San Joaquin Valley
Natural Communities Conference
March 26, 2015
Hodel's Country Dining, Bakersfield

Program and Abstracts

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San Joaquin Valley Chapter, The Wildlife Society
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San Joaquin Valley Natural Communities Conference
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Hodel's Country Dining

8:00 - 9:00	Registration	
9:00 - 9:10	Brian Cypher Larry Saslaw	Welcome to the Conference, Moderator Schedule details and announcements
9:10 - 9:30	David Germano	*Boom and Bust or Steady As She Goes: A Comparison of the Dynamics of Two Populations of Kangaroo Rats in the Southern San Joaquin Desert*
9:30 - 9:50	Craig Fiehler	*Long Term Population and Density Estimates for San Joaquin Kit Fox on the Carrizo Plain National Monument (2000-2014)*
9:50 -10:10	Dan Meade	*San Joaquin kit fox presence on and near Topaz Solar Farms, San Luis Obispo County*
10:10 - 10:30	Tory Westall	*Parental Care in Urban San Joaquin Kit Foxes (Vulpes macrotis mutica): Relative Roles of Adult Group Members in Pup Rearing*
10:30 – 10:50	BREAK	
10:50 - 11:10	Christopher Lortie	*Functional assessment of animal interactions with shrub- facilitation complexes: a formal synthesis and conceptual framework*
11:10 – 11:30	Troy Rahmig	*Western Kern County Conservation Gap Analysis*
11:30 – 1:00	LUNCH	***Registered participants will be served lunch.***
1:00 – 2:30		**Quick Talk Presentations**
	Larry Saslaw	Blunt-nosed leopard lizard habitat use in an oilfield landscape
	Erica Kelly	Scat tubes and track tubes to monitor Buena Vista Lake Shrews
	Erin Tennant	Status survey for Buena Vista Lake Shrew
	Vicky Monroe	Bears in Kern
	Sarah Tanuvasa	NRCS wildlife habitat cost-share programs
	Troy Rahmig	Update of Bakersfield Habitat Conservation Plan
	Jihadda Govan	Environmental Outreach at Atwell Island
	Steve Pruett	Kit Fox den activity at a Bakersfield Construction Site
	Tory Westall	Update on Sarcoptic Mange in Bakersfield Kit Foxes
	Bobby Kamansky	Funding Natural Resource Projects
	Taylor Noble	Blunt-nosed leopard lizard shrub use study
	Brian Cypher	Bakersfield Cactus conservation
		Follow up discussion on Quick Talks
2:30 - 2:50	Mike Westphal	*When things heated up: the drought of 2014 and the first blunt-nosed leopard lizard rangewide recruitment survey*
2:50 - 3:10	BREAK	
3:10 - 3:30	Pedro Garcia	*Effects of Urban Noise, Irrigation, and Socioeconomics On Bird Diversity and Abundance in a Semi-Arid California City*
3:30 - 3:50	Bobby Kamansky	*Mammal Records in Kings County along a Major Highway Corridor during Construction*
3.50 - 4:10	Vicky Monroe	*Wildlife management in Kern*
4:10 – 4:30	Johnny Grady	*The SoCalGas Quest for a Habitat Conservation Plan in the San Joaquin Valley*
Poster	Robyn Powers	*Canine Field Assistants at the Ivanpah Solar Electric Generating System: The Safe and Successful Use of Ecological Detection Dogs in Challenging Field Conditions*

Abstracts

Oral Presentations

Boom and Bust or Steady As She Goes: A Comparison of the Dynamics of Two Populations of Kangaroo Rats in the Southern San Joaquin Desert

David Germano, Department of Biology, California State University, Bakersfield, CA 93311-1022, (661) 589-7846, dgermano@csub.edu

