Grains of Change

In California's Central Valley, where a quarter of the food varieties we eat are farmed, a new generation of growers is teaming up with conservationists to make sure that rice and long-billed curlews will always mix.

By Don Stap

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A grassland located on a private ranch near the Yolo Bypass Wildlife Area is a prime location to search for the sometimes elusive long-billed curlew. Photo: (Photo: Brown W. Cannon III)

I've come to California to search for the link between sushi and the long-billed curlew. On this February day the rice paddy before me is filled with a few inches of water and the crumpled, mud-sopped straw that last summer was three-foot-high grassy stalks top-heavy with rice panicles. Not just any rice. Virtually all of the rice harvested here in the Sacramento Valley, at the northern end of the vast Central Valley, is short and medium grain—premium varieties that find their way into nearly every sushi roll sold in the United States.

In the distance, hundreds of white-fronted geese rise like surf off the fields, then settle back down. "My father and grandfather would have been amazed to see how many geese are here now," says Don Traynham, a third-generation rice grower who works these fields with Mike Kalfsbeek on White Road Farms. Traynham, 37, is part of a new wave of rice farmers who understand their fields' importance to birdlife. Throughout the morning he stops to point out sandhill cranes, egrets, and ibises—though only one long-billed curlew, probing the muddy water for invertebrates.

With a checked brown and beige upper body, plain buff belly, and cinnamon underwings, the long-billed curlew is North America's largest shorebird. Long-bills stand nearly two feet tall and have a wingspan approaching three feet. More imposing yet is the bill they are named for—up to eight inches long and curving downward like a scythe. It serves as the perfect tool to capture shrimp and crabs burrowed deeply in tidal mudflats and earthworms buried in pastures. This impressive bird is known to attack nearly any predator that ventures too near its nest, including hawks, eagles, coyotes, and humans. It flies directly at the intruder at great speed, looking like, as one observer noted, a guided missile, veering off at the last second, then circling around to attack again.

Once fairly common and widespread, the long-billed curlew has gone the way of many shorebird species, its population declining and its range shrinking. Dwindling grasslands have left only relict long-bill populations breeding in the West. For years scientists thought the bird's prospects were bleak enough that of the 53 shorebird species breeding in North America, it was one of only five listed as "highly imperiled" by the U.S. Shorebird Conservation Plan, a comprehensive attempt by the U.S. Fish and Wildlife Service and more than two dozen partnering organizations to gather all the pertinent facts on North American shorebirds. For some time, the entire long-bill population has been estimated to be 20,000 birds.

At the same time the long-bill was disappearing, a similar fate befell the Central Valley's flora and fauna. An ancient lake bed, roughly 450 miles north to south and generally 40 to 60 miles east to west, this flat landscape was once dominated by grasslands threaded with riparian woodlands and opening into freshwater marshes and oak-grass savannas. Pronghorn antelope, elk, and mule deer fed on the grasses, and grizzly bears, wolves, and mountain lions fed on them.

In the mid-1800s the Gold Rush that lured people westward forever changed the face of the valley, reducing the pronghorn and elk to small, isolated populations. By the late 1800s grizzly bears and wolves had vanished altogether. A few mountain lions survived, but today the largest predator common to the Central Valley is the coyote. Less than one percent of the valley's remaining grasses are native. Farm fields have replaced more than 94 percent of the freshwater marshes, and 99 percent of the riparian woodlands have been degraded or destroyed.

This is the bad news.

But if you are accustomed to strawberries on your cereal in the middle of winter, you might need to think twice before you criticize this land transformation. The Central Valley, with its Mediterranean climate of mild, wet winters and hot, dry summers, has more than 81,000 farms and ranches on 14.5 million acres of agricultural land that produces fully one-fourth of the varieties of food items we place on our tables. More than 300 crops are grown here, from lemons, asparagus, and bell peppers to olives, almonds, and spinach.

Yet "we've discovered that the ag fields are important to all kinds of wildlife during the winter," says Gary Langham, director of bird conservation for Audubon California. The long-billed curlew in particular favors rice and alfalfa fields as well as pastures. So for a week in late February, Alex Hartman, shorebird conservation biologist at Audubon California's Sacramento office and an expert on long-bills, takes me all over the Sacramento Valley, where most of the long-billed curlews congregate this time of year. We watch for them as we travel through farmland and pastures, a calming landscape of expansive fields and sky that reaches a flat horizon in all directions. Along the way we talk with rice growers and conservationists.

