

## Oak woodland and river protection in Upper Cosumnes Watershed

by Alan Ehrgott,

Executive Director, American River Conservancy

**E**ast of Sacramento, in the Sierra Nevada foothills, the El Dorado Ranch fronts the Cosumnes River, one of the last undammed rivers on the west slope of the Sierra Nevada. Hiking across the ranch's 7,800 acres of mature blue oak woodland is like taking a step back-in-time, before 150 years of California residential development. The undisturbed woodland stretches as far as the eye can see, and the diversity of wildlife skyrockets at the main fork of the Cosumnes River to include an assemblage of native fishes, bald and golden eagle (*Haliaeetus leucocephalus* and *Aquila chrysaetos*), bear, mountain lion (*Puma concolor*), and song birds.

A protected future for this landscape was not always assured. In the 1950s the Bureau of Reclamation proposed the Nashville Project, a three-dam complex immediately east of Highway 49 on the Cosumnes River. But the Cosumnes is not a high-elevation watershed, and as such, a hydroelectric complex on the river would have limited capacity. Thus the proposal died with more intensive financial analysis. In the mid-1990s, McCuen Properties proposed a subdivision of 569 rural lots over the 7,800 acre ranch. This project was



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Cosumnes River Canyon

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later abandoned when neighboring residents, the City of Plymouth, and Foothill Conservancy challenged it based on impacts to existing transportation routes, and to natural and cultural resources.

This fall American River Conservancy (ARC) will complete its third phase acquisition, protecting a total of 3,157 acres of El Dorado Ranch and over 2.5 miles of river canyon immediately west of Highway 49. Acquired and protected lands will make up 40 percent of the entire ranch and will provide habitat for a future State Wildlife Area, as well as the first public trail in the Upper Cosumnes watershed.

ARC's goals include protecting the native fisheries, the extensive wildlife corridor, and

the quality of water flowing into the Sacramento Valley and Bay-Delta. The Cosumnes serves as a rare model of a free-flowing river because there are no significant dams on its North, Middle, South or Main Forks. The acquisition of El Dorado Ranch and conservation of this extensive blue oak woodland will protect the Cosumnes River from its headwaters to its confluence with the Mokelumne River.

Over the past ten years, ARC has completed the purchase of thirteen properties fronting the Cosumnes River, protecting 7,000 acres of riparian habitat beneficial to native fishes, including rainbow trout

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## California Oaks Coalition

California Oaks Coalition brings together state, regional, and local organizations to conserve and perpetuate the state's primary old growth resource. Members of California Oaks Coalition are united by the vital role of oaks in providing habitat, sustaining healthy watersheds, and sequestering carbon:

American River Watershed Institute  
 Butte Environmental Council  
 California Invasive Plant Council (Cal-IPC)  
 California Native Plant Society (CNPS)  
 CNPS San Diego Restoration Committee  
 CNPS Sanhedrin Chapter  
 Californians for Western Wilderness (CalUWild)  
 California Wilderness Coalition (CalWild)  
 Carpe Diem West  
 Clover Valley Foundation  
 Dumbarton Oaks Park Conservancy  
 Elder Creek Oak Sanctuary  
 Endangered Habitats Conservancy  
 Endangered Habitats League  
 Environmental Defense Center  
 Environmental Protection Information Center (EPIC)  
 Environmental Water Caucus  
 Foothill Conservancy  
 Forests Forever  
 Friends of the Richmond Hills  
 Friends of Spenceville  
 Hills for Everyone  
 Los Padres ForestWatch  
 Lower Kings River Association  
 Napa County Water, Forest and Oak Woodland Protection Committee  
 Northern California Regional Land Trust  
 Planning and Conservation League  
 Redlands Conservancy  
 Resource Conservation District of Santa Monica Mountains  
 Rural Communities United  
 Sacramento Tree Foundation  
 Santa Clarita Organization for Planning and the Environment (SCOPE)  
 Shasta Environmental Alliance  
 Sierra Club Placer County  
 Tejon Ranch Conservancy  
 Tuleyome  
 University of California Los Angeles Botanical Garden

### The four areas of support being developed for the Coalition are:

- 1) Research and advocacy updates (available at [californiaoaks.org](http://californiaoaks.org)).
- 2) Information to educate and engage the public.
- 3) Tools for engaging in planning processes and educating opinion leaders.
- 4) Materials to inform local, regional, and state governmental agencies of the opportunities for and benefits of protecting oak woodlands.

Please contact Oaks Network Manager Angela Moskow, [oakstaff@californiaoaks.org](mailto:oakstaff@californiaoaks.org), for more information.

