



# 9th International Oak Society Conference

UC Davis • October 21-24, 2018

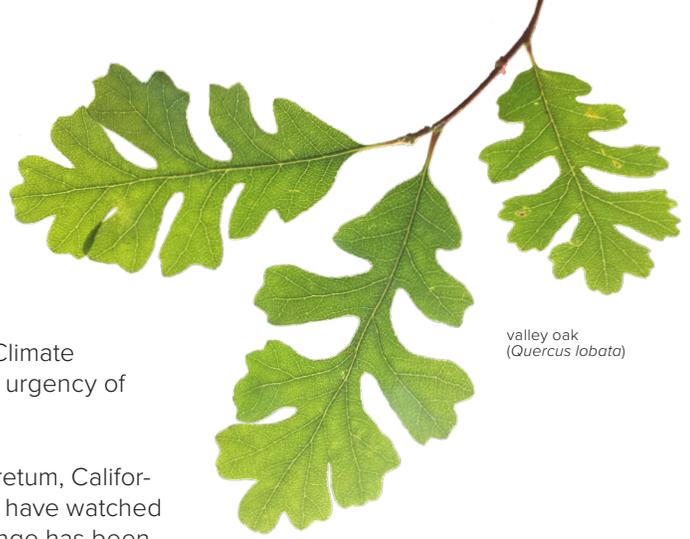
## Conference Program



#IOS2018Davis

[arboretum.ucdavis.edu/IOS2018Davis](http://arboretum.ucdavis.edu/IOS2018Davis)

# Welcome to the 9th International Oak Society Conference!



valley oak  
(*Quercus lobata*)

We are honored to host the International Oak Society for its first ever Northern California conference at the UC Davis Arboretum and Public Garden. We chose “Oak Landscapes of the Future: Adapting to Climate Change” as the theme for the conference in response to the increasing urgency of this global issue.

In the three years since the last conference in 2015 at the Morton Arboretum, Californians have endured record-breaking drought, rainfall, and wildfires and have watched news reports of extreme weather around the world. Global climate change has been described as the biggest threat to our planet and the greatest challenge of our time. From urban forests to wildlands to public garden collections, all natural and human-created landscapes will be profoundly affected. This is our call to action.

Developing and implementing solutions for adaptation and mitigation to protect and ensure the longevity of the oak landscapes that we treasure will require creativity and collaboration across boundaries and disciplines. This is why it is so important for us to come together now, to share ideas and build connections between experts and enthusiasts, agencies and academia, arborists and artists.

The UC Davis Arboretum and Public Garden encompasses the landscape of the full 5,300-acre campus, including a 100-acre arboretum, an urban campus core, natural areas, and agricultural lands. Our organization holds the unique position of being responsible for the long-term stewardship of oak trees in these diverse settings as well as being a training ground for future environmental leaders. Looking to the decades ahead, we are in the midst of developing a Living Landscape Adaptation Plan that will identify key strategies for building resilience in our tree canopy for uncertain future climate realities.

The Arboretum and Public Garden’s purpose is to inspire human potential to help people and environments thrive. We hope you will depart from this conference with the energy and optimism we will need to rise to the challenges ahead.

Emily Griswold  
Conference Committee Chair  
Director of GATEways Horticulture and Teaching Gardens  
UC Davis Arboretum and Public Garden

## Acknowledgements



**Sacramento Tree Foundation**

**Pepperwood Preserve**

**UC Davis Center for Plant Diversity**

**City of Davis**

**Tree Davis**

**Morton Arboretum**

**Conference Committee Members:**

Emily Griswold  
Shannon Still  
Stewart Winchester  
David Muffly  
Zarah Wylie  
Rachel Davis  
Abbey Hart  
Melissa Cruz

Special thanks to all the UC Davis Arboretum and Public Garden staff, students, volunteers, IOS Board members, presenters, and donors who made the conference possible.

## Peter J. Shields Oak Grove

Started in 1962, Shields Oak Grove is the UC Davis Arboretum and Public Garden's most significant scientific collection. The 10-acre grove is unique for its tremendous diversity of mature trees from around the world with a special emphasis on species from warm and dry climates. As one of the largest public collections of oaks in the United States, it has attracted oak researchers and enthusiasts for decades. In 2007, the oak collection became nationally accredited through the American Public Gardens Association Plant Collections Network in recognition of the Shields Oak Grove's diversity, value, and high standards of museum records and care.



