periods when activity is less frequent. At FCZ/CAC, *G. sila* are maintained under naturalistic seasonal cycles designed to mimic natural changes in temperature, photo period, and humidity levels, but conditions never become as harsh as possible in the wild. Under these idealized conditions, *G. sila* are active both earlier and later in the year than typically understood, from mid-February until early October. Monitoring *G.sila* under naturalistic captive conditions can help us make better-informed decisions about when to monitor or plan anthropogenic activities around natural populations of *G. sila*.

MAXIMUM DISTANCE OF POND TURTLE (*ACTINEMYS* SP.) NESTS FROM AQUATIC SITES, AND MANAGEMENT IMPLICATIONS

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Northwestern (*Actinemys marmorata*) and Southwestern (*A. pallida*) pond turtles have experienced significant population declines and are under consideration for federal listing as threatened species. Despite extensive research, key gaps remain in understanding their nesting ecology. Studies report varying nesting distances from aquatic habitats, ranging from 1 to 457 meters, with an average maximum distance of 155.5 meters. Prior studies suggested nesting distances of approximately 50 meters, but these figures do not fully capture the range of habitat needed by the species. Many nests in published research were found over 100 meters from water, with some as far as 457 meters, suggesting the importance of upland habitat preservation for the turtles' survival and population persistence. Upland areas serve critical roles, such as for dispersal, aestivation, overwintering, basking, and nesting, and should be considered core habitat rather than buffer zones. Effective management of these areas, extending up to 500 meters from aquatic habitats, is essential for the long-term survival of these species. Given the cryptic nature of turtle nests, it is recommended to designate this 500 meter zone as occupied nesting habitat for conservation efforts, although challenges exist in identifying and surveying these nests. The conservation of these upland areas is vital to the turtles' survival and population recovery. Furthermore, management of active nests and nesting habitat during California Environmental Quality Act/National Environmental Policy Act consultations will prove challenging due to the cryptic nature of pond turtle nests. Several avoidance and minimization measures based on past development projects will be briefly reviewed and discussed to inspire a conversation with consultants and wildlife managers on nesting management decisions for future projects.

THE DESERT SPINY LIZARD, *SCELOPORUS MAGISTER UNIFORMIS*, IN THE SAN JOAQUIN DESERT OF CALIFORNIA

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The yellow-backed spiny lizard, *Sceloporus magister uniformis*, is well known from the Mojave Desert, where it is widespread and abundant. It is less well known from Central California. We report on an intensive survey effort conducted in 2024 where we sought out *S. m. uniformis* across its potential range in the San Joaquin and western Mojave Desert, using visual surveys and scat detection dogs / genotyping from scat. We found *S. m. uniformis* to be widely but patchily present in the western San Joaquin Valley and associated ranges from the Panoche Hills in the north to the Lokern region in the south. The species was found to be present in the Transverse Ranges to the south of the San Joaquin Valley and abundant in the western Mojave. Preferred habitat was rock outcrops and anthropogenic structure such as riprap in desert washes. Temperature preferences ranged from about 18 Celsius to 30 Celsius, and the species could be observed March-October whenever the temperature was within these bounds. We present an updated map of its distribution in Central California. This large lizard deserves increased attention due to its potential endemism and restriction to the San Joaquin Desert biome.

TEMBLOR LEGLESS LIZARD (*ANNIELLA ALEXANDERAE*) 2025 UPDATE ON CONSERVATION STATUS, NEW DISTRIBUTION RECORDS, AND SURVEY METHODS

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Before 2013, all legless lizards found in California were classified as a single species, *Anniella pulchra.* In 2013, this single species was split into five species and four new species of *Anniella* were described. In 2022 the California Fish & Game Commission voted to list the Temblor legless lizard (*Anniella alexanderae*) as a candidate species. A decision to list or not list this species as state threatened or endangered depends on the recommendation of a status report prepared by the California Department of Fish and Wildlife (CDFW). The United States Fish and Wildlife Service is also reviewing the status

of this species with a decision to list or not list as federally Threatened or endangered. The federal proposal may be decided as soon as 2026. The candidate status gives this species full protection until the vote of the Commission. There is now a huge increase in surveys by energy companies, United States Bureau of Land Management, United States Geological Survey, CDFW, and consulting companies. Today there are over 5000 cover boards, mostly carpet tiles, in place in areas where *Anniella alexanderae* may occur. New locality records double the range of the *Anniella alexanderae* that was reported in the 2019 status report. In 2022, we decided to see if eDNA was a potential method of confirming the presence of this species without observing legless lizards under the cover. Most eDNA research is used for aquatic species like fish and amphibian larvae. The use of eDNA on a terrestrial species like *Anniella* seems promising.

REPRODUCTIVE SUCCESS OF CALIFORNIA LEAST TERNS AND WESTERN SNOWY PLOVERS THROUGH YEARS OF LOW ROCKET LAUNCH CADENCE

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Anthropogenic noise can affect seabird and shorebird reproductive success, and these types of noise have been increasing over time. Rocket launches are an extreme form of anthropogenic noise and there is a gap in our understanding of rocket launch noise and its effects on seabirds and shorebirds. Vandenberg Space Force Base (VSFB) is a launch site for space vehicles located on California's Central Coast and is also home to breeding colonies of federally endangered California least terns (*Sternula antillarum browni*) and threatened western snowy plovers (*Charadrius nivosus nivosus*). Rocket launches from VSFB started in 1959, and launch cadence remained high until the early 1970s, after which cadence decreased steeply. Except for a small spike in the 1990s, launch cadence remained low until the early 2020s, at which point cadence has been increasing, with 51 launches in 2024 and even more projected for 2025. An evaluation of reproductive success at low launch cadence is critical to provide a comparison as launch cadence increases in the coming years. Our research seeks to establish this foundational knowledge by determining if low launch cadence has influenced the reproductive success of tern and plover populations at VSFB. To do this, we used a 23-year dataset to perform two analyses evaluating the reproductive success at VSFB as a function of 1) launches per year and 2) reference sites with nesting terns and plovers along California's Central Coast that were likely not affected by rocket launches. Analyses are ongoing; however, preliminary results suggest that at low launch cadence, some measures of reproductive success may not have been affected by rocket launches.