The article below is adapted from a presentation Carol Rice made at a technical session on oak woodlands during California Native Plant Society's Conservation Conference held in Los Angeles earlier this year. Tom Gaman chaired the session and presented statewide trends in oak woodlands.

## Oak woodlands and fire

by Carol Rice, General Manager  
 Wildland Res Mgt and Tom Gaman,  
 Registered Professional Forester and Advisor,  
 California Wildlife Foundation

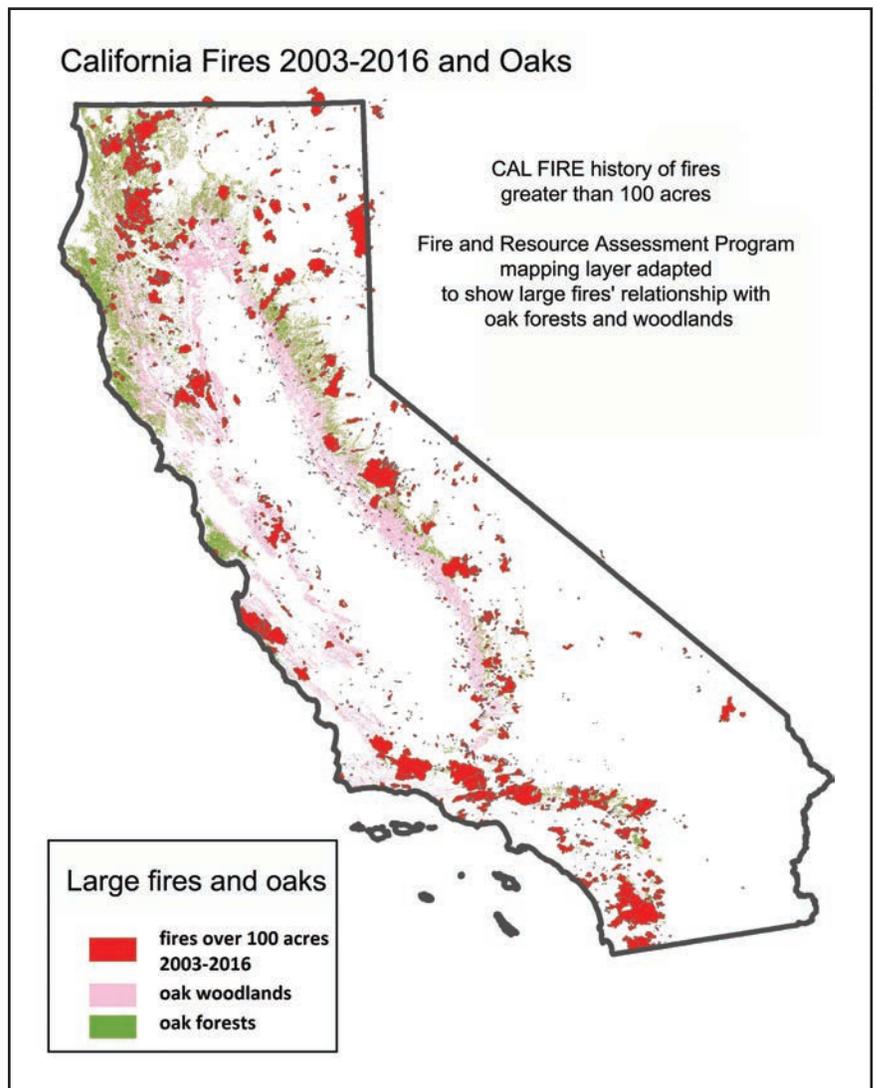
**Fire ecology in oak woodlands:** Fire has always been a part of oak woodlands and forests. Oak woodlands persist because they have adapted to live with fire after thousands of years of burning.

The main adaptation is that most oaks sprout. Coast live oaks can survive crown scorch and then vigorously sprout from their base. Deciduous oaks are not known for their sprouting capability, although studies found that only 3 percent of burned valley oaks died even when 85 percent of the trees were completely top-killed (Holmes 2006).

Bark thickness and branching habits are also adaptations that protect oaks from fire damage, but sprouting is what provides a competitive edge over conifers. Sprouting is especially advantageous when fire frequency is high. For example, during a Society of American Foresters field trip to the Rim Fire site, the group concluded that much of the most severely burned area is likely to become oak woodland because the conifers could not withstand frequent high-intensity fires, but oaks could.