## Conference Schedule – Sunday, October 21

### 8 AM–3 PM

#### OPTIONAL DAY TRIP – FROG POND TRAIL

Oaks in the Berryessa Snow Mountain National Monument .....Departs from Conference Center

### 8 AM–4 PM

#### OPTIONAL DAY TRIP – THE OAKS OF PEPPERWOOD

Research, Land Management and Fire .....Departs from Conference Center

### 8 AM–5 PM

#### OPTIONAL DAY TRIP – WINE COUNTRY

Tour and Tastings .....Departs from Conference Center

### 1–4 PM

#### OAK DISCOVERY DAY

Free public event for all ages with self-guided tours, fun oak activities, and Native Californian acorn grinding and food preparation demonstration.....Shields Oak Grove

### 4–7 PM

Registration Desk Opens ..... Conference Center Lobby

### 6–7 PM

Opening Reception ..... Conference Center Lobby

### 7–8 PM

Keynote Address ..... Ballroom B & C

Recovery and Resilience of Oak Woodlands Following the October 2017 Tubbs Fire

• *David Ackerly, University of California, Berkeley*

## Satellite Meetings – Sunday, October 21

### 9 AM–NOON

IOS Board Meeting .....Arboretum Headquarters Library

### 4:30–6 PM

Oaks of the Americas Conservation Network .....Conference Room A

### 5–6 PM

APGA Plant Collections Network Multisite *Quercus* Curatorial Group .....Conference Room B

# Conference Schedule – Monday, October 22

## 7 AM

Registration Desk Opens ..... Lobby

## 8–10 AM

Plenary Session ..... Ballroom B&C

*Moderator: Emily Griswold, UC Davis Arboretum and Public Garden*

Welcome and Opening Remarks

- *Charles Snyers, International Oak Society*
- *Shannon Still, UC Davis Arboretum and Public Garden*

Introduction to California Oak Diversity

- *Pamela Muick, Contra Costa Solano Colleges*

The California Acorn Survey: What 39 Years of Counting Acorns Can Tell You

- *Walt Koenig, Cornell University and University of California, Berkeley*

Assessing the Climate Change Vulnerability of California's Oak Vegetation Types

- *James Thorne, University of California, Davis*

## 10–10:20 AM

Coffee Break ..... Lobby

## 10:20 AM–NOON

### CONCURRENT SESSIONS

Track A: Global Oak Diversity ..... Ballroom B&C

*Moderator: Béatrice Chassé, Arboretum des Pouyouleix*

Evolution of the World's Oaks: Phylogeny and Biogeography of the Genus *Quercus*

- *Andrew Hipp, The Morton Arboretum*

Neotropical Oaks Phylogeography and Conservation

- *Hernando Rodríguez Correa, Universidad Nacional Autónoma de México*

Major Asian Lineages of the Beech Family

- *Chuck Cannon, The Morton Arboretum*

The Oaks of Vietnam: Origin, Evolution and Genomic Diversity

- *Joeri Sergej Strijk, Guangxi University*

Track B: Urban Oak Habitats ..... Ballroom A

*Moderator: Zarah Wyly, Sacramento Tree Foundation*

Re-Oaking Silicon Valley: Building Climate Resilience with Oaks in Cities

- *Erica Spotswood, San Francisco Estuary Institute*

Seed to Seedling: Inspiring Kids While Growing Oaks for Our Future

- *Pamela Sanchez, Sacramento Tree Foundation*

Effects of Human Plantings and Weather Variation on Gall Wasps and Leaf Miners on Oaks