Since August 1993, Larry Saslaw and I have trapped a population of Giant Kangaroo Rats (*Dipodomys ingens*, GKR) at an isolated site in the southern San Joaquin Desert of Kern County. We have trapped twice a year on a 144 trap grid and in the 22 y of trapping, we have seen two periods of high numbers of GKR (> 100 in a six-day session). The most recent peak (> 141 GKR per session) began in May 2010 and lasted until April 2012, with an all-time high of 174 individual GKR caught in May 2011. However, by September 2014, the numbers had dropped to two GKR. I also trap at the Buttonwillow Preserve, 20.6 km east of the GKR site. There are no GKR at this site but both Tipton Kangaroo Rats (*D. n. nitratoides*, TKR) and Heermann's Kangaroo Rats (*D. heermannii*, HKR) are caught using the same protocol as for the GKR plot. In contrast to the GKR site, numbers of TKR and HKR have fluctuated less. I have caught as many as 62 individual TKR and 47 HKR in a session (different sessions) but during the recent drought when GKR crashed, TKR and HKR numbers have remained fairly steady with 22 TKR and 11 HKR caught on the plot in September 2014. The GKR population attained such high numbers that, coupled with a drought since 2011, kangaroo rats ate virtually all the food at their site with no residual dry matter found in September 2014. At the Buttonwillow site, the smaller TKR and HKR, whose numbers did not spike up in the past five years, have not cleared their site of residual dry matter. Likely the seed reserve in the ground is still abundant enough to continue feeding kangaroo rats at the Buttonwillow site. More long-term trapping is needed at several other sites in the San Joaquin Desert with these three species to determine if these contrasting population dynamics are indicative of these species.

Long Term Population and Density Estimates for San Joaquin Kit Fox on the Carrizo Plain National Monument (2000-2014)

Craig Fiehler, California Dept. of Fish and Wildlife, P.O. Box 9442, Bakersfield, CA 93389, craig.fiehler@wildlife.ca.gov, (661) 335-2380; Co-Authors: Bob Stafford; Laura Prugh; Scott Butterfield; Brian Cypher

The Carrizo Plain has long been identified as a core recovery site for the endangered San Joaquin kit fox (*Vulpes macrotis mutica*). Since 2000, we have monitored kit fox populations in this region by conducting spotlight surveys on 109.1 km of roads on the

Carrizo Plain National Monument. We observed 2,471 kit foxes during these surveys and population estimates have ranged from a low of 65 during the fall of 2014 to a high of 1,788 during the summer of 2005 ($\bar{x}$ = 529.5). Mean kit fox density was estimated to be 0.01 foxes/hectare (range 0.001-0.035) over this time period.

The lack of precipitation over the past three years and associated reductions in small mammal populations appear to be a major factor in the decline in kit fox numbers on the Carrizo Plain. Given current population estimates, the national monument may not be large enough in isolation to retain a viable kit fox population during prolonged dry periods. Adjacent lands, that typically are wetter less optimal habitat, become more suitable during dry periods and therefore should be considered important refugia for the Carrizo kit fox population when addressing long term conservation strategies.

San Joaquin kit fox presence on and near Topaz Solar Farms, San Luis Obispo County

Daniel E. Meade, Jason Dart, Christine Van Horn Job, Brian Cypher, Tory Westall, Bill Vanherweg, Jacqueline Tilligkeit

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SJKF use of habitat on and around Topaz Solar Farms has been studied since 2008. Surveys found an uneven distribution of use by kit fox over the approximately 10,000 acre study area, with higher use in the southeastern portions where grassland was the predominant habitat. As project construction progressed from 2011 to present, additional tracking methods have been used to provide finer scale habitat use information. Nine VHS radio collared kit foxes were located three times daily as feasible during solar farm construction. Currently, kit foxes regularly utilize completed solar array fields, and additional individuals are present in the vicinity. SJKF use will continue to be tracked for five years post-construction with scat studies (annual population study) and for three years with GPS telemetry on up to 20 individual kit foxes. Information gathered will provide a measurement of SJKF use on and near this large PV solar facility.