One way to understand the role of fire in oak woodlands is by looking at fire regimes, including how often the area has burned, the intensity of fire, and the severity of the

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## RESOURCES

### PUBLICATIONS:

- The report, *How can we save our native trees? Drought and Invasive Beetle impacts on Wildland Trees and Shrublands in the Santa Monica Mountains*, by Oaks Coalition member Santa Monica Resource Conservation District and NASA DEVELOP, is available at: [rcdsmm.org/wp-content/uploads/2016/04/Droughtand-Invasive-Beetle-impacts-RCDSMM-1.2.18.pdf](http://rcdsmm.org/wp-content/uploads/2016/04/Droughtand-Invasive-Beetle-impacts-RCDSMM-1.2.18.pdf)
- **Debris Flow Fact Sheet**, published by California Department of Conservation, describes conditions that contribute to debris flow, provides an overview of types of flows, and provides advice for residents in the path of a debris flow: [conservation.ca.gov/index/Documents/CGS-Debris-Flow-Fact-Sheet.pdf](http://conservation.ca.gov/index/Documents/CGS-Debris-Flow-Fact-Sheet.pdf)

### INTERNET RESOURCES:

- **California Fire Science Consortium:** Includes links to events and webinars, research and publications, data resources, and organizations: [cafiresci.org/](http://cafiresci.org/)
- **Center for Western Water and Water Extremes**, University of California, San Diego, Scripps Institution of Oceanography: Includes a wide range of links, including peer reviewed articles, book chapters, and public reports: [cw3e.ucsd.edu/](http://cw3e.ucsd.edu/)
- **Fire Adapted Communities Learning Network:** Develops, innovates, and uses a network approach to disseminate fire adaptation practices to improve community wildfire resilience: [fireadaptednetwork.org/](http://fireadaptednetwork.org/)
- **Sonoma Resource Conservation District's Fire Recovery** web resources include a Natural Resources Recovery Guide, Best Management Practices for landowners preparing for winter weather, and many other links, many of which have information that is applicable beyond Sonoma County: [sonomarc.org/resources/fire-recovery/](http://sonomarc.org/resources/fire-recovery/)
- **United States Geological Survey (USGS) California Water Science Center:** Includes links to information about risks associated with wildfires and water (see: [ca.water.usgs.gov/wildfires/wildfires-debris-flow.html](http://ca.water.usgs.gov/wildfires/wildfires-debris-flow.html)), research projects, and hydrologic extremes: [ca.water.usgs.gov/index.html](http://ca.water.usgs.gov/index.html)

## Studying oaks to guide management decisions



© Bryant Baker

### Oaks on Happy Canyon grazing allotment

by Bryant Baker,  
*Conservation Director,  
Los Padres ForestWatch*

Los Padres National Forest—a nearly two million-acre forest dominated by chaparral and oak woodland along the Central and South Coasts—is home to 11 of California's 20 oak species. Four of these—blue oak, black oak, Engelmann oak, and valley oak—have been designated as “Management Indicator Species” by the Forest Service in accordance with the 1976 National Forest Management Act. Forest officials are required to make adjustments to how they manage an area when monitoring indicates that these oak populations are declining.

Although various shrub oaks occur across nearly every acre of Los Padres, these four tree species can influence Forest Service management activities. In addition, several measures have been taken to protect blue oaks, including the establishment of the Blue Oak Woodlands Area of High Ecological Significance near Garcia Mountain in Los Padres. Here grow some of the southernmost stands of blue oaks, which occur at higher elevations than those found farther north.

Attention has recently been on blue oaks and valley oaks across grazing allotments

within the national forest. One such allotment is found in Happy Canyon, near the spring-induced wildflower haven of Figueroa Mountain. A 5,000-acre grazing area has been used by nearby ranchers for decades, and there has been substantial concern for the recruitment and viability of the oaks.

Several studies pointed to poor oak recruitment in the grazed areas of the allotment compared to the surrounding un-grazed area. In 2016, the Forest Service finished environmental review for a project that would authorize commercial grazing on the allotment for a new 10-year term, finding that there would be no significant impacts. However, California Oaks Coalition member Los Padres ForestWatch ([lpfw.org](http://lpfw.org))—a nonprofit conservation organization dedicated to ensuring plants and wildlife, watersheds, and wilderness areas across the Los Padres National Forest are protected—objected to this decision, based in part on data suggesting blue oaks and valley oaks were suffering from grazing impacts.

The Forest Service agreed to conduct a multi-year study on oak recruitment in and around the grazing allotment. They set up several plots, fencing off half of them to keep out livestock. The first data were

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impacts of fire, as measured by crown scorch, fuel consumption, and soil heating.

**Fire frequency and severity:** Frequent fire in oak woodlands has in the past kept fuel volumes low. Increases in fuel accumulation lead to greater fire intensity and severity of impacts.

The size of fires is an important component of the fire regime. Forest Service data demonstrate that California's recent fires in oak landscapes have grown larger and more severe. Fire size and severity do not perfectly correlate. The same fire can be both damaging and beneficial. The Rim Fire was so big that entire trees were consumed, boles and all. In other places the burned area looked like a prescribed burn. Where grass carries fire, which includes areas of deciduous oaks with grassy understory, large fires were the norm before 1900.

