

Evening Events Continue at Rancho Santa Ana Botanic Garden: California Courtyard

4:45 - 7:00 pm **Mixer** featuring music by **Sage Against the Machine** (Antonio Sanchez (Nursery Production Manager), Evan Meyer (Seed Program Manager), and Rico Ramirez.

6:00 - 9:00 pm **BANQUET**

KEYNOTE PRESENTATION:

The Botanists and How They Got Us Back to the Flora

Gary D. Wallace, Research Associate, Rancho Santa Ana Botanic Garden

Botanists may be plant collectors, observers, writers, teachers, systematists or a combination of these. I will touch on some of the many botanists who traveled through or lived in southern California. Botanists often came from elsewhere, earned a living in non-botany careers, and studied plants on the side. Botanists have different motives and means of studying the flora. For some it is the lure of new species for distant gardens or selling specimens as a means to earn money, for others a goal of amassing one of each of the different plants in North America, for others the documentation of the flora of an area, and for some the study of a particular group. Some botanists choose to write systematic treatments while others compile checklists or floras of an area. Still others write inspiring narratives encouraging exploration or organized supportive clubs and societies like Southern California Botanists. I will also mention some of the means and reasons the early botanists communicated with each other and a few miscellaneous anecdotes. Some historical information is likely lost forever illustrating the need for future documentation of persons and events in the context of southern California botany...



Platanus racemosa Nutt.
California sycamore **Platanaceae**

Illustration by Fred M. Roberts

Symposium Program

41th Annual Southern California Botanists Symposium

Back to the Flora:

A journey through Southern California

Saturday, October 10th, 2015

Pomona College—Seaver Auditorium

8:00-9:00 am **Registration**

9:00-9:10 am **Opening Remarks by Nick Jensen**

9:10-9:15 am **Tribute to Bob Thorne by Dr. Gary Wallace**

9:15-9:45 am **Floristics and the Path of Native Plant Conservation**

Greg Suba Conservation Program Director,
California Native Plant Society.

Scientific information that documents and describes where plants occur provides a sound basis for the protection of native plant species, communities, and landscapes. Floristic studies provide botanical knowledge upon which one can build conservation advocacy and regulatory arguments, develop management goals, and monitor trends. This talk will describe how floristic information is fundamental to a variety of conservation scenarios, and present current examples of native plant conservation in California.

Equipped with the products of floristic research, plant conservation advocates can begin the long march of advocacy and activism. Whether planning for the protection of an endangered *Astragalus*, demonstrating the local rarity of a *Convolvulus*, or arguing the ecological importance of an *Asclepias* more commonly found across the California state line, the effort begins with a floristic manual in hand. Reviewing and maintaining California's rare plant inventory happens only through continual reference to local and regional floras. Those building our statewide vegetation map rely on floristic information to complete their classification of plant alliances and associations.

At a time when the number of research universities offering botany degrees is dropping, and a number

of institutions across the country are closing and/or consolidating their herbaria and collections, the work of those developing floristic inventories across California remains essential to our understanding of the state's flora and our efforts to preserve it.

10:00-3:00 pm **POSTER SESSION**

9:45-10:15 am **Integrating Botanical Data with Botanical Knowledge: The Consortium of California Herbarium and the Jepson eFlora**

David Baxter Biodiversity Informatics Manager,
Jepson herbarium

The Consortium of California Herbaria (CCH) and the Jepson eFlora are two major online resources for the California botanical community. The CCH is a gateway to information from over 2 million California vascular plant specimens housed in 35 participating herbaria. The Jepson eFlora is an online continuation of *The Jepson Manual, Second Edition*, with descriptions, illustrations, and identification keys for all naturally occurring California vascular plants, and serves as a taxonomic authority for California floristics. These products offer two distinct types of information, but both can be used to determine where plant taxa occur. By comparing georeferenced specimen points in CCH with the authored geographic ranges of taxa in the eFlora, specimens falling outside their authored range are indicated as "yellow flags". Efforts to resolve yellow flags have revealed opportunities for improvement of CCH records, eFlora treatments, and the yellow flagging methodology.

