

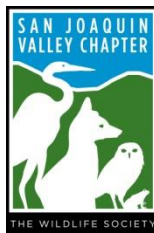
**San Joaquin Valley
Natural Communities Conference
March 17, 2016
Hodel's Country Dining, Bakersfield**

Program and Abstracts



Sponsored by

**San Joaquin Valley Chapter, The Wildlife Society
Colibri Ecological Consulting**



San Joaquin Valley Natural Communities Conference
March 17, 2016
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	Randi McCormick	<i>Blunt-nosed leopard lizard surveys on Tejon Ranch in 2015</i>
9:30 - 9:50	Jonathan Richmond	<i>Wholesale land conversion in California's San Joaquin Desert fails to erase genetic signals of historic metapopulation structure in the endangered blunt-nosed leopard lizard <i>Gambelia sila</i></i>
9:50 -10:10	Larry Saslaw	<i>Daily movements and home ranges of blunt-nosed leopard lizards based on radio telemetry observations</i>
10:10 - 10:30	Dan Meade	<i>San Joaquin kit fox habitat utilization at a large-scale solar facility</i>
10:30 – 10:50	BREAK	
10:50 - 11:10	Dave Hacker	<i>Giant Kangaroo Rat Distribution and Slope Selection in the Panoche Valley</i>
11:10 – 11:30	Jeff Davis	<i>Using Mobile Apps for Wildlife and Botanical Fieldwork</i>
11:30 – 12:30	LUNCH	<i>Registered participants will be served lunch.</i>
12:30 – 1:10		Quick Talk Presentations
	Craig Fiehler Camdila Wirth Brian Cypher Ryan Lopez Dianna Grosso Kris Robison Skip Moss	<i>Damage resistant mounting system for remote cameras in areas with elk and cattle Sequoia Riverland Trust in the Carrizo Plains Update on the sarcoptic mange epidemic among San Joaquin kit foxes in Bakersfield Mojave ground squirrel survey results An Introduction to the CDFW, Office of Spill Prevention and Response TWS San Joaquin Valley Chapter Hobby use of drones for ecologists</i>
1:10 – 1:30	Mike Westphal	<i>Grasshopper abundance and blunt-nosed leopard lizard habitat during a drought</i>
1:30 - 1:50	Felix Ratcliff	<i>Using Ecological Sites and State-and-Transition models to plan for wildlife conservation management at the Tejon Ranch, California</i>
1:50 - 2:10	Chris Lortie	<i>The importance of positive plant interactions for ecosystem function in the San Joaquin Desert</i>
2:10 - 2:30	Mary Whitfield	<i>Ongoing Research in the Kern River Valley, CA.</i>
2:30 - 2:50	Jenna Stenek	<i>A Tricolored Blackbird restoration project in the Kern River Valley</i>
2.50 - 3:10	BREAK	
3:10 - 3:30	Andy Krause	<i>Reliability in Automated Identification within Acoustical Detection Systems for Chiroptera.</i>
3:30 – 3:50	Danielle Temple	<i>Case Studies of Bat Mitigation Measures Due to Construction Activities at Seven Bridges within the Central Valley</i>
3:50 – 4:10	Ryan Lopez	<i>Drought and life history of California tiger salamanders in vernal pools of the Southern San Joaquin Valley geographic region</i>
4:10 – 4:30	David Lee	<i>Eyesore or oasis? Managing raptor nests in SJV cell towers</i>
4:30-4:50	Erin Tennant	<i>Statewide Swainson's Hawk (<i>Buteo swainsoni</i>) Inventory and Trend Analysis</i>
4:50	Brian Cypher	<i>Why it's fun to be a conservation biologist</i>

Abstracts

Oral Presentations

BLUNT-NOSED LEOPARD LIZARD SURVEYS ON TEJON RANCH IN 2015

Randi McCormick, McCormick Biological, Inc. P.O. Box 80983, Bakersfield, CA 93380, Office: (661) 589-4065; Cell (661) 343-1078

Surveys to detect Blunt-nosed leopard lizard (*Gambelia sila*, BNLL) were conducted following methods modified from CDFG (2004) in nine pastures within potential BNLL habitat on Tejon Ranch in 2015. A series of sample plots were established and surveyed on foot by two surveyors in nine pastures along the lower elevations of the Ranch, between State Route 58 and Edmonston Pumping Station. Driving surveys were also conducted between plots and on selected existing access roads. Over 15 survey days (no more than 5 per pasture) spread throughout May, June, July, August, and September, 27 BNLL observations were recorded in four pastures. Standardization of methods will allow the Tejon Ranch Conservancy to repeat surveys and assess BNLL presence and population trends, as well as evaluate trends associated with other reptile species present.