After several days of rain and bad luck we have seen only three long-bills at relatively close range and a few distant flocks in flight disappearing into charcoal skies. This should be a good time to see the birds; two weeks from now the majority will be gone. The long-bills are early migrants, leaving for their northern breeding grounds in March.

Herein lies a problem. The estimate of 20,000 curlews in North America was based in part on the annual continent-wide Breeding Bird Survey, a census conducted in June when most species are easily heard or seen as they defend their territories and engage in courtship displays. By then, however, long-billed curlews—courtship and breeding far behind them—are slipping inconspicuously through the grasslands with their chicks.

With this in mind, in 2004 and 2005, several scientists set up surveys across 16 states, looking specifically for curlews in March and April, when the birds would be more visible. Although their sample size was small, through mathematical extrapolation they came up with a new estimate—100,000 to 160,000 long-bills. This, surely, is good news.

Gary Page, director of the Point Reyes Bird Observatory Conservation Science's (PRBO) wetlands ecology division and one of the country's leading shorebird experts, took an interest. "I wanted to see if we could document the importance of the Central Valley to the curlews," he says, "so we needed to know how many curlews depend on the valley and what kind of habitat they are using." The question was whether surveys could be done without having to gain access to private property, so in 2007, 2008, and 2009 Page drove public roads in and around some of the area's agricultural fields and pastures. He discovered that with a spotting scope he could see the big, unmistakable curlews even in the fields' far corners.

Page, David Shuford, a senior biologist with the PRBO, and Langham then coordinated volunteers to conduct daylong surveys that would cover much of the Central Valley and all the interior valleys of California. From September 2007 to August 2009 more than 100 people participated in four surveys. The results suggested that the new estimate of more than 100,000 curlews was likely more accurate than the old one of 20,000 birds. In fact, most of the surveys tallied 18,000 to 20,000 curlews in one day—just in the Central Valley.

Many birds were spotted in the shallow waters of rice fields. In February 2009 Audubon California, the PRBO, The Nature Conservancy, and the California Rice Commission sponsored a workshop for rice growers to discuss ways to make their fields even more hospitable to long-billed curlews and waterbirds in general. "We weren't really sure how it was going to go, but there was an excellent turnout," says Langham. "The rice growers really wanted the science to show how the birds were using their lands. If we could just show them the right things to do, they were very willing to consider them." Don Traynham was among six growers to volunteer for a pilot project. Traynham, outgoing and energetic, works 1,500 acres of rice fields in the northern Sacramento Valley.

In California rice is harvested once a year. Each April the fields are flooded with five inches of water, and the rice seed is planted. During the growing season, May to July or August, more water is added, but before the season's apex, in August and September, the fields are dried out so the heavy harvesters can do their work. The rice stalks that remain after harvest must be worked back into the soil over the winter in order to prepare the fields for replanting the following spring.

For 80 years, since rice farming began in California in 1912, the growers routinely set their fields ablaze, burning off the straw. This was efficient, though unpleasant to anyone who lived nearby. "I grew up in Sacramento," Langham says, "and as a kid you couldn't play outside for two weeks or more. It was hard to see. Ash fell from the sky." In 1991 the Rice Straw Burning Reduction Act mandated that burning be phased out over the next decade. As rice growers tried various mechanical means to get rid of the straw, some realized that keeping water in the fields created anaerobic conditions that would break down the plants naturally. "Lo and behold," says Langham, "this also had the effect of creating a huge amount of waterbird habitat."

Discussions at the workshop focused on finding ways to more closely align farming practices—primarily when and how much water is kept in the fields—with migrating and wintering waterbirds' seasonal cycles. Practices that would provide more water for the curlews and waterfowl ranged from simply holding rainwater in the fields after the summer harvest to extending how long the water was retained during the winter. Traynham, who was already managing land around his rice fields for wildlife, agreed to try one of the more labor-intensive suggestions: create islands in the fields that could serve as nesting areas for black-necked stilts and avocets as well as other birds. Talking about these projects, he acknowledges that historically farmers and conservationists haven't always seen eye to eye. "Yeah, it used to be that way," he says. "But with time you can change anything. Pro-environment is where it's at, and if you're going to survive, you better be part of it. With the political environment we live in today, coalition building is the only way you get anything done."