- *Ian Pearse, U.S. Geological Survey, Ft Collins Colorado*

Value of Oaks to Wildlife in Urban Sacramento

- *Daniel A. Airola, Northwest Hydraulic Consultants*

## NOON–1:30 PM

Lunch Break and Poster Session ..... Lobby

Don't Ask, Don't Tell Is Not the Best Policy

- *Pamela Allenstein, American Public Gardens Association*

Oaks as a Pilot Group for Developing Conservation Gap Analysis Methodologies

- *Emily Beckman, The Morton Arboretum*

Future Climate Change will Reduce Growth of the California Endemic Valley Oak

- *Luke Browne, University of California, Los Angeles*

Predisposition To decline: Predicting AOD Occurrence with Environmental Factors

- *Sandra Denman, Forest Research, United Kingdom*

High Quality Genome Assembly and Annotation of a California Endemic Oak

- *Sorel Fitz-Gibbon, University of California, Los Angeles*

Mitigating Drowned Oaks

- *Ken Knight, Kenneth A. Knight Consulting, LLC*

Functional Trait Variation of *Quercus castanea* Née along a Climate Gradient in the Cuitzeo Basin, Michoacan, Mexico

- *Libny Ingrid Lara De La Cruz, Universidad Nacional Autónoma de México (UNAM), Morelia, Michoacán, México*

Effects of Variation in Bud Burst and Flowering Phenology on Acorn Production in a Savanna Population of Valley Oak

- *Andy Lentz, University of California, Santa Barbara*

Miocene Divergence and Pleistocene Introgression of Two Deciduous Oak Species from Section *Cerris* in China

- *Yao Li, Nanjing Forestry University, China & University of California, Los Angeles*

Fate of California Black Oaks in Large Wildfires

- *Jonathan W. Long, USDA Forest Service Pacific Northwest Research Station*

Physiological and Gene Expression Response of Valley Oak (*Quercus lobata*) Seedlings to Water Stress

- *Alayna Mead, University of California, Los Angeles*

Ancient Introgression Among Two Distantly Related White Oak Species in Southern California: When and How Much?

- *Scott O'Donnell, University of California, Los Angeles*

New Oak Cultivars 2018

- *Ryan Russell, City of Columbia, Missouri*

An Overview of Drippy Blight Disease of Red Oaks

- *Rachael Sitz, United States Forest Service, Rocky Mountain Research Station*

Climatic and Soil Factors shape the Demographical History and Genetic Diversity of *Quercus liaotungensis* in North China

- *Jia Yang, Northwest University, Xi'an, Shaanxi Province, China*

Refer to the conference website for abstracts, presenting author biographies, and co-author listings. Please note that only presenting authors are listed in the program.

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# Conference Schedule – Monday, October 22

## 1:30–3 PM

### CONCURRENT SESSIONS

Track A: Lightning Talks .....Ballroom B&C

*Moderator: Taylor Lewis, UC Davis Arboretum and Public Garden*

Using the IUCN Red List to Assess the Global Status of Oaks

- *Christina Carrero, The Morton Arboretum*

Highlights of a California Landowner's Twenty-two Year Oak Woodland Conservation Project

- *Diane S. Pepetone, California Naturalist*

Sharing Oak Woodland Research through a Popular Website

- *Devii Rao, University of California Cooperative Extension*

The Great Oak Count and The OakWell Survey: Comprehensive Surveys of Palo Alto's Native Oaks

- *Elise Willis, Canopy, Palo Alto, California*

Oaks in the Mix: Championing *Quercus* within a Diverse Living Collection

- *Vanessa Handley, University of California Botanical Garden, Berkeley*

Root Sucker Cutting Propagation of Dwarf Oak Species as an Alternative to Seed Propagation for Ex-situ Conservation

- *Adam Black, Peckerwood Garden, Texas*

Addressing Roots of Threats to Oaks

- *Hilary and Jen Bayer, Magic, Palo Alto, California*

Evaluating the Impact of Emergent Disease on Microbial and Insect Populations in the Tree Ecosystem

- *Shyamali Roy, University of Reading, United Kingdom*

Managing Sudden Oak Death: Selected Studies on What Works, and What Doesn't

- *Steven Swain, University of California Cooperative Extension*

Combining Molecular Data to Reconstruct the Evolution of Oaks

- *Damien D. Hinsinger, College of Forestry, Nanning, China*

Species Boundaries Between Three Sympatric Oak Species at the Northern Edge of their Distribution in China

- *Fang Du, Beijing Forestry University, China*

Wither the Mighty Oak? Examining Trends in Large Hardwood Trees in Northern California and Southern Oregon, USA