10:15-10:45 am **BREAK**

10:45-11:15am **New Phylogenetic Approaches to Biodiversity Assessment and Conservation**

Brent Mishler Professor, Department of Integrative Biology, UC Berkeley and Director of the Jepson Herbarium.

Biodiversity is usually measured by examining changes in the number of species across a region to identify areas of particularly high species diversity and endemism. Beta-diversity, or turn-over on the landscape, is likewise usually measured by comparing proportions of species shared among subareas. However, investigations based on species distributions alone miss the full richness of analyses

that can result from taking a phylogenetic approach. Our research group is applying a novel suite of phylogenetic tools including two new metrics, Relative Phylogenetic Diversity and Relative Phylogenetic Endemism, and new methods called Categorical Analysis of Neo- And Paleo-Endemism (CANAPE), Range Weighted Branch Length Difference (RWiBaLD), and phylogenetic range-weighted turnover (PhyloRWT). CANAPE and RWiBaLD are tested statistically with the same spatial randomization of terminal taxa on the map. These methods are rank-free since it does not matter what taxonomic levels the terminals represent, as long as they are monophyletic and their geographic distribution can be characterized, and are thus relatively robust to lumping and splitting decisions by taxonomists.

Applications of these methods will be shown for plants of Australia (where the methods were first developed) and of California (where an NSF-funded project is underway). Understanding such evolutionary patterns of biodiversity on the landscape is important for conservation planning, given the need to prioritize efforts in the face of rapid habitat loss and human-induced climate change. These new phylogenetic methods can identify complementary areas of biodiversity that have unique evolutionary histories in need of conservation.

11:15-11:45 am **Writing a Flora in the Digital Age: Lessons Learned from the Development of *A Flora of Santa Catalina Island***

Matt Guilliams, Ken and Shirley Tucker Systematist, Santa Barbara Botanic Garden

With unprecedented threats to global biodiversity from climate change, habitat destruction, and invasive species introductions, basic floristic research is more important now than it ever has been. Technological advances have facilitated some aspects of floristics work and have provided new opportunities for creative uses of the resulting data. The Santa Barbara Botanic Garden is working with the Catalina Island Conservancy to produce *A Flora of Santa Catalina Island*. The island is the largest of the southern California Channel Islands, is situated only 20 miles from the Los Angeles area, and hosts about a million visitors per year. The flora of the island is relatively rich, with 700+ minimum-rank taxa, of which 9 are endemic and 59 are of conservation concern. In this talk, I provide an overview of our project, with three emphases. First, I introduce the

island and its remarkable flora. I then describe our approach to generating the manuscript, which has streamlined the writing and editorial processes and will permit the flexible development of future editions, online resources, and other products such as checklists and morphological databases. I conclude with lessons learned while working on this project, each of which supports the notion that floristic work is critical to conserving biodiversity.

11:45 am- 1:15 pm **LUNCH**

1:15-1:45 pm **San Gorgonio summit region and beyond: Species problems in Southern California!**

Tommy Stoughton, Ph.D Candidate, Rancho Santa Ana Botanic Garden

Staking its claim to fame as the highest peak in Southern California, Mount San Gorgonio is also home to many species in the San Bernardino Mountains that are new to science and have not yet been formally described. In this presentation, I will pay homage to the magnificently diverse alpine flora of Mount San Gorgonio and highlight lingering questions concerning species boundaries both in the alpine zone and at lower elevations in the San Bernardino Mountains. As of now, the plant species diversity in the San Bernardino Mountains remains largely underestimated, and these taxonomic vagaries may extend well beyond the San Bernardino Mountains to other adjacent sky islands of comparable size in Southern California.

1:45-2:15 pm **The Flora of the San Gabriel Mountains**

Orlando Mistretta, Research Associate, Rancho Santa Ana Botanic Garden.