WHOLESALE LAND CONVERSION IN CALIFORNIA'S SAN JOAQUIN DESERT FAILS TO ERASE GENETIC SIGNALS OF HISTORIC METAPOPOPULATION STRUCTURE IN THE ENDANGERED BLUNT-NOSED LEOPARD LIZARD *GAMBELIA SILA*

Jonathan Q. Richmond^{1*}, Dustin A. Wood¹, Michael F. Westphal², Lawrence R. Saslaw³, and Robert N. Fisher¹

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Large portions of California's San Joaquin Desert have undergone near complete land conversion over the past century and a half, leading to the disappearance of several large lakes, wetlands, extensive xeric habitats, and the decline of numerous endemic species. Although many of these endemic species are threatened or endangered, little is known about how these rapid changes to the landscape may have adversely affected their

population genetics. In this talk, I will present results from a range-wide genetic study on one of the San Joaquin Desert's most iconic endangered species, the blunt-nosed leopard lizard *Gambelia sila*, which currently occupies <15% of its historic range and continues to experience threats to remaining habitat. A main goal of this work was to test whether genetic signals in contemporary *G. sila* populations are more consistent with habitat configurations of the historical landscape, or whether they better reflect the converted landscape in which suitable habitat is highly fragmented and less extensive than in the recent past. We used three different datasets (mitochondrial gene sequences, microsatellite allele frequencies, and restriction-associated digest sequence data) to elucidate different aspects of population history at different time scales, and to explore genetic interactions with the closely related long-nosed leopard lizard *Gambelia wislizenii* in the Cuyama River Valley. I will describe several important findings of this work and discuss its relevance to future management of the species, which up to now has been largely uninformed by genetics.

DAILY MOVEMENTS AND HOME RANGES OF BLUNT-NOSED LEOPARDS BASED ON RADIO TELEMETRY OBSERVATIONS

Larry R. Saslaw, Davis J Germano, and Taylor Noble

Larry Saslaw, Endangered Species Recovery Program, lsaslaw@esrp.csustan.edu, 661-706-2673

A study was initiated in 2015 to evaluate blunt-nosed leopard lizard habitat use in an oilfield landscape near McKittrick, CA. A total of 45 blunt-nosed leopard lizards (25 males and 20 females) were captured on two study sites. Thirteen males and 10 females and 12 males and 10 females were captured and telemetered at the oilfield and reference sites, respectively. Daily movement patterns, daily movement distances and minimum convex hull ranges for individuals will be presented. Movement patterns and ranges within the oilfield facilities will also be discussed.

SAN JOAQUIN KIT FOX HABITAT UTILIZATION AT A LARGE-SCALE SOLAR FACILITY

Daniel E. Meade, Brian Cypher, Jason Dart, Christine Van Horn Job, Tory Westall, Erica Kelly, Ken Spencer, Jacqueline Tilligkeit

San Joaquin kit fox (SJKF) use of habitat on and around Topaz Solar Farms has been studied since 2008 over an approximately 10,000 acre study area. A combination of annual scat surveys and radio collars has allowed tracking of kit fox individuals, locations, and habitat use. We present data from the first full year of post-construction kit fox tracking and the first year of GPS collar data. Currently, kit foxes regularly utilize completed solar array fields, and additional individuals are present in the vicinity. SJKF continue to be tracked post-construction with scat studies for five years and with GPS telemetry on up to 20 individual kit foxes for three years. Information gathered will provide a measurement of SJKF use on and near this large PV solar facility, and could help inform management decisions on future large-scale energy projects.

