

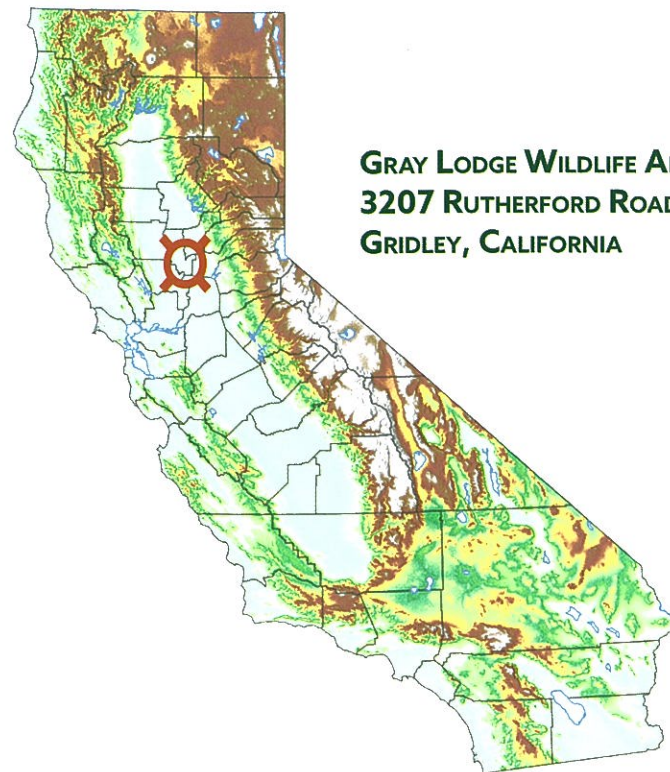
Gray Lodge Wildlife Area in winter. The wildlife area encompasses about 9,100 acres and is owned and operated by the California Department of Fish and Wildlife since it purchased the first 2,500 acres in 1931. The wildlife area's landscape is characterized by numerous canals, seasonal wetlands and both shallow and deep ponds.

GOING WITH THE FLOW

What it took to open
water canals to CDFW's
Gray Lodge Wildlife Area

STORY BY EVA BEGLEY

PHOTOGRAPHS BY PAUL AND EVA BEGLEY



GRAY LODGE WILDLIFE AREA
3207 RUTHERFORD ROAD
GRIDLEY, CALIFORNIA

Thousands of Californians head up to the Sierra Nevada each winter to enjoy the snow. But what happens to all that snow when all the skiers and snowboarders have gone home, and the weather warms up?

Some of it soaks into the ground, some gets taken up by nearby vegetation but much of it feeds the state's streams and rivers. The Sierra snowpack is, in fact, California's biggest reservoir of water, much bigger than Lake Shasta, Lake Oroville or any of the state's other manmade water storage lakes. And so a snowflake that falls somewhere in northern California's upper Feather River watershed may find itself providing waterfowl habitat in the California Department of Fish and Wildlife's Gray Lodge Wildlife Area before continuing its journey downstream through the Sacramento-San Joaquin River Delta and out to sea.

But getting from the mountains to Gray Lodge isn't quick and easy. First our melted snowflake goes through several hydropower plants on the Feather River, traverses Lake Oroville and eventually reaches Thermalito Afterbay. From there it enters the Sutter Butte Main Canal and is then diverted into the Biggs-West Gridley Irrigation District's canals, which supply many of the region's rice fields, orchards and privately owned wetlands as well as the wildlife area.

Days later, it finally arrives at Gray Lodge, where in summer it will help grow various plants that provide food for wildlife. It may also provide habitat for waterfowl broods and other wildlife dependent on shallow water in summer, or it might become part of one of the deep pools that fish and river otters call home. In fall and winter, it might help flood the shallow ponds in which huge flocks of ducks and geese like to loaf and dabble.

Gray Lodge Wildlife Area was established in 1931 with the purchase of the 2,500-acre Gray Lodge Gun Club. For decades, it had neither enough water nor the necessary infrastructure to reach its full wildlife habitat potential. Getting more water for the wildlife area, which today encompasses more than 9,000 acres, took a strong legal effort, numerous contracts and a cooperative team effort to lay the groundwork. It started in 1992, when Congress passed the Central Valley Project Improvement Act (CVPIA). This law required the U.S. Bureau of Reclamation to provide more water to various wildlife refuges, including raising Gray Lodge's annual water allocation by 8,600 acre-feet to 44,000 acre-feet per year. (An acre-foot of water is the amount of water it takes to cover one acre of land with one foot of water.) Through a water exchange agreement with the California Department of Water Resources, which manages Feather River water, and a conveyance contract with the Biggs-West Gridley Irrigation District, the Bureau arranged for water to be delivered to the wildlife area. But the earthen canals that carry water from Thermalito Afterbay to Gray Lodge and then distribute it throughout the wildlife area didn't have the capacity to deliver the extra water. They were more than 50 years old and over time they had begun to leak. The flow of water gradually loosens the compacted soil that lines the canals, banks erode, burrowing animals cause additional damage and encroaching vegetation slows down the flow of water. Repairing, reshaping and sometimes widening 20 miles of irrigation district canals plus another 76 miles of canals on the wildlife area itself, along with replacing undersized culverts, redesigning five county road bridges that constricted the flow of water and making numerous other infrastructure improvements—all of that adds up to a big project.