They are the iconic backdrop for nationally and even globally televised events, such as the Rose Bowl and the Tournament of Rose Parade in Pasadena. They are the largest acreage of uninterrupted native vegetation adjacent to the teeming millions who crowd the cismontane valleys and hillsides of the Los Angeles metropolitan area. At least 1500 taxa of vascular plants have been documented. They occupy a mountain range where intertwining patterns of elevation, topography, precipitation, exposure, geology, orientation, fire and flood serve to offer a kaleidoscope of habitats. This presentation will offer a brief review of some of these species and their context within the broader flora. The San Gabriel Mountains are a treasured refuge of native

flora. Species once abundant in the valleys beyond the range persist in the lower elevations. Taxa unique to the range are found at every elevation.

This presentation will briefly review efforts to understand and document the flora of the San Gabriel Mountains. Taxa both common and rare will be discussed. The flora will be examined in relation to its unique east-west orientation that is one of the defining characteristics of this member of southern California transverse mountain cordillera.

2:15-3:00 pm **BREAK**

3:00-3:30 pm **The Flora of the Tule River Watershed**

Jessica Orozco, M.S. Student, Rancho Santa Ana Botanic Garden.

The Tule River is located in Tulare County in the southern Sierra Nevada and consists of the North, Middle, and South forks. For my master's thesis, I conducted a floristic study of the South Fork Tule River (SFTR) watershed. The SFTR originates near Slate Mountain, in the Sequoia National Forest. The South Fork and its tributaries drain west through the Tule River Indian Reservation (TRIR) into Lake Success. The TRIR was established in its current location in 1873 in the ancestral land of the Yaundachi Yokuts people of the Central Valley. Vegetation includes *Quercus douglasii* woodland, grassland, chaparral, riparian, as well as coniferous forests including *Sequoiadendron giganteum* groves. The TRSF watershed is an ideal place for a floristic study because it represents a botanical 'black hole.' Given past exploitation of the tribe, access to the land by scientists had been previously limited, as is the case with many tribal trust lands in California. Poorly documented plant diversity on tribal trust lands, including the TRIR, speaks to the need for more collaboration between Native American communities and botanists. Both botanists and tribal community members can benefit from this exchange of knowledge as we work towards an improved understanding of the California flora.

3:30-4:00 pm **Botanical discovery and inventory in Joshua Tree National Park**

Tasha LaDoux, Botanist, Joshua Tree National Park.

The California desert represents one of the more pristine habitats in California, yet it remains one of the least documented floras in the state. Despite the fact that the National Park Service has managed the ~800,000 acres of Joshua Tree National Park since 1936, recent efforts have added over 100 species to the catalogue of vascular plants. Significant field discoveries include several species at the edge of their geographic distribution, newly described taxa, and many new rare plant occurrences. Currently, there are ~725 vascular plant species documented within the boundaries of JTNP: annuals represent the dominant life-form (50%); over 90 taxa are considered obligate summer bloomers; and only 7% are considered non-native plant taxa. As exemplified by Joshua Tree National Park, the desert regions within California remain a place of great botanical opportunity.

4:00-4:30 pm **Flora of the Verdugo Mountains and San Rafael Hills: A chaparral island in a sea of urbanization**

Naomi Fraga, Conservation Botanist, Rancho Santa Ana Botanic Garden

The Verdugo Mountains and San Rafael Hills in Los Angeles County, California, are a 21 km (13 mi) long mountainous region that encompasses approximately 14,646 ha (36,192 acres) surrounded by the greater Los Angeles area. Urbanization from the greater Los Angeles area has encroached upon these mountains over the years. Despite the mountains' proximity to high population densities, recent botanical collections from the range are sparse. The goal of our study was to compile historic and recent botanical collections from the range to document the flora of the Verdugo Mountains and San Rafael Hills. We performed botanical surveys in the Verdugo Mountains and San Rafael Hills to document vascular plant taxa with herbarium vouchers, develop an annotated checklist, describe plant communities, and document fire-following species for the region. We identified fire-following species from three burn areas in the study area one to five years later. In this presentation I will present the results of our study, and share insights on the need to document plant diversity in urban areas focusing on greater Los Angeles.

4:30-4:45 pm **Closing Remarks by Nick Jensen**