GIANT KANGAROO RAT DISTRIBUTION AND SLOPE SELECTION IN THE PANOCHE VALLEY

Dave Hacker. California Department of Fish and Wildlife.
Randi McCormick. McCormick Biological, Inc.

Surveys for Giant kangaroo rat (*Dipodomys ingens*, GKR) sign were completed in 2013 across approximately 26,000 acres in the Panoche Valley, Panoche Hills, and Little Panoche Valley. In a GIS, the results were overlaid with slope data and prior distribution data. GKR distribution was found to have expanded well beyond the extent that Dan Williams documented in the early 1990s. Areas colonized by GKR since the 1990s included uncultivated rangelands and formerly cultivated lands. The mean slope value where GKR sign was found was significantly less than where GKR sign was not found. Although GKR sign was found in areas exceeding Williams' estimated maximum of 21 degrees slope, we found a strong inverse relationship between GKR sign and slope. GKR abundance decreased rapidly as slopes exceeded approximately 8 degrees, or 14%.

USING MOBILE APPS FOR WILDLIFE AND BOTANICAL FIELDWORK

Jeff Davis; Colibri Ecological Consulting, 11238 N Via Trevisio Way, Fresno, CA 93730; 559-246-3272; jdavis@colibri-ecology.com

If you are like me, you might wonder how you used to function without your mobile phone. The ability to look up answers to questions on demand, take photos whenever and wherever, and deposit checks without physically going to a bank are just some of the numerous features I appreciate about this device. The mobile phone has also revolutionized the way in which we carry out wildlife and botanical fieldwork. This singular device has replaced standalone topo maps, soil maps, compasses, GPS units, field guides, audio recording and playback systems, cameras, rulers, measuring tapes, flashlights, datasheets, calculators, manual tally counters, stopwatches, timers, pens and pencils, sunrise and sunset charts, and more. Some mobile apps, though, are better than others. In this 5-minute talk I will discuss those that I have found to be especially useful for wildlife and botanical fieldwork.

GRASSHOPPER ABUNDANCE IN BLUNT-NOSED LEOPARD LIZARD HABITAT DURING A MAJOR DROUGHT

Michael Westphal; US Bureau of Land Management; 20 Hamilton Court, Hollister, CA, 95023; 8316305000; mwestpha@blm.gov; **Erin Tennant; Jennifer Michalski; Karin Middleton; Michael Powers**

Observed variation in numbers of blunt-nosed leopard lizard neonates in 2014 following a multi-year drought suggested that winter precipitation plays a role in lizard reproduction and recruitment. One potential causal link between precipitation and lizard recruitment is grasshopper abundance, which is expected to be higher when productivity is high. We gathered preliminary data to assess the abundance of

grasshoppers over the leopard lizard breeding season at multiple sites occupied by leopard lizards. We found significant temporal variation over the course of the seven month breeding period at all sites, and a shared pattern of early season high abundance, a mid-summer drop in abundance, and a rise in abundance in the fall. The pattern tracks the observed activity pattern of leopard lizards, where individuals are highly active in spring and early summer, absent in mid-to late summer, and active again in the fall. We interpret our findings as providing support for the hypothesis that grasshopper abundance partially mediates seasonal lizard activity.

USING ECOLOGICAL SITES AND STATE-AND-TRANSITION MODELS TO PLAN FOR WILDLIFE CONSERVATION MANAGEMENT AT THE TEJON RANCH, CALIFORNIA

Felix Ratcliff (UC Berkeley), James Bartolome (UC Berkeley), Michael White (Tejon Ranch Conservancy)

Felix Ratcliff: PhD Candidate, UC Berkeley. Department of ESPM, U.C. Berkeley, 140 Mulford Hall #3114, Berkeley, CA 94720-3114. felixratcliff@berkeley.edu

