

Symposium Title: Challenges and Opportunities Managing and Monitoring Wildlife Across Conservation Plans in the South Coast Ecoregion of Southern California

Large-scale conservation programs for wildlife have been in progress in the South Coast Ecoregion since the mid-1990's. These plans facilitate land development in agreed upon areas in exchange for the conservation of a connected, landscape scale preserve system designed to maintain specific sensitive plant and animal species and vegetation communities. Challenges exist in managing and monitoring these sensitive resources, which often occur on reserves surrounded by urban areas or in locations where there is a strong demand for public recreation. Moreover, each conservation plan has slightly different requirements for land management and biological monitoring and, in some plan areas, each landowner is responsible for implementing their own projects using existing internal or grant funds. Partners from the various planning areas in the South Coast Ecoregion are coordinating to develop and implement regional monitoring studies for species and vegetation communities that overlap plan boundaries to better understand and manage threats at a larger scale, to provide more efficiencies in implementation, and to share project data. This symposium will focus on three themes with regards to managing and monitoring within and across conservation plans: (1) an overview of the regulatory framework, plan boundaries, species and vegetation communities included, implementation process, and region-wide collaboration and tools; (2) examples of regional monitoring studies and; (3) challenges of managing threats originating from the urban areas. Each of the speakers has extensive experience in conservation management and/or monitoring in Southern California. Through this symposium, we will highlight the challenges and opportunities of managing and monitoring sensitive resources in the South Coast Ecoregion.

Opening Remarks and Introductions:

Robert Fisher (co-moderator), US Geological Survey, Western Ecological Research Center,
Yvonne Moore (co-moderator), San Diego Management and Monitoring Program

Speakers:

(1) Overview of Conservation Planning in the South Coast Ecoregion and the Challenges and Opportunities for Regional Collaboration

Susan Wynn (presenter), US Fish and Wildlife Service

Abstract:

California is a biodiversity hotspot, with more endangered, threatened and rare species than in any other state. In the rapidly urbanizing areas of San Diego, Riverside, and Orange Counties, local jurisdictions have partnered with the wildlife agencies to develop and implement large-scale Natural Community Conservation Planning (NCCP) programs to protect, manage, and monitor sensitive plant and animal species and vegetation communities. Land acquisition, management, and monitoring in each plan area is well underway and there are now opportunities for collaborations across plan boundaries to provide efficiencies in implementation and to collect data at a regional scale to better inform management. This presentation will provide an overview of the plan areas in the South Coast Ecoregion, regulatory framework, species and vegetation communities conserved, and the challenges of scaling up monitoring and management to the ecoregion scale.

(2) Management and Monitoring Strategic Plan (MSP) for Conserved Lands in Western San Diego County and the MSP Portal

Yvonne Moore (presenter), Kris Preston, Trish Smith, Emily Perkins, Sarah McCutcheon, Annabelle Bernabe, Brenda McMillan, San Diego Management and Monitoring Program, Donn Holmes, Dam Nguyen, Curtis Tamanaha, Elise Watson, US Geological Survey

Abstract:

The San Diego Management and Monitoring Program (SDMMP) is a science based program that provides a coordinated approach to management and biological monitoring of lands in San Diego that have been conserved through various conservation programs and mitigation efforts. The SDMMP was tasked with preparing a regional management and monitoring plan that fulfills the need for a strategic approach to implement management and monitoring objectives in a cost-effective manner. The Management and Monitoring Strategic Plan for Conserved Lands in Western San Diego County: A Strategic Habitat Conservation Roadmap (or simply “MSP Roadmap” or “MSP”) is a comprehensive, landscape-scale adaptive management and monitoring framework for prioritized species and vegetation communities in western San Diego County. By establishing biological goals and measurable objectives across the region, the MSP Roadmap provides for a coordinated effort among multiple key organizations in western San Diego County in the implementation of adaptive management and monitoring actions using the same approach. The MSP Roadmap categorizes and prioritizes plant and animal species, vegetation communities, and threats/stressors, identifies geographic locations for actions, provides specific timelines for implementation, and establishes a process for coordination and implementation. The MSP Roadmap includes databases and mapping tools (“MSP Portal”) which are available on the SDMMP interactive website: <http://portal.sdmmp.com>. This presentation will provide an overview of the MSP Roadmap, the collaborative tools developed and available on the MSP Portal, and the efforts to bring partners together to develop and implement monitoring and management projects across the region.

