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The Accidental Wetland

A plumbing mistake fills a Mexican desert
with water, wildlife, and irony



Mexican biologists listen
for marsh birds in the
Ciénega de Santa Clara.

Try this just before sunset, when the fry-hot day begins to fade. Grasp the iron rungs of the ladder, the metal still warm from the sun, and climb up to the platform: one story, two stories, part of a third. When you reach the top of the rust-pocked observation tower, the landscape will start to reveal itself.

This part of northwestern Mexico, just above the northern tip of the Gulf of California, first appears as a land of spectacular absence. On the western horizon, beyond thousands of acres of cracking mudflats, lies the main channel of the Colorado River. Weakened by nearly fifty upstream dams and countless diversions in the United States and Mexico, the Colorado limps through its delta to the nearby ocean. To the north, a couple of miles away in a rutted, barren expanse of desert, is a smudge of date palms, the signal flag of the only visible town. Beyond the town, barely out of sight but rarely out of mind, is the international border and *el otro lado*—the other side.

To the south, beginning at the footings of the observation tower and extending toward the sea, is a striking mirage. No, wait: not a mirage. Look again at the sheets of water lit pink by the sun, the thick forests of cattails, the airborne silhouettes of geese and great blue herons and the occasional bald eagle. They are real.

Climb down the ladder and approach the water. It's not deep and smells slightly of salt, but it's cooler, fresher, and wetter than anything for miles. If there's still some light, push an aluminum canoe into the water and paddle through the hissing cattails. You might see some good-sized bass swim below your boat, or hear the harsh rattle of the rare, secretive Yuma clapper rail.

This is the Ciénega de Santa Clara, a forty-thousand-acre wetland nearly fifty times the size of Central Park. It's a pulsing fragment of habitat, a bit of biological wonder isolated in an otherwise nearly sterile landscape. It's the best reminder of what this desert used to be, and what it just might, one day, be again.

I've visited the *ciénega* and its surroundings for the past four years, first as a reporter and then as a teacher of English and a catch-as-catch-can student of Spanish.

When I first arrived, reporter's notebook in hand, I thought I knew what to expect. I'd read Aldo Leopold's rapturous descriptions of the Colorado River delta of old, a nearly two-million-acre wonderland flush with big fish, wild cats, songbirds, waterfowl, and sweet water. After Leopold and his brother canoed the delta in 1922, he recalled their trip in an essay called "The Green Lagoons." "On the map the Delta was bisected by the river, but in fact the river was nowhere and everywhere," he wrote. "He divided and rejoined, he twisted and turned, he meandered in awesome jungles, he all but ran in circles, he dallied with lovely groves, he got lost and was glad of it, and so were we."

From Marc Reisner's classic *Cadillac Desert* and other accounts, I'd learned about the subsequent demise of the Colorado. Throughout most of the last century, the big dreamers and empire builders north of the border had squeezed the river mercilessly. "The river system provides over half the water of greater Los Angeles, San Diego and Phoenix; it grows much of America's domestic production of fresh winter vegetables; it illuminates the neon city of Las Vegas," Reisner wrote. Small wonder that it became, in his words, "the most legislated, most debated, and most litigated river in the entire world."

In nearly every piece of legislation, and in every court case, the delta lost. In the decade before the Hoover Dam was completed in 1935, as much as 22 million acre-feet of water reached the Gulf of California each year. (An acre-foot, the coin of the western water realm, is about 326,000 gallons, enough to cover an acre of land with a foot of water and supply a family of four for a year.) By 1963, when the river's last major dam was completed, almost no water reached the sea. Except during flood years, such as those of the late 1980s, nearly all of the water at the very end of the Colorado delta is seawater, shoved northward by powerful tides in the Gulf of California.

All that wondrous wildlife habitat, gone. All that fertile fishing ground, gone. When I arrived in the delta, I expected a place arranged around this central tragedy, a universe ordered by its black hole.

In Ejido Johnson, the little town visible from the *ciénega's* observation tower, I did find trouble and sadness, but of a different, more complicated sort. The town had formed as a cooperative farming village—an *ejido*—in the 1970s, more than a decade after the upstream dams had mostly stoppered the Colorado's flow. Its earliest residents had come from all over the state of Sonora and beyond, most of them poor and eager for a piece of land, any land. So what if their new property lay by a shrunken river in a hot and howling desert? For the first time in

their lives, they had something to leave to their children.