Rangeland managers are often required to simultaneously manage multiple resources and enhance ecosystem services; often balancing livestock production and other land uses with biological conservation. Ecological Site and accompanying State-and-Transition models provide rangeland managers a predictive modeling framework for understanding drivers of vegetation change in spatially and temporally variable arid rangelands, however wildlife community dynamics are typically omitted from these models. Since 2013, we have worked in riparian areas of the Tejon Ranch in Southern California to develop Ecological Site and State-and-Transition models and to determine how these models can best be used to predict wildlife community dynamics and plan for wildlife conservation. We collected wildlife occurrence data from camera traps deployed at 15 different creek reaches in the San Joaquin Valley portion of the Ranch. As of June 2015 we reviewed 60,000 30-second videos from two years of year-round camera trapping, resulting in detection of 14 medium and large mammal species in 28,000 videos. Initial analysis of this camera trap data indicates that there is variation in mammal communities between study sites and that this variation can largely be explained by differences in the ecological site and vegetation state at a given creek reach. Future work will include investigating links between differences in wildlife communities and differences in structural aspects of riparian vegetation in the vegetation states, and creating predictive models linking changes in vegetation state to changes in wildlife communities that can be used for planning wildlife conservation management.

THE IMPORTANCE OF POSITIVE PLANT INTERACTIONS FOR ECOSYSTEM FUNCTION IN THE SAN JOAQUIN DESERT

Christopher J. Lortie, Scott Butterfield, Michael Westphal, Alex Filazzola, Taylor Noble, Ally Ruttan, and Amanda Liczner.

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The ecological theory of positive interactions has become a powerful tool in understanding, predicting, and designing experiments associated with community structure. Positive interactions can shape biodiversity and mediate important ecosystem functions. These functions frequently translate into important services for humans in arid and semi-arid ecosystems. In deserts, a simplification has been to treat the matrix of vegetation as shrub or open. This ‘two-phase’ model or short cut reduces complexity but nonetheless structures many successful and meaningful contrasts for deserts and other harsh ecosystems. In the San Joaquin Desert, a geographically dispersed but integrated set of experiments have been deployed to examine the capacity for positive plant interactions to improve ecosystem function for the region. A micro-environmental array in the Cuyama Valley is currently measuring the resilience of shrub-understory plant associations to resist key drivers of global change. A manipulative experiment is in its first year examining the consequences loss of *Ephedra californica* at Panoche Hills Ecological Reserve on animals. The population dynamics and behavior of the blunt-nosed leopard lizard is being monitored at the Carrizo National Monument using the same two-phase methodology. Pollinator dynamics associated with shrubs relative to open microsites are being recorded at the southern of the San Joaquin Desert to explore the importance of floral resource islands that shrubs provide. Finally, a distributed, large-scale regional survey is active across the entire range of the desert to examine the importance of the presence, size, and condition of *Ephedra californica* on other plant species. These are critical first steps in better understanding the relevance of positive interactions and foundation species within the San Joaquin Desert. However, expansion to other taxa and connections to other data and research within the region to appropriately frame the relative scope of this simple approach will dramatically accelerate our capacity to make better informed decisions for restoration.

ONGOING RESEARCH IN THE KERN RIVER VALLEY, CA

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The Southern Sierra Research Station is a small non-profit organization based in Weldon, Kern County. We have a number of ongoing long-term research projects in the Kern River Valley. These projects include work with Southwestern Willow Flycatchers, Yellow-billed Cuckoos and Flammulated Owls. Our Willow Flycatcher research was initiated to investigate the factors that affect the reproductive success and population size of Southwestern Willow Flycatchers on the South Fork Kern River. It has now expanded into examining other aspects of flycatcher biology, breeding bird population trends, as well as cowbird control methods. The Yellow-billed Cuckoo research has primarily

examined population trends, but has looked at other components of cuckoo ecology as well. Lastly, we have conducted surveys for Flammulated Owls in the various mountain ranges surrounding the Kern River Valley; we also hung up and monitored 73 nest boxes in the Greenhorn and Breckenridge Mountain Ranges. In this talk I briefly summarize our research on Willow Flycatchers, Yellow-billed Cuckoos and Flammulated Owls.

A TRICOLORED BLACKBIRD RESTORATION PROJECT IN THE KERN RIVER VALLEY

Jenna Stenek, Southern Sierra Research Station, 7872 Fay Ranch Road' P.O. Box 1316 Weldon, CA 93283. (760) 378-3345' www.southernsierraresearch.org

A small population of Tricolored Blackbirds inhabit the Kern River Valley (KRV) year round and unlike the majority of habitat used by these birds in California, the habitat used in the KRV is primarily native and natural. In 2014, the Southern Sierra Research Station, Kerncrest Audubon, Kern Audubon and multiple partners collaborated to enhance, create, and protect wetland areas at three locations in the Kern River Valley to specifically benefit Tricolored Blackbirds. For this presentation we will discuss the progress, approach, lessons learned, and the significance of this restoration project.