SUCCESSFULLY EXCLUDING CLIFF SWALLOW NESTING ON A BRIDGE STRUCTURE

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Cliff swallow (*Petrochelidon pyrrhonota*) colonies (mud nests or mud remnants) from previous years are present on the Coffee Road bridge located in Bakersfield, Kern County, California. A swallow exclusion plan was developed to exclude cliff swallows from nesting on the bridge during Project activities associated with Kern River Canal Backup Weir Project. The plan included installing plywood and high-density polyethylene plastic curtains along both spans of the Coffee Road bridge prior to the start of the nesting season (February 1). The combination of plywood and the

plastic curtain made nesting surfaces less appealing and obstructed entry points. Swallow activity was monitored before, during, and after installation of the exclusion. Monitoring efforts are currently ongoing, but preliminary results suggest that this method is effective in precluding cliff swallows from nesting on bridge structures.

SPATIOTEMPORAL PARTITIONING BETWEEN AN INVASIVE SPECIES AND A MESOCARNIVORE COMMUNITY IN THE URBAN ENVIRONMENT

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Invasive species can be detrimental to ecosystems. While the effects of invasive species on native ecosystems are many, invasive species are often capable of outcompeting species for resources, yet our understanding of these effects in urban environments is still developing. The domestic cat (*Felis catus*) is an invasive species that is commonly observed in urban areas alongside other urban mesocarnivores, however, the potential impacts and interactions domestic cats have on other urban mesocarnivores is not well understood. To address this knowledge gap, we evaluated temporal and spatial partitioning between domestic cats and other mesocarnivores in an urban environment. We predicted that if domestic cats are negatively affecting other urban carnivores, urban carnivores may spatially or temporally minimize interactions with domestic cats. We used camera traps with scent lures at high school and college campuses across the southern San Joaquin Valley to monitor the visitation patterns of urban mesocarnivores from 2020 to 2022. Generalized linear mixed models and AIC model selection will be used to evaluate spatial relationships and interactions between domestic cats and other urban mesocarnivores, temporal overlap coefficients and peak activity analysis will be used to evaluate temporal overlap, and the results of these analyses will be discussed.

KERN RIVER IN CRISIS: WHAT HAPPENS WHEN ANTHROPOGENIC ACTIVITIES TRANSFORM A PERENNIAL RIVER INTO A NON-PERENNIAL RIVER?

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Anthropogenic activities can result in the conversion of perennial rivers and streams into long-term, non-perennial systems, ultimately causing devastating effects on freshwater and riparian habitats, and wildlife. To understand the impact that rapid water loss linked with anthropogenic activities has on river ecosystems, we studied the recently rewatered Lower Kern River in Bakersfield, California and subsequent regression of water levels due to weir repairs and water diversions. Specifically, we surveyed rapid water loss effects on aquatic ecosystem health and wildlife before, during, and post critical water levels on a perennial river that ecologically functions as an ephemeral river. We deployed temperature loggers (n = 1 logger/site; n = 5 sites) and measured stream physiochemical parameters (e.g. salinity, pH, etc.) before and during rapid water loss in the Kern River during summer and fall 2024. Underwater cameras, eDNA, and field surveys were conducted to survey the fish populations pre- and post-dewatering of the river. Preliminary results suggested that 1) water temperatures exceeded recommended thresholds for aquatic wildlife (< 30 Celsius) throughout the river during summer 2024, and 2) rapid water loss resulted in multiple mass fish deaths (<3,000 fish) compared to the upstream reference site in early fall 2024. Mosquito fish (*Gambusia affinis*) and largemouth bass (*Micropterus salmoides*) were the dominant taxa (> 70%) observed prior to water loss;

however, catfish and bullhead taxa (*Ictalurus* spp. and *Ameiurus* spp.) also dominated the fish community post-water loss. Interestingly, we only observed the endangered rainbow trout (*Oncorhynchus mykiss*) prior to the dewatering event. While data collection is still ongoing, these preliminary results highlight the effects of rapid water loss due to dewatering rivers and massive water diversions. Ecosystem downgrading happens when perennial rivers are routinely dewatered, and thus, ecologically function as long-term ephemeral rivers, which can potentially have long-lasting effects on long-term ecosystem health.

TRASH TALK: ENVIRONMENTAL CONDITIONS AFFECT PLASTIC DEGRADATION AND MACROINVERTEBRATE COMMUNITIES

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The increasing abundance of plastic pollution in the environment has altered resource subsidies available to freshwater and terrestrial habitats. To understand the fate of plastic pollution in arid landscapes, we investigated the degradation of low-density polyethylene compared to naturally occurring leaves from London planetree (*Plantanus acerifolia*) in terrestrial and freshwater habitats. Specifically, we explored 1) whether leaf and plastic degradation rates differ, and if patterns are consistent across habitats, and 2) how leaf and plastic materials impact terrestrial and aquatic macroinvertebrate communities that colonize leaf packs. To accomplish this, two traditional leaf pack experiments were conducted with three experimental treatments: natural leaves, plastics, and a mix of both materials. Leaf packs were anchored in an ephemeral pond and an arid grassland (n = 55 treatment per habitat) and subsets were harvested every 1-3 months over a year (n = 3-6 leaf packs per treatment per habitat). Results indicated that plastic leaf packs degraded 115 times faster in the grassland compared to the pond habitat, and natural leaves degraded 1.7 times faster in the pond compared to the grassland. Macroinvertebrate density was similar across leaf packs; however, mixed leaf packs supported greater taxonomic and functional feeding group diversity than plastic and natural leaf packs (all $P < 0.001$). A second study was conducted with another set of leaf packs anchored in artificial pond mesocosms with differing drought conditions to better understand the effect of pond hydroperiod on plastic degradation. Regardless of pond treatments, natural leaves had the fastest degradation while plastic litter had the slowest degradation rates. These studies provide insights into how varying environmental conditions can impact the degradation rates of plastics in the environment, advancing knowledge on the fates of plastics in terrestrial and freshwater habitats.

