



Southern California Botanists

35th Annual Symposium *Desert Botany: Bounty or Bust*
Dedicated to the memory and work of Alan Romsper

October 17, 2009

The Ruby Gerontology Center California State University, Fullerton

TENTATIVE SCHEDULE AND ABSTRACTS OF TALKS

8:00 a.m. - Registration begins.
Morning snacks will be provided.

9:00 - 9:15 a.m.
Introductory comments
Gary Wallace, SCB President

9:15 - 9:45 a.m.
**Recent Plant Discoveries in the California Deserts:
Scratching the Surface about to be Bulldozed.**
James M. Andre, Director – Granite Mountains Research
Center, University of California, Riverside Natural Reserve
System.

The California desert flora, as represented in the Jepson Desert Manual, includes the southern Great Basin Province east of the Sierra Nevada and the Desert Province, including both the Mojave and Sonoran Deserts. Encompassing about 28% of California's landmass, the desert flora contains approximately 2,300 (37%) of the 6,200 vascular plant taxa native to California. Despite popular opinion to the contrary, and a long history of collecting, the California deserts remain one of the floristic frontiers in the United States with an estimated 5-10% of the flora undescribed. In addition to numerous taxonomic discoveries, botanists continue to document significant range extensions and rare plant occurrences. We have only scratched the surface in our efforts to document and inventory California's rich desert flora. Presently, more than 100 solar, wind and geothermal energy development projects are proposed throughout the California deserts over the next 3 to 5 years that will destroy more than one million acres of pristine desert ecosystem. This presentation provides 1) an overview of recent plant discoveries and an assessment of our floristic knowledge, 2) the status of rare plants in the California deserts through specific analyses and case studies, and 3) a perspective of what we stand to lose with the impending industrialization of California's deserts.

9:45-10:30
**Renewable Energy: Meeting the Threat to California's
Desert Rare Plant Habitat.**
Greg Suba, Conservation Director, CNPS, Sacramento and
Nick Jensen, Rare Plant Botanist, CNPS, Sacramento.

This presentation summarizes the history and current state of utility-scale renewable energy projects within the California Desert Conservation Area (CDCA), describes sitespecific native plants issues that exemplify the character and scale of project-related impacts, and describes conservation strategies being implemented by the California Native Plant Society. As of June 2009, a total of 64 wind energy applications (totaling 462,462 acres), and 65 solar energy applications (totaling 575,155 acres) have been submitted to the US Bureau of Land Management (BLM) for certification within the CDCA. The total megawatt (MW) potential of these desert projects (c. 50,000 MW for solar alone) carries both great promise for our nation's energy future and great losses to impacted desert habitats. The fate of California's desert ecosystems will be determined by the collective abilities of conservation groups, regulatory agencies, energy corporations, and politicians to navigate successfully through the myriad issues entangling the appropriate siting of, and mitigation for renewable energy projects, and the desert biota's ability to survive our decisions.

10:30-10:50 Break

10:50-11:20
**Invasive Plant Species and their Effects on Desert Plant
Communities**
Matt Brooks, U.S. Geological Survey, Western Ecological
Research Center, Yosemite Field Station.

Desert floras contain some of the lowest proportion of non-native species of any ecosystem, yet they can often be dominated by a few non-native species in terms of primary productivity, biomass, and/or cover. These dominant species can have significant impacts through competition with native plants and altered ecosystem processes. However, there are clearly some exotic species that are more of a management concern than others, and their relative threats can

vary significantly among elevational zones. In addition, there are some species on the threshold of establishing in desert regions that should be top priorities for control efforts. In this talk I will describe some of the dominant non-native invasive species of the Mojave Desert, explain the ways that they threaten native plant communities, and summarize control strategies that have been used to manage them.

11:20-11:50

Disturbance, Vulnerability, and Recoverability of Soils and Vegetation in the Mojave Desert.

Robert H. Webb, U.S. Geological Survey, Tucson, Arizona.

In the Mojave Desert of California, severe disturbance to soils and vegetation results from fire, off-road vehicle (ORV) use, military maneuvers, heavy construction, and overgrazing. Vulnerability to disturbance is not constant across this landscape; some soils and vegetation assemblages are less vulnerable to disturbance than other sites. Using some basic engineering soil mechanics and natural recovery rates of different vegetation assemblages, vulnerability to disturbances can be differentiated on a landscape scale, providing an objective means of determining where any type of disturbance should be avoided. Large-scale disturbances, whether the inadvertent result of fire or the deliberate result of land-use practices, are now common in the Mojave Desert. Few large-scale revegetation attempts have been successful in the past; yet most severely disturbed lands will recover without human intervention. In the Mojave Desert, many historical disturbances have been preserved without additional disturbance for over 90 years, allowing quantification of recovery rates from soil compaction and denudation of perennial vegetation. Depending upon the assumptions made in a recovery model (linear versus logarithmic trajectory), the extrapolated amount of time for complete or 90% recovery of compacted soils ranges from 80 to 120 years for coarse-grained soils characteristic of alluvial fans in the region. The cycling of wet periods and droughts may be a climatic mechanism that allows a seemingly orderly transfer of species composition from short-lived to long-lived species. In general, extrapolations from the available data indicate that some severely disturbed sites may require as little as a century or as long as several thousand years for full recoverability of species composition.