Project planning started soon after passage of the CVPIA. However, coordination among the federal, state and local agencies along with other stakeholders in the proposed

Opposite page, before the backhoes could move across the California Department of Fish and Wildlife's Gray Lodge Wildlife Area and begin work, a huge amount of behind-the-scenes legal and contractual work had to be completed. By the time the improvement project is finished in 2021, it will be the 30th anniversary since Congress passed the enabling legislation.



improvements took years. It also took time to arrange sufficient funding and obtain the necessary environmental permits and other approvals. Some of Biggs-West Gridley Irrigation District's facilities were renovated between 2013 and 2015 with \$28 million in federal funds, but there wasn't enough money to make the improvements necessary for the required acre-feet to Gray Lodge.

In 2014, however, California's voters approved Proposition 1, the \$7.1 billion water bond that funds projects that help meet the long-term water needs of the state. Through it, the California Natural Resources Agency awarded a grant of more than \$52 million in 2017 to a partnership of the Biggs-West Gridley Irrigation District and the waterfowl conservation group, Ducks Unlimited, to complete the improve-

Not only is predictable availability of water and high-quality habitat good for waterfowl and other wildlife, it also makes hunters, birdwatchers and anglers happy.

ments. Construction kicked off in November 2019 with an anticipated completion in early 2022. A project like this—with its many conservation-related elements—requires a huge amount of coordination and must also consider impacts to elements outside of basic infrastructure. For starters, there's the impact to threatened and endangered species, such as the giant garter snake. This species, listed by both the federal government and the state of California as threatened, once flourished throughout the huge network of marshes and sloughs that filled much of the Central Valley before the second half of the 19th century. Since that time, most of the Valley has been drained for agriculture, urban development and other human uses. Now the snakes, which can grow up to 64 inches long but are harmless to people, have to make do with prey they can find in rice fields and managed wetlands—such as those at Gray Lodge. They're active from spring to fall, and in late summer the females give birth to anywhere from 10 to more than 40 live young. Then, generally from October until April, the snakes retreat to small mammal burrows and other dry crevices in upland areas. To protect the snakes, Gray Lodge environmental scientist Dave Van Baren explained, "We need to start getting ready for wintertime construction the preceding summer by closing rodent burrows and removing riprap and any other features in the work area where dormant snakes might hide in winter."

Even those tasks aren't as simple as they sound. To find all the rodent burrows, biologists first have to clear a tangle of brush and weeds. Then in winter, after the work area has been made as inhospitable as

possible for overwintering snakes, a biologist needs to be on site whenever construction occurs to watch for any remaining snakes and, if one is found, move it to a safe area. Conversely, Van Baren said, the few trees that needed to be removed had to be felled in winter, before birds could start nesting.

Then there's the issue of recreation. Gray Lodge is famous for its amazing flocks of migratory waterfowl each winter, which draw hunters and birdwatchers from all over California and elsewhere. Ducks Unlimited's Virginia Getz, manager of conservation programs for the organization's western region, pointed out, "Gray Lodge is one of the most important wetland areas in the entire Pacific Flyway, providing vital wintering habitat for up to 1 million ducks and more than 100,000 geese."

Except in very dry years, Gray Lodge used to get an average of 35,400 acre-feet of surface water per year, but the timing was unpredictable. Much of the water used by the wildlife area, said Lori Dieter, Gray Lodge's fish and wildlife interpreter, is drain water from nearby rice fields. The growers flood, then drain, their fields twice a year in the course of normal farm operations but generally not at the times when the wildlife area is in greatest need of water for optimal habitat management.

"Now we'll be able to get the water we need when we need it," said Van Baren. Not only is predictable availability of water and high-quality habitat good for waterfowl and other wildlife, it also makes hunters, birdwatchers and anglers happy. During construction, however, the water supply canals had to be dewatered.

"But we made a lot of adjustments in the construction schedule to avoid reducing water deliveries to Gray Lodge at important times," Getz said. "In some cases, we needed to shut off flow, complete certain work and start flow again. We are very cognizant of the importance of fall water deliveries to the wildlife area and have staggered work at the two main water delivery points to ensure that the area can receive water from one point while work is being conducted on the other."

Back in the dry winter of 2014-2015, when the first phase of construction was underway, CDFW used pumped groundwater to maintain Gray Lodge's

Opposite page, clockwise from top: To move water more efficiently, portions of five county roads were redesigned to allow replacement of undersized culverts while modifications were conducted along nearly 100 miles of irrigation district canals, both on and off the wildlife area. Wetlands native pale smartweed is abundant at Gray Lodge, making it one of several species of smartweed, all of which produce crops of tiny seeds relished by many birds. Great egrets are year-round residents at Gray Lodge. This one poises on the lookout for frogs in a pond. These birds nest in some of Gray Lodge's tall, old trees, often in communal rookeries with snowy egrets and great blue herons. A magnificent lift-off occurs spontaneously with mixed winterizing waterfowl that include snow and Ross's geese.



One of Gray Lodge Wildlife Area's many shallow ponds. The vegetated levees around it, as well as the vegetated banks of the area's canals, provide habitat for many species, including summertime nest sites for mallard ducks as well as the rodent burrows where giant garter snakes often overwinter. Without periodic maintenance, many of the wildlife area's shallow ponds would gradually fill in with soil and vegetation.



Two backhoes appear ready to dance with each other as they reshape a canal by giving the banks a gentler slope. One of the requirements during construction like this is for a biologist to remain onsite and be available whenever work is performed. The reason for the onsite presence is to ensure that if a displaced giant garter snake is uncovered through the work of the backhoes then the biologist will be available to relocate the snake to a safe area.

wetlands. "Fortunately, even with last winter's construction work, we didn't have to reduce hunting quotas," said Van Baren. With careful scheduling of construction activities and sufficient rain in December and January, there was enough water to maintain the ponds through the end of the migratory waterfowl season.

Once all the work has been completed, Gray Lodge will finally be able to get up to 44,000 acre-feet of water per year. That's the maximum amount of water authorized by the CVPIA; the actual quantity delivered in any given year may be less, largely depending on the preceding rainy season's total precipitation and the amount of water in the Sierra snowpack.

Since 1992, Gray Lodge has invested \$7.2 million through grants and partnerships on improvements to its internal water delivery system, increasing the land that could be flooded from about 32 percent to 88 percent. "That 88 percent is the total amount of land area reachable by above-ground water deliveries—about 8,093 acres," Van Baren noted. The new areas open to flooding include permanent ponds, ditches, canals, wetlands and riparian areas. When the water supply project is complete, Gray Lodge will be able to flood that acreage solely through gravity flows of above-ground water instead of relying on

Once all the work has been completed, Gray Lodge will have the promised annual allocation of 44,000 acre-feet of water. That's the maximum amount of water authorized by the Central Valley Project Improvement Act.

deep wells and pumps to provide the water.

"This ability doesn't mean we would flood every available acre at the same time each year, and there'll always be some upland areas that will remain dry except during major flood events," Van Baren said. "Even during the winter, we will still have uplands available for non-wetland wildlife. The 88 percent is a capability and not a goal to reach every year."

Dieter added, "We want to maintain an ecological balance among the various habitats at Gray Lodge, including the uplands that deer and quail and other species need."

Not only is pumping groundwater very expensive in terms of energy consumption and maintenance and repair costs, but falling water tables are a problem in much of the American West. Water percolating from Gray Lodge's ponds and waterways already helps recharge the local water table, and so, as Dieter pointed out, bringing in additional surface water and being able to minimize pumping will be a further groundwater benefit.

There will be summertime benefits too. The

See **Gray Lodge**
Continued on page 39

come youth hunters on a first-come, first-served basis though water is often a limiting factor on how much hunting habitat is available and how many birds are using the areas.

The Klamath Basin complex was battling a botulism outbreak in the summer of 2020 that had claimed thousands of ducks as a direct result of a lack of water and too many birds concentrated too close together. Water also was in short supply at both CDFW's Shasta Valley and Butte Valley wildlife areas.

For Information on Modoc National Wildlife Refuge, call (530) 233-3572.

LOS BANOS WILDLIFE AREA

At the Los Banos Wildlife Area in Merced County, youth hunters and their adult companions have lots of tantalizing options. Three junior required double blinds—J1, J2 and J3—are open to hunting all season and located at the center of the zone 6 spaced blind unit within the wildlife area's productive northern region.

In late November, the Mud Slough Unit becomes available. That's a 620-acre satellite property located about 4 miles southeast of the Los Banos check station. One-time agricultural ground converted to managed wetlands with the help of the nonprofit organization Ducks Unlimited, nine double blinds are available to junior hunters and their adult mentors, who can also shoot. Five of those blinds are located within assigned ponds, which gives hunters additional freedom to roam and set up beyond the strict confines of their blind. As an added bonus, Mud Slough permit holders are the only ones allowed to hunt pheasants on the property during the wild pheasant season. Pheasants often seek refuge in Mud Slough after being flushed from surrounding private duck clubs and elsewhere.

"It's the obvious statement, but it's also true: These kids are the future of our sport and the future of wildlife conservation," said Sean Allen, a CDFW senior habitat supervisor and manager of the Los Banos Wildlife Area.

"The core value at Mud Slough and our J blinds is to provide a nurturing environment for the kids—a low-pressure, low-stress classroom where they can

learn to hunt without competing with adults and still enjoy some success and opportunities to harvest waterfowl."

Access to Mud Slough and the J blinds on the main wildlife area is granted through the regular entry process at the Los Banos check station and limited to two people per blind/assigned pond—one youth hunter and one accompanying adult to foster a safe, one-on-one learning environment.

"If you talk to any young adult hunter who regularly hunts the Grasslands, they almost all can recount some story or some positive experience about hunting Mud Slough and the J blinds," Allen said.

Mud Slough especially hits its stride late in the season and is known to produce canvasback ducks and white-fronted geese for its hunters.

"Every child should have the chance to experience a sunrise over the marsh and the sound of whistling wings over their head. That's why we do this. That's why we love these areas," Allen said.

For more information on Los Banos Wildlife Area, call (209) 826-0463.

SACRAMENTO NATIONAL WILDLIFE REFUGE COMPLEX

At the Delevan National Wildlife Refuge—part of the Sacramento National Wildlife Refuge Complex south of Wil-lows along Interstate 5—the secret is out.

Delevan's Assigned Pond 11 is reserved for those with at least one junior hunting license holder in their party. It remains a top pick among hunters and is taken quickly on most shoot days.

Hunt results for youth blinds and special set-aside areas often can be misleading. Posted bird averages typically are low, reflecting their light use and the inexperienced shooters using them rather than considering the quality of the habitat or the hunting they offer.

No such ambiguity surrounds Delevan's Assigned Pond 11, however, which consistently posts strong harvest results that rank it among the refuge's top shooters—young hunters or not. The Colusa National Wildlife Refuge also reserves an assigned pond for those with a Junior hunting license holder in their group. Colusa's Assigned Pond 10 is another good, in-season option for hunters

looking to shoot alongside their son or daughter.

Both Delevan and the Sacramento wildlife refuge offer a Saturday, in-season junior waterfowl hunts, scheduled this season at Delevan for Dec. 12, and the following week at Sacramento on Dec. 19. Both refuges reserve all of their blinds and assigned ponds those days just for junior hunting license holders and their non-shooting adult companions. The dates this year have been moved back later in the season in the hopes of providing novice waterfowlers with better hunting and more action.

"These are low-pressure, high-quality hunts where we set aside some of the best spots on the refuges just for the kids," explained Garrett Spaan, hunt program coordinator for the Sacramento wildlife refuge complex. "After doing this for a long time, you learn that when the adults can also hunt, they don't pay as much attention to the kids. So, these hunts are structured to provide a real mentoring opportunity."

Applications for these special hunts must be submitted by mail to the Sacramento wildlife refuge complex by Nov. 16—an application process outside of the standard CDFW online reservation system. An on-site lottery draw takes place the morning before each hunt to fill any vacancies. Blinds and assigned ponds can be refilled with new youth hunters and their mentors as others depart.

For more information on the Sacramento National Wildlife Refuge Complex, call (530) 934-2801.

GRIZZLY ISLAND WILDLIFE AREA

Just a 30-minute drive from the city of Oakland and only 15 to 20 minutes from the bustling East Bay suburbs of Lafayette, Walnut Creek and Concord is the Grizzly Island Wildlife Area's West Family Unit, a 180-acre former Suisun Marsh duck club reserved for junior hunting license holders and their adult companions.

The West Family Unit features five double blinds and is available to young waterfowlers and their mentors all season on Wednesday, Saturday and Sunday shoot days on first-come, first-served.

The beauty of the West Family Unit is

its convenience and proximity to one of California's largest metropolitan centers. Located off Interstate 680 between Benicia and Fairfield in Solano County, the West Family Unit has a self-registration booth on the property, which spares duck hunters from driving an extra 30 to 40 minutes to the Grizzly Island Wildlife Area check station to register and sign in.

According to CDFW's Orlando Rocha, an environmental scientist at the Grizzly Island Wildlife Area, the West Family Unit is one of the wildlife area's better-producing properties in terms of bird averages per hunter. "In a typical year, kids are in school on Wednesdays so that property rests all week, which can

make the Saturday morning shoots there pretty good," Rocha said.

In addition to the West Family Unit, Grizzly Island reserves a newly-acquired property—named the Crescent Family Unit—for junior hunting license holders and their adult companions throughout the waterfowl season. The Crescent Family Unit features three double blinds on 140 acres located close to the Grizzly Island check station entrance and adjacent to the area's Crescent Unit.

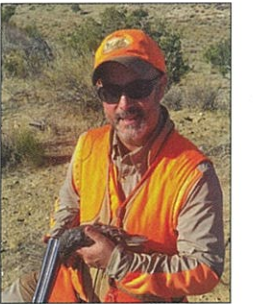
And on one Saturday each duck season—typically during the holidays—Grizzly Island sets aside all of its duck blinds in Pond 11 and the Crescent Unit, about 25 double blinds, for junior hunting

license holders and their mentors, who can also tote their shotguns.

For more Information about Grizzly Island Wildlife Area, call (707) 425-3828.



Peter Tira is an Information Officer with the California Department of Fish and Wildlife. After work, he and his two sons keep busy with their pursuit of California's youth hunting opportunities.



From Gray Lodge

Continued from page 25

wildlife area maintains about 500 acres of ponds throughout the summer for shore birds and waterfowl such as mallards and wood ducks. Additional ponds are irrigated to grow smartweed and watergrass, two native plant species that produce abundant crops of tiny seeds relished by many birds. California's natural wetlands typically provide about 750 pounds per acre of food for wildlife—seeds, tubers and small invertebrates—and carefully managed areas can produce almost as much from all the seeds naturally present in the soil. But again, the timing of irrigation needs to be right. "Flood the ponds at the wrong time or for the wrong duration, and you may get nothing but cocklebur, which has little value for wildlife," said Dieter. "Flood them at the right time, and you'll have ponds full of a complex of valuable foods, such as smartweed and watergrass." Also, if the ponds are flooded for more than four days at a time, they begin to produce mosquitos. Spraying with *Bacillus thuringiensis*, a bacterium that kills mosquito larvae, is expensive. However, state-of-the-art head gates and weirs replacing the flashboard boxes previously used to manage water depths and contouring of ponds will give the

staff better control over which ponds are flooded or drawn down, which will minimize mosquito problems.

Unlike California's major, concrete-lined water supply aqueducts, the canals at Gray Lodge will continue to have earthen beds and banks. As Van Baren emphasized, vegetated banks provide good wildlife habitat, too. The new banks, though, will be more gently sloped and less prone to erosion. The only places where the canals will have a concrete bottom is at a few box culverts, and riprap will only be used around the new water control structures.

Humans have inexorably changed California's Central Valley in the last couple of centuries. It's a nice fantasy to think that once we've restored and given legal protection to wetlands and other natural habitats damaged by human actions, these lands will continue to provide good habitat for native plants and animals in perpetuity without further human intervention. But, as Andy Atkinson, Gray Lodge's manager, once commented, "Nothing natural is static." Without occasional scouring floods, fires or human maintenance, dense stands of cattails and tules will gradually fill the shallow open water required by many species of waterfowl and shore birds; without maintenance, the uplands where giant garter snakes

overwinter will be overwhelmed by trees and invasive non-natives like Himalaya blackberry, which can grow into impenetrable thickets covering more than 100 acres; animals such as ground squirrels, muskrats and beavers will alter the hydraulics of waterways by burrowing into banks, making them slump. It's a never-ending task to maintain good habitat for a huge diversity of creatures with sometimes-conflicting requirements. At Gray Lodge, though, that task is getting a bit easier thanks to the efforts of its dedicated staff, the Biggs-West Gridley Irrigation District, Ducks Unlimited and other stakeholders. This spectacular wildlife area has rightly been described as a jewel in the Pacific Flyway; when the Water Supply Improvement Project is complete, the jewel will have even more sparkle. 🐻

Eva Begley, Ph.D., has worked for the California Department of Fish and Wildlife, other state and local agencies, academia and the private sector. She is the author of a field guide to northern California plants, and her stories have appeared before in Outdoor California.