Stephens, Martin, and Clinton (2007) estimated acres burned annually prior to European settlement by determining the number of acres of each vegetation type in California, and its typical fire-return interval. Of the 13 million acres of oak woodlands, a range of 1.2 to 3.15 million acres of "oakwoods" burned each year, and for mixed "evergreen forests" 112,000 to 335,000 acres burned annually.

**Patchiness and seasonality:** Pattern or patchiness is important when considering post-fire transport of seeds or movement of wildlife. Good data are not available, but it is likely fires pre-European settlement were patchy due to the paucity of fuel.

Native American burning seasons were likely in the early spring (especially in evergreen ecosystems where the leaf litter burns when the grass is green) and fall, especially in deciduous stands. In past decades, wildfires have burned in the summer and fall, but more recently they have occurred year-round due to drought, increased temperatures associated with the changing climate, and large swaths of disease.

**Tale of two states:** Hugh Safford and Kip Van de Water (2014) investigated the difference between pre-European settle-

ment and current fire-free intervals and found that it varied by location. Intervals between fires are far longer than before European settlement in northern California and far shorter in southern California. Human ignitions are a primary factor for the shorter intervals in southern California. Additionally, the higher frequency changes the fuels to ignitable annual grasses, thereby exacerbating fire frequency.

Based on the spatial distribution of oak woodlands and fire-return interval measurements, blue and coast live oak, as well as canyon live oak are most impacted by frequent fires. Interior live, tan, and Oregon white oak are most impacted by lack of fire.

Threats to oaks in coastal northern California are from overtopping by Douglas-fir and bays and from overtopping by pines in the Sierra. In southern California, non-native pests are devastating oak woodlands. Additionally, non-native annual grasses are fueling more frequent fires in the oak savannas of southern California.

**Vegetation management:** More prescribed fire would help perpetuate oaks in northern California, even in the wildland-urban interface. It makes sense to put fire where and when we want it so that future fires devastate fewer homes and vegetative communities. Where oak woodlands are vulnerable, it would help to have a cache of local seedlings and acorns ready for restoration following wildfire. Treating fuels around woodlands will aid fire containment prior to it reaching oak woodlands. Ignition prevention programs should target where and why fires start. For example, because 80 percent of wildfires start within 10 feet of a road, and mechanical equipment causes most wildfires, it is important that mowing is done properly and before ignitable fuels become tinder dry. It is also important to hold those who start wildfires accountable.

Dr. Harold Biswell, one of California's first fire ecologists, admonishes us: *Work with nature, not against it.*

## Fire, rain, and mudslide risk

The devastating and deadly mudslides in Santa Barbara County in January 2018 originated in chaparral areas that had burned, flowing through and uprooting trees on downslopes. This deadly disaster highlighted the need to better understand how rain and wildfire interact to place hillsides and communities at risk.

A study by Professor Binod Tiwari of California State University's Department of Civil and Environmental Engineering examined the intensity and duration threshold for triggering mudslides on slopes that had lost vegetation cover due to wildfire.

"We found that the risk of mudslides drops significantly on slopes that have good vegetation cover," Tiwari said.

In a February 2018 interview with the *Orange County Register*, Tiwari explained the difference between landslides and mudslides:

A landslide is the movement of soil or rock mass due to the loss of resistance against the force that is pushing the soil or rock downwards and outwards. Landslides involve a shallow or deep soil/rock mass, which could be dry or saturated with water. As such, they are slides and not a flow.

A mudslide is generally a flow of saturated soil mass that has water content high enough for the soil to behave as liquid. Mudslides happen very quickly with fast-moving soil and water. Mudslides are caused by water saturation of the immediate topsoil layer from rainfall. Wildfires are a triggering factor for mudslides, usually due to vegetation loss.

The risk of mudslides and debris flows is strong when storms follow fires, due to vegetation loss and soil exposure, according to the U.S. Geological Survey ([pubs.usgs.gov/fs/2004/3072/fs-2004-3072.html](https://pubs.usgs.gov/fs/2004/3072/fs-2004-3072.html)), which cautions: "Fast-moving, highly destructive debris flows triggered by intense rainfall are one of the most dangerous postfire hazards."

Tiwari noted that wildfires burn the soil and can change their properties, specifically clays, making them brittle and less permeable: "Post-wildfire ashes on that soil surface make the soil more impermeable and slippery...As such, infiltration capacity of the rainwater under the ground reduces significantly, which eventually increases the surface run-off to ease flash flooding in creeks in the area."