- *Jonathan W. Long, USDA Forest Service Pacific Northwest Research Station*

Common Names for Oaks in Western Europe - and the Spanish Problem

- *Roderick Cameron, Grigadale Arboretum, Argentina*

Intimate Encounters with Wild Oaks: TreeGirl Nude Photography with Fantastical, Famous and Ancient Oaks

- *Julianne Skai Arbor, TreeGirl Studios*

Track B: In-depth Case Study .....Ballroom A

*The Oaks of Apple Park, presented by Dave Muffly*

Track C: "Quercophiles Abroad" Film .....Conference Room A

*Compiled by Dan Keiser*

## 3–3:30 PM

Afternoon Break.....Lobby

## 3:30–5:30 PM

### WORKSHOPS

Climate Change and California Native Cultures' Uses of Oaks: Food, Art, and Tribal Identity.....Putah Creek Lodge

- *Frank K. Lake, USDA Forest Service, Pacific Southwest Research Station*

Developing a Global Fagaceae Working Group .....Conference Room A

- *Chuck Cannon, The Morton Arboretum*

Open Science Protocols for Contributing to Informal Oak Research Networks .....Conference Room B

- *Prahlada Papper, UC Berkeley*

Structural Pruning of Oaks .....Conference Center Courtyard

- *Brian Kempf, Urban Tree Foundation*

Establishing a Consortium of Ex Situ Conservation Collections for Threatened North American Oaks .....Ballroom A

- *Murphy Westwood, The Morton Arboretum*



# Conference Schedule – Tuesday, October 23

## 7:30 AM

Registration Desk Opens ..... Lobby

## 8–10 AM

### CONCURRENT SESSIONS

Track A: Oak Evolution and Genetic Diversity ..... Ballroom A

*Moderator: Andrew Hipp, The Morton Arboretum*

Functional Diversification in the 'Roburoid Oaks'  
• *José A. Ramírez-Valiente, Centre of Forest Research, INIA-CIFOR, Madrid, Spain*

Ecosystem Consequences of Species Coexistence in Highly Diverse Oak Communities  
• *Antonio González-Rodríguez, Universidad Nacional Autónoma de México*

Population Genetic Structure of Bur Oak (*Quercus macrocarpa*)  
• *Mira Garner, The Morton Arboretum*

Episodic Hybrid Advantage Keeps Species Boundaries Low in Oaks (*Quercus*)  
• *Warren Chatwin, University of Notre Dame*

Track B: Oak Land Management and Conservation Concerns ..... Ballroom B & C

*Moderator: Timothy M. Boland, Polly Hill Arboretum*

Reforestation of Mount Tavor Oak in the Low Land of Israel  
• *Ezra Barnea, Barnea Oak Nursery*

Oak Woodland Regeneration in Fuel Treatment Areas Before and After the 2017 Tubbs Fire, Sonoma County, CA  
• *Michelle Halbur, Pepperwood Preserve*

Biotic and Abiotic Factors and Their Involvement in Oak Trees Decline and Mortality Phenomenon in Northern Israel  
• *Idan Kopler, Shamir Research Institute, University of Haifa, Kazrin, Israel*

Drought and Beetle Impacts to Native Trees in the Santa Monica Mountains: What Does the Future Hold?  
• *Rosi Dagit, Resource Conservation District of the Santa Monica Mountains*

## 10–10:20 AM

Coffee Break ..... Lobby

## 10:20 AM–NOON

### CONCURRENT SESSIONS

Track A: California Oak Evolution and Genetic Diversity ..... Ballroom B & C

*Moderator: Shannon Still, UC Davis Arboretum and Public Garden*

Potential Role of Epigenetics in Ability of Oaks to Respond to Environmental Change  
• *Victoria Sork, University of California, Los Angeles*

Modeling Adaptive Gene Flow in California White Oaks Through Historic and Future Climate Change  
• *Prahlada Papper, UC Berkeley*

Evolution and Diversification of California Red Oaks  
• *Paul Manos, Duke University*

Disentangling the Phylogenetic Network of the California Red Oak Clade (*Quercus*, section *Lobatae*, series *Agrifoliae*)  
• *Richard Dodd, UC Berkeley*