FACTORS LIMITING SEEDLING RECRUITMENT OF VALLEY OAKS (*QUERCUS LOBATA*) IN THE SOUTHERN SAN JOAQUIN VALLEY

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Oak trees are dominant in woodlands across a range of climates, and provide important ecosystem services such as support of biodiversity. However, oaks in dry environments are becoming increasingly threatened as temperatures rise and drought frequencies increase. As a result, many oak populations are suffering from adult mortality and are failing to recruit seedlings. A promising approach to increasing seedling survival, especially in the hot and dry southern San Joaquin Valley (SJV), is by enhancing drought resistance. This can be accomplished by promoting mycorrhizal associations, which can allow for increased water uptake. Additionally, nanochitosan, a biopolymer derived from chitin, has the potential to increase drought resistance through upregulation of stress responses. For my current study, I am testing these different active restoration strategies on valley oaks (*Quercus lobata*). This species is endemic to California, and is projected to undergo large population declines in the southern SJV. With the help of volunteers, 2,400 valley oak acorns were collected and planted in eight fenced plots along Chanac creek,

located in the southern SJV side of the Tejon Ranch Conservancy. The plots are arranged in pairs of lowland and upland plots at each of four different sites to test for an elevation and slope effect. Each plot was enclosed by 10-foot-tall fences, and each hole was lined with copper wire mesh before planting. Once sprouted, seedlings in each plot will be treated with mycorrhizae, nanochitosan, or a combination of both as part of a full factorial fully crossed randomized block design. As seedlings grow, measurements of growth and functional traits will be taken to assess seedling survival and success.

A DECADE OF MANAGEMENT ON THE NORTH CARRIZO ECOLOGICAL RESERVE

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Over the last decade, CDFW has managed roughly 12,737 acres that comprise the North Carrizo Ecological Reserve (ER). This ER was created from mitigation lands generated from the Topaz Solar Farm project and is predominantly San Joaquin Desert grassland habitat. During the past decade, we have collared kit foxes and pronghorn, installed 22 water troughs for wildlife, restored saltbush to portions of the ER, and translocated San Joaquin antelope squirrels, among many other things. This is an update on some of the work we have done and what we have planned for the coming years.

EFFECTS OF COYOTE ACTIVITY ON THE SAN JOAQUIN KIT FOX

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At the Kern National Wildlife Refuge Complex (KNWRC), we are researching site use patterns of the endangered San Joaquin kit fox (SJKF; *Vulpes macrotis mutica*). Prior to 2021, SJKF had not been detected on the refuge for multiple decades. Following the removal of the invasive plant species, salt cedar (*Tamarisk* spp.) from 2021-2023, we are now observing an influx of SJKF detections through camera trap data. The preferred habitat of SJKF consists of sparse shrubs, bare ground and minimal invasive grasses. Although salt cedar removal has increased habitat availability, another main concern for the endangered species is predator activity. A major predator of SJKF on the refuge is the California Valley coyote (*Canis latrans ochropus*). Our objective was to assess if coyote activity on the refuge is affecting SJKF occurrences. To do so, we analyzed the relationship between coyote detections and SJKF detections from our first full year of camera trap data in 2024. We aim to use generalized linear models and activity pattern analyses to assess SJKF response to predator activity. Using this data, we may be able to view possible influences of native predator activity towards an endangered species, thus helping us to gain a better understanding of their overall relationship.

GRAZING 101 FOR WILDLIFE BIOLOGISTS: THE MEANING OF LIFE, THE UNIVERSE, AND EVERYTHING

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Livestock are a common feature within many ecological monitoring and research projects. Wildlife biologists may attempt to account for livestock presence and potential impact on study systems by treating them as a land management variable noted as “grazing present/absent” or a confounding variable noted as ”overgrazed.” Yet, often

no additional information is collected such as what type of livestock, how many, how long they were on site, where they were within the project area, and what time of year they were present. The goal of this presentation is to provide an overview of basic livestock grazing principles, and the value of collecting grazing data that is informative and scientifically valuable in wildlife research.

INVESTIGATING THE POPULATION SIZE AND DEMOGRAPHY OF THE NORTHWESTERN POND TURTLE (*ACTINEMYS MARMORATA*) AT A HIGH ELEVATION SITE IN KERN COUNTY

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The northwestern pond turtle (*Actinemys marmorata*) is known from several locations along the south fork of the Kern River, in the southern Sierra Nevada of Kern County. One of these locations is at the Canebrake Ecological Reserve managed by the California Department of Fish and Wildlife, near the town of Onyx, in the Kern River Valley. In 2019, we began a mark-recapture study to evaluate the population size and demographic characteristics of this population, as no high elevation sites in the southern Sierra have been previously studied. We trapped turtles annually for five of the last six years and marked 76 turtles (53 males, 17 females, and 6 juveniles). The mean carapace length for males was 157 millimeters (mm), for females was 144 mm, and for juveniles was 92 mm. Most turtles were found to be >20 years old (33 males and 11 females) or >10 years old (15 males and 4 females), with the remainder (5 males, 2 females, and 6 juveniles) evenly dispersed between 1 and 10 years old. Using the Schnabel population estimation method, we estimate the population size to be 127 turtles (95% CI = 92–207). Gathering demographic data at this site is often difficult due to water level changes in the pond during wet and dry years.

CDFW SEEKS INPUT ON TEMBLOR LEGLESS LIZARD FOR CALIFORNIA ENDANGERED SPECIES ACT STATUS REVIEW

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California Department of Fish and Wildlife (CDFW) requests information on Temblor legless lizard (*Anniella alexanderae*) occurrences, habitat, and threats to complete its Status Review of the species in response to a petition for listing as Threatened or Endangered under the California Endangered Species Act (CESA). This presentation will provide a brief synopsis of the CESA listing process, the roles of CDFW and the California Fish and Game Commission (Commission) in discretionary decision making about listing, the timeline for CDFW's status review and decision on listing by the Commission, and will highlight opportunities for public contribution of information. CDFW seeks your input on the status of this fossorial, locally endemic lizard.

NEW LOCALITIES OF TEMBLOR LEGLESS LIZARDS FROM FRESNO AND KERN COUNTIES

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The range of the Temblor legless lizard (*Anniella alexanderae)* is poorly known. Obtaining information on the distribution of this species is vital to inform state and federal status reviews to determine if it needs conservation protections. The U.S. Geological Survey began sampling for Temblor legless lizards in 2022 and has sampled more than 100 sites within and adjacent to the species' putative range. Previous work documented the detection probability of this fossorial species and insights into environmental drivers of Temblor legless lizard occupancy based on sampling in 2022 and 2023. Further sampling in 2024 and 2025 has documented new localities for this species, expanding its range both further south and further west than previously hypothesized. We present our most recent observations of this secretive species and identify important gaps that could be filled with further sampling in the center and periphery of the species' known distribution.