Functional assessment of animal interactions with shrub- facilitation complexes: a formal synthesis and conceptual framework

Christopher J. Lortie, A. Filazzola, & D. Sotomayor

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Facilitation studies focus primarily on plants often neglecting the extended effects that spread through ecological networks. Plants interact with other organisms through consumptive effects and a myriad of non-trophic effects such as habitat amelioration or pollination. Shrubs are a dominant benefactor species in plant facilitation studies but can

also have direct and indirect effects/interactions with animals. Herein, we use a systematic review to address the following two objectives: (1) to propose a conceptual framework that explores these effects taking into consideration the functional roles of the interacting species, and (2) to formally review the current state of this field examining effects beyond the widely explored plant-plant interactions. This synthesis was explicitly structured to ensure that basal shrub-plant facilitation was included in some form with an animal species, and consequently a relatively limited number of studies have to date examined the importance of these two sets of coupled interactions (77 studies in total). From this set of studies, 34 studies documented positive plant interactions generating a total of 47 independent instances of shrub-plant-animal or shrub-animal-plant interactions. These sets of interaction pathways were relatively evenly split between direct (54%) and indirect (46%) shrub interactions with animals. Hypotheses frequently tested included seed trapping, herbivore protection, magnet pollination effects, and facilitation-mediated secondary seed dispersal. The most common functional role of shrubs was herbivore protection, and the most common animal role associated with plant-facilitation complexes was that of a consumer. However, animals also frequently provided direct positive effects including secondary seed dispersal and pollination. The implications of nested complexes of shrub-plant facilitations are thus largely unexplored particularly in their capacity to scale to other taxa or trophic levels even from the relatively simple sets of interactions summarized in this review. None of these studies explored bidirectional plant-animal interactions, used a network approach to describe the interaction sets that included plant facilitation, nor contrasted interaction strengths. Nested and multi-trophically integrated sets of experiments incorporating plant facilitation into community dynamics are thus critical in advancing management of high-stress ecosystems.

Parental Care in Urban San Joaquin Kit Foxes (*Vulpes macrotis mutica*): Relative Roles of Adult Group Members in Pup Rearing

Tory L. Westall, Brian L. Cypher, Katherine Ralls, David J. Germano

Tory L. Westall, California State University, Stanislaus, Endangered Species Recovery Program, twestall@esrp.csustan.edu

The San Joaquin kit fox (*Vulpes macrotis mutica*) is Federally listed as Endangered and State listed as Threatened because of extensive habitat degradation and loss. A substantial population of San Joaquin kit foxes are known to reside in Bakersfield, California. Kit fox family groups typically consist of a mated pair, the young-of-the-year, and occasionally older offspring from previous years. The relative contributions of the parents and older offspring to the rearing of young are unknown in the urban environment. Our objectives were to determine the following: the relative time investment by each adult group member to pup rearing (den attendance); the tasks performed by each adult group member in pup rearing (e.g., provisioning, guarding, etc.); and the chronology of participation and tasks performed by adult group members in pup rearing. We classified group members into three categories (Mother, Father, and Helper) and monitored for three periods of the breeding season (Preparturition, Nursing, and Weaned). Our results indicated no significant difference in den attendance between periods, but there was a significant difference in den attendance by role. Mothers spent significantly more time at the den than either Fathers or Helpers. Mothers and Fathers

had no significant difference in the number of provisioning events, but both provisioned significantly more than Helpers. Not surprisingly, Mothers play a critical role in pup rearing and provide the most direct care to young, while Fathers search for food to provision Mothers and pups. Helpers in the urban setting did not contribute significantly to pup care and were only tolerated in their natal range because of a super abundance of food. Further research should investigate the role of Helpers in a natural setting to determine the benefit they may have to pups.

