METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

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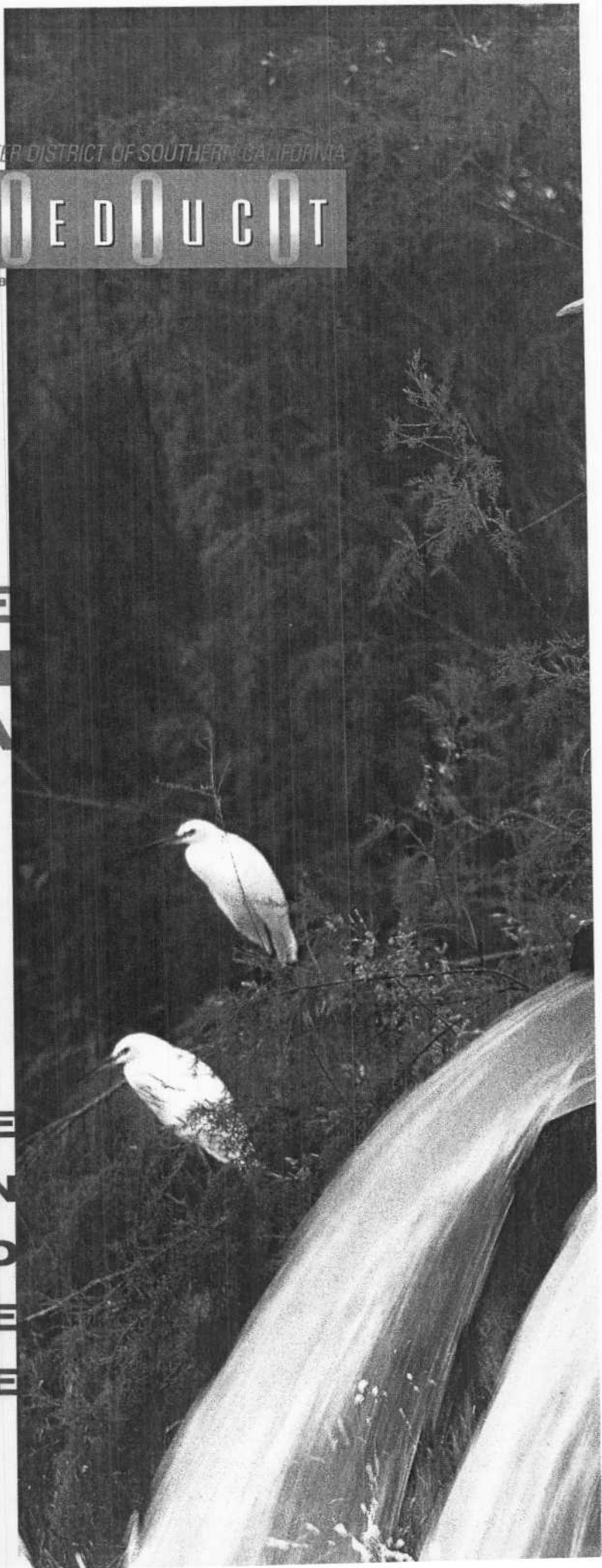

THE SALTON SEA

WHERE MAN AND NATURE COLLIDE

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Agricultural drainage sustains the Salton S

ACCORDING to the California Department of Parks and Recreation, the Salton Sea attracted more visitors in the 1960s and 1970s than Yosemite National Park. Now, even though it's the largest inland body of water west of the Rockies, most of its campgrounds sit empty much of the year. Dilapidated and deserted resorts and marinas dot its shores, often along with miles of dead fish. Recreational use is just 25 percent of what it was during the sea's boom years.

Straddling Imperial and Riverside counties, the Salton Sea is without a beginning or an end. The Alamo and New rivers flow into the 35-mile-long inland sea, carrying agricultural drainage and municipal wastewater.

Historically, the Salton Sea, or more accurately the Salton Sink, was part of the Gulf of California that extended north to a few miles above the town of Indio, about 144 miles from its present northernmost reach. For centuries, the Colorado River has carried a heavy load of silt that gradually created an immense delta that cut off the northern end of the gulf, leaving the Salton Sea, the bottom of which lies 278 feet below sea level, to evaporate.