11:50 AM-1:30 PM Lunch Break

After announcements, the SCB Board will arrange lunch with the speakers at the Fullerton Arboretum. Pack your lunch and join us! The long break is intended to allow everyone time for lunch, to enjoy some casual conversation, and to return promptly for the afternoon session.

1:30-2:15

Responses of Desert Perennials to Extreme Drought: Are Populations Recovering from 2002?

Edward G. Bobich, Asst. Prof. Biological Sciences, California State Polytechnic University, Pomona.

The deserts of western North America have been in a drought for much of the last decade, with 2002 being the most severe year. As a result, a large percentage of the perennials have died throughout these deserts. In Deep Canyon, which is in the Sonoran Desert, it was documented that the elevational ranges of most of the perennials has changed, with populations moving higher in elevation in the last 30 years. In the present study, it was hypothesized that if the elevational ranges of perennials are changing, then perennial mortality should be greater and perennial recruitment should be lower at lower elevations than at higher elevations. Furthermore, shallow-rooted shrubs with low water-storage capacity should experience the greatest mortality among perennials because they are typically dependent on pulsed rainfall events and they do not have the water storage tissue to persevere extended drought like shallow-rooted stem succulents. Of the elevations (220 m, 245 m, 270 m, 480 m, and 815 m) studied, by spring 2009 percent perennial mortality was highest at 270 m and 480 m; percent mortality of drought deciduous shrubs was greatest (~ 90%) at the two lowest elevations. Furthermore, in the last two years there has not been one perennial recruit at the two lowest elevations and less than 10 at 270 m. Recruitment of perennials, primarily *Encelia farinosa*, was high at the two highest elevations in 2008, but there were less than 5% of the number of recruits at those same elevations in the spring of 2009. It was noted, that several shrubs that appeared dead from summer 2007 through winter 2009 were actually alive and set fruit in spring 2009. In conclusion, the populations of many perennials, especially drought deciduous shrubs, may be decimated a low elevations if the deserts of North America become drier and hotter, as is predicted by many climate models. However, the dynamic nature of desert populations and the resiliency of individual plants require long-term assessment before broad conclusions can be made.

2:15-2:45

Connectivity Conservation in the California Desert

Kristeen Penrod, Conservation Director, Science & Collaboration for Connected Wildlands.

SC Wildlands (SCW) mission is to protect and restore systems of connected wildlands that support native wildlife and the systems upon which they rely. SCW has collaborated closely on connectivity conservation in California, and beyond, since the ground-breaking Missing Linkages conference we helped organize in November 2000. Since then we have worked closely with numerous partners to complete the South Coast Missing Linkages project, a highly collaborative inter-agency effort to identify and conserve the highest priority linkages in California's South Coast Ecoregion. We are now embarking on a project to complete essential connectivity analyses for the California desert ecoregions. The goal of this project is to identify areas where maintenance or restoration of ecological connectivity is essential to conserving the unique biological diversity of California's desert. Identification of these key areas of connectivity will help inform land management and conservation decisions in the face of future land-use pressures as well as climate change. We are evaluating a taxonomically diverse group of focal species that are sensitive to habitat loss and fragmentation. These focal species represent the diversity of ecological interactions that can be sustained by successful linkage design. The success of our science-driven technical approach, coupled with our inclusive and consensus-based planning approach, can best be judged by the fact that numerous partner agencies are currently institutionalizing and implementing the priority linkage conservation designs we have produced.

2:45-3:15 Break

3:15-3:45

Management of Threatened and Endangered Plants on BLM Lands.

Christina Lund, Botanist, BLM, Sacramento.

The BLM is responsible for the management of approximately 16 million acres of land in California and NE Nevada. There are 51 threatened and endangered plant species that occur throughout the 16 million acres. Of those species - 21 are located in Southern California.

BLM has specific policy and guidance on the management of threatened and endangered species. Which includes specific objectives such as 1) to conserve and recover threatened, endangered and proposed species and the ecosystems upon which

they depend and 2) to initiate proactive conservation programs which minimize the potential for listing of BLM designated sensitive species under the ESA, and to ensure that actions requiring authorization or approval by the BLM are consistent with the conservation of BLM sensitive species as defined in the policy and guidance. For the purpose of this conference I propose to discuss the various details in the BLM policy and guidance and to provide examples of what's working along with what's not working.

3:45-4:30

Securing a Future for California Deserts

Bruce Pavlik, Mills College, Oakland California

"Boom or Bust" phenomena affect the conservation and management of desert lands in California. Economic cycles in gold prices, housing values, and agricultural commodities have obvious linkages to mining, the growth of cities and the psychology of investment, speculation and land use. Developing long-term strategies for securing a biologically rich future for arid lands in California and the American west must recognize variations in boom or bust phenomena with respect to spatial scale, configuration and origin. I will review a simple framework that accounts for those variations and provide a few suggestions for addressing the gathering challenges. It is my belief that long-term strategies must emphasize social and political approaches that incorporate focused science as needed, but aim at developing local stewardship and economic incentives for conservation.

4:30-4:45 Closing Remarks; silent auction results

Vendors

CNPS San Gabriel Mountains Chapter

F.M. Roberts Publications

Rancho Santa Ana Botanic Garden

SCB Silent Book Auction proceeds go to the Susan Hobbs Grant for field research and Alan Romspert Desert Studies Grant.

Registration Table

Please visit our registration table and...

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- Suggest next year's symposium topic
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