When things heated up: the drought of 2014 and the first blunt-nosed leopard lizard rangewide recruitment survey

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Assessing the future impacts of global warming requires both theoretical modeling but also the input of empirical data. Opportunities to collect relevant empirical data may be unexpected and difficult to exploit in a short time frame. Robust partnerships may provide a framework for rapid-response data collection when novel opportunities arise. The extreme drought of 2014 provided a unique opportunity to test models of persistence in the face of climate change in the endangered blunt-nosed leopard lizard, *Gambelia sila*. Due to an existing partnership between the Bureau of Land Management, California Department of Fish and Wildlife, the Nature Conservancy, and UC Santa Cruz, personnel were able to mobilize within a matter of days when preliminary data suggested that lizards were not recruiting in some populations. By conducting rigorous surveys, field workers were able to gather meaningful data from over 20 sites within the narrow window when neonate lizards could be observed, resulting in a dataset that confirmed a strong causal link between drought and recruitment in on *Gambelia sila* and also provided a geographic visualization of the drought x recruitment interaction. We propose that the relevant factors that contributed to the success of the rapid response survey were:Pre-established partnerships, including active cross-institutional funding mechanisms; key personnel with appropriate training; and existing lines of communication.

Effects of Urban Noise, Irrigation, and Socioeconomics On Bird Diversity and Abundance in a Semi-Arid California City

Pedro Garcia, M. Katti

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Ecological and socioeconomic variables must be combined to explain the composition, distribution, and population dynamics of urban wildlife. We have shown that property value and yard irrigation drive plant and bird diversity in Central California's Fresno-Clovis Metro Area (FCMA). Here we focus on how four local scale factors—anthropogenic noise, property value, proximity to wetspace (flood control basins), and greenspace (parks)—affect bird abundance and species richness. We analyzed bird counts (at 67 random points) for the years 2013 and 2014, following protocol of the Fresno Bird

Count, with concurrent noise level measurements, Zillow property value zestimates, and distance to nearest greenspace and wetspace.
Of all local scale factors, property value had a significant effect on both bird richness (R^2=0.13, p=0.0002) and abundance (R^2=0.17, p<0.0001) while anthropogenic noise had a significant effect (R^2=0.07, p=0.038) on only bird richness in the year 2014. While socioeconomics explain bird diversity across FCMA, local (within city) variation in diversity is driven by behavioral (noise) variables. We intend to continue looking at landscape (green or wet spaces) level variables, as they have been shown in similar studies of other cites to also be determinants in variation of bird diversity. While more food in cities increases bird populations, species composition is more sensitive to noise and landscape factors other than food. Urban ecology research and policy must take more multiscale, multivariate, landscape-based, and taxon specific approaches to better manage cities for biodiversity.

Mammal Records in Kings County along a Major Highway Corridor during Construction

Bobby Kamansky, Principal Biologist, Kamansky's Ecological Consulting, Biology Professor, College of Sequoias, Visalia, California, bobinator1@hotmail.com

Little information exists about transportation and public infrastructure projects' construction on local biota. This study summarizes observations and findings from four months of surveys along Highway 41 west of Highway 5 in Kings County, measures employed to avoid impacts and species observations. Highway rights of way in this part of California harbor surprising diversity and abundance of mammals, many of which are rare, protected or listed under the federal or state endangered species acts.
The area is known to harbor a rich mammalian fauna. Biologists detected at least five clusters of San Joaquin kit fox dens (*Vulpes macrotis mutica*) which were monitored and collapsed in consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. Several deep dens were made into the existing road fill material. Biologists also observed at least 22 American badger dens within 200 feet of the roadway in at least four clusters of dens. One den was within 10 feet of the roadway. While only San Joaquin whipsnake (a single adult, *Coluber flagellum ruddocki*) and coyote were found dead on the road, coyotes are noteworthy in light of the abundance of kit foxes because they are known to prey on them. However, new oil well was dug during the construction window which may have pushed at least the kit foxes in the direction of the construction. These records provide information about proper avoidance measures during construction, animal behavioral patterns and wildlife use along major highways.