THERMAL ACTIVITY OF THE TEMBLOR LEGLESS LIZARD (*ANNIELLA ALEXANDERAE*) IN THE SAN JOAQUIN DESERT

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The Temblor legless lizard (*Anniella alexanderae*) is a cryptic fossorial reptile endemic to the San Joaquin Desert of California. While its ecology remains poorly understood, previous studies on similar species suggest that legless lizards are primarily active in cooler temperatures, often burrowing beneath leaf litter or sandy substrates to avoid extreme heat. However, recent field observations challenge this assumption, with multiple individuals found active at surface temperatures exceeding 90° Fahrenheit. This study documents summer detections of *A. alexanderae* from previously known locations within the Temblor Range and adjacent alluvial fans, highlighting conditions under which individuals were encountered. The findings suggest that Temblor legless lizards may tolerate higher surface temperatures than previously thought, possibly emerging from subsurface refugia to exploit specific thermal or prey-related opportunities. Understanding the thermal ecology of *A. alexanderae* is critical for refining survey protocols and conservation strategies. These findings provide valuable insights into the species' behavioral flexibility and habitat use, contributing to more effective management and conservation efforts in arid landscapes.

USING AUTOMATED TELEMETRY TO STUDY REPATRIATED BLUNT-NOSED LEOPARD LIZARDS

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Describing the space use and activity patterns of endangered animals is important to implementing effective conservation strategies. Historically, collecting sufficient data on small-bodied species was challenging due to constraints of manual tracking and short battery life. The development of miniaturized tracking devices, such as UHF (ultra-high frequency) transmitters, has provided opportunities to better understand the ecology of many smaller-bodied species and assess conservation efforts. The blunt-nosed leopard lizard (BNLL; *Gambelia sila*) is an endangered species endemic to the San Joaquin Desert of Central California. We have been releasing captive-produced BNLL to bolster an almost-extirpated population on Panoche Plateau, Fresno County, where we installed an automated telemetry system of >150 remote nodes. In June 2024, we released 10 captive-reared BNLL equipped

with UHF backpacks and later equipped four wild-reared lizards near the end of July. We monitored lizards with a combination of hand and automated tracking. We were able to use trilateration methods to estimate >100,000 lizard locations, providing data to better quantify home ranges and habitat selection. Additionally, we used data from the remote telemetry system to predict when lizards are likely below ground, and to detect late season activity.

SMALL, YOUNG, AND ELUSIVE: CAPTIVE REARING REVEALS THE EARLY LIFE OF BLUNT-NOSED LEOPARD LIZARDS

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Blunt-nosed leopard lizards (*Gambelia sila*) are federal- and state-endangered lizards endemic to San Joaquin Desert habitat in central California. As with many endangered species, not all life-stages are equally understood. Most studies of *G. sila* focus on adults during the spring reproductive season, due to challenges accessing other stages (both biological and regulatory). In 2020, Fresno Chaffee Zoo received emergency permission to create a *G. sila* breeding colony for Panoche Plateau in the hopes of repatriating offspring and restoring this isolated population. An auxiliary benefit of this colony is that it provides unprecedented access to *G. sila* during their more elusive life-stages, such as hatchlings during their first fall. We report on a suite of early-life traits measured in captive-reared *G. sila* (*n* = 152) including egg traits, primary sex ratio, growth rate, symmetry, thermal preference, energetics, and water loss. We then compare these values to the limited observations available for wild animals in the field. Our results confirm that our incubation and rearing conditions produce *G. sila* with traits similar to those observed in the wild and provide new details about the natural history of this unique and endangered species.

UNUSUALLY LARGE MAXIMUM SIZES OF THE ENDANGERED BLUNT-NOSED LEOPARD LIZARDS (*GAMBELIA SILA*)

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Large size of individuals in an animal population can confer selective advantages over smaller members. The blunt-nosed leopard lizard (*Gambelia sila*) is an endangered species of the San Joaquin Desert for which the maximum snout-vent length (SVL) of lizards in the 1960's was reported to be 123 millimeters. Since then, population studies have not reported lizards greater than this maximum size. Here we report substantially larger maximum SVL of males in two populations: Semitropic Ecological Reserve and Lokern Ecological Reserve.

A SECOND TADPOLE SHRIMP (*LEPIDURUS LEMMONI*) NATIVE TO CALIFORNIA CENTRAL VALLEY VERNAL POOLS

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It has previously been thought that only one species in the genus *Lepidurus* occurs in California's Great Central Valley - the federally listed as endangered vernal pool tadpole shrimp (*Lepidurus packardi*). However, the alkali tadpole shrimp (*L. lemmoni*) was observed in the southern portion of the Central Valley in 2019 within several alkaline playa pools. This species' presence in the Central Valley likely represents a remnant historic native population concentrated between 0 to 25 kilometers south of the southern edge of the historic Tulare Lake. Alternatively, the occurrence may be a natural or anthropogenic range extension or perhaps a new species. The discovery of a species (or possibly new or cryptic species) very uncommon to the Central Valley provides additional management implications that Tulare Basin pools provide habitat for rare species at risk of development and should be protected. Furthermore, alkali pools within this region should receive more intensive and widespread survey attention, especially from a large branchiopod perspective.

THREE NOVEL STUDIES FOR THE RECOVERY OF THE SAN JOAQUIN VALLEY GIANT FLOWER-LOVING FLY: BENEFITS FOR EARLY-CAREER SCIENTISTS STUDYING UNDERAPPRECIATED SPECIES

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The recovery of rare and understudied species like the San Joaquin Valley giant flower-loving fly (SJVF; *Rhaphiomidas trochilus*) relies on collaborative efforts, including contributions from amateurs, enthusiasts, and early-career scientists. Despite its rarity, research on SJVF has been limited to general observations and inferences from its federally endangered relative, the Delhi Sands flower-loving fly (*R. terminates abdominalis*). Critical gaps remain in understanding the SJVF's lifespan, population size, and foraging behavior, hindering conservation efforts due to insufficient natural history data. These gaps persist due to challenges in funding, time, and effort, contributing to a recent lack of interest from established researchers. To address these gaps, simple, low-cost studies could provide important insights: offering artificial nectar sources could reveal foraging preferences, mark-recapture methods could estimate population size and lifespan, and determining cooling thresholds could support translocation efforts. These studies would answer key questions posed by the United States Fish & Wildlife Service and highlight the potential for young scientists to contribute meaningfully to underappreciated species research. Unlike charismatic species (e.g., San Joaquin kit fox, blunt-nosed leopard lizard, California red-legged frog, etc.) which often have well-documented natural histories spanning decades of research, species like the SJVF offer unique opportunities for early-career scientists to establish themselves in the scientific community while addressing critical conservation needs. By focusing on accessible and cost-effective studies, researchers can generate foundational knowledge to inform recovery efforts and secure protection for many rare and understudied species.