RELIABILITY IN AUTOMATED IDENTIFICATION WITHIN ACOUSTICAL DETECTION SYSTEMS FOR CHIROPTERA

Andrew Krause, Project Biologist, Padre Associates, Inc., 3500 Coffee Road, Suite B, Bakersfield, CA. 661-829-2686, Ext. 302 akrause@padreinc.com

Studying animals in the field today, one objective in today's studies of various animal species is to be minimally invasive. Bats were always an exception, as there was no way to make assessments without mist-netting and handling of species. With today's technological advancements in acoustical detectors, a visual image of a bat's echolocation can now be produced in the form of a sonogram. These visual images can then be used to identify the various species of bats. These detectors allow for active monitoring as well as remote monitoring with data logging capabilities. Species identification is becoming more crucial in an effort to properly identify species, especially species such as the Townsend's big-eared bat which is now a state listed candidate for threatened or endangered status. With the introduction of White-nose syndrome, more species may be added to that list. Given the variety of software programs available for acoustical analysis, many of these have some sort of automated species identification feature. This produces information in various analytical forms, like an Excel spreadsheet, that gives a list of species detected and quantity of calls identified. We will take a look at these software programs, the difference between zero-cross and full-spectrum detectors and how reliable the automated species identification systems are.

CASE STUDIES OF BAT MITIGATION MEASURES DUE TO CONSTRUCTION ACTIVITIES AT SEVEN BRIDGES WITHIN THE CENTRAL VALLEY

Danielle Temple, Curtis Uptain, and Martina Pernicano. Quad Knopf, Inc. 901 East Main Street, Visalia, CA 93292. daniellet@quadknopf.com.

The California Department of Transportation (Caltrans) is charged with maintaining the extensive highway system in California and they also assist County and City governments with installing and maintaining roadways and other transportation infrastructure through their Local Assistance Program. Bridges constructed over canals, streams, and overpasses within the Central Valley likely support more roosting bats than any other structure type – natural or manmade. Bridges are a crucial resource for bat populations in the Central Valley, where few other options remain for roosting bats. The maintenance and replacement of bridges associated with seismic retrofitting, road widening, new road and trail construction, and other upgrades present unique challenges and opportunities for the protection of bat populations. Quad Knopf biologists have assisted Caltrans and other agencies implement bat protection measures at 7 bridges in Tulare, Kern, Fresno, Madera, and Plaster counties. We provide case-study examples of how Caltrans and County and City Road Departments are in a unique position to provide substantial protections and benefits to many species of bats, including large maternity colonies.

DROUGHT AND LIFE HISTORY OF CALIFORNIA TIGER SALAMANDERS IN VERNAL POOLS OF THE SOUTHERN SAN JOAQUIN VALLEY GEOGRAPHIC REGION

Ryan Lopez; Wildlands; 559-367-2869; rlopez@wildlandsinc.com;

The California Tiger Salamander (*Ambystoma californiense*, "CTS") is a long-lived (10 or more years) federally Endangered and state threatened amphibian whose range extends from the eastern foothills of the Sierra Nevada, west to the outer coast range. Despite an increasing understanding of CTS life history range wide, variations in life history strategies are poorly understood. Located near the southern extent of CTS range in the Southern San Joaquin Valley Geographic Region, the Sand Creek Conservation Bank ("SCCB") contains approximately 527 acres of CTS habitat including 22.63 acres of vernal pools and swales. Being just outside the San Joaquin Desert, we predict that the life history of CTS on the SCCB varies from northern, more mesic-climate populations in terms of breeding regularity and magnitude of breeding events. CTS monitoring was conducted as required by the SCCB Long-Term Management Plan since 2005. To better understand SCCB CTS breeding dynamics, beginning in the winter-spring of 2014-2015 and continuing for an expected 3 years, Wildlands will conduct CTS surveys and hydrologic monitoring to characterize the CTS breeding ponds of a natural vernal pool ecosystem within the San Joaquin Desert.