Western Kern County Conservation Gap Analysis

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Natural land cover types in western Kern County, once prevalent, have been continually converted to other land uses over the last 100 years. Today conversion of natural land covers is as prevalent as ever. However, many natural land cover are protected. The level

of protection on these lands varies, and multiple-use missions of land owners can compromise the functionality of the natural areas for native species. As part of the Bakersfield Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) an analysis was completed to categorizes the protected lands in western Kern County into four categories, dependent on the permanence of protection and the management objectives for the land. It assesses the level and type of protection in place for each natural land cover type relative to their abundance in the study area. This study proposes goals for protection of natural communities in western Kern County based on their rarity and risk of future conversion to other land uses and provide recommendations for protection priorities. The Bakersfield HCP/NCCP will contribute to these habitat protection goals over the next 30 years.

Black Bears of Kern

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Kern County saw a dramatic spike in bear activity in 2014. More than 1,300 bear calls were made to CDFW throughout Kern County, with a total of 15 bears captured and relocated. CDFW received 108 black bear calls and/or sightings within Bakersfield city limits. In previous years, bear sightings in Bakersfield have only been reported once or twice a year. Several complex factors have lead to a significant increase in reported human-wildlife conflicts. While the causes of the increase in black bear activity are myriad, the drought has had a significant impact, as the lack of water forced bears to roam further in search of food sources.

The SoCalGas Quest for a Habitat Conservation Plan in the San Joaquin Valley

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SoCalGas is the nation's largest natural gas service provider, connecting 5.8 million meters in more than 500 communities in Southern California. Within the San Joaquin Valley (SJV), SoCalGas operates and maintains 1,400 miles of transmission and distribution pipeline over diverse terrain and vegetation communities including vernal pool, grassland, scrub, riparian, and woodland. In February 2015, SoCalGas submitted a Habitat Conservation Plan (SJV HCP) in support of an application for an incidental take permit from the U.S. Fish and Wildlife Service, pursuant to Section 10(a)(1)(B) of the Endangered Species Act. The permit is requested for 30 years and covers 21 species of special status plants and animals known from the 5.9 million-acre Plan area. By protecting and conserving the covered species and their habitats, the SJV HCP ensures compliance with the Endangered Species Act as SoCalGas continues to provide long-term natural gas service to its customers.

Poster

Canine Field Assistants at the Ivanpah Solar Electric Generating System: The Safe and Successful Use of Ecological Detection Dogs in Challenging Field Conditions.

Robyn M. Powers, H.T. Harvey & Associates, Cal Poly Technology Park, Bldg. 83, Mt. Bishop Rd., San Luis Obispo, CA 93407, rpowers@harveyecology.com, 805-756-7423; Co-authors: Katherine Ayres; Murrelet Halterman; Daniel Duke; and Brian B. Boroski

H. T. Harvey & Associates recruits, trains, and deploys ecological scent-detection dogs and handlers to survey for a variety of wildlife species. Our skillfully trained dogs, capable of discriminating a vast amount of olfactory information, can provide improved search efficiency for some wildlife studies, particularly in environments where the limitations of human vision present challenges. The Harvey Dog Program is currently assisting in avian fatality searches at the Ivanpah Solar Electric Generating System near Nipton, CA. The 3,500-acre site was constructed in a manner that retains native vegetation, dominated by creosote bush and white bursage, which can potentially obstruct the view of human surveyors. The dogs have demonstrated proficiency in finding evidence of avian fatalities when specimens are small, camouflaged, or completely hidden from view. Through careful scheduling and cooling equipment, our dogs safely surveyed through the summer months when daily maximum temperatures averaged 102 degrees Fahrenheit. Approaches that increase searcher efficiency, which improve the precision of fatality estimates, are an important consideration when designing and conducting avian fatality studies. The application of this technique and other novel approaches that improve the precision of estimates should be further explored to aid fatality assessments and inform management decisions based upon these studies.