FROM MOUNTAIN TO THE VALLEY: INVESTIGATING HOW LAND COVER CHANGES AFFECT AQUATIC MACROINVERTEBRATE TAXONOMIC AND FUNCTIONAL DIVERSITY

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Headwater streams are sensitive ecosystems due to their small size, making them vulnerable to erosion, sedimentation, and changes in flow and habitat complexity linked to anthropogenic activities and climate change. Understanding terrestrial-aquatic connections in stream systems requires examining how factors such as energy inputs, nutrient availability, and macroinvertebrate communities interact across different environments. We investigated how changes in land cover along an elevation gradient influence taxonomic and functional diversity in the non-perennial stream systems located in California's arid climate (n = 12 sites). We predicted that macroinvertebrate taxonomic and functional diversity will increase with an increase in elevation, along with an increase in riparian plant diversity. In addition, the macroinvertebrate community will be dominated by the shredder

and collector–gatherer functional feeding groups (FFG) in the higher elevation stream sites; however, the collector–filterer and scraper–grazer FFG will dominate the macroinvertebrate community in the low elevation, valley stream sites. A Surber sampler was used to collect aquatic macroinvertebrate samples, colorimetric methods were used to determine nutrient concentrations, and the total dry mass of allochthonous materials was measured. The riparian vegetation was surveyed and overarching canopy cover above the stream was measured. Preliminary data suggests that collector-gatherers (*Chironomidae* and *Baetidae*) and collector-filterers (*Simuliidae*) larvae dominated the macroinvertebrate communities (>70%) in the high elevation sites; however, collector-filterers (*Simuliidae*) and collector-gatherers (*Baetidae*) larvae dominated the low elevation sites. In addition, macroinvertebrate taxonomic and functional diversity was 2 x greater at high elevation sites compared to low elevation sites. High elevation, mountainous sites were dominated by shrubs and trees where water flow is perennial; however, low elevation, grassland sites were dominated by grasses with sparse woody vegetation where water flow is non-perennial. Understanding how elevation and land cover influence freshwater streams will aid in effective management and restoration efforts in arid climates.

TERRESTRIAL-AQUATIC CONNECTIONS: INVASIVE *AILANTHUS ALTISSIMA* LEAF DECOMPOSITION IN FRESHWATER ECOSYSTEMS AND IMPACTS ON MACROINVERTEBRATE COMMUNITIES

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Introductions of invasive plant species to riparian zones can impact nearby freshwater ecosystems by altering the composition of leaf litter available to freshwaters that serve as critical habitat and food resources for aquatic biota. The deciduous tree of heaven (*Ailanthus altissima*; TOH) is an invasive species that negatively impacts terrestrial ecosystems; however, little research has focused on potential impacts on freshwater ecosystems. This study aims to understand if TOH leaf litter 1) decomposes at different rates compared to native species' leaf litter, and 2) supports a unique macroinvertebrate community compared to native species' leaf litter. Native Frémont's cottonwood (*Populus fremontii*) and London planetree (*Plantanus acerifolia*) were used as comparisons to TOH. Leaf packs contained 3 grams of invasive, native, or mix of all leaf types (n = 35 leaf packs/treatment/habitat). Leaf packs were anchored in a perennial pond and a headwater stream site and harvested every 2-4 weeks. Macroinvertebrates were identified to family level and sorted by functional feeding group. The remaining leaf litter was dried and weighed to identify the decomposition rates. The ash-free-dry-mass of the remaining leaf litter was determined to calculate organic matter loss through time. Preliminary results suggest that TOH leaf litter 1) breakdown rate was the fastest compared to other litter treatments, and 2) is supporting a unique macroinvertebrate community dominated by collector-gatherers and shredders, which might be linked with the rapid fragmentation of TOH in the stream site compared to the pond site. Understanding how common invasive species impact terrestrial-aquatic connections may help support future species management efforts.

TEJON CREEK WATERSHED ENHANCEMENT PROJECT: 15 YEARS OF CONSERVATION PROGRESS

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The Tejon Creek Watershed Enhancement Project represents a comprehensive, long-term conservation effort within one of California's most biodiverse private land holdings. Over the past 15 years, the Tejon Ranch Conservancy has implemented a multifaceted approach to watershed management that balances ecological restoration with sustainable land use practices. Our invasive plant removal program has successfully reduced non-native cover (ex. *Tamarix ramosissima, Arundo donax*) in priority riparian zones, while collaborative ranch infrastructure development with the landowner and grazing lessee has enabled strategic prescribed grazing in both upland and riparian zones.

Ongoing habitat monitoring -- via permanent vegetation transects, wildlife camera stations, annual bird counts, and herpetofauna coverboards -- has documented increases in native plant diversity and wildlife activity. Research partnerships with regional universities and community science activities have yielded valuable data on a variety of subjects. Most recently, the project has expanded to include small-scale active restoration activities, with the planting of native riparian trees and valley oak (*Quercus lobata*) acorns. This presentation will highlight our integrated management approach, key partnerships, and vision for future restoration outcomes. We will also discuss lessons learned regarding the importance of landowner collaboration, adaptive management frameworks, and securing long-term funding for watershed-scale conservation initiatives on working landscapes.