In 1905, the flooding Colorado River destroyed the headworks of a canal to the Imperial Valley redirecting its entire flow toward the Salton Sink. Because there is no outlet, water flowing into this sea would have eventually filled it to just above sea level, submerging the cultivated land and towns of the Imperial and Coachella valleys. After several failed attempts, workers were able to divert the Colorado back toward the Gulf of California in 1907. Until the gates at Hoover Dam were closed in 1935, a repeat flood was a constant threat to residents and farmers.

As it had done over countless years, what nature put in, nature took out by evaporation. In 1907, the Salton Sea covered about 330,000 acres, but in a little more than a dozen years, it was reduced to 150,000 acres. Now, the sea is sustained by irrigation runoff and, thanks to Hoover and other dams along the Colorado River, the threat of flooding has been eliminated.

Since then, the sea has been maintained and increased by the approximately 1.3 million acre-feet of agricultural drainage from irrigated lands in the Imperial and Coachella valleys in California and the Mexicali Valley in Baja California. Covering 245,000 acres, levees have been constructed to protect adjacent farmland and structures at sites along the shoreline. Even so, the rising sea has created a flood threat, with the Imperial Irrigation District (IID) and the Coachella Valley Water District shelling out payments to those adversely affected by the sea's rise.

The drainage sustains the Salton Sea, but the rising salinity left behind as the water evaporates is also what's killing it.

In 1928, President Calvin Coolidge issued an executive order withdrawing lands lying below elevation 220 feet below sea level in the Salton Sink for the purpose of providing a reservoir for agricultural drainage water. With the sea's only outlet being evaporation, dissolved salts contained in the inflows have collected in the sink since prehistoric times. Since the 1970s, salinity has increased by about 1 percent a year, making the Salton Sea 25 percent saltier than the ocean.

Wetlands, crop lands and the sea offer migrating waterfowl a mix of habitats and food sources making the basin a prime stopover on the Pacific Flyway for more than 1 million birds. There are some 380 species of birds, five of which are endangered, stopping at the sea.

The Salton Sea also has an abundant fishery, which continues despite the regular mass fish die-offs, with marine species, such as sargo, orangemouth corvina and gulf croaker, 1950s by the California Department of Fish a the sea's most numerous specie, found its way their introduction in Imperial Valley irrigation for aquatic plant control. A million or more fi to die in a single event. Eutrophication—a co the death and decomposition of phytoplanktor low dissolved oxygen levels as well as odor pr as the primary cause of these die-offs. Rising sa identified as a threat to the fishery. Continued i salinity would likely result in the conversion of to a brine fly/brine shrimp ecosystem similar to that of Mono Lake.

Double

In recent years, the sea has turned on the birds that have used it as a refueling stop. In some cases, it has become a death trap for many wintering birds. In January, more than 5,600 birds died of avian cholera and other undetermined causes. An entire island nesting colony of double-crested cormorants died in 1997 and avian botulism killed another 5,200 birds. In 1996, 15,000 birds, inclu endangered brown pelicans, died of avian chole botulism. The death of so many brown pelicans l and Wildlife Service to abandon its consideration The largest die-off occurred in 1992 when 150,0 and ruddy ducks died from an unknown cause. T fish die-offs have garnered the attention of state a wildlife officials.

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Aerial view of the Salton Sea

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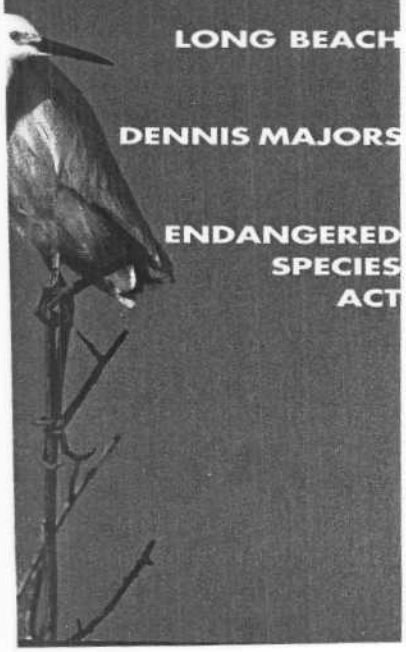