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Tiwari and his students are using a rain simulator system and slope model box to study the impact of vegetation loss in triggering mudslides. They found that a rainfall intensity of half an inch per hour for the duration of 30 minutes is enough to trigger a mudslide in a post-wildfire area, while it requires over 15 hours of rainfall of that intensity (half an inch per hour) to trigger a mudslide in an area that has good vegetation cover, although the soil on the slope is loose.

Risks of damage from floods, landslides, and mudslides grow with fire severity, California Wildlife Foundation Executive Officer Janet Cobb cautions: “Keeping trees standing and managing fire more effectively are of paramount importance to our state. This will require collaboration across sectors, such as that underway by signatories of the Fire Memorandum of Understanding (MOU), the control of invasive species, and development restrictions in areas of high fire risk.”

For more information on the Fire MOU, see “Restoring biodiversity after fire” in the Fall-Winter 2017 issue of this newsletter.

### Trees and mudslide risk

*Trees on slopes always help to reduce the amount of rainwater going directly to barren soil, specifically by intercepting it and through evapotranspiration.*

*Trees can significantly reduce soil erosion and related mudslide risks. Moreover, tree roots reinforce the soil on slopes, significantly helping to reduce problems associated with landslides and mudslides. However, we must pay special attention in areas of potential debris flow while designing waterways for culverts and bridges in areas where tree cover is dense.*

*Trees have the potential to move with large debris flows, where they can block waterways near bridges or culverts. We need to design structures to trap those trees before they reach the bridges or culverts to prevent them from washing away the bridges or diverting debris flows toward communities.*

**Professor Binod Tiwari**

## The Kizh ancient Hurungna oak—the oldest known living organism in California



Researcher Michael R. May standing next to the oak, believed to be a relict of a vanquished vegetation community.

by Gary Stickel, PhD  
Kizh Tribal Archaeologist

The oldest known oak has been living for an estimated 13,000 years on land that is part of the original Kizh tribal territory. The oak, composed of 70 stem clusters, is believed to be a single asexually reproducing clone that dates to the Ice Age.

The Kizh (pronounced like *teach*) Nation, also known as the Gabrieleño Band of Mission Indians, learned about the oak at a meeting held earlier this year to educate participants from the City of Fontana about the area’s indigenous Indian tribe. A member of the city’s historical society informed meeting participants about an oak growing in the area that is believed to be the oldest in the world, the second-oldest living organism in North America, and oldest organism in California.

I had thought Methuselah, the 4,700 year-old Bristlecone pine in California’s White Mountains was the oldest. I had helped radiocarbon date this ancient tree when I was a lab technician at University of California Los Angeles’s Institute of Geophysics and Planetary Physics. However, the historical society member shared an article by a team of five University of California (UC) biologists, which described the tree, a Pleistocene era (Ice Age) clone of Palmer’s oak (*Quercus palmeri*) that is growing in the Jurupa Mountains, south of Fontana in southern California.<sup>1</sup>

The UC researchers subsequently teamed up with Robert Przeklasa, PhD, to explore opportunities to protect the oak. The tribe and California Oaks Coalition have now joined this effort. Original Kizh territory covered parts of six Southern

California counties, including the mountains where the oak is growing.

Oak trees were considered by the Kizh, and all California tribes, to be the “staff of life.” The tribe nominated the site to California’s Native American Heritage Commission’s Sacred Lands Inventory. In so doing, the tribe decided to name it the *Hurungna Oak*, as the tree is living in the Jurupa Mountains and *Jurupa* is a corruption of *Hurungna*, the name of the ancient prominent Kizh village in the area. It is the tribe’s hope that this designation, which has been granted by the commission, will assist in efforts to preserve the tree and the vital land around it. The tribe is also collaborating with California Wildlife Foundation and California Oaks Coalition member Endangered Habitats Conservancy to preserve this amazing survivor of the oaks. The Kizh see it as a living metaphor for their people’s survival in the 21st century.

*Oak is considered a medicine tree to our Tribe, associated with strength and protection. Individual oak trees of great size and longevity have often been considered sacred and used as spiritual and civic centers for important tribal gatherings such as weddings, peace conferences and naming ceremonies.*

**Chief Ernest P. Salas, Kizh Nation**

<sup>1</sup>May MR, Provance MC, Sanders AC, Ellstrand NC, Ross-Ibarra J (2009) A Pleistocene Clone of Palmer’s Oak Persisting in Southern California. PLoS ONE 4(12): e8346. Published: December 23, 2009. doi.org/10.1371/journal.pone.0008346

# Partnership expands scientific monitoring for West Coast's largest tidal wetland restoration project

by **Doug Cordell**,  
Public Affairs Officer,  
San Francisco Bay National Wildlife Refuge  
Complex

California State Coastal Conservancy and California Wildlife Foundation (CWF) are expanding scientific monitoring at United States Fish and Wildlife Service's (USFWS's) South Bay Salt Pond Restoration Project. This program will help answer key research questions, better integrate regional data collection and sharing, and incorporate data on climate change impacts. CWF will administer \$1.2 million in Science Program funds awarded through Bay Area voter-approved Measure AA.