Track B: Horticulture ..... Ballroom A

*Moderator: James Hitz, International Oak Society*

Managing Oak Wilt  
• *Guy Sternberg, Starhill Forest Arboretum*

Micropropagation of the Rare Ring-cupped Oak, *Quercus arbutifolia*  
• *Qiansheng Li, Shanghai Institute of Technology*

Southwestern US Oaks: An Ornamental Propagation Nursery's Effort to Make Superior Ornamental Selections Available for Commercial and Public Planting  
• *Mark Krautmann, Heritage Seedlings & Liners*

Evaluation of Evergreen Oaks for Southeastern Landscapes  
• *Mark Weathington, JC Raulston Arboretum at North Carolina State University*

## NOON–1 PM

Lunch Break ..... Lobby

## 1–4:30 PM

Local Tours ..... Depart from Conference Center

- Shields Oak Grove Deep Immersion Tour
- Sacramento Region Urban Forest and Capitol Park Tour
- Tour of Habitat Restoration on the Putah Creek Riparian Reserve
- Arboretum Horticulture and Plant Collections Tour
- Arboretum GATEways Tour – Academic Engagement Gardens and Student Leadership Programs
- Plant Conservation and Collections-Based Research Tour
- Bicycle Tour of UC Davis campus and City of Davis Urban Forest

## 5:30 PM

Buses depart for Sacramento ..... Conference Center

## 6–9 PM

Gala Dinner, Awards Ceremony, and Keynote Address ..... Sacramento Library Galleria

Historical Ecology of Northern California:  
Learning from the Past to Prepare for the Future  
• *Robin Grossinger, San Francisco Estuary Institute*

## 9:00 PM

Buses depart for return trip to Davis ..... Sacramento Library Galleria

# Conference Schedule – Wednesday, October 24

## 7:30 AM

Registration Desk Opens .....Lobby

## 8–10 AM

### CONCURRENT SESSIONS

Track A: Climate Change and Urban Oak Landscapes .....Ballroom B&C

*Moderator: Andrew Fulks, UC Davis Arboretum and Public Garden*

- UC Davis Living Landscape Adaptation Plan
  - *Shannon Still, University of California, Davis*
- Utilizing California's Climate Change Legislation to Keep Oaks Standing
  - *Angela Moskow, California Wildlife Foundation/California Oaks*
- Urban Oak Landscapes of the Future
  - *Bryan Denig, Cornell University*
- The Difficulty of Planting Urban Trees in France Under Climate Change
  - *Thierry Lamant, Arboretum des Grandes Bruyères, Ingrannes, France*

Track B: Global Oak Conservation .....Ballroom A

*Moderator: Charles Snyers, International Oak Society*

- Climate Risk to Oak Species in Oaxaca, Mexico
  - *John N. Williams, CIIDIR-OAXACA, Instituto Politécnico Nacional, Mexico*
- New Efforts in Mexican *Quercus* Conservation
  - *Maricela Rodríguez-Acosta, Puebla University Botanical Garden, BUAP, Mexico*
- Mapping the Elevational Distribution of Oaks in the Eastern Himalayan Mountains
  - *James Thorne, University of California, Davis*
- The Conservation of *Quercus ilex* subsp. *rotundifolia* in the Dehesas of the Southwestern Iberian Peninsula
  - *Hendrik Brand, University of Kassel, Witzenhausen, Germany*

## 10–10:20 AM

Coffee Break .....Lobby

## 10:20 AM–NOON

### CONCURRENT SESSIONS

Track A: Oak Utilization and Cultural Landscapes .....Ballroom B&C

*Moderator: Rachel Davis, UC Davis Arboretum and Public Garden*

- Working with Beautiful Oaks to Produce Delicious Truffles
  - *Bogdan Caceu, La Creole Orchards, Salem, Oregon*
- Tribal Traditional Knowledge, Stewardship of Tanoaks, Cultural Landscape Practices and Climate Adaptation: Sustaining a Future of Acorn Traditions and Food Security in the Klamath-Siskiyou Bioregion, Western United States
  - *Frank K. Lake, USDA Forest Service Pacific Southwest Research Station*