(3) Beyond NCCPs: Developing Strategies to Ensure Regional Wildlife Connectivity in Southern California

Trish Smith (presenter) and Cara Lacey, The Nature Conservancy

Abstract:

Southwestern California is the birthplace of the State of California’s Natural Community Conservation Program (NCCP), established in the early 1990’s to protect habitats and species at the subregional level while allowing compatible development to continue. Today, five of the thirteen NCCPs approved statewide are in place in the contiguous counties of Orange, Riverside and San Diego, with additional plans proposed or in the planning process. Despite the progress that has been made through the NCCPs to conserve and manage the region’s wildlife habitat, gaps in the conservation reserve networks approved under the plans remain, that if developed, could threaten the persistence of many species, particularly those that need to move in response to many threats, including climate change. Gaps in habitat connectivity between core protected areas are particularly concerning. Although such connectivity was included in the plans’ reserve designs, these connections have not been given specific focus or priority. This presentation will identify potential strategies and tools for addressing wildlife connectivity at the regional level, building upon the framework established by the NCCP.

(4) Regional Occupancy and Post-fire Recovery of California Gnatcatchers in Southern California

Barbara E. Kus (presenter), Kris L. Preston, and Alexandra Houston, U.S. Geological Survey, Western Ecological Research Center

Abstract:

The California Gnatcatcher, a federally threatened species, is the flagship species for regional conservation planning in southern California. An inhabitant of coastal sage scrub vegetation, the gnatcatcher has declined in response to habitat loss and fragmentation, and the population now exists in small patches within an urban matrix. Exacerbating loss of habitat to development, catastrophic wildfires have emerged recently as the largest threat to persistence of California Gnatcatchers throughout their range. We undertook two inter-related investigations to examine post-fire recovery of gnatcatchers and their habitat, and to document the status of gnatcatchers throughout their California range to establish a baseline from which future population trends could be derived. We used GIS to develop a habitat suitability model for California Gnatcatchers using PRISM (climate, topography) covariates, and selected over 700 points in a spatially balanced manner on conserved lands and participating military lands. Bird and vegetation data were collected at each point between March and May in 2015 and 2016. Presence/absence of gnatcatchers was determined on each of three visits to points, using area searches within 150 x 150 m plots. We used an occupancy framework to generate Percent Area Occupied (PAO) by gnatcatchers, and analyzed PAO as a function of time since fire. At the regional scale in 2016, 23% of the points surveyed were occupied by gnatcatchers, reflecting in part the effect of massive wildfires in the last 15 years. Similarly, PAO in the post-fire subset of points was 24%, with the highest occupancy in unburned (last fire <2002) habitat. Among points that had burned since 2003, occupancy increased with time since burn, but sites that burned in 2003 have still not achieved the PAO of unburned sites. Thus, identifying management to accelerate post-fire recovery of coastal sage scrub is a high priority for habitat and species conservation.

(5) Conserving Coastal Cactus Wrens: A Fragmentation Sensitive Species Facing Multiple Threats in an Urbanized Landscape

Kris L. Preston (presenter), Barbara E. Kus, Dana Kamada, Karly Moore, US Geological Survey, Trish Smith, The Nature Conservancy, Milan Mitrovich, Natural Communities Coalition

Abstract:

Cactus wrens have significantly declined in coastal southern California due to habitat loss and fragmentation from urban development. Wrens are conserved by multiple species conservation plans but continue to decline due to large-scale wildfires and drought. Productivity is positively associated with late winter-early spring rainfall, late winter minimum temperatures and early egg laying. Egg laying is initiated earlier in years with warmer March temperatures, in pairs with older males, and at sites with lower wren territory densities and fewer corvids. Reproduction appears limited by food availability. Survival from fledging to adulthood is low. Most individuals are sedentary, staying close to natal sites with limited dispersal in fragmented landscapes. Predation can be high in urban fragments and small populations (<3-5 pairs) are vulnerable to local extinction. Active management is required to recover populations from the effects of urbanization, wildfire and drought. The management strategy is focused on restoring and enhancing habitat to enlarge existing wren populations and restoring connectivity via large stepping stone patches of live-in habitat for multiple wren territories. Research is underway to determine cactus restoration planting palettes that support arthropods fed to nestlings and identifying planting microhabitats that provide greater plant and arthropod resilience to drought. A wildfire management strategy includes establishing cactus nurseries and cactus

outplantings to provide source plants for immediate post-fire habitat rehabilitation, reducing fire ignitions, decreasing fire severity in cactus patches, and maintaining populations in fire refugia to provide a source of wrens to recolonize sites burned in wildfires. Management to prevent loss of genetic diversity and inbreeding may be necessary. Adults have been successfully translocated between sites to augment populations and enhance genetic diversity, although it is expensive and there is a lack of donor sites. Swapping eggs between nesting pairs may be a more feasible alternative for enhancing genetic diversity.

(6) Biotelemetry Data for Golden Eagles (*Aquila chrysaetos*) Captured in Coastal Southern California, November 2014–February 2016

Robert N. Fisher (presenter), Jeff A. Tracey, Melanie C. Madden, Jeremy B. Sebes, Todd E. Katzner, US Geological Survey, Peter H. Bloom, Bloom Biological, Inc.

Abstract:

The status of golden eagles (*Aquila chrysaetos*) in coastal southern California is unclear. To address this knowledge gap, the U.S. Geological Survey (USGS) in collaboration with local, State, and other Federal agencies began a multiyear survey and tracking program of golden eagles to address questions regarding habitat use, movement behavior, nest occupancy, genetic population structure, and human impacts on eagles. Golden eagle trapping and tracking efforts began in October 2014 and continued until early March 2015. During the first trapping season that focused on San Diego County, we captured 13 golden eagles (8 females and 5 males). During the second trapping season that began in November 2015, we focused on trapping sites in San Diego, Orange, and western Riverside Counties. By February 23, 2016, we captured an additional 14 golden eagles (7 females and 7 males). Biotelemetry data were collected between November 22, 2014, and February 23, 2016. The location data for eagles ranged as far north as San Luis Obispo, California, and as far south as La Paz, Baja California, Mexico. This presentation will provide an overview and results from the study.

(7) Recreation Management and Human Valuation, the Fusion of Social and Ecological Sciences

Milan Mitrovich (presenter), Natural Communities Coalition, Chris Monz, Utah State University

Abstract:

Managers of urban-proximate wildland settings must often strike a careful balance with providing nature-based recreation experiences with the maintenance of ecological integrity. With over 3 million residents within a 30-minute drive of the natural areas of central and coastal Orange County, the demand for recreation experiences is ever present, and increasing. Equally important is the increasing need and desire for the conservation of natural resources and preservation of the rich natural heritage of an iconic area of the California coast. Resource management planning and implementation strategies in natural areas are often more successful when informed by interdisciplinary research that combines both ecological and social science approaches in a location specific manner. The Natural Communities Coalition has partnered with national leaders in the field of recreation ecology from Utah State University and Oregon State University to implement a multi-year project designed to address ecological aspects, human benefits and values, and contemporary management approaches tied to recreation within the region. Fourteen management units within the Nature Reserve of Orange County are considered a high priority for assessment and monitoring of recreation use and associated management uses. The majority of units fall under the management of OC Parks, California State Parks, and

the Irvine Ranch Conservancy. The project will employ both continuous assessment and sampling approaches to establish baseline conditions. Work is to include field assessment of the location and condition of trails, sites, and other areas of visitor use, determination of the spatial distribution of use, and assessment of visitor attributes and preferences, demographics, motivations, values and judgements of resource and social conditions. Work will be conducted in two distinct phases. The first phase is three years in duration, with social and biophysical field sampling to begin spring 2017.