CWF has been a partner in wetland restoration in the South Bay, working with its contractor, Pacific States Environmental (PS), to bring in more than one million cubic yards of clean, tested fill to restore tidal marsh at Bair Island for USFWS, saving the Service approximately \$10 million. PS and CWF are now delivering fill for Service

levee repairs on the Don Edwards San Francisco Bay National Wildlife Refuge in Menlo Park and Alviso. This effort—the largest tidal wetland restoration on the West Coast—is returning former commercial salt ponds to thriving marsh lands that once ringed San Francisco Bay, thereby increasing wildlife habitat, mitigating flood risk, and expanding outdoor recreational opportunities.

Don Edwards marshes provide habitat for two federally-listed endangered species, Ridgway's Rail (*Rallus obsoletus obsoletus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*). Former salt pond levees, open ponds and dry pan have also become important habitat for shorebirds and waterfowl crowded out of other areas by development, including the western sandpiper (*Calidris mauri*) and the threatened western snowy plover (*Charadrius*



© Jenny Erbes, Point Blue Conservation Science

Western snowy plover (*Charadrius nivosus nivosus*) and chick

*nivosus nivosus*). Visit [southbayrestoration.org](http://southbayrestoration.org) for more information.

California Wildlife Foundation thanks John Bourgeois for his leadership of the important South Bay Salt Pond Restoration Project over the last decade.

Janet Cobb, Executive Officer

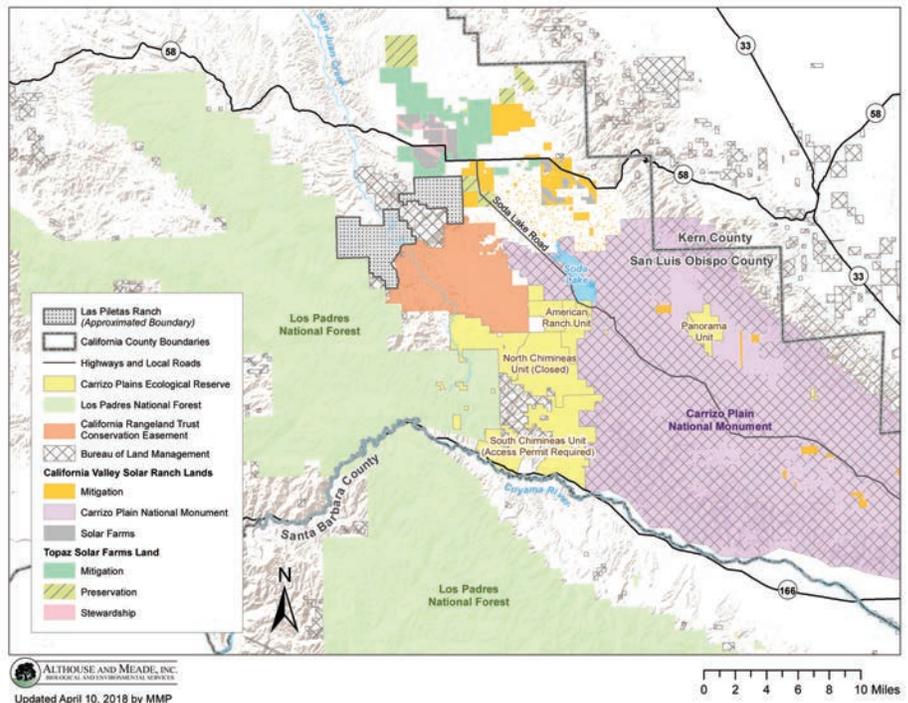
## Realizing the vision for protecting and restoring Carrizo Plain

The lands within and beyond Carrizo Plain National Monument support one of the highest concentrations of rare, threatened, and endangered species in the country. Carrizo Plain Conservancy (CPC, visit: [carrizoplainconservancy.org](http://carrizoplainconservancy.org)) has continued its collaborative conservation efforts since its article in the Spring-Summer 2017 issue of this newsletter. Below are recent accomplishments, carried out in collaboration with California Wildlife Foundation and other partners:

**Creating a kit fox preserve.** CPC is acquiring and transferring two properties, considered excellent San Joaquin kit fox (*Vulpes macrotis mutica*) habitat, to California Department of Fish and Wildlife (CDFW). The two properties add 480 acres to adjacent lands already owned by CDFW. Together, these properties will create a 900-acre kit fox preserve in the northern Carrizo Plain.