Chasing a Lost Black Oak on Santa Cruz Island, California

- *Jonathan W. Long, USDA Forest Service Pacific Northwest Research Station*

Cork Wars in World War II: Oaks, Espionage and National Security

- *David Taylor, Johns Hopkins University*

Track B: Plant Collections and Public Garden Conservation Initiatives .....Conference Room A

*Moderator: Dirk Giseburt, Kruckeberg Botanic Garden*

- Plant Collections Network Multisite *Quercus* Collection: Collaborative Efforts from 2015-2018
  - *Matthew Lobdell, The Morton Arboretum*
- Cultivated Oaks of the World: Putting Oak Collections on the Map
  - *Roderick Cameron, International Oak Society*
- The Morton Arboretum's Oak Conservation Efforts in Mexico and Central America
  - *Silvia Alvarez-Clare, The Morton Arboretum*
- The ConServation – Conservation Mapping and its Role in Oak Conservation
  - *Timothy M. Boland, Poly Hill Arboretum*

Track C: Insect and Pathogen Threats to Oaks .....Ballroom A

*Moderator: Christopher Lee, California Oak Mortality Task Force, California Department of Forestry and Fire Protection*

- Oak Health Issues in the UK and Approaches to Ensuring Resilient Oak Trees for Future Generations
  - *Sandra Denman, UK Forest Research*
- Oak Mortality Patterns and Causes in the Midwest
  - *Rose-Marie Muzika, University of Missouri*
- Southern California Pest and Diseases: History, Biology and Current Research
  - *Akif Eskalen, UC Cooperative Extension, Davis*
- Sudden Oak Death: Trends and New Discoveries
  - *Dave Rizzo, University of California, Davis*

## NOON–1 PM

Lunch Break .....Lobby

## 1–1:30 PM

Wrap up Discussion and Closing Commentary .....Ballroom B&C

## 1:30–3 PM

International Oak Society Meeting of Members .....Ballroom B&C

## 3–4 PM

Seed Exchange .....Ballroom A

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# 9th International Oak Society Conference Schedule-at-a-Glance

UC Davis Conference Center • 550 Alumni Lane, Davis, CA 95616

## SUNDAY

7:00 am	
8:00 am	
9:00 am	
10:00 am	
11:00 am	
12:00 pm	
1:00 pm	Schedules Vary
2:00 pm	Optional Day Trips
3:00 pm	
4:00 pm	
5:00 pm	
6:00 pm	
7:00 pm	6–7 pm Opening Reception
8:00 pm	7–8 pm Keynote Speaker David Ackerly

## MONDAY

7 am	Registration Opens		
8–10 am	Morning Plenary		
10–10:20 am	Coffee Break		
10:30 am–12 pm	Global Oak Diversity	10:30 am–12 pm	Urban Oak Habitats
12–1:30 pm	Lunch Break and Poster Session		
1:30–3 pm	Lightning Talks	1:30–3 pm	Oaks of Apple Park
1:30–3 pm	Film: Quercophiles Abroad		
3–3:30 pm	Afternoon Break		
3:30–5:30 pm	Workshops See Schedule for Details		

## TUESDAY

7:30 am	Registration Opens		
8–10 am	Oak Evolution and Genetic Diversity	8–10 am	Oak Land Management and Conservation Concepts
10–10:20 am	Coffee Break		
10:30 am–12 pm	California Oak Evolution and Genetic Diversity	10:30 am–12 pm	Horticulture
12–1 pm	Lunch Break		
1–4:30 pm	Local Tours See Schedule for Details		

## WEDNESDAY

7:30 am	Registration Opens		
8–10 am	Climate Change and Urban Oak Landscapes	8–10 am	Global Oak Conservation
10–10:20 am	Coffee Break		
10:30 am–12 pm	Oak Utilization and Cultural Landscapes	10:30 am–12 pm	Plant Collections and Public Garden Conservation
10:30 am–12 pm	Insect and Pathogen Threats to Oaks		
12–1 pm	Lunch Break		
1–1:30 pm	Wrap up Discussion and Closing Commentary		
1:30–3 pm	International Oak Society Meeting of Members		
3–4 pm	Seed Exchange		

5:30 pm	Buses Depart for Gala	
6–9 pm	Gala Dinner and Keynote Speaker	
9:30 pm	Buses Return to Davis	

10:00 pm