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## COLUMN ONE

### S.F. Bay: Cleaner but Still a Ways to Go

■ Despite progress over the last 30 years, the huge estuary is still sick, activists say. One dilemma is how to refresh it with more delta water without harming Southland supplies.

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SAN FRANCISCO—As dawn breaks on a gray and chilly summer morning, a shivering band of men and women strides purposefully to the end of Pier 7, east of Fisherman's Wharf, and plunges, one by one, feet first into the icy, choppy waters of the bay.

Whooping with exhilaration as their bodies absorb the first shock of the 56-degree water, the eight swimmers stroke rapidly through the green waves, heading west with the tide toward Aquatic Park, 1½ miles away.

For the next 40 minutes, the Sunrisers, a hardy—some say nutty—group, experience the largest bay on the West Coast of the Americas in an intimate, joyous way that most of the 6 million people living around its shores never do.

Thirty years ago, before federal regulations forced local governments to stop dumping raw sewage into the bay, veteran bay swimmers like Bob Roper sometimes found themselves paddling through floating slicks of human waste.

Now, Roper says, swimmers normally encounter nothing more dangerous than a barking sea lion or a sandwich wrapper.

"Every time I make this swim, I feel born again," he says.

This most urbanized of American bays has made something of a comeback. Treatment plants make the bay safer to swim in and less smelly than it was when Jackie McCort was growing up in the East Bay four decades ago.

"We would roll up the windows and hold our noses when we crossed the bay bridges," says McCort, a Sierra Club staffer who works on bay issues. "The bay stank."

But even this cleaner, healthier bay is just a sickly shadow, its advocates say, of the mighty estuary it was 150 years ago.

The bay's commercial fisheries have collapsed. Pollutants continue to pour into it from agricultural runoffs and industrial discharges. It is invaded by nonnative plants and animals and some of its native species are endangered.

On piers and beaches around the bay, the state posts warnings in half a dozen languages to anglers: Unsafe concentrations of mercury and other toxic substances in bay fish make it unsafe for adults to eat more than two a month. Pregnant women and children under the age of 6 should eat no more than one fish a month.

The bay's continuing problems are bad news for the entire state because it is the endpoint for the Sacramento Delta—California's most important water resource. The battles playing themselves out now between state and federal agencies, environmentalists and water users over how to more comprehensively restore the bay will affect all Californians for generations to come.

Federal law—specifically, the Endangered Species Act—requires the state to stop pumping water from the delta at certain times of the year if further pumping will harm endangered species. Each time a delta smelt or winter-run salmon is listed as endangered or threatened, water supplies are cut to farms, businesses and homes to increase the flow through the delta to the bay.

Next spring, two more runs of salmon may be listed as endangered, triggering more pumping restrictions.

"All of the water imported from Northern California to the south comes through the delta, and the delta and the bay are physically and hydrologically connected," says Stephen Hall, executive director of the Assn. of California Water agencies.

"I don't see how Southern Californians can ignore what happens to the bay," Hall says. "Unless they don't care about their water supply."

For half a century, delta water users thought only of how to reliably transport water out of the system, says Timothy Quinn, deputy general manager of the Los Angeles Metropolitan Water District. Now, he says, they are forced to think about the health of the delta and the bay.

"If we are not taking care of that bay-delta watershed, we are not taking care of California's economic future," Quinn says.

### Source for Farmers and Drinking Water

The bay-delta watershed drains 40% of California's land mass. Its headwaters rise in the Sierra Nevada, flow through streams to the Sacramento and San Joaquin rivers and then into the bay and out into the ocean. The delta supplies drinking water to more than 22 million Californians, as much as 40% of Southern California's drinking water in some years. Water from the delta irrigates Central Valley farmlands that produce 45% of the nation's fruits and vegetables.

People began altering the watershed in the 1800s, when settlers drained marshes, logged forests along streams, built dikes to control flooding and sent millions of pounds of hydrolic-mined sludge and debris down the rivers to the bay during the Gold Rush.

But the most massive changes took place in this century, starting in the 1930s, when California turned the delta into one of the largest, most heavily engineered water delivery systems in the world.

The delta system redistributes and transports about 30 million acre-feet of water every year. For decades, the flow of fresh water vital to the mixing and flushing of the bay has steadily declined, as more was sucked out of the delta to be sent south of the Tehachapis. The bay now gets less than half of the fresh water flow it did before

the delta was turned into a water transport system.

"It was operated for half a century solely with regard to the needs of the water users, and the needs of the ecosystem were ignored," says Quinn of the Metropolitan Water District. "We're now finding out that we have to do better balancing."

But advocates for the bay worry that the emphasis of water agencies, the state and the federal government—who have been negotiating a long-term restoration program for the bay-delta for four years—is on cleaning up the delta and improving the water delivery system, not on restoring the bay.

"There's obviously a lot of concern that what they are proposing is more mechanical fixes, which got us into this problem in the first place," says Mike Lozeau, of San Francisco BayKeeper, an environmentalist organization that monitors pollution in the bay.

### Invasion by Exotic Species

About 200 yards off the Alameda coast in the East Bay, the water laps against the waders of marine biolo-

gist Andy Cohen. Dipping a small sieve in the mud, Cohen counts the sea snails and other small ground dwellers he captures. All four species entrapped there are nonnative to the San Francisco Bay.

"The bay is being invaded by exotic species at an incredible rate," Cohen says. A study by Cohen and another marine biologist last year gave the bay the dubious distinction of being the most invaded estuary in North America. Cohen estimates that a foreign species is introduced an average of once every 14 weeks here.

Shellfish and other sea creatures have been dumped from the ballast of ships since the 1800s. Fish, turtles and other animals are sometimes freed by people who no longer want them as pets. Plants often are deliberately introduced in landscaping and restoration efforts. In several instances, introduced species have overwhelmed native species and dramatically altered the bay's life cycle.

"We don't know why it is so much worse here than in other estuaries," Cohen says. "But there is speculation that it is because this system is so stressed that it is hard for the bay to fight off the invading species."

Pollution, over-fishing, dredging and the decline of fresh water flows from the delta into the bay are all cited as stress factors that may impair the ability of native species to survive the introduction of exotics.

Environmentalists say key decisions that will be made in the coming months on mounting a long-term restoration of the bay-delta should be made with an eye on how to build on the successes made in the bay.

The 1972 passage of the federal Clean Water Act, which forced local governments to stop dumping raw sewage into the bay, was the first important step toward reversing the bay's decline. In the 1980s, about \$3 billion of federal money was spent building state-of-the-art sewage treatment plants around its waters. Now, most of the 900 million gallons of effluent discharged annually into the bay is highly treated. Raw sewage poses a problem only during and after heavy rains, when storm drains overflow.

And there have been other gains. Building restrictions have all but halted landfilling, which by the 1970s had destroyed 90% of the wetlands that once flourished on the bay's shores. Thousands of acres of wetlands have been restored, adding habitat for millions of

migrating birds on this important stopover of the Pacific Flyway.

Some endangered species have rebounded, most notably the brown pelican, which was virtually wiped out by pesticides in the 1960s. Flocks of the top-heavy birds are now a common sight, skimming the waters and diving for fish.

Thirty years of reclamation efforts have even managed to slightly enlarge the inlet, which still is hundreds of miles smaller than it was before millions of people settled around its shores.

Now, the bay advocates argue, it is time to push for full rehabilitation.

"Estuaries are