**Goodwin Ranch house and grounds.** The Nature Conservancy (TNC) is exploring the transfer of its ownership in the historic Goodwin Ranch house and grounds to CPC. TNC and CPC plan to use the property to accommodate researchers, and as a venue for events focused on Carrizo Plain.

Conserved Lands in Carrizo Plain Area



## Mokelumne designated as a California Wild and Scenic River

Thirty-seven miles of the Mokelumne River, which include irreplaceable oak riparian habitat, were entered into California's Wild and Scenic River system with Governor Brown's signing of Senate Bill 854 in June. The designation requires the state to protect the river's scenic and recreational values, prohibiting new or larger dams on the protected river reaches.

The Mokelumne River supports a number of special status species, is potential spawning habitat for fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and is included in a state-defined critical wildlife habitat block. The designation followed California Natural Resources Agency's release of the Mokelumne River Wild and Scenic River Study Report (<http://resources.ca.gov/programs-projects/wildandscenic/>), which recommended adding the North Fork and Main Stem of the Mokelumne, between Salt Springs Dam and Pardee Reservoir, to the California Wild and Scenic Rivers system.

Visit California Oaks Coalition member Foothill Conservancy's website to learn more about their 30-year effort to protect the Mokelumne River: [foothill-conservancy.org/pages/statewild.cgi](http://foothill-conservancy.org/pages/statewild.cgi).

## Napa County initiative update

The Napa County Watershed and Oak Woodland Protection Initiative of 2018, voted on in the June election, lost by a narrow margin. The initiative was developed by proponents of a similar measure (from 2016), in collaboration with Napa Valley Vintners. However, the vintners changed their position shortly after the 2018 measure was introduced.

The 2016 measure never made it to the ballot because of actions by the Napa Registrar of Voters, which are reported on in the Fall-Winter 2016 and Spring-Summer 2017 issues of this newsletter. Reflecting on all of these setbacks, proponent Jim Wilson noted: a growing segment of the wine industry recognizes the value of oak woodlands in protecting Napa's Agricultural Preserve, established 50 years ago.

## Pacific Herring Fishery Management Plan nearing completion

A Fishery Management Plan (FMP) for the imperiled Pacific herring (*Clupea pallasii*), initiated by California Department of Fish and Wildlife (CDFW) and Fish and Game Commission in the spring of 2016, is nearing its completion. CDFW, California Wildlife Foundation (CWF), and Pacific Herring Steering Committee (composed of industry and conservation stakeholders) recruited and retained a Project Management Team to draft the plan.

CWF administered funds, which were provided by Audubon, through a grant from Gordon and Betty Moore Foundation, and by National Fish and Wildlife Foundation. Substantial in-kind contributions were provided by Audubon California, CDFW, California Ocean Protection Council, Oceana, the Ocean Science Trust (OST), and by the Pacific herring industry.

The draft FMP follows the Marine Life Management Act Master Plan. It describes the biology, ecology, and habitat of herring; the fishery and its management history; and

provides research and data collection protocols. The FMP proposes a management strategy for San Francisco Bay herring, which includes the use of a predictive model to estimate spawning stock biomass, a Harvest Control Rule to set quotas based on that biomass, and a decision matrix tool to incorporate ecosystem considerations into yearly quota decisions. It also describes the process for collecting data and setting quotas, should fishing resume in the management areas outside of San Francisco Bay.

The draft FMP is undergoing peer review, under the guidance of OST. The FMP Draft Scientific Peer Review Final Report is scheduled for fall 2018. This will be followed by public comment and final action by the Fish and Game Commission. Visit [www.wildlife.ca.gov/Fishing/Commercial/Herring/FMP](http://www.wildlife.ca.gov/Fishing/Commercial/Herring/FMP) for further information and to review the timeline, and [wildlife.ca.gov/Fishing/Commercial/Herring](http://wildlife.ca.gov/Fishing/Commercial/Herring) to learn more about the fishery.



© Tony Brake

Slaty and glaucous-winged gulls fight over herring roe, a key winter food source for dozens of species of waterbirds in San Francisco Bay.

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collected in 2017, and will serve as a baseline as the study continues. The results of the study will help the Forest Service determine how grazing is impacting Happy Canyon's blue oaks and valley oaks, and will inform subsequent management practices.

While such a study was overdue, it highlights the importance of the Management Indicator Species status of these oaks.

The public was able to point to the unique protection of these species as a reason for the Forest Service to examine its decision with a finer lens. Hopefully, the agency will give more consideration to oaks during the decision-making process for future projects as a result of the work being done today.

Visit the Oaks of the Los Padres Forest webpage to learn more: [lpfw.org/ourregion/wildlife/oaks/](http://lpfw.org/ourregion/wildlife/oaks/).

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(*Oncorhynchus mykiss*) and federally endangered winter-run Chinook salmon (*Oncorhynchus tshawytscha*), as well as other amphibian, mammal, and bird populations.

Purchase funding has been provided by a diverse partnership, including California Wildlife Foundation/California Oaks, Wildlife Conservation Board, California Natural Resources Agency River Parkways Program, El Dorado County, RBC Wealth Management, and several hundred private supporters of the American River Conservancy. We also acknowledge the generous \$500,000 discount in the purchase price provided by Angelo Tsakopoulos as a donation to ARC.

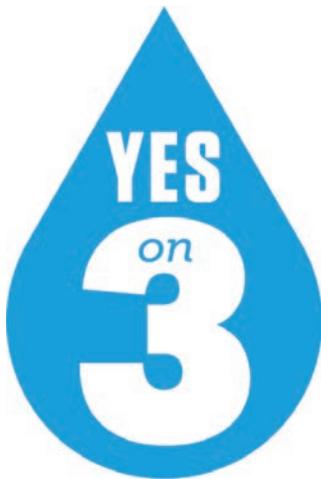
Funds provided by El Dorado County come from the Oak Woodland Preservation Account, with mitigation fees collected from developers to purchase and protect priority areas identified in its Oak Woodland Conservation Plan. In public testimony before the

Board of Supervisors, El Dorado County Planning Director Roger Trout stated, “In my personal and professional opinion, I have never seen a better oak woodland conservation project.”

#### American River Conservancy celebrates 30 years

American River Conservancy is celebrating its 30th anniversary, the completion of 83 conservation projects, and the protection of 25,000 acres of native fisheries, endangered species habitat, and recreational lands within the upper American and Cosumnes River watersheds. ARC provides interpretive hikes, educational programs to schools, and volunteer opportunities to the greater Sacramento metropolitan region. Visit [arconservancy.org](http://arconservancy.org) for more information.

## Proposition 3 on the November ballot



California Wildlife Foundation/California Oaks is supporting an upcoming statewide bond measure that will provide essential funding to sustain land and water conservation programs in California. Proposition 3, Water Infrastructure and Water Conservation Bond Initiative, scheduled for the November 2018 ballot, includes more than \$3 billion dollars for watersheds and riparian corridors, with \$50 million specifically for oak woodland conservation. If approved, this measure will replenish depleted Oak Woodland Conservation Program funds at Wildlife Conservation Board and provide other critical funding for the stewardship of California's natural resources.

Known as the Water Supply and Water Quality Act of 2018, this measure will authorize more funds to be invested in watershed conservation than any measure ever presented to the voters of any state. It also includes billions of dollars for water conservation, wastewater recycling, groundwater remediation, and restoration of existing storage and conveyance facilities. There is no allocation to new reservoirs or for Delta tunnel(s). Visit [waterbond.org](http://waterbond.org) for more information.

*Gerald H. Meral, PhD, Director of the California Water Program at Natural Heritage Institute, is the proponent of Proposition 3.*



#### CALIFORNIA WILDLIFE FOUNDATION CALIFORNIA OAKS FUND

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[WWW.CALIFORNIAWILDLIFEFOUNDATION.ORG](http://WWW.CALIFORNIAWILDLIFEFOUNDATION.ORG)

## How you can help:

- Donate to California Wildlife Foundation/California Oaks. A secure donation can be made from our website: [californiaoaks.org](http://californiaoaks.org).
- Spend time in an oak woodland or forest. Click on [californiaoaks.org/resources](http://californiaoaks.org/resources) for a summary of oak landscapes around the state that have public access.
- Please consider including oak conservation in your financial and estate planning efforts. Additional information can be found at [californiaoaks.org/donate](http://californiaoaks.org/donate).
- Be vigilant about threats to oak woodlands and oak-forested lands in your community and email California Oaks for information: [oakstaff@californiaoaks.org](mailto:oakstaff@californiaoaks.org).
- Sign up for the Oaks e-newsletter at [www.californiaoaks.org](http://www.californiaoaks.org).
- Support local and statewide measures to protect natural resources.
- Hold decision-makers accountable for protecting our green infrastructure.

California Oaks is a fund within California Wildlife Foundation, federal tax identification number 68-0234744. Contributions of cash, stocks, and bonds are tax deductible.

**Click on the Newsletters link of [californiaoaks.org](http://californiaoaks.org) to download prior newsletters.**

*Latin names are used for species with designated state or federal conservation status.*

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