EYESORE OR OASIS? MANAGING RAPTOR NESTS IN SJV CELL TOWERS

David Lee, Senior Biologist, Davey Resource Group (DRG)
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David Lee, an urban wildlife biologist, has been surveying cell tower sites in the San Joaquin Valley since 2013. He has located dozens of raptor, raven and songbird nests in and around cell towers. In his talk, David will provide photos of tower nests, background on nesting bird compliance, details on survey methods and mitigation strategies for active nests.

Statewide Swainson's Hawk (*Buteo swainsoni*) Inventory and Trend Analysis

Erin Tennant¹, John Battistoni¹, David Wright², Stacy Anderson², Carie Battistone³, and Krista Tomlinson¹

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3 = California Department of Fish and Wildlife, Wildlife Branch, Nongame Program, Sacramento, CA

Abstract:

Swainson's hawks (*Buteo Swainsoni*; *SWHA*) were once one of the most common *Buteos* nesting in California and historic estimates suggest there were once over 17,000 nesting pairs in the state. However, by 1979 this species had been extirpated throughout portions of its range and the statewide population declined by more than 90%. The statewide decline, attributed largely to habitat conversion, water channelization, and urbanization, led to a state threatened listing in 1983. Since listing, interest in SWHA has grown considerably and there has been an increased survey effort throughout the state. A 2006 rigorous statewide survey and intensive northern Central Valley surveys in 2009 documented an overall increase in the SWHA population, which is currently estimated at 2,251 pairs. Several reports have also indicated that SWHA are increasing in the southern San Joaquin Valley. In 2014, the California Department of Fish and Wildlife sought funding to replicate the 2006 statewide survey in order to assess population status using comparable sampling methods. We will discuss this two year statewide inventory and trend analysis project, which is currently underway. We will focus on the southern San Joaquin Valley portion of the project, which will attempt to provide a baseline for SWHA distribution and abundance in this area.

Poster

COCCIDIOIDOMYCOSIS IN RESCUED MARINE MAMMALS

Jazmine Mejia Muñoz^{1*}, Shawn Hannah^{2*}, Heather Liwanag², Gitte McDonald³, Catherine Mulcahy⁴, Tenaya Norris⁴, Shawn Johnson⁴, Lauren Palmer⁵, and Antje Lauer¹

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²California Polytechnic State Institute (Cal Poly), Dept. of Biological Sciences, San Luis Obispo, California 93407

³Moss Landing Marine Laboratories, Moss Landing, 8272 Moss Landing Rd., Moss Landing, CA 95039

⁴The Marine Mammal Center (TMMC), 2000 Bunker Road, Fort Cronkhite, Sausalito, CA 94965-2619

⁵Marine Mammal Care Center at Fort McArthur, 3601 S Gaffey St, San Pedro, CA 90731

Coccidioidomycosis is suspected to be the number one fungal infection among stranded marine mammals in California. However, nothing is known about differences in prevalence of the disease in pinnipeds along California's coast, how the disease affects rehabilitation of stranded animals, or if some age groups are more vulnerable than others. Arthroconidia from the soil-dwelling fungal pathogen *Coccidioides* spp. can become airborne when soil is disturbed in endemic areas and subsequently transported by the wind to non-endemic areas, including California's coast, e.g. by strong Santa Ana winds in the fall. We hypothesize that California Sea Lions and other pinnipeds rescued by the Marine Mammal Centers (MMC) closest to the Southern San Joaquin Valley, known as a hot spot for coccidioidomycosis, will have a higher incidence of the disease compared to animals rescued further north. In our ongoing project, we included animals of all age groups, and both sexes, which were rescued at several MMCs along California's coast. By performing immunodiffusion assays we have detected IgG and IgM antibodies against the pathogen in about 10% of all blood sera from predominantly adult and sub adult California Sea Lions rescued in Sausalito and San Pedro (n=134 California Sea lions, n=16 northern fur seals), indicating acute coccidioidomycosis. Our work indicates that coccidioidomycosis should be considered as a major reason of sea mammal strandings along California's coast; however more samples need to be investigated.