TAKEN WITH A GRAIN OF SALT: ASSESSING FUNCTIONAL TRAIT VARIATION IN HALOPHYTIC PLANTS ACROSS THE SAN JOAQUIN DESERT

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Salt-tolerant plants (halophytes), which commonly occur across the San Joaquin Desert, display a spectrum of environmental tolerances. This study aimed to explore the poorly understood relationship between ecological niche breadth and functional trait variability in generalist and specialist halophytes. I hypothesized that generalist halophytes would exhibit greater functional trait variation across an environmental gradient, while specialists would maintain more stable functional traits. Specifically, I predicted that the performance of traits in generalist species would decline with increasing environmental stress (e.g., elevated salinity, lower mean annual precipitation), while specialist traits would remain consistent under increasing stress. To test this hypothesis, I measured a suite of hydraulic, structural, and leaf economic traits in five generalist, four specialist, and six co-occurring non-halophyte (glycophyte) species across 14 sites in the San Joaquin Desert from 2021 to 2024. Specialist halophytes demonstrated lower functional trait variability and greater tolerance to extreme conditions, particularly high salinity, compared to generalists. Although both groups shared similar tolerance limits, only specialists consistently survived beyond those limits. These findings suggest that specialist halophytes are more resilient to perturbations in salinity and drought and exhibit greater trait stability across environmental gradients. This resilience may be attributed to their specialized adaptations to highly saline environments, including unique physiological mechanisms for osmotic adjustment.

SUMMARY OF SEASONAL NESTING BEHAVIORS OF SWAINSON'S HAWK (*BUTEO SWAINSONI*) AT THREE NESTING SITES

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Nesting Swainson's hawks (SWHA; *Buteo swainsoni*) were monitored in 2023 and 2024 during a Caltrans bridge replacement construction project at Cottonwood Creek near Avenue 12 and State Route 99 in Madera County. Additionally, in 2024, another bridge replacement project at the Kings River near Stratford in Kings County was also monitored. In 2023, the nearest active nest to the Cottonwood Creek project was approximately 0.45-mile to the east of construction activities. In 2024, the nearest active nest was approximately 280 feet from construction activities. In the same year, for the Stratford Project, the nearest monitored nest was approximately 200 feet from construction activities. Behavioral data were collected electronically and exported into an Excel file for analysis. Results from the 2023 and 2024 nesting bird season will be presented, along with results from statistical analysis of behaviors and environmental factors such as noise and temperature. A comparative analysis of the effects of noise on Swainson's hawk nesting behavior is currently being conducted for three nests, and preliminary results from that comparison will also be presented.

EFFECTS OF MICROHABITAT CHARACTERISTICS ON UPLAND SITE USE BY THE ENDANGERED BUENA VISTA LAKE ORNATE SHREW

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The Buena Vista Lake ornate shrew (BVLOS; *Sorex ornatus relictus*) is a federally endangered subspecies of shrew endemic to the southern Tulare Basin, California. BVLOS are typically associated with wetland habitats and moist soils. Kern National Wildlife Refuge (KNWR) has documented BVLOS across its wetland habitats since 1992, but several observations of the species in alkali desert scrub habitat during recent exploratory surveys exposed a need for more information on the relationship between BVLOS presence and distance to water. The objective of this study was to collect a year-round dataset of shrew activity at varying distances from water to discern seasonal differences in habitat associations and water dependence using remote cameras. Thirty-six cameras were deployed across KNWR's upland habitat beginning in April 2024 and locations were stratified by distance to water. As of January 2025, 11 sites have had BVLOS detections with the farthest detection being 1664 m from water. Using single-season, single-species occupancy models, we aim to assess the effect of microhabitat characteristics on occupancy. Our results may reveal what habitat characteristics are most important to BVLOS, how distribution varies seasonally, and how to better manage for a species that could be more widespread than previously thought.

THE CHALLENGE OF CONFLICTING DATA IN HABITAT MANAGEMENT: LESSONS FROM THE GIANT KANGAROO RAT

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Conservation planning relies on multiple sources of ecological data, including live trapping, habitat quality assessments, and habitat suitability models. However, discrepancies among these datasets can create challenges in habitat management when one source of data's results conflicts with another, potentially leading to misallocated conservation efforts. Identifying and understanding the causes of these conflicts is critical for improving decision-making. This study examines data discrepancies in habitat conservation by re-creating surveys in species presence through aerial imagery analysis, live trapping and habitat suitability modeling, and comparing to data from a 2014 study on habitat prioritization. This study emphasizes identifying potential sources of error in determining species presence and habitat evaluation, examining why these data sources may conflict, and providing strategies to optimize resources for more effective management decisions. Giant Kangaroo Rats (*Dipodomys ingens*), a keystone species in the San Joaquin Desert, provide an ideal system for this analysis due to their well-documented ecology and extensive past data collection. As ecosystem engineers, their presence is closely tied to habitat conditions, making them highly sensitive to environmental changes. Early findings reveal key challenges in integrating multiple data sources and demonstrate how reliance on a single dataset may misrepresent habitat suitability and conservation needs. By identifying these discrepancies, we provide recommendations for improving tools for ensuring that conservation strategies more accurately reflect species distributions and habitat conditions. This research has broad implications for habitat management, particularly in systems where conflicting data sources complicate conservation decision-making.

GIANT KANGAROO RAT DISTRIBUTIONAL CHANGES AND HABITAT PREFERENCES AT THE PROPOSED CIERVO HILLS CONSERVATION BANK, FRESNO COUNTY, CA

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The Ciervo Hills Conservation Bank (Ciervo Preserve) is being entitled by Natural Resources Group, Inc. (NRG) for the permanent protection of habitat for numerous San Joaquin Valley threatened and endangered endemics, including the state and federally endangered giant kangaroo rat (GKR; *Dipodomys ingens*). The Ciervo Preserve is approximately 3,500 acres, located within the Ciervo Panoche Natural Area in Fresno County, and has been included in multiple monitoring efforts and listed species studies for years. In the summer of 2024, as part of pre-entitlement GKR surveys, NRG and QK, Inc., conducted GKR live trapping surveys to determine the extent of GKR occupation on the Ciervo Preserve. GKR occupancy can be confirmed with live trapping, as well as the observation of identifiable and diagnostic "precincts." Surveying biologists observed an increasingly expanding area of occupation as the survey season progressed. GKR precincts were documented on the mostly flat valley floor habitat on the northwest, as well as narrow ridge tops adjacent to steep slopes, that provide habitat connectivity to the more topographically diverse portions of the Preserve to the southeast. These results support previous site-specific genetic studies that demonstrated a higher genetic relatedness across these topographically variable areas, compared to the contiguous valley floor grasslands, indicating that steep slopes and extreme topographic variability are not de-facto barriers for GKR habitat usage.