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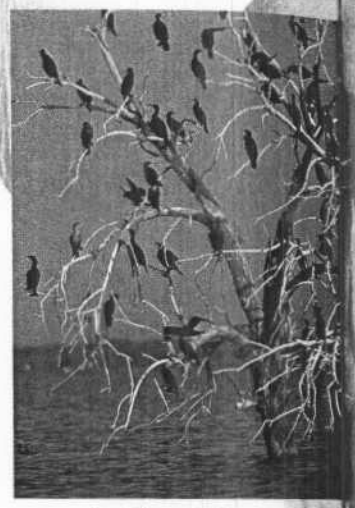
die-offs, with marine species, such as sargo, orangemouth corvina and gulf croaker, introduced since the 1950s by the California Department of Fish and Game. Tilapia, the sea's most numerous specie, found its way to the sea following their introduction in Imperial Valley irrigation canals in the 1960s for aquatic plant control. A million or more fish have been known to die in a single event. Eutrophication—a condition arising from the death and decomposition of phytoplankton, which results in low dissolved oxygen levels as well as odor problems—is suspected as the primary cause of these die-offs. Rising salinity also has been identified as a threat to the fishery. Continued increases in the salinity would likely result in the conversion of the existing fishery to a brine fly/brine shrimp ecosystem similar to that of Mono Lake.



Double-crested cormorants

In recent years, the sea has turned on the birds that have used it as a refueling stop. In some cases, it has become a death trap for many wintering birds. In January, more than 5,600 birds died of avian cholera and other undetermined causes. An entire island nesting colony of double-crested cormorants died in 1997 and avian botulism killed another 5,200 birds. In 1996, 15,000 birds, including 1,400 endangered brown pelicans, died of avian cholera and avian botulism. The death of so many brown pelicans led the U.S. Fish and Wildlife Service to abandon its consideration to delist this bird. The largest die-off occurred in 1992 when 150,000 eared grebes and ruddy ducks died from an unknown cause. These bird and fish die-offs have garnered the attention of state and federal wildlife officials.

Now, Congress is taking the lead to reverse the downward spiral of the sea.

Named in honor of the late Palm Springs Rep. Sonny Bono, who championed reclamation of the Salton Sea, Rep. Duncan Hunter, R-El Cajon, introduced the Sonny Bono Memorial Salton Sea Reclamation Act on February 25, to authorize federal funding to reclaim the sea. The Imperial/San Diego County congressman says the sea is rapidly approaching a salinity level where if corrective action isn't soon taken it will be incapable of sustaining fish life. The bill authorizes $350 million on a 50 percent cost-sharing basis with state and local agencies for construction. It also sets aside $22.5 million for feasibility studies and $5 million for scientific and biological studies.

"Due to recent and ongoing wildlife die-offs and the impending collapse of the Salton Sea ecosystem, it is the intent of Congress to provide an expedited process to begin to arrest the ecological disaster that is overcoming the Salton Sea," Hunter states in the bill.

"The bill provides for a reclamation project to reduce and stabilize the salinity of the sea and stabilize its surface elevation," says John Scott, an engineer in Metropolitan Water District's Colorado River Resources branch who has tracked Salton Sea issues since 1992. "The legislation requires the project to reclaim healthy fish and wildlife resources and to enhance recreational uses and economic development with the caveat that the sea will continue as a repository for agricultural drainage."

Options that the Secretary of the Interior would be directed to consider to improve conditions at the sea include: an in-sea diked impoundment where high-salinity water would be pushed in by the fresher inflows from the sea's periphery, thereby lowering the salinity of the surrounding sea; pump high-salinity water out of the sea; and/or augmenting the flows into the sea.

The Salton Sea Authority was formed under a joint powers agreement among the agricultural districts, the Imperial Irrigation District and the Coachella Valley Water District, that discharge drainage to the sea, as well as Riverside and Imperial counties. After considering numerous alternatives, the authority has identified the in-sea diked impoundment option as the most practical alternative to controlling salinity. Others believe pumping out high-salinity water would be more effective and also would provide some control over the sea's elevation.