In the early years, these pioneers wove houses from the desert scrub, replacing them later with brick or plywood structures. They plowed their *parcelas* of land, and sowed wheat and cotton and barley. The irrigation water they relied on—taken from upstream, far from the *ejido* and the *ciénega*, and shunted through a series of canals—was occasionally so salty that it poisoned the crops. Tough conditions, combined with often-poor market prices, led many to take second and third jobs. Most younger people now work at the Sony factory in Mexicali, a four-hour daily commute by company-owned school bus, or attempt a risky adventure on *el otro lado*. In the winter, some resort to bundling green onions—*cebollas*—in the nearby corporate-owned fields. Even the fastest *cebolleros* earn less than twenty-five dollars a day, and all the pickers come home each night with stinking skin and aching joints.

What of the river and its dried-out delta? The Colorado's remains lie in the desert beyond the *parcelas*, largely ignored. Other than the surviving farmers, only a few of the two hundred or so people in town profit directly from its flow. José Juan Butrón, a soft-spoken, wide-smiling young father of three, unrolls his nets every February for the *corvina* season at the saltwater-filled mouth of the river. But fishing's not much of a living anymore. Too few fish and too much competition. Better to find other work, if you can.

No one in the *ejido* was here during the river's glory days, and only a handful have heard firsthand stories of its former strength. For most, the Colorado delta is now a home without much history. Those who grow up here often push north, taking their inherited recollections with them. In the Cucapá Indian villages along the river, some very old people have tales to tell, but these pockets of memory are rare.

During successive trips to the *ejido* and the *ciénega*, a month here, two months there, I learned a little about the art of living in the delta. I went to elaborate *quinceñeras* and late-night dances on the basketball court. I went to Saturday evening masses in the humble cinderblock church, always hosed down before the traveling priest arrived in his battered Toyota hatchback. I learned witty proverbs from Graciela Castro de la Torre, who got up before dawn to make lunch for her middle daughter, Ana Maria, to take to the onion fields. As Ana Maria left the house, her older sister, Viviana, would return from the night shift in the Sony factory.

I also got to know charming Juan Butrón, José Juan's father, proud of his storytelling and his hospitality. Juan, who could come home covered with mud after a day in the fields or the *ciénega*, sometimes turned up on dance nights in a black leather jacket and pointy boots, his thick salt-and-pepper hair neatly coiffed. I drank cup after cup of Nescafé with cantankerous Doña Maria Martinez, the elderly *abuelita* of the *ejido*, whose tiny, round body belied her quick humor and grand sense of theater. I gradually



A young *cebollero* in a field not far from Ejido Johnson, near the end of a day that began at 4 a.m.

learned who was related to whom, who was feuding with whom, and which families had shared long friendships. Sometimes, we looked at one another as if over a long distance, divided by economics, by education, by culture. Yet from a few people I heard joys and doubts—about relationships, about children—that didn't sound all that different from my own concerns.

My notebook of new words and phrases collected fragments of the days. *Nunca la he visto sentada*. I've never seen her sitting down. *El anda con drogās*. He uses drugs—literally, he walks with drugs. *Novelera* or *novelero*, a lover of stories and gossip. *Donde bailan y tocan, todos se embocan*. Where they're dancing and playing music, everybody crowds in.

Every once in a while, other *norteamericanos* would arrive in the ejido, bumping over the small highways and dirt roads that lead from Mexicali and San Luis, a few clutching their romantic ideals as tightly as their copies of Leopold and Reisner. They were always greeted—as I still am—with courtesy and bemusement. The ejido, on the whole, is simply too busy surviving to be distracted by a story as old as the fate of the river.

In the desert south of town, the *ciénega* contains a more modern, and possibly more hopeful, tale. Yet that story, too, is threatened by the same forces that tore apart the river seventy years ago. Fifty miles to the northeast in Yuma, Arizona, sits a fantastically expensive, long-dormant plant, built to desalinate some of the Colorado River's much-used water. The plant is, in a roundabout way, the wellspring of the *ciénega*. If it is fired up, as some drought-stricken western U.S. water managers would like to see happen, it will also be the source of the *ciénega's* demise.

The *ciénega* may look like a near-pristine remnant of Leopold's delta lagoons, but it's not. It's a modern plumbing mistake, and a very political one at that.

The *ciénega* springs from the long regional squabble over Colorado River water, a dispute that has ranged from high-minded to ridiculous to very nearly violent. Beginning in 1922, the seven states and two countries with a stake in the river basin divvied up the Colorado on paper. California ended up with the largest share, 4.4 million acre-feet per year. The watershed's other states—Wyoming, Colorado, Utah, New Mexico, Nevada and Arizona—got variously smaller shares of water. In 1944, the United States also signed a treaty with Mexico agreeing to deliver 1.5 million acre-feet of Colorado River water south of the border each year.

The river didn't cooperate with this neat accounting. Early negotiators overestimated the river's actual average flow, which meant the system was overdrawn even in normal years. With the spectacular population growth across the West a serious supply problem began to take shape. Phoenix and its surrounding county grew by more than 40 percent between 1990 and 2000, while Las

Vegas and its county grew a staggering 85 percent. There's less water than planners expected, and more people who want it.

In the 1960s, yet another problem emerged. As the river makes its way south from Colorado and Wyoming, it repeatedly detours through pumps and ditches into agricultural fields, carrying fertilizers and salt from soils back to the main stem of the Colorado. By the time the river reaches the Mexican border, its water is usually too salty for irrigation purposes. So in 1973, the United States and Mexico amended their original treaty, with the United States agreeing to control the salinity of the water delivered to Mexico.

Convolved problems lead to convoluted solutions. While the founders of Ejido Johnson were settling their patch of desert in the 1970s, the U.S. Bureau of Reclamation was building a \$250-million desalination plant just north of the Mexican border, in Yuma. The project was intended to clean up some especially salty irrigation runoff from Arizona, dump that water back into the main stem of the river, and thus meet the United States' obligations to Mexico. The Yuma project also included a sixty-mile-long canal intended to shunt concentrated brine (a byproduct of the desalting process) into an obscure corner of Mexico's Sonoran Desert.

During the twenty-year construction of the Yuma plant, which was finally completed in 1992, the Bureau of Reclamation began diverting about 120,000 acre-feet of untreated, salty irrigation runoff down the sixty-mile canal and into the low-lying desert, rather than permitting it to raise the salinity of the main stem. The Bureau expected high tides to flush the water out to sea, but that never happened. Instead, the diverted water formed a huge, brackish lake with only a sporadic connection to the sea, and completely separate from the main stem of the Colorado.

It wasn't the freshest water on earth, but before long, cattails sprouted, birds gathered, local families and fishermen began to spend occasional weekends on the burgeoning puddle, and curious biologists visited from both sides of the border. Ed Glenn, an environmental scientist at the University of Arizona, traveled to the marsh in 1991 with renowned desert botanist Richard Felger.

"We drove down the canal, and we found the *ciénega*," Glenn remembers. "It was the biggest wetland in the Sonoran Desert."

Glenn and Felger discovered what many locals already knew. The Bureau, whose dams had originally destroyed the delta wetlands, had been inadvertently watering the seed of its recovery.

The accidental forty-thousand-acre restoration project could not be kept quiet for long. The place soon earned a fancy name from its admirers—La *Ciénega de Santa Clara*—and created a burst of excitement in its small slice of the world. The delta had been dismissed as a wasteland for years, and the *ciénega* was its first tangible sign of life in a long, long time.

"It was the beginning of a greater awareness of what was really in the delta," says Glenn. In the 1980s and early '90s, a

series of floods had sent extra pulses of water down the river into Mexico, and Glenn and others found that the dense cottonwood and willow forests along the main stem of the Colorado had bounced back with stunning speed. The delta wasn't dead; it was just waiting to be turned back into wetlands.

But by the early 1990s, the Bureau of Reclamation was at last ready to crank up the long-delayed Yuma desalting plant, a move that would have cut off the flow of comparatively fresh water through the diversion canal and replaced it with concentrated and toxic brine from the desalting process. So Glenn began to write and talk about the *ciénega*. "I just thought it was a shame for it to be eliminated without anyone knowing it was there," he says. He soon got the attention of some environmental groups, especially the U.S. organizations Environmental Defense, Defenders of Wildlife, and the Pacific Institute, and the Mexican group Pronatura. Soon a small band of activists from both sides of the border was meeting regularly, discussing how to protect the *ciénega* and restore the forests along the main stem of the river.

In 1993, the Mexican government designated the *ciénega* and most of the Mexican stretch of the Colorado River as a federal biosphere reserve. The move didn't secure any additional water rights for the delta, but it did give the Mexican government and environmentalists the leverage they needed to protect the *ciénega*.

Faced with the international pressure and mechanical problems at the Yuma plant, the Bureau and U.S. states along the river used some short-term conservation measures to meet their treaty obligations to Mexico while leaving the *ciénega* intact. For example, some "extra" water was obtained by lining California's Coachella Canal, preventing seepage, but that water now goes to California. So far, the Yuma desalting plant, other than a brief period of operation in 1992, has spent its life in mothballs.

All the while, the *ciénega* has continued to surprise its visitors and neighbors. Osvel Hinojosa, a young pony-tailed Mexican ornithologist, surveyed the *ciénega* and documented the world's largest population of the endangered Yuma clapper rail. Now finishing his doctorate at the University of Arizona, Hinojosa also works on the staff of Pronatura Noroeste. A few residents of Ejido Johnson, who had watched some of their lands drown in the *ciénega*, tried to make the best of the situation by beginning a small ecotourism business. Juan and José Juan Butrón now guide a trickle of visitors, and they also work as contract bird biologists for Hinojosa and the biosphere reserve. Another long-time ejido resident and *los cuates*, his twin sons, sometimes cater picnics for visitors at the *ciénega*: hot dogs or tacos, your choice, always accompanied by fat bottles of sweet soda.

In the past few years, the *ciénega* has also become a chance-meeting place for sportsmen, biologists, journalists, and Colorado River experts of all political stripes. It can be a strange crossroads.



Carnival goers wade across the shallow remnants of the Colorado River on their way to and from an Easter weekend festival in Baja California Norté.

During one visit, I bumped into a group of county commissioners and water managers from near my home in western Colorado. We all use the river; together, we witnessed the consequences.

The Yuma desalting plant remains idle, staffed only by a skeleton crew. Over the years, it's gained a widespread reputation as a boondoggle, but with the southwestern United States in its seventh year of an extraordinarily severe drought, it is again gaining supporters. The year 2002 was the driest year in northern Arizona in the last millennium, and there are no clear signs of imminent improvement. The Colorado River, divided up during a relatively wet period in the past century, is looking skimpier than ever. Recent efforts to get more water into the lower Colorado for conservation purposes have been delayed or completely turned back. Most users of the river are in no mood to be generous.

"The threats don't ever go away. They might hibernate for a while, but they always come back," says Ed Glenn. "With the *ciénega*, we now think, 'no one's going to operate that plant,' but then someone comes forward and says they want it restarted."

How would it happen? In the late 1960s, Arizona agreed that California would have first claim on river water during officially designated shortages. So as the drought continues, Arizona has become especially eager to get additional fresh water into the system. The more water in the river, the less likely it is that the federal government will declare such a shortage, in turn making it less likely that Arizona will have to give up water to California. During the past few years, Arizona's top water bosses have argued that the easiest way to avoid an official shortage is to start up the Yuma desalting plant.

The idea made its way into a report to Congress from the Bureau of Reclamation and then, in 2003 and 2004, into congressional committee reports. This doesn't mean reopening is required by law, but it does give the plant a high-level endorsement.

The *ciénega*, however, keeps sweet-talking its detractors. When Herb Guenther, the head of the Arizona Department of Water Resources, declared his support for reopening the Yuma plant, a fleet of state and national environmental groups wrote to his boss, Arizona Governor Janet Napolitano, detailing the ecological riches of the *ciénega*. Guenther backed away from his statement, and the state has taken no official position. Napolitano, a Democrat elected in 2002, even suggested last spring that Arizona "start believing in a culture of [water] conservation." Though Napolitano's words may sound reasonable, western water law has historically operated on a "use it or lose it" principle. You can use water to grow cotton or grow empires, the law implies, but for heaven's sake don't try to save it—or someone else may rightfully lay claim to it.

Sid Wilson, the general manager of the Central Arizona Project—the canal-and-tunnel system that delivers river water

to Phoenix, Tucson, and desert farmers—has also championed restarting the Yuma plant. Last spring, however, he took a canoe tour of the *ciénega*, and came back hinting at a bit of flexibility. He's begun a series of meetings with farmers, *ciénega* defenders, and water managers, and he says his goal is to protect both the state's interests and the *ciénega*.

Of course, it's impossible to know what such words will mean for the *ciénega*. But environmentalists hope the state can find an alternative to the Yuma desalting plant. For instance, farmers looking to get out of their business could lease or sell their water rights to the federal Bureau of Reclamation, allowing more water to stay in the Colorado River.

Remember how unlikely all this is. The *ciénega* is an isolated, largely artificial wetland in one of the most brutal deserts in North America, sustained by the waters of a severely over-tapped river. Its odds have never been good. But it somehow recruits new (and sometimes reluctant) sympathizers while keeping a grip on its old allies.

"I don't know if I'm proud or embarrassed that I've maintained such close interest in this for so long," laughs Jennifer Pitt of the U.S. group Environmental Defense. During her half-dozen years of working to protect the delta, Pitt has acquired a formidable understanding of the legal, political, and ecological issues in the region. "I just decided I had to get down into the bloody details in order to make any difference," she says.

Pitt and others say it's the just-add-water potential of the delta that keeps them sitting in meetings and poring over reports, chiseling away at the river's multilayered problems. The green lagoons that Aldo Leopold saw, with their jaguars and their songbirds and their plump fish, aren't likely to reappear in our lifetimes. But the almost supernatural emergence of the *ciénega's* wetland habitat, along with the re-emerging cottonwood and willow forests on the main stem, suggests that a modest recovery is possible.

Biologists at the *ciénega* say that it needs between 100,000 and 120,000 acre-feet annually to remain at roughly its current size. Just a bit of extra water—50,000 acre-feet each year, along with 260,000 acre-feet of flood releases every four or five years—could advance the restoration of the main stem, expanding the Colorado River delta's capacity as a rare, valuable haven for wildlife. That possibility has helped supporters persist through losing legal battles, language barriers, policy setbacks, and the terribly long drought.

From the observation tower at the edge of the *ciénega*, it's easy to see the results of these activists' persistence. Unlike just about every other body of water between Texas and the Pacific Ocean, the *ciénega* is bigger than it was five years ago, thanks to the continued infusion of Arizona irrigation water. The *ciénega*

is a triumph for wildlife, for science, and for anyone who mourns the once-grand Colorado delta.

But if you ever get a chance to climb the tower, make an about-face and squint across the desert to the north. The *ciénega* may hold out many rewards, yet few have benefited the *ejido*, that small cluster of houses under the distant stand of date palms. Environmental groups and the biosphere reserve staff have championed the *ejido's* fledgling ecotourism business, and several *ejido* residents continue to participate with enthusiasm. Juan Butrón, who knows the birds of the *ciénega* as well as any university-trained biologist, often waxes eloquent about the promise of the wetland. He, along with a handful of his neighbors, believes the natural wonders of the *ciénega* will help their families and their town.

Most *ejido* residents aren't so optimistic. While the *ciénega* and its curious visitors might ease the burden of poverty for Butrón and a few others, tourism alone isn't likely to save this town. Not many in the *ejido* are waiting for the *ciénega* to deliver. They're busily looking for work—in Mexicali, or across the border—that will aid their families now. These distant opportunities, not the *ciénega*, are driving the future of the *ejido*.

In the four years that I've been visiting the *ejido*, several families have left to find jobs, boarding up their small houses against thieves and blowing dust. Each time I show up, the streets seem a little bit quieter. Strong family ties keep some young couples in place, but many acknowledge that their time here likely is limited.

The *ciénega* does have one thing to offer its neighbors, though. Once or twice each school year, the kids at the local elementary school tuck warm, foil-wrapped taquitos in their backpacks, pile into pickup trucks, and ride, screaming and laughing, into the desert south of town. When they arrive at the edge of the *ciénega*, they climb out, chasing each other up the ladder of the observation tower. From the top, they crowd together, shouting and dangling their limbs, and look out at the shining waters.

Later, the father-and-son team of Juan and José Juan Butrón take some children on a canoe tour. If the students can manage a few moments of quiet, they might see a raccoon or a coyote lurking in the cattails, spot brown and white pelicans flying heavily overhead, or watch avocets, dowitchers, and masses of other shorebirds rest from their long migrations along the Pacific Coast. They might notice the cloudless desert sky reflected in the calm water. As they sit in their low-slung canoes, overshadowed by the tall, thick cattails, they might even imagine that this wetland has no end. From the cool center of the *ciénega*, it's the desert that can begin to seem like a mirage.

When the children tire themselves out and return to the makeshift dock, their teacher may gather them under the shady *palapa* and tell them a story: What you see here is a memory, a reminder. This is the way it used to be. 