Interest in wildlife extends well beyond the younger generation of rice growers. The day before we met with Traynham, we spent some time with Jack DeWit. Lanky and soft-spoken, the 67-year-old DeWit, who has been farming for about 30 years, seems like an elder statesman of sorts for the area's roughly 2,500 family-run rice growers. He talks about his experiment with growing organic rice in some of his fields. At one time, his operation was among 73 rice farms that had gone at least partly organic, a practice that requires planting cover crops for several years. "Our crop rotation there is wild rice, regular rice, and shorebirds," DeWit said, a slight smile disappearing as quickly as it appeared. A few minutes earlier he had led us to an overlook and pointed out a shallow stretch of water packed with black-necked stilts, avocets, dowitchers, dunlins, pintails and mallards. In a light rain, he remarked on how many species were using just this one small area. "Each year, when I see the first mallards with a brood, I call my wife to come look," he said. "I'm excited by that." DeWit also knows all too well that farmers want to farm, and find it difficult to leave their fields sitting untouched for the waterbirds' benefit. "I have one son who likes ducks as much as I do," he says, "and another who wants to fire up his tractors after harvest as soon as possible."

Some or all of the practices discussed at the February 2009 workshop went into effect on six farms during the 2009–2010 season. As part of this pilot project, Hartman organizes bird surveys every two weeks. "The jury is still out," he tells me as we drive back to Sacramento after our visit with Traynham. "We've only done a few surveys to this point." But both Hartman and the rice growers are optimistic about the long-term results.

The rice growers' alliance with conservation organizations holds a barely concealed benefit for them as well: It deflects the criticism they receive for "wasting" water. In the arid West, "whiskey is for drinking and water is for fighting over," Hartman says, quoting a well-worn aphorism usually attributed to Mark Twain. Many Californians have had their water use restricted by drought, and when they fly into Sacramento they can look down and see the gleam of water siphoned from the Mount Shasta reservoir and filling tens of thousands of acres of rice fields.

The rice growers can now point out that the water in their fields is essential to a wide variety of wildlife. Up to 230 animal species have been recorded, including 187 bird species, 28 of which are listed at the state or federal level as species that range from "special concern" to "endangered." Most rice fields are designed to make optimum use of the moisture they receive. Water released at the high end of the field spreads out through paddies. Then, on many farms, it is collected by a canal so it can be

pumped back uphill and recycled, reducing the amount of water needed to replace what is lost to evaporation. A pound of rice requires between 250 and 650 gallons of water, although numerous crops use comparable amounts (a pound of soybeans uses about 240). Still, Hartman says, "There's simply not enough water to go around." How California's water is split among farmers and 35 million residents is complex and often contentious.

When the long-bills come south each year, they generally spend the first months in the alfalfa fields at the bottom end of the Central Valley. In past years Page has seen large numbers of curlews sitting under irrigation sprinklers. Now, he says, some farmers are putting in drip lines, which run underground and deliver water directly to the plant roots. This is a perfectly sound water conservation strategy, but, ironically, one with potentially unfortunate consequences for waterbirds. What happens if the flooded areas the curlews depend on disappear? Will they simply move elsewhere?

Page and others have placed satellite transmitters on long-billed curlews the past few years and tracked their movements. "I thought that maybe the birds have to go all over the valley to find food, or that some would move back and forth from the valley to the coast, but none of that happened. We found a lot of site fidelity to wintering areas. Curlews would tend to return to their own little portion of the valley rather than settling in different places every year. One bird came back to the area around Dixon four years in a row."

Near Dixon we run smack into another problem: blocks of new homes that appear to have been dropped, like a movie set, into the middle of the fields. Small farming towns are becoming bedroom communities for people who want to work in the city but live in the country. "All these houses went up in the last six to seven years," says Chris Conard, a natural resource specialist and curlew census volunteer. "And developers own much of this ag land, just waiting to develop it."

On my last day in California I make one final attempt to find some curlews, with shorebird expert Nils Warnock (then at the University of California-Davis and now Alaska Audubon's executive director) as my guide. Once again the day begins with dark skies and drizzle. We drive along old farm roads near Davis for an hour, and the rain picks up. Twenty minutes later it stops suddenly and a break in the clouds allows some sunlight to peek through. There they are: a hundred or more long-billed curlews picking at the grasses in a pasture, stretching their wings and preening.

A harrier sweeps by and the birds fly up, their cinnamon underwings flashing. They circle the field, lazily it seems, then settle again. More birds appear: song sparrows, tree swallows, white-crowned sparrows, meadowlarks, a dozen great egrets, and a big flock of blackbirds. We watch for a half-hour as the curlews roam the wet pasture. Then the clouds close like a curtain and the rain begins again. Suddenly I realize the rainfall I've been cursing all week is adding water to the rice fields—those "surrogate wetlands"—artificial and less picturesque perhaps than the originals but just as important to the future of the long-billed curlew and many other species that depend on them.