INVESTIGATION OF GIANT KANGAROO RAT (*DIPODOMYS INGENS*) MORTALITIES THROUGH AN AD-HOC WORKING GROUP APPROACH

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Tim Bean; California Polytechnic University, San Luis Obispo
Russ Namitz; United States Bureau of Land Management
Deana Clifford; California Department of Fish and Wildlife
Dan Applebee; California Department of Fish and Wildlife
Craig Fiehler; California Department of Fish and Wildlife
Brandon Swanson; California Department of Fish and Wildlife
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Lauren Kong; United States Fish and Wildlife Service
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An ad hoc working group of species experts from universities, government agencies, non-profit organizations, and the private sector was established May 2024 in response to a large number of giant kangaroo rat (*Dipodomys ingens*, GKR) mortalities at Carrizo Plain National Monument. The group's objectives were to share information, document the temporal and spatial extent of mortalities, collect specimens for testing, and contextualize the event within historical population patterns. Species experts observed an unusual amount of diurnal and crepuscular GKR activity throughout their range, including atypical activity during afternoon hours. Information sharing revealed that a similar

mortality event occurred in the same area May-July 2019. GKR carcasses of similar presentation were observed in smaller numbers in the Panoche Valley and Lokern in 2019 and 2024. The California Animal Health and Food Safety Laboratory System (CAHFS) conducted postmortem diagnostic testing (histopathological examination of tissues and anticoagulant rodenticide testing of liver samples) of two GKR collected in May of 2024. Trauma was the primary finding for both GKR and is consistent with findings from three GKR cases examined in 2019. No anticoagulant rodenticides were detected in the livers of GKR submitted in 2019 and 2024. Antibody titer testing for Yersinia pestis, the bacterial agent that causes plague, was performed on one euthanized 2024 GKR by the California Department of Public Health, with a negative result. Mycotoxins were not detected in the stomach contents of the other GKR carcass from 2024. By late June 2024, the number of observed mortalities decreased. Hypotheses for the event included spatial competition due to unusually high population size, mycotoxin exposure from contaminated food sources, or surplus killing by predators. Given the limited number of carcasses available for examination, definitively ruling out these potential causes remains challenging. Despite these challenges, this effort demonstrates the importance of maintaining collaborative networks among wildlife researchers.

Informal Poster Session

NEON IN THE SIERRAS: EXPANDING THE SCOPE OF ECOLOGICAL SCIENCE THROUGH LONG-TERM, OPEN ACCESS DATA

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The National Ecological Observatory Network (NEON) is a continental-scale program that collects long term, open access, ecological data to better understand how ecosystems are changing across the United States. NEON provides data from 47 terrestrial and 34 aquatic field sites. NEON data cover a range of subject areas within ecology, including organismal observations, biogeochemistry, aerial Light Detection and Ranging, hyperspectral imagery, and micrometeorology. All samples and data collected by NEON are publicly available and can be accessed digitally through the NEON website. By providing free and open standardized data, along with data analysis tools, tutorials, and educational resources NEON is engaged in the global effort to expand the scope of science and make scientific data access easier for all. NEON's field sites within Sierra National Forest (SNF) are essential to the continuation of the largest ecological data collection and monitoring program in the United States. Scientists from a variety of disciplines have conducted research using data and samples collected from the NEON sites within the SNF. Many of these studies have used NEON data to investigate questions that contribute to our understanding of climate change and how the results can be applied to manage and mitigate the effects of increasing natural disturbances. This poster presentation will introduce NEON's field sites in the Sierra National Forest, showcase NEON data collected from these sites such as remote sensing data and plant presence and abundance data. It will also highlight the Observatory's Research Support Services program, which makes components of NEON's infrastructure available to outside researchers and community members to support their research.

THE BUENA VISTA LAKE ORNATE SHREW (*SOREX ORNATUS RELICTUS*): A STORY OF HOPE FOR AN ENDANGERED SPECIES

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The Buena Vista Lake ornate shrew (BVLOS; *Sorex ornatus relictus*), a species federally listed by the U.S. Fish and Wildlife as endangered, is endemic to the San Joaquin Valley, California. a landscape once dominated by arid shrub scrub habitat with various tributaries flowing into higher order streams or the historic Tulare Lakebed. It is presumed the BVLOS historically occurred in wetland and riparian areas throughout the Tulare Basin. However, these habitats have been profoundly reduced due to conversion to agricultural, urban, and industrial uses. One of the wetland habitat types that still remain in the San Joaquin Valley, are wetlands owned and managed by duck clubs. BVLOS have been detected in the Goose Lake duck club and duck clubs adjacent to the Kern National Wildlife Refuge. Westervelt Ecological Services (WES) was hired by the California High-Speed Rail Authority to provide mitigation for impacts to BVLOS habitat. The poster will discuss how WES contracted with a duck club owner to survey for BVLOS on the owner's existing duck club, and entered into an agreement to restore the surrounding uplands to wetland habitat that would expand the duck club while benefiting the BVLOS. Restoration of the property, now referred to as the Lone Tree Mitigation Site, was accomplished by creating three new wetlands surrounded by upland areas. The poster will also present data results from two years of BVLOS-targeted surveys in the restored wetlands.

A COMPARATIVE STUDY OF THE EFFECTS OF ARTIFICIAL LIGHT ON SAN JOAQUIN KIT FOXES IN URBAN AND NON-URBAN ENVIRONMENTS

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The San Joaquin kit fox (*Vulpes macrotis mutica*) is a small carnivorous mammal that inhabits the San Joaquin Valley of Central California. Unfortunately, this subspecies of kit fox is currently listed as endangered. The primary reason for their endangerment is the significant loss of their natural habitat due to human activities. Despite urbanization being one of the causes of habitat loss, the urban populations of this endangered species have acclimated well to their surroundings. Bakersfield, CA, has provided an urban habitat for the San Joaquin kit fox, leading to a robust population. Artificial light at night (ALAN), common in urban environments, has been shown to impact wildlife behavior. This study aims to determine how the San Joaquin kit fox behaviorally responds to the presence of ALAN in urban and non-urban environments. To achieve this, we will determine if kit fox visits change in response to ALAN depending on their type of environment (urban and non-urban). This ongoing study aims to enhance our understanding of how small carnivores at an intermediate trophic level respond to light pollution. Additionally, understanding how endangered SJKF responds to new stimuli will assist conservation efforts, including detecting movement patterns and habitat preferences concerning light pollution.