"A pump-out scenario is complicated by the resulting impacts on the area where the high-salinity water would be disposed," says Scott. "Each of the three specific alternatives has its merits and disadvantages. Congress would direct the Secretary of the Interior to give each option due consideration, as well as any other the secretary deems appropriate to reclaim the sea."

However, the legislation provides that the solution shall not develop or promote an ongoing reliance on Colorado River water. "Congress is directing the secretary to encourage water conservation and account for water transfers out of the Salton Sea basin, which would likely reduce inflows to the sea" says Scott. "Specifically, the secretary would be directed to incorporate into his project design calculations an assumption that Salton Sea inflows could be reduced to 800,000 acre-feet per year or less, about 500,000 acre-feet less than current levels."

By reducing the amount of agricultural runoff, the sea's current flood threat can be stemmed, while at the same time the volume of pesticides and fertilizers reaching the sea also would be decreased.

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Photo courtesy U.S. Fish and Wildlife Service

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written by **Joe Pomento**

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The Colorado River Board of California, in cooperation with California's Colorado River contractors, is developing a "California 4.4 Plan" by which the state would reduce its demands on the river to the state's basic annual apportionment. The current draft plan calls for conservation within the Imperial Valley. About a million acre-feet of agricultural drainage from Imperial Irrigation District reaches the Salton Sea, comprising about 80 percent of the sea's inflow. In June 1984, the State Water Resources Control Board concluded that Imperial water use practices were unreasonable and constituted a misuse of water under the state's constitution. Under a 1988 agreement with Metropolitan, Imperial has implemented and is operating a number of conservation projects funded by MWD that are saving more than 100,000 acre-feet a year. Imperial, Coachella Valley Water District and the U.S. Bureau of Reclamation have each stated that additional water can be saved.

If the bill is passed and signed by the president, the secretary has 18 months to submit a report to the House Committee on Resources and the Senate Committee on Energy and Natural Resources documenting the findings and recommendations of the feasibility study. Also submitted at this time will be a reclamation plan for the sea, along with a cost-sharing formula for operation and maintenance of plan implementation, and completion of environmental compliance and permitting required for construction. The secretary also must complete specifications of the construction activities to be carried out under the recommended plan that are sufficient to use in soliciting bids. The bill delegates authority to the congressional committees to approve the secretary's plan, amend the plan and approve it as amended, or return the plan to the secretary with such recommended changes as a committee deems appropriate. Upon approval of the plan, the secretary would be directed to initiate construction.

Photo courtesy U.S. Fish and Wildlife Service

Recording pick-up data

"The intent of this bill is to fast track development and implementation of a Salton Sea reclamation plan," says Scott. "Rep. George Brown, D-Colton, is of the opinion that we have five years to reclaim the Salton Sea before salinity reaches a level that would decimate the fishery."

Federal interest can be a double-edged sword. While the bill provides for the development of a reclamation plan within a public forum under the National Environmental Policy Act and the California Environmental Quality Act, the authority delegated to the congressional committees to unilaterally revise and approve the plan presents a wild card.

Recognizing the need to conserve water in the Imperial Valley, the bill also exempts the Imperial Irrigation District, Coachella

arising from implementation of a Salton Sea reclamation plan or any other actions taken that would reduce inflow to the sea.

The creation of the Salton Sea National Wildlife Refuge in 1930 and the introduction of fish have resulted in significant recreational and wildlife beneficial uses. The bill would memorialize the late Sonny Bono by renaming the refuge as the Sonny Bono Salton Sea National Wildlife Refuge.

Without federal funding and protection from liability as provided in the bill, resulting effects on the Salton Sea could pose a formidable obstacle to pursuing future conservation in the Imperial Valley or other activities that would reduce Salton Sea inflow. In the absence of an effort to stabilize salinity, natural forces will continue to close in on this significant resource with or without water conservation in the Imperial Valley.

photos by Gary Kramer

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managing editor
GARRY HOFER

staff writers
KEVIN McLAUGHLIN
JOE POMENTO
MONICA SCHWARZE

staff photographer
LINDA OKAMURA

design
C. SANTILLAN, INC.

chief of communications
JACK MALOY

acting director of public affairs
BOB GOMPERZ

You can email comments or questions to us at ghofer@compuserve.com

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