(8) Accessibility Drives Species Exposure to Recreation in the Urbanized Coastal San Diego County Reserve Network

Courtney L. Larson (presenter), Colorado State University, Sarah E. Reed, Wildlife Conservation Society, Adina M. Merenlender, University of California Berkeley, Kevin R. Crooks, Colorado State University

Abstract:

Most protected areas globally have a dual mandate that includes both biodiversity conservation and providing access for outdoor recreation. In urban areas, there is often particularly high demand for access to remnant natural spaces. Despite its numerous benefits for human communities, recreation can have negative effects on animal species. Our recent global systematic review found that 93% of scientific papers on this topic found at least one significant effect of recreation on wildlife, demonstrating that there is a clear need to understand patterns of recreational use and resulting threats to sensitive species. We quantified spatial and temporal variability in recreation across a network of reserves in the urbanized, yet biodiverse landscape of coastal San Diego County. Visitation rates varied widely, and we found that accessibility variables such as the number of parking lots, entrances, and nearby housing units had the strongest relationships with visitation, rather than reserve characteristics such as area or vegetation communities. We also identified several species that we expect are exposed to high levels of recreational use, including the orange-throated whiptail (*Aspidoscelis hyperythra*), western spadefoot (*Spea hammondi*), and the federally-threatened California gnatcatcher (*Polioptila californica californica*). Our results can be used to prioritize highly exposed species for further research into their responses to recreation, as well as identify areas with potential conflicts between recreation and conservation objectives as priorities for management.

(9) Managing Threats on Local Reserves Surrounded by the Urban Landscape

Betsy Miller (presenter), City of San Diego

Abstract:

Land managers have extensive experience managing anthropogenic threats to natural resources on conserved lands in the urban fragments in western San Diego County. Examples of the multitude of threats to conserved plant and animal species and ecosystem functions include invasive nonnative plant and animal species, recreation, illegal dumping, altered hydrology, trampling, homeless encampments, pollution, pesticides, and encroaching land uses. Land managers must also deal with larger-scale processes that can impact natural communities such as wildfire and drought. Land managers rely on an adaptive monitoring and management approach, with monitoring targeted to identify management needs and the effectiveness of management actions. A management oriented monitoring program is essential in persuading decision makers to allocate funding for recommended management. Land managers benefit from science that

increases understanding of the system being managed and on determination of best management practices. To optimize management of conserved lands, land managers need flexibility to respond to circumstances on the ground and trust from decision makers and regulatory agencies that they have the expertise to effectively manage threats. There are many roadblocks and challenges to successful management and land managers rely on science, practical expertise and lessons learned to navigate these obstacles.

(10) Managing an Unforeseen Threat from the Urban Areas – Local Efforts to Manage Shot-Hole Borer/*Fusarium* Complex Impacting Wildlife Due to Mass Tree Mortality.

Hans Sin, (presenter) California Department of Fish and Wildlife

An invasive ambrosia (aka “shot-hole”) beetle was recently discovered in southern California in stands of native and ornamental tree species and is known to cause severe damage to riparian communities and urban areas. The shot-hole beetle forms a symbiotic relationship with the *Fusarium* spp. fungus it carries. The potential for this pest species to cause large amounts of destruction has already been realized. Within the Tijuana River Valley, more than 280,000 trees have been infested by the shot-hole beetle, and more than 140,000 trees have suffered major limb damage throughout 241 hectares (597 acres) of primarily riparian forest. This stretch of river serves as vital breeding ground for the state and federally endangered least Bell’s vireo, magnifying the implications of this loss. It is likely that this will not be an isolated event and further damage of critical, native habitat can be expected in the future if methods to control the beetle are not developed. Due to the species’ extensive list of suitable reproductive host trees and the survivability of the fungus and beetle throughout a wide range of temperatures, there is nothing that suggests this pest species will not become more than a regional issue and spread statewide, potentially into other parts of the country. This presentation will provide an overview of local efforts to develop and implement a management strategy aimed at limiting the expansion of the species and to prioritize investment for a long-term solution. This effort requires coordination across jurisdictional boundaries, industries, interest groups, and disciplines (i.e. entomology, plant pathology etc.) making it a considerable task to undertake. However, such an effort is required if further losses of critical habitat are to be prevented.