IMPACT OF A SARCOPTIC MANGE EPIDEMIC ON A POPULATION OF ENDANGERED SAN JOAQUIN KIT FOXES

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Brian L. Cypher; Endangered Species Recovery Program
Jaime L. Rudd; Endangered Species Recovery Program
Alyse D. Gabaldon; Endangered Species Recovery Program
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Since 2015, we have conducted annual six-week systematic, citywide camera surveys during the summer in Bakersfield, CA to obtain population estimates and document the spatial spread of sarcoptic mange in endangered San Joaquin kit foxes (SJKF; *Vulpes macrotis mutica*). In 2019, we set up additional cameras in Taft, CA and have since included them in our yearly survey. We observed a 68% decline in Bakersfield SJKF camera detections between 2015

and 2020. Our lowest detections of SJKF were observed in 2020 with only 41 individuals, compared to 129 individuals in 2015. Similarly in Taft, we detected the lowest number of SJKF in 2020 at seven individuals compared to ten in 2019, although we only had one year's worth of data prior. Mange detections have considerably decreased in the last 4 years for both Bakersfield and Taft, and the Bakersfield population has shown a steady increase from 2021-2024. However, Taft SJKF population fluctuates between 24 and 13 individuals respectively. While mange hadn't been detected in either urban population since 2022, we recently documented six mange-infested individuals from Bakersfield in 2024. Based on fluctuating annual incidence rates along with previous epidemiological modeling, these findings suggest that sarcoptic mange has become endemic.

EVALUATION OF A NEW NON-INVASIVE PCR BASED METHOD TO DETECT THE SAN JOAQUIN KIT FOX (*VULPES MACROTIS MUTICA*) AND OTHER MAMMALS IN KERN COUNTY, CA

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Non-invasive methods to survey animal species in their natural habitat are under-used and rarely included in Environmental Impact Reports. They are also not included as recommended methods for surveys of endangered species such as the endangered San Joaquin Kit fox (SJKF; *Vulpes macrotis mutica*) and other endangered species. However, there are several advantages that these methods have to offer when compared to traditional survey methods. At CSUB, we designed and tested a new primer pair that amplifies a fragment of the mitochondrial DNA extracted from scat to target SJKFs and other mammals in different habitats in Kern County, CA. Early results from this work show the potential of this method to rapidly and accurately identify many species that may share a habitat with the endangered SJKF, among them other foxes (*Vulpes* spp., *Urocyon cinereoargenteus*), larger canines (*Canis latrans*, *Canis lupus*) and feline predators (*Puma concolor*, *Lynx rufus*), the black bear (*Ursus americanus*), other common species, such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), Virginia opossums (*Didelphis virginiana*), as well as several preferred prey species, such as kangaroo rats (*Dipodomys* sp.) and members of the *Sciuridae*. Scat samples were collected in and around Bakersfield, CA, the Carrizo Plains and Temblor Mountains in disturbed and undisturbed grassland habitats that are suitable for SJKFs. We are currently evaluating results obtained with our designed primers to results obtained with primers obtained from peer-reviewed literature. The goal is to not only identify the presence of the SJKFs but also other species that might act as predators or competitors in a habitat that could support populations of SJKFs. This may aid in explaining why SJKF are absent in some prime grassland habitats. Furthermore, obtaining knowledge of established co-existing species is valuable to decide which land can be proposed for SJKF mitigation and conservation strategies.

CHARACTERIZING THE DIVERSITY AND ZOONOTIC POTENTIAL OF FECAL PARASITES IN URBAN AND EXURBAN SAN JOAQUIN KIT FOXES

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The San Joaquin kit fox (SJKF; *Vulpes macrotis mutica*), the largest subspecies of the kit fox (*V. macrotis*), has been listed as an endangered species since 1967 and currently faces a range of stressors, including habitat destruction

and urbanization, predation, rodenticide toxicity, and infectious diseases. Endemic to the San Joaquin Valley region of California, the SJKF has adapted to urban environments, occupying university campuses, parks, and residential areas and sympatrically co-exists with other peridomestic wildlife and domestic animals living in these areas. To date, there is little research describing gastrointestinal parasitic infections of the SJKF, limiting our understanding of wildlife-pathogen interactions, disease transmission, potential for zoonotic parasite transmission, and types of infectious diseases that could impact conservation and management efforts. This study aimed to characterize and compare fecal parasites in urban and exurban SJKF populations to better understand wildlife-pathogen interactions and zoonotic parasite transmission. We found that exurban kit foxes were more likely to have gastrointestinal parasites compared to their urban counterparts. These preliminary findings suggest that foxes that inhabit exurban environments may have higher exposure to intestinal parasites than foxes that live within urban regions.

RELEASE OR TRANSLOCATION HABITAT FOR THE ENDANGERED BLUNT-NOSED LEOPARD LIZARD (*GAMBELIA SILA*)

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Blunt-nosed leopard lizards (*Gambelia sila*) are a federal and state endangered species and have fully-protected status in California. Until recently, this prevented issuance of incidental take permits for *G. sila* and thus translocation from project sites to protected areas. This restriction was recently loosened, and translocation may soon be permitted under some scenarios, In 2020, Fresno Chaffee Zoo received emergency permission to collect 7 lizards from Panoche Plateau to form a captive breeding colony and repatriate offspring back to Panoche Plateau, providing an opportunity to understand the conditions necessary for colonization or translocation. Over 2023 and 2024 we released 137 yearling (approximately 10-month old) lizards back to Panoche Plateau outfitted with radio-transmitters for post-release monitoring. High precipitation in 2022-2023 resulted in high cover of invasive annual grasses, drastically reducing habitat quality. We manually mowed 50 square meters plots around our 2023 release locations. Released lizards used less area than three remnant wild lizards at the plateau or lizards in a neighboring wild population despite mowing, likely because thatch still hindered movement. Instead of mowing in 2024, we selected release locations that had features heavily utilized by wild *G. sila* such as access to open ground, burrows, and shrubs for thermoregulation and predator protection. Although lizards released in 2024 had higher rates of predation, they used more area and behaved more naturally than lizards released in 2023. Our observations suggest that successful translocation of *G. sila* will require release sites to include the key features that we selected in 2024, and if thatch is present releases are unlikely to be successful.