

# The Surprise Return of the Colorado River Delta

border to supply its own farms and cities. In 1944, the U.S. and Mexico signed a treaty to divide up the flows of the Colorado and the Rio Grande. Mexico secured rights to 1.5 million acre-feet of the lower Colorado's annual average flow of 7.5 million acre-feet.

The treaty dealt only with water quantity. It did not mention water quality. Mexico came to rue this omission. By the time the Colorado reached the border, its salt content was toxic to farm crops. As a result of upriver use of river water and agricultural runoff, Mexican farmers saw their irrigated crops wither and die. Only 29 years later, after prolonged negotiations, did the U.S. agree to reduce salinity levels to more tolerable levels.

The new agreement went into effect in

1973—and, quite unexpectedly, set the stage for the greening of the delta. To comply with the requirement that salt content be lowered, the U.S. decided to build a desalting plant close to the border, near Yuma, Arizona. The plant was to treat salty irrigation runoff from the south Gila Valley before discharge into the river. While the plant was being built, the runoff was to be carried south by canal and discharged into a barren area in the eastern delta, from there eventually to drain into the Gulf of California.

Mexico was willing to tolerate this temporary solution because the discharge area was considered wasteland. Soon, however, that "wasteland" began to show signs of life. Without any assistance from wetland



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**Top:** A young resident bird-watcher in Eijido Luis Johnson, Ciénega de Santa Clara

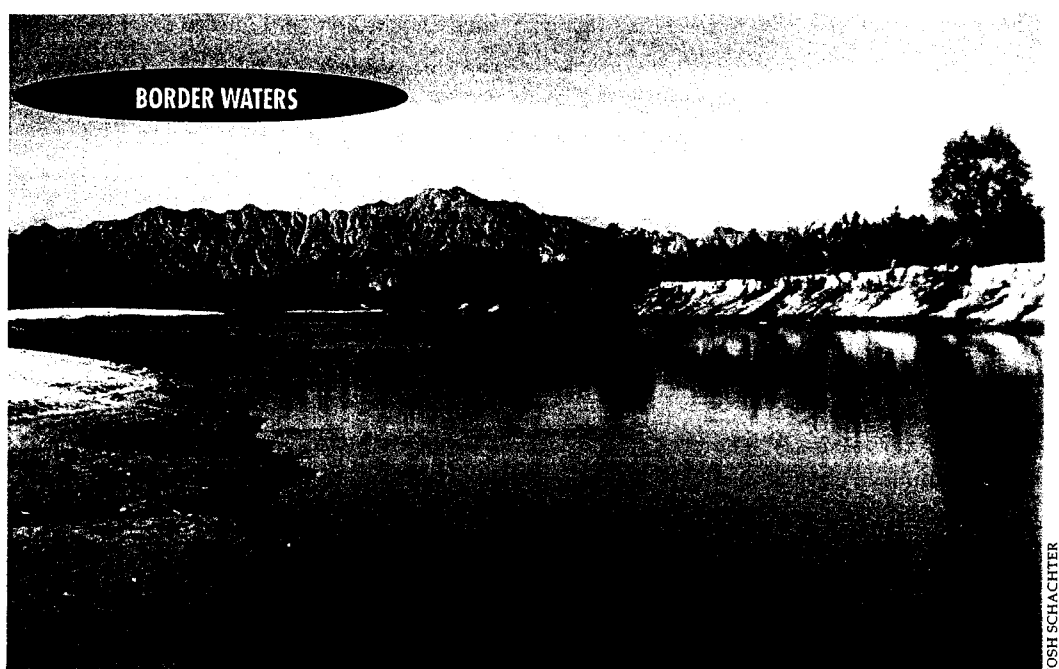
**Left:** This canal carries agricultural runoff from southern Arizona to the Ciénega de Santa Clara.



WESLEY MARK



José Campoy, director of the Delta Biosphere Reserve, designed this glyph of a shell inside a sun for La Ruta de Sonora.



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consultants, mitigation experts, or environmental regulators, the drain water transformed 50,000 acres of dusty, salt-encrusted barrens into cattail wetlands and brackish-water marsh. The Ciénega de Santa Clara returned, and so did the wildlife, including 150 bird species and the endangered desert pupfish. According to Glenn, the Ciénega now shelters 6,000 Yuma clapper rails, the largest remaining population of this endangered bird.

## Life-Giving Water Returns

IT TOOK TILL 1992—almost 20 years—to build the desalting plant, due to engineering problems, and it still has not been put into operation because the U.S. finds that it's cheaper to continue diverting the problem runoff south. As the custodian of the

unexpected wetlands, Mexico is glad to see the drain discharge. In 1993, Mexico established the Upper Gulf of California and Colorado River Delta Biosphere Reserve to protect Ciénega de Santa Clara and similar areas. Now schoolchildren come here on field trips to see their first blue herons, egrets, avocets, and geese. José Campoy, the director of the Biosphere Reserve, showed me a calendar illustrated with drawings created by student visitors. "The children help educate their parents about the natural values of the delta," he said.

Meanwhile, more water arrived—thanks to overflow discharges from U.S. dams and Mexico's Morelos Dam, just south of the border—especially during the wet El Niño years of the 1980s and '90s. Nourished by these flows, the river again coursed for 100 miles below the border and reached the Gulf. Cottonwoods and willows returned, and with them also warblers, tanagers, vireos, and other migratory songbirds. The endangered southwestern willow flycatcher finds shelter here again. Beavers have returned too, thanks to individual animals "washed away from the United States during heavy runoff," and are now established, according to Eric Mellink of the Center for Scientific Investigation in Ensenada.

Delta habitat now extends over some 150,000 acres. That's just a fragment of the two million acres Spanish missionaries and explorers found, but it supports up to 60,000 waterfowl and 160,000 shorebirds each year. This habitat is about the same size as all of southern California's coastal wetland systems combined. The delta has reemerged as a key stopover on the Pacific Flyway, taking some pressure off the California coast and the Salton Sea.

**Top right: Landscape of the Colorado River Delta, Mexico**

**Bottom: In the 19th century steamboats cruised the delta, fueled by cottonwoods from dense stands along the river.**



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The impact of the resurgent river flows extends into the Gulf of California. Mexican fishery officials have noted that catches of shrimp and corvina, a popular commercial fish, increase after overflow releases from dams. According to a 2000 report published in *Fishery Bulletin* by Glenn and researchers at the University of Baja California in Ensenada, the releases can expand brackish-water spawning and nursing areas for marine life. For El Golfo de Santa Clara, a small fishing community below the mouth of the delta that exports its catch to markets as far away as South Korea, the larger harvests serve as an economic shot in the arm.

## Locals Become Nature Guides

THE WILDLIFE REBOUND also has brought new economic opportunities for delta communities in the form of ecotourism. El Golfo fishermen now take visitors out in their skiffs (pangas) to watch seabirds and see the Biosphere Reserve. They tell them that if they're lucky, they may catch a glimpse of the endangered vaquita, a small porpoise that breeds in the upper Gulf and along the margins of the delta. Small islands at the delta mouth host breeding colonies of royal terns, black skimmers, and black-crowned night herons.

People of Ejido Luis Johnson, a small cooperative farming community, have been commuting to better-paying jobs in border factories and fish packing plants. Now there is another income-producing alternative, nature tourism. A few years ago the ejido began to offer guided tours by panga to the nearby Santa Clara wetlands. Word of this reached La Ruta de Sonora Ecotourism Association, a nonprofit agency in Tuscon, Arizona, and it offered to help by training local guides to host English-speaking visitors. Now, said José Juan Butrón, who launched these tours, "we handle about 20 tours during winter birding season." Five pangas and six canoes owned by the ejido ply the shallow waterways that wind through the six-foot-high cattail thickets. The skiffs use electric motors to minimize pollution and engine noise.

Local guides also take sport fishermen out to catch largemouth bass and other non-native fish that have colonized the waters. Butrón has refurbished one village home so visitors can stay overnight . . . and spend more money locally.

The government of the state of Sonora supports this new economic thrust. In a 2001



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**Top: José Campoy and an ecotourist canoeing in the Ciénega de Santa Clara**

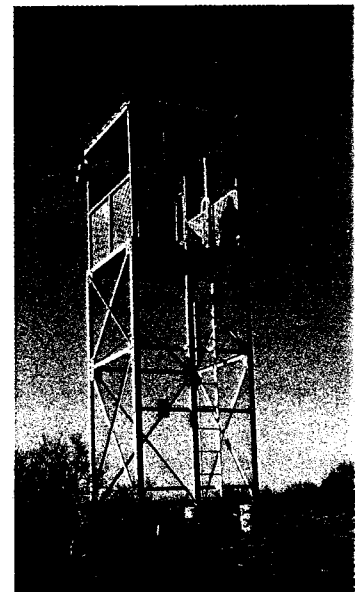
**Below: Waterfowl observation tower in the Santa Clara marshlands**

edition of a state tourist guide, Governor Armando López Nogales observed: "Above all, ecotourism may prove to be an essential emergent market within the tourist sector. We may count on the importance of the Biosphere Reserve on the Colorado River delta, a place where one can find animal species not found elsewhere in the world."

These new-found ecotourism opportunities can benefit communities north of the border as well. In April 2001, Yuma, Arizona, held its first Yuma Birding and Nature Festival, featuring field tours to the Santa Clara wetlands and El Golfo. The festival attracted over 300 participants, and plans are under way to make it an annual event. To expand wildlife-watching opportunities, the community is restoring wetlands along its riverfront.

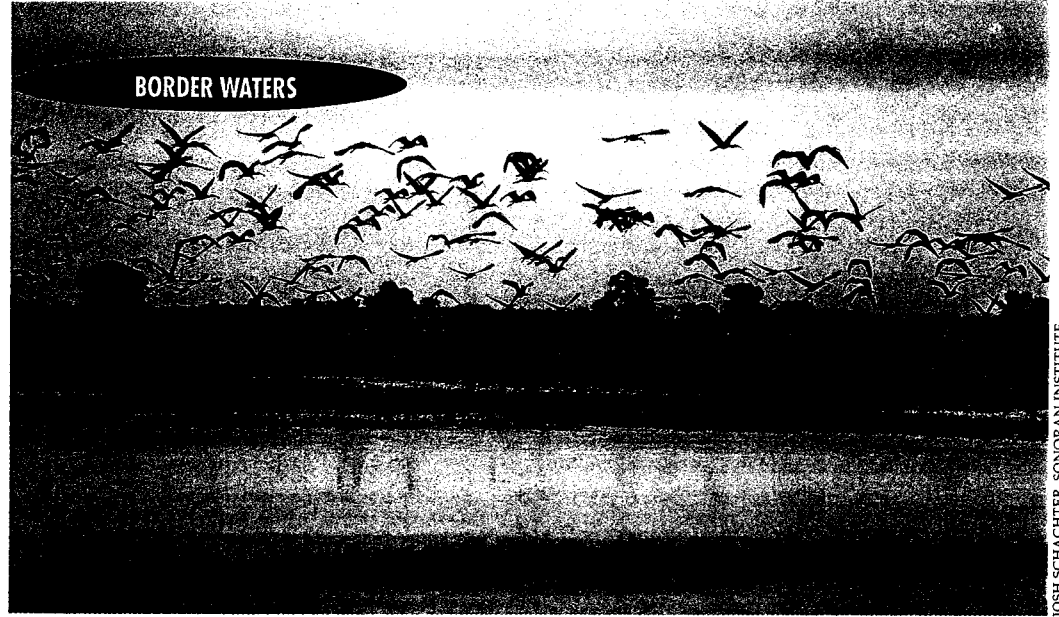
## Crossborder Delta Defense

A SIGN AT THE BASE of a tower in the Santa Clara wetlands clued me in to another form of cross-border cooperation. It declared that the tower was a joint project of wildlife agencies in the United States and Mexico. In 1997, the U.S. Department of the Interior and its Mexican counterpart, Secretaría de Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP), agreed to cooperate in cross-border projects. "As part of this program, we decided to donate a birdwatching tower to the Santa Clara wetlands," explained Mitch Ellis, superintendent of the Imperial National Wildlife Refuge north of Yuma. "We have also helped to repair storm damage to a field station in the Biosphere Reserve and participated in aerial wildlife surveys of the delta."



KURT KUTAY

## BORDER WATERS



JOSH SCHACHTER, SONORAN INSTITUTE

**Top: Ibis in an agricultural field, Colorado River Delta, Sonora, Mexico**

**Bottom: Young residents of Ejido Luis Johnson**



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The return of life-giving water to the delta generates another management responsibility: monitoring water quality. Jaqueline García, a research scientist in Guayamas, Sonora, has detected the presence of selenium in water samples taken from the Ciénega. This natural element can be toxic at high levels. A three-year study is under way to determine whether selenium bioaccumulates in the breeding population of the Yuma clapper rail and impairs breeding success, as it was found to do in the Kesterson National Wildlife Refuge in California's Central Valley. The study is being conducted by the a binational team of researchers from the University of California Institute for Mexico and the United States (UC-MEXUS).

The riverside forests and resurgent wetlands indicate that the delta, while beleaguered, is still very much alive. There is no assurance, however, that the life-giving flows will continue. Indeed, the U.S. has decided to designate another use for the water that sustains the riverside forests. In January 2001, in the last days of the Clinton Administration, Secretary of the Interior Bruce Babbitt approved so-called interim surplus criteria (ISC) for the Colorado River, which permit the Secretary to divert surplus flows to states with water needs that exceed their allowed allocation. This essentially means California, which uses up to 800,000 acre-feet a year above its allocation of 4.4 million acre-feet. Under the ISC, California will have access to these flows if it shows progress toward the reduction of its water usage to the permitted level by 2016.

The ISC generated considerable opposition from Mexico and from environmental groups on both sides of the border. For some time already, environmental organi-

zations and community groups had been urging the Department of Interior to allocate more water to environmental needs of the lower Colorado River and delta ecosystem. In November 1999, 38 organizations, representing over eight million U.S. and Mexican citizens, sent a letter to the governments of both countries making this plea. In June 2000, eight environmental groups, including the Center for Biological Diversity and the Sierra Club, filed a lawsuit against the Department of Interior contending that it had failed to protect the river and delta ecosystem under the Endangered Species Act. The nonprofit Pacific Institute, a research organization based in Oakland, submitted to the Department of Interior an alternative ISC plan that dedicated flows to delta habitat. The Department declined to analyze this alternative, asserting that "the United States does not mitigate for impacts in a foreign country"—an assertion that blatantly overlooks Article 17 of the 1944 water treaty: "Each government declares its intention to operate its storage dams in such manner, consistent with the normal operations of its hydraulic systems, as to avoid, as far as feasible, material damage in the territory of the other."

Although water interests on both sides of the border have traditionally been reluctant to dedicate river water to environmental needs, there appears to be a growing, if sometimes grudging, acceptance that the Colorado River delta's needs must be addressed on a binational basis. In a December 27, 2000, editorial the *San Diego Union Tribune* pointed to a need for "improvements" in the Colorado Delta, concluding that "with some innovation, including channeling more agricultural runoff water into the delta, and negotiating with all users to allow a little more water

flow into the Gulf of California, the United States and Mexico can improve somewhat the ecological health of this vast desert delta."

One possible proactive approach has been set in motion. In December 2000, the binational International Boundary and Water Commission (IBWC) approved a minute order that, for the first time, acknowledges the need to address the water requirements of the delta ecosystem. The Commission established a cross-border technical task force to develop cooperative delta projects "to ensure use of water for ecological purposes." In September of this year the Commission, along with United States and Mexican government agencies, sponsored a two-day Colorado River Delta Symposium in Mexicali, Mexico. It attracted some 300 participants.



Meanwhile, natural as well as political forces threaten the delta. The onset of drought could cut short its recovery, rendering any discussion of surplus flow allocations meaningless, at least temporarily. The pressure to restart the desalting plant in order to reclaim farm runoff for domestic use could also shrink the Santa Clara wetlands.

Anticipating such problems, the David and Lucille Packard Foundation has funded a study to explore short-term options for restoring flows to the delta. In May the study team, which includes water officials from both sides of the border, issued a report that singled out two options. The first is to divert farm runoff by canal from the Yuma and Gila Valley areas to the delta to expand wetlands. The U.S. Bureau of Reclamation is already considering this as a way to reduce salinity levels in the Colorado River. The second option is to acquire water rights to marginal farmland in the delta for use in restoration, which Mexico is considering as a means of making more efficient use of water.

Seventy years ago, few people worried about the fate of the Colorado River delta. Current efforts to sustain the living delta reflect a significant change in public attitudes on both sides of the border. Once regarded as expendable in the drive for development, coastal wetlands and riverside forests are now regarded as worthy of

protection and restoration. Does setting aside life-giving flows to natural systems mean we must stint on our own water needs? We are learning to stretch our existing water supply by reclaiming our wastewater, adopting water conservation measures, and cleaning up urban groundwater basins.

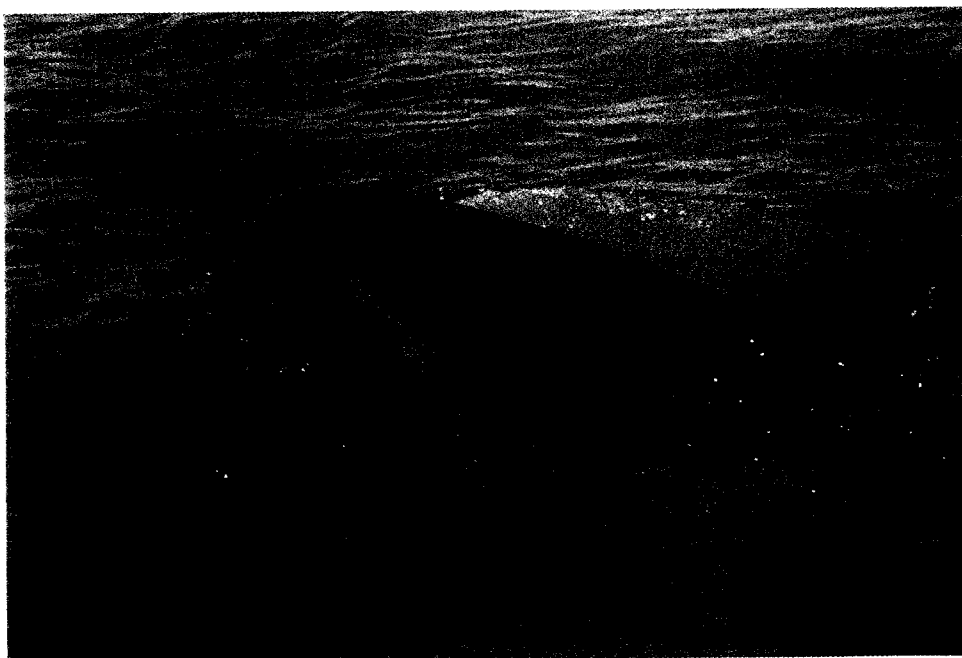
We are becoming more aware of the need to link new growth to the availability of future water supplies. In 2001, Governor Gray Davis signed into law a landmark bill that requires local governments, prior to approving new development, to verify with local water agencies that future water supplies will be available. The author of the bill was State Senator Sheila Kuehl (D-Santa Monica).

Because of such expanded policy perspectives, California's Mono Lake and the Sacramento-San Joaquin River delta enjoy a new lease on life. While its future is far from assured, the desert delta now has a chance to survive, thanks to its determined defenders. ■

*Wesley Marx, author of The Frail Ocean (revised edition, 2000), has been observing the recovery of the Colorado River delta during repeated camping trips to the region with his family. He may be contacted at [wmarx@primenet.com](mailto:wmarx@primenet.com).*

**Top: Mark Briggs and Carolyn Gorman of the Sonoran Institute investigate changes in the river channel and vegetation with researcher Francisco Zamora.**

**Bottom: A dolphin swims in the Alto Golfo de California Biosphere Reserve.**



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