

## Lewis Ranch: Preserving oak woodlands, working lands, and a riparian corridor

by Elena DeLacy, Executive Director,  
American River Conservancy

**O**n Lewis Ranch—situated at the intergrade between blue oak woodland, foothill pine belt, and Sierra mixed conifer-hardwood forest—it is possible to encounter blue oak and California buckeye not far from Pacific dogwood and Douglas-fir. The diverse topography and unique geology that created such a varied mix of habitats also make the ranch an excellent refuge for species whose ranges are shifting due to climate change.

Greenwood Creek, a perennial foothill tributary to the South Fork of the American River, flows through the 972-acre Lewis Ranch, near the town of Greenwood in El Dorado County. The site is exceptionally biologically diverse, with more than 3 miles of riparian frontage, varying topography, and a mosaic of vegetation types.

Indigenous people tended the region's wild and diverse landscapes for millennia, and the Lewis family, homesteaders, and ranchers have utilized its rolling hills as rangeland for over 100 years. Descendants of the Nisenan and Miwok people, whose bedrock mortars dot the landscape, continue to reside in the area, and they are active in



Julie Andert, American River Conservancy

**Greenwood Creek, a major perennial tributary to the South Fork American River, at the Lewis Ranch.**

cultural preservation efforts regionwide.

In 2018, American River Conservancy (ARC)—a new member of California Oaks Coalition—began working with the California Department of Fish and Wildlife (CDFW) and a local private landowner to protect Lewis Ranch through fee-title acquisition. ARC, which celebrates its 30th anniversary in 2019, conserves wildlife corridors and watersheds on recreational lands, working lands, and culturally important landscapes in the greater Sacramento metropolitan area.

Greenwood Creek, two tributary streams, and seasonal ponds on the property provide spawning and rearing habitat for native fish and valuable aquatic habitat for wildlife. Rainbow trout, (*Oncorhynchus mykiss*), foothill yellow-legged frog (*Rana boylei*), western pond turtle (*Actinemys marmorata*), western toad, Sierra newt, mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), grey fox, river otter, black bear, mule deer,

American kestrel (*Falco sparverius*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), and hundreds of other species use the area as a wildlife corridor.

El Dorado County's General Plan identifies significant portions of the property as an *Important Biological Corridor* and a *Priority Conservation Area*. The conservation of Lewis Ranch aligns with CDFW and Wildlife Conservation Board efforts to protect significant biological resources in the South Fork watershed in western El Dorado County and central Sierra Nevada. The acquisition project also helps advance CDFW's land conservation policies and wildlife protection goals in the State Wildlife Action Plan by conserving sustainable plant and animal communities that support multiple species of interest.

Subdivisions in the region are fragmenting wildlife habitat, and built infrastructure in

— continued on page 4

### Inside

Pages 2–5 and 8

#### California Oaks Coalition Reports and Resources

Hills For Everyone, El Dorado County student victory, Tools to keep oaks standing, Conserving California's oak rangelands, Tree carbon, In Memoriam: Alan Gibson George

Pages 6–7

#### California Wildlife Foundation Partner Reports

Carbon Farming, Cannabis on the Carrizo Plain

## 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 sequestering carbon, maintaining healthy watersheds, providing habitat, and sustaining cultural values:

Amah Mutsun Land Trust  
American River Conservancy  
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  
California Water Impact Network (C-WIN)  
California Wilderness Coalition (CalWild)  
Californians for Western Wilderness (CalUWild)  
Carpe Diem West  
Center for Biological Diversity  
Chimieas Ranch Foundation  
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)  
Save Lafayette Trees  
Shasta Environmental Alliance  
Sierra Club Placer County  
Sierra Foothill Conservancy  
Tejon Ranch Conservancy  
Templeton Heritage Tree Foundation  
Tuleyome  
Tuolumne River Trust  
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 participating 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, [amoskow@californiaoaks.org](mailto:amoskow@californiaoaks.org), (510)763-0282 for more information.

## How evolution saved a wildlife corridor

by Melanie Schlotterbeck, Hills For Everyone

*It is not the strongest of the species that survives, not the most intelligent that survives. It is the one that is the most adaptable to change.* —Charles Darwin

Hills For Everyone's (HFE) story is about evolution. Formed in 1977, our original vision was to create a state park in a rapidly urbanizing and park-poor area of Southern California. We have enjoyed a steady stream of success. Today, Chino Hills State Park is more than 14,000 acres, cobbled together with more than 33 acquisitions. The park sits at the juncture of Southern California's four most populous counties (Orange, Riverside, San Bernardino, and Los Angeles). It also conserves an iconic landscape dotted with oak and walnut trees, which have historically not been well protected in California.

While HFE's original mission was to create the state park, the science of conservation biology woke us up in the 1990s. We realized that without connections to other natural lands that our park would become an island and wildlife would be doomed. Without access to diverse mates inbreeding occurs, plant dispersal changes, and eventually the resources we aimed to protect would be lost. Consequently, we expanded our mission to protect the 31-mile-long Puente-Chino Hills Wildlife Corridor.

Connectivity became the focus. HFE's first goal was to connect our hills to the Cleveland National Forest in the Santa Ana Mountains. Coal Canyon was the only linkage left, and it was approved for 1,440 houses. By working with state park staff, the developer, Caltrans, and conservation biologists, we secured funding to buy it. On

and off ramps on the 91 freeway were closed down. Conservation scientists cited this success as a "global precedent for correcting an ecological planning error." HFE is now focused on connecting the 4,000 protected acres on the west side of the hills to the park's 14,000 acres at the "Missing Middle" of the corridor.

HFE continues to work to understand threats to the region's \$200 million conservation investment. In addition to impacts from roadway projects and housing developments, we need to understand threats from fire. HFE completed a 100-year fire study that showed parts of our landscape were burning every 9 to 11 months, when the natural fire regime should be every 30 to 150 years. We found that humans clearly were causing the majority of the fire ignitions (through cigarettes, fireworks, car fires, arson, etc.). Our goal expanded again to defend the state park from frequent preventable fires, which do not allow vegetation to recover and promote the conversion of woodlands, chaparral, and coastal sage scrub habitats into nonnative grasslands. As a finer fuel, grasslands ignite more easily, dry out sooner, and carry fire faster than our native habitats.

The lesson we have learned over the past 40 years is to evolve—evolve your thinking, strategies, and tactics, and success will follow. We are grateful to be a member of the California Oaks Coalition. Learn more at: [www.HillsForEveryone.org](http://www.HillsForEveryone.org).



The rolling hills of Chino Hills State Park are quite a sight to see in the spring.

Melanie Schlotterbeck, Hills For Everyone

## RESOURCES

### CALIFORNIA OAKS COALITION MEMBER WEBSITES:

**Californians for Western Wilderness (CalUWild)** publishes a monthly newsletter on public lands issues in the West. The most recent issue and archives may be found at [www.caluwild.org/newsletters](http://www.caluwild.org/newsletters). A California Congressional Information Sheet, listing telephone numbers for representatives and information about co-sponsorship of lands legislation, may be found at [caluwild.org/DOCUMENTS/CACongrCosp.pdf](http://caluwild.org/DOCUMENTS/CACongrCosp.pdf).

**Hills For Everyone's** website shares resources on 1) the economic benefits of parks, 2) key steps for preserving natural lands, and 3) the environmental review process for land use planning: Visit: [www.hillsforeveryone.org/thecorridor/1240-2](http://www.hillsforeveryone.org/thecorridor/1240-2).

### PLANTING ACORNS:

Visit [californiaoaks.org/oak-tree-care](http://californiaoaks.org/oak-tree-care) to download *How to collect, store, and plant acorns*.

*Guide to Growing California Oaks* on Phytosphere Research's website includes information on collecting, storing, sorting, and planting acorns; choosing suitable planting sites for oak woodland restoration plantings; and protecting oak seedlings: [phytosphere.com/oakplanting/acorns.htm](http://phytosphere.com/oakplanting/acorns.htm).

### PUBLICATION:

Beckman E, Meyer A, Denvir A, Gill D, Man G, Pivorunas D, Shaw K, Westwood M (2019). Conservation Gap Analysis of Native U.S. Oaks. Lisle, IL: Morton Arboretum. Visit: [www.mortonarb.org/files/conservation-gap-analysis-of-native-US-oaks.pdf](http://www.mortonarb.org/files/conservation-gap-analysis-of-native-US-oaks.pdf) to download.

*The student presentations were impressive; they clearly did their homework and presented facts, not just emotions. Their presentations before the school board would make any parent, teacher, or board member proud. They earned—and deserve—their success. —Cheryl Langley, Rural Communities United*

## High school students convince school board to protect oak woodland

by Richard Kientz, Biology and Earth Science Teacher, Union Mine High School

El Dorado County's oak habitat is the most at-risk in California, according to California Oak Foundation's *Oaks 2040: The Status and Future of Oaks in California* report (2006). The main threats are suburban sprawl at the county's western flank and large-scale land conversion throughout (e.g., wineries), but for one school community the potential loss of oak habitat came from an unlikely cause: solar energy. Incongruous as it sounds, "going green" was going to be the demise of Union Mine High School's oak woodland, a remnant piece of a once unbroken biotic zone spanning the county's lower elevations.

The Union Mine campus is dotted with blue and live oaks, vestiges of an expansive woodland slowly fragmented throughout the 20th century. Adjacent to the campus, a 10-acre woodland features mature blue, live, and black oaks; gray pine, which is habitat for numerous bird species, including acorn woodpeckers (*Melanerpes formicivorus*); and a wildlife corridor for deer, fox, coyotes, racoons, and bobcat (*Lynx rufus*). The seasonal Deadman's Creek is home to California newts (*Taricha torosa*) and Sierran treefrogs. The area is a living laboratory for Union Mine's biology, earth science, and environmental science classes, which study ecology, succession, co-evolution, riparian habitat, and the impacts of invasive species.

In November 2018, the school board signed a contract for a districtwide Purchase Power Agreement (PPA; a financial agreement in which a developer provides the design, permitting, financing, and installation of a solar array on a customer's property) to reduce long-term utility costs. Instead of locating the array on the school's expansive parking lots, the board selected the oak woodland, thus requiring the removal of 20 to 40 trees, many nearing the size defined by the county

as heritage oaks. Grading of a slope above Deadman's Creek would encroach on ephemeral tributary drainages and endanger local native plant and ecological communities.

While recognizing the benefits of renewable energy, Union Mine students and staff raised objections to good intentions creating bad outcomes. Students addressed the board and argued that locating the solar array over existing parking lots was the only win-win outcome: the district wins with decreased utility costs, and nature wins when the oak woodland is left intact. The board, however, decided to stay the course, citing signed contracts and economic

factors as impediments to a full reconsideration and relocation of the array. The fate of the oaks, it seemed, was sealed.

It is here that Ed Abbey's famous tenet: "The idea of wilderness needs no defense, it only needs more defenders," is fitting for the work of oak woodland conservation, which needs more defenders. For *Oaks* readers that sentiment likely seems obvious, but it was powerful to witness dozens of students,

staff, and community members piled into the small confines of a school board meeting this past spring donning "Listen to the Community, Protect Our Oaks" T-shirts and holding "Solar Panels Belong on Parking Lots, Not Oak Woodlands" signs. Students delivered impassioned, articulate, and cogent arguments based on principles of intergenerational equity and compliance with the California Environmental Quality Act.

Ten days later, the superintendent reported that the PPA contract had been renegotiated: the solar array would be relocated to the parking lot, and the oak woodland would remain intact. The outcome that students, staff, and the community achieved reaffirms Margaret Mead's famous quote, "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has."



Defenders of the oak woodland Richard Kientz

## Lewis Ranch — from page 1

fire-adapted wildland ecosystems increases the threat of catastrophic wildfire. Current zoning for Lewis Ranch would allow up to 50 development sites. Conversion to vineyards poses another threat to the habitat and resource values of the Lewis Ranch and Greenwood Creek watershed.

ARC intends to preserve this land and its water in perpetuity and to manage it as a wildlife preserve and working ranch. Once completed, this project will provide a unique opportunity for guided hiking, bird watching, fishing, and managed bow hunting of deer and wild turkey.

ARC has launched a strategic campaign to raise the \$4,470,000 needed to acquire this property, via a combination of state grant funding, foundation support, and individual donations. California Wildlife Foundation's Vesta Fund has made a contribution to leverage additional support for this vital project.

### American River Conservancy: Protecting habitat in the Sierra Nevada foothills

For the past 30 years, ARC has protected some of the most beautiful and diverse habitats in the central Sierra Nevada. The conservancy has completed 84 projects, protecting 26,000 acres of native fisheries, endangered species habitat, and recreational lands within the upper American and Cosumnes river watersheds. Based in Coloma along the banks of the American River's South Fork, ARC focuses on land acquisition in strategic conservation areas, including the upper American and Cosumnes river watersheds, Pine Hill Preserve, and key wildlife corridors. ARC also provides interpretive hikes, educational programs to schools, and volunteer opportunities to the greater Sacramento metropolitan region.

In the coming decades we will redouble our land conservation and stewardship services. Land conservation offers dual benefits for the climate by sequestering greenhouse gases and preventing greenhouse gas emissions that would result from development. Preserving habitat for rare, threatened, and endangered species has always been a top land-conservation priority for ARC. As the planet warms, climate refuges are even more critical for ensuring that these species survive and thrive. Land conservation will become even more important as California's population grows and places more demands on natural systems.

Visit [www.ARConservancy.org](http://www.ARConservancy.org) to learn more and donate.

## Tools to keep oaks standing

*California Wildlife Foundation/California Oaks (CWF/CO) often receives questions about how to establish permanent protections for oaks on private property. Three primary conservation tools are available:*

**Conservation easements** are voluntary legal agreements that protect natural resource values through permanent limitations on the uses of the property. Willing landowners can sell or donate a conservation easement. The landowner receives proceeds from the sale or tax incentives from the donation, and retains ownership and the ability to ranch, manage, sell, lease, or bequeath the land, subject to the terms of the easement. An easement may apply to all or a portion of the property and need not require public access. Benefits to communities include the permanent protection of land and water resources; the continued economic productivity of working landscapes; the retention of land in private stewardship; and saved tax revenues, since infrastructure development is not needed on the land.

Conservation easements can be held by nonprofit organizations, whose missions enable them to act as land trusts, or by certain government agencies. Easement holders must monitor and report on compliance each year.

Stewardship endowments enable land trusts to carry out the significant responsi-

bilities associated with the conservation goals for the easements they acquire. Land trusts and government agencies maintain stewardship endowments to fund these activities. Land trusts often request that easement landowners make an endowment contribution associated with stewardship costs of the property.

Another conservation opportunity is through **in-fee** or **fee ownership**, when property from a willing landowner is acquired by a land trust through a donation, purchase, or combination of the two. In-fee transactions are appropriate when the land is not needed for productive use; has sensitive natural resources that require intensive management; is surrounded by protected lands; and conservation objectives align with public use.

A land trust might retain ownership of the property as a permanent preserve or transfer the property to a suitable owner, such as a government agency. In some cases, the land is sold to a private owner, subject to a conservation easement held by the land trust. (Proceeds from such a sale may fund the land trust's long-term management of the conservation easement and/or advance the trust's land conservation mission.) Land donations in-fee can be tax deductible as a charitable gift, depending on the terms of the transaction.

Conservation easements and donations

in-fee are one of a range of options to conserve the natural resource values of a property. Land trust staff members, accountants or tax advisors, and attorneys can provide information on associated tax benefits and other special considerations.

Another conservation tool is a **deed restriction**, which a landowner can use to place protections on the alteration or removal of trees. Deed restrictions are also sometimes used by governmental entities. For example, the City of Petaluma placed deed restrictions on trees designated as heritage or landmark trees ([cityofpetaluma.net/cdd/pdf/formsandhandouts/tree\\_heritage\\_restriction.pdf](http://cityofpetaluma.net/cdd/pdf/formsandhandouts/tree_heritage_restriction.pdf)). CWF/CO recommends retaining legal counsel to understand the legal requirements of a deed restriction.

For more information, visit the Land Trust Alliance ([landtrustalliance.org](http://landtrustalliance.org)), which includes links to its 94 members in California ([www.findalandtrust.org](http://www.findalandtrust.org)) and information about tax incentives for donated or partially donated conservation easements ([www.landtrustalliance.org/issues-action/take-action/tax-incentives](http://www.landtrustalliance.org/issues-action/take-action/tax-incentives)).

To find a land trust that is active in a particular county, visit the California Council of Land Trust's county map ([www.calandtrusts.org/map-ca-land-trusts](http://www.calandtrusts.org/map-ca-land-trusts)).

Learn more about the California Council of Land Trusts ([www.calandtrusts.org](http://www.calandtrusts.org)).

# The challenge of conserving California's oak rangelands

by Angela Moskow, California Oaks

Approximately 80 percent of California's oak woodlands are on private land, providing vital habitat for many of the state's rare, threatened, and endangered species. The conservation of private lands is an essential means of keeping oaks standing, in the absence of strong and enforceable protections.

The California Rangeland Conservation Coalition has identified 13 million acres in the Central Valley that need conservation easements and/or restoration. California Rangeland Trust (CRT) alone seeks funding to permanently conserve 204,796 acres of private rangeland, in addition to the 330,383 acres of rangeland under CRT protection. Other land trusts that conserve rangelands also have needs that overshadow their capacities, as each easement requires professional staff and financial resources.

A 2014 study of rangeland conversions on 13.5 million acres in the Central Coast, Bay Area, and Central Valley found that 37 percent of blue oak woodlands on rangeland had no conservation designation, as well as 51 percent of montane hardwoods, 32 percent of coastal oak woodlands, 41 percent of blue oak-foothill pine, and 50 percent of valley oak woodland.<sup>1</sup>

The California Land Conservation Act of 1965, known as the Williamson Act, enables local governments to enter into contracts with private landowners to restrict specific parcels to agricultural or open space use. Participating landowners realize property tax savings through assessments based on these uses rather than full market value. The rangeland study reported that 47 percent of blue oak woodland, 38 percent of blue oak-foothill pine, 35 percent of coastal oak woodland, 34 percent of valley oak woodland, and 21 percent of montane hardwood in the study area were enrolled under the Williamson Act.

However, the natural resource values of



Julie Andert, American River Conservancy

**Rangelands such as Lewis Ranch are largely situated in the foothills of California, where development pressures threaten high-conservation-value oak woodlands and riparian corridors.**

Williamson Act lands are not necessarily protected, thus differing from lands under conservation easements. For example, Williamson Act enrollment does not guarantee the conservation of a property's oak woodlands. Further, the future of these lands is uncertain, both because of the temporary nature of the enrollment—unlike land under conservation easements, which are held in perpetuity—and also because of the cessation of state funding for counties during the Great Recession.

A 2018 report from the California Department of Forestry and Fire Protection noted:

If state government subvention payments to counties are not soon resumed, the program may experience significantly declining participation, with severe tax impacts on ranchers and farmers. Survey results suggest that the net result could be the sale of 20 percent of ranch acreage, much of which would be converted to other uses.<sup>2</sup>

A great extent of California's watersheds

and wildlife are on Williamson Act lands. Their permanent protection through conservation easements would provide much-needed financial resources for private landowners, secure threatened habitat, and perpetuate the carbon-sequestering value of the state's rangelands. According to the state's forest and rangeland assessment report, more than two-thirds of ranchers are receptive to the possibility of financial incentives for improving environmental quality, and continued funding for these efforts is important to conserve, sustain, and enhance ecosystem services.

<sup>1</sup> Cameron DR, Marty J, Holland RF. "Whither the Rangeland?: Protection and Conversion in California's Rangeland Ecosystems." *PLoS ONE* 2014;9(8). e103468. doi:10.1371/journal.pone.0103468.

<sup>2</sup> Ferkovich R, Hartman L, Johnson J, et al. *California's Forests and Rangelands 2017 Assessment*. California Department of Forestry and Fire Protection, Fire and Resource Assessment Program. August 2018, p 63-4.

## Trees, carbon, and agricultural landscapes

California's natural and working lands form the fifth pillar of the climate strategy devised by former California Governor Jerry Brown (<https://ww3.arb.ca.gov/cc/pillars/pillars.htm#pillars>). Soil carbon in the agricultural landscape is enhanced by the presence of trees, an important reason to keep trees standing.

California Oaks partners with land trusts to protect working landscapes with conserva-

tion easements and other tools, and we have been encouraging the state to recognize the importance of oaks in sequestering carbon in agricultural landscapes. In their research paper, University of California (UC) Davis range management specialist Leslie M. Roche and colleagues found that total soil organic carbon was positively correlated with woody plant cover. The authors also found that carbon stores can be quickly degraded and

lost upon removal of woody cover: "Although there is considerable potential for carbon sequestration with woodland conservation and restoration, these carbon stores are not more resilient to disturbances than grassland carbon pools and can be quickly degraded and lost upon oak removal."<sup>1</sup>

Royce Larsen of UC Cooperative Extension and colleagues write about oak trees

— continued on page 7

# Sequestering carbon in agricultural lands

Ellee Igoe, Solidarity Farms



**The Carbon Sink Farm**

by Angela Moskow, California Oaks

The *New York Times Magazine* article, “Can Dirt Save the Earth?” presents counter-intuitive evidence linking the dawn of agriculture to a rise in carbon emissions: “Ice cores from Greenland, which contain air samples trapped thousands of years ago, reveal increases in greenhouse gases that correspond with the rise of farming in Mesopotamia.”<sup>1</sup>

Crops sequester carbon, yet most forms of agricultural production also emit carbon and/or nitrogen through respiration and soil disturbance, resulting in net greenhouse gas emissions. Livestock respiration and waste add to the greenhouse gas load.

The California Air Resources Control Board reported that the state’s agricultural sector accounted for approximately 8 percent of statewide greenhouse gas emissions in 2016, primarily from methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O):

Sources include enteric fermentation and manure management from livestock, crop production (fertilizer use, soil preparation and disturbance, and crop residue burning), and fuel combustion associated with agricultural activities (water pumping, cooling or heating buildings, and processing commodities).<sup>2</sup>

Chemical fertilizer production also has significant greenhouse gas impacts.

## The potential of carbon farming

Carbon farming utilizes a set of agricultural management practices designed to enhance soil’s ability to sequester carbon. Ecologist Whendee Silver, PhD, with the

University of California (UC), Berkeley, studied soil carbon concentrations on rangelands in Marin and Sonoma counties at the request of ranchers John Wick and Peggy Rathman.

The Marin Carbon Project emerged in response to Dr. Silver’s findings as well as experimentation by rangeland ecologist Jeff Creque, PhD, with the addition of compost to soil on the Wick–Rathman Ranch and a research property in Yuba County. The application of approximately half an inch of compost to 3 acres resulted in the accumulation of a stable form of carbon in the soil at a rate of almost 1.5 tons of CO<sub>2</sub> per acre per year.<sup>3</sup>

The addition of compost provides enhanced ecosystem benefits. Modeling by UC Berkeley Department of Environmental Science, Policy, and Management researchers estimated: “Increases in total soil organic matter of 3 percent increased the soil water holding capacity by up to 4.7 million acre-feet across all working lands in California, with hydrologic benefits greatest in locations with enough precipitation to fill increases in soil storage capacity.” The report also estimated improvements in soil erodibility, soil temperature, and net primary productivity.<sup>4</sup>

## Carbon Sink Demonstration Farm

Carbon farming programs are underway to assess the potential for compost additions to improve the ability of soil to sequester carbon across California’s varied landscapes. One such effort is on an 87-acre farm in the San Luis Rey Watershed, just outside the Pauma Reservation in San Diego County.

California Wildlife Foundation is serving as fiscal agent for California State Coastal Conservancy’s Climate Ready Program grant (see: [scc.ca.gov/climate-change/climate-ready-program](http://scc.ca.gov/climate-change/climate-ready-program)) to fund the Pauma Band of Luiseño Indians and Solidarity Farms in operating Pauma Tribal Farms’ Carbon Sink Demonstration Farm. The Conservancy’s Climate Ready funding program supports practices in coastal communities that sequester greenhouse gases through the conservation of natural and working lands.

A report from the San Diego Food Alliance describes issues the project seeks to address:

In addition to climate mitigation needs, the region faces several resilience challenges that affect the county as a whole, and will be felt strongly by agriculture. Among the most important of these are increased average temperatures and prolonged heat

waves, which will result in plant evaporative stress. Rising water costs are already a major barrier to farm profitability, so any measures that can alleviate water stress and/or water pricing will act to stabilize farm incomes and farming in the region.<sup>5</sup>

The Carbon Sink Demonstration Farm is utilizing cover cropping, compost application, no-till farming, woody perennial crops, and hedgerows to increase the soil’s water-holding capacity to enhance drought tolerance, improve water-use efficiency, reduce farm runoff, provide habitat for native pollinators and other wildlife, and enhance agricultural productivity and food security.



**Connor Magee of Climate Science Alliance plants an Engelmann oak at the Carbon Sink Farm with students during an event called *Wimé'ax-ish: Bringing Balance*.**

*Native plants used for restoration and carbon sequestration are also traditional food, fiber, and medicine, so our mitigation efforts are simultaneously food sovereignty projects.*  
—Ellee Igoe, Solidarity Farms

The project seeks to influence production practices on more than 52,000 acres of agricultural lands within the San Luis Rey Watershed through collaboration among stakeholders across multiple sectors to advance climate change adaptation. With the potential to sequester more than 600 metric tons of CO<sub>2</sub> annually, it is designed to build and leverage nontraditional alliances to link famers, scientists, anthropologists, skills development experts, policy makers, and agency staff members.

— continued on next page

## Sequestering carbon — from prior page

“The Conservancy is excited that the project is convening a broad range of interested folks to spread the use of carbon sink farming practices across the region,” said Joel Gerwein, Coastal Conservancy project manager.

The project will leverage grant funding from the U.S. Natural Resources Conservation Service and California Department of Food and Agriculture’s Healthy Soils Initiative, as well as in-kind contributions from Solidarity Farm, the Pauma Band of Luiseño Indians, and CWF.

## Regenerative agricultural practices

Carbon farming is part of a suite of agricultural practices that focus on improving soil health. Assuming that demonstration projects around the state and farther afield continue to generate positive results, agricultural innovation is among the few positive trends as climate change impacts are proliferating. Carbon farming holds the potential to connect every California household to a regenerative climate solution—via the compost bin.

<sup>1</sup> Moises Velasquez-Manoff, April 18, 2018. “Can Dirt Save the Earth?” *New York Times Magazine*. See: <https://www.nytimes.com/2018/04/18/magazine/dirt-save-earth-carbon-farming-climate-change.html>

<sup>2</sup> 2018 Edition, California Greenhouse Gas Emission Inventory: 2000 – 2016, California Air Resources Board.

<sup>3</sup> See *Supra* note 1.

<sup>4</sup> Flint L, Flint A, Stern M, et al. U.S. Geological Survey. California’s Fourth Climate Change Assessment, California Natural Resources Agency. Pub CCCA4-CNRA-2018-006.

<sup>5</sup> *Linking Climate-Friendly Farming Practices to San Diego County’s Climate Action Plan: An opportunity analysis of carbon farming in the unincorporated County*. Batra Ecological Strategies for San Diego Food Alliance, 2018, p 3.

## Trees, carbon... — from page 5

creating “islands of enhanced soil fertility...The result is deposition of two or three times more organic matter under an oak canopy and 35 to 40 percent more organic carbon and nitrogen in soils under an oak canopy than in grassland soils.”<sup>2</sup>

<sup>1</sup> Roche LM, Chang JF, Six J, O’Geen AT, Tate KW. “Soil Organic Carbon Stability Across Mediterranean Oak Agroecosystem.” Abbreviated version presented at 7th California Oak Symposium: Managing Oak Woodlands in a Dynamic World. US Forest Service, Pacific Southwest Research Station, held in Visalia, CA Nov 2014. p 227.

<sup>2</sup> Larsen R, Lewis D, Valachovic Y. “Watershed Management in Oak Woodlands.” In: *A Planner’s Guide for Oak Woodlands*, 2nd ed. Giusti GA, McCreary D, Standiford RB (eds.). University of California Agriculture and Natural Resources Pub 3491. 1993, rev. 2005. p 35.

## Cannabis on the Carrizo Plain

by Steph Wald, Board of Directors, Carrizo Plain Conservancy

Located in eastern San Luis Obispo County between the Bay Area and Los Angeles, the Carrizo Plain is a remnant of the once vast San Joaquin Valley grassland ecosystem. It is known for some of the most exquisite wildflower “super blooms” in California. Largely undeveloped, the area supports one of the highest concentrations of rare, threatened, and endangered plant and animal species in the country. Carrizo Plain Conservancy ([carrizoplainconservancy.org](http://carrizoplainconservancy.org)), in partnership with state, federal, and nonprofit organization partners, including California Wildlife Foundation, is advancing a vision for an enlarged and restored Carrizo Plain.

An antiquated subdivision sits almost halfway along Carrizo Plain, north of the Bureau of Land Management’s Carrizo Plain National Monument and south of two industrial solar-generation facilities. The 24,000-acre subdivision, called California Valley, has more than 7,000 2.5-acre lots, of which only 200 have been developed. California Valley was created in the 1960s when a section of the State Water Project was expected to go through the Plain.

In early 2016, numerous small pot farms or “grows” began to appear in the California Valley. A cannabis trade magazine had reported that lots could be bought or leased cheaply and that San Luis Obispo County had no controlling ordinances regarding cannabis cultivation. As a result, the grows rapidly established in the valley, eventually numbering more than 250, according to the County Planning Department.

To avoid the same permitting requirements as conventional agriculture, the grows were installed more as nurseries, importing soil and relying on imported water. Lots were scraped clear of vegetation, and the marijuana plants were grown in large “totes” rather than in the poor soils of the area. Local water was in short supply and was of poor quality, so water trucks did a brisk business hauling water to the sites. Extensive use of pesticides to control weeds and animal pests, especially rodents, affected local wildlife, including the endangered giant kangaroo rat (*Dipodomys ingens*) and San Joaquin kit fox (*Vulpes macrotis mutica*).

The increase in traffic damaged the community well at the California Valley Services District office, pounded roads into fine dust, increased crime, and heightened suspicion of neighbors. The boom also raised area lot prices from less than \$2,500 to \$10,000 or more, putting property out of reach of conservation organizations, including Carrizo Plain Conservancy.

Caught off guard, the county responded with an emergency ordinance that banned new cannabis cultivation but allowed existing grows to continue until December 2017.

In November 2016, Californians passed a proposition that legalized the recreational use of marijuana but allowed cities and counties within the state to regulate the growing, processing, and selling of marijuana and marijuana products. This led to the enactment of a permanent San Luis Obispo County ordinance in late 2017 that limits the number of cannabis cultivators in the county

— continued on page 8



Abandoned cannabis grow site, California Valley, Carrizo Plain

County of San Luis Obispo

## Cannabis on the Carrizo Plain — from page 7

to the number that existed under the emergency ordinance (141) and bans cannabis activities in residentially zoned lands, including California Valley.

Only a handful of grows have been permitted in the county to date, and local opposition to individual proposals has been intense, due to concerns over smell, noise, night lighting, pesticide use, traffic, manufacturing processes, and general safety. Some California Valley growers have resisted being closed down, but overall most sites have been abandoned, often leaving behind fencing, plastic tarps, and other planting debris.

Grow sites have shifted onto agriculturally zoned land, with several established in

the northern Carrizo Plain area along Highway 58. Poor access, lack of water, and general remoteness have kept grows from establishing on private lands within Carrizo Plain National Monument. Enforcement of the new ordinance in California Valley is slowly addressing the cleanup needs and restoration of environmental values where they have been damaged. Lot prices are coming back down, but there continues to be a market for sales to persons unaware of the prohibition on cannabis activities, and it remains to be seen how and when a new equilibrium will be achieved.

## In Memoriam: Alan George, “Mr. Oak Tree”

Alan Gibson George, a great champion of oaks, passed away in Visalia in the spring of 2019, at the age of 94. He earned a Purple Heart for his service with the U.S. Navy during World War II, attended and graduated from the University of California, Berkeley, and served for 34 years with UC Cooperative Extension as a Tulare County Farm Advisor.

Alan George earned the nickname “Mr. Oak” or “Mr. Oak Tree” due to his advocacy to preserve the history of Visalia and its beautiful oak trees. He was instrumental in The Nature Conservancy’s acquisition of the Kaweah Oaks Preserve in 1983, which is now managed by Sequoia Riverlands Trust.

George was active in the Tulare County Historical Society (President, 1981-83) and the Beautification Committee for the City of Visalia, and volunteered many hours planting and maintaining oaks in local parks. The Alan George Oak Grove at Seven Oaks Park honors his work.

*Alan called me regularly to urge us on with our work to have people fully appreciate what oaks add to a community. I always appreciated his understanding of the importance of keeping oaks standing.*

— Janet Cobb, California Wildlife Foundation/California Oaks Executive Officer

### Oaks along the Kaweah River

Alan George was instrumental in preserving remnants of riparian oak woodlands that historically thrived in vast areas of the Tulare Lake Basin. In the 1998 report, *From the Sierra to the Sea—The Ecological History of the San Francisco Bay-Delta Watershed*, The Bay Institute of San Francisco described this long-depleted resource:

“In the Tulare Lake Basin, riparian forest occurred around the periphery of the lakes and along virtually all of the eastside tributaries (e.g., Kings, Kern, Tule, Kaweah rivers), including ephemeral ones that did not reach the lakes.

“On the alluvial fans, a continuous riparian forest flourished from the foothills to the lakes. The riparian forest of the Tule, Kings, and White rivers and of Deer Creek stretched like dark green ribbons through the immense surrounding oak savanna. The riparian woodlands of the Kaweah River spread to the limits of its fan, occupying some 254,000 acres and merging with the tree savannas to create a continuous woodland that extended in many places to the shore of Tulare Lake.

“The Kaweah oak woodland was so large and densely clustered that the trees created a canopy in many places. Oaks gave way to other trees near the banks of the streams, including Arizona ash, Oregon ash, sycamore, walnut, cottonwood, and willow.”

## 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. 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 about oak issues: [amoskow@californiaoaks.org](mailto:amoskow@californiaoaks.org).
- Sign up for the Oaks e-newsletter at [californiaoaks.org](http://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.



CALIFORNIA WILDLIFE FOUNDATION  
CALIFORNIA OAKS FUND

428 13th Street, Suite 10A  
Oakland, CA 94612

tel 510.763.0282  
fax 510.268.9948

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

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

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

© 2019, California Wildlife Foundation/California Oaks. Please feel free to share this newsletter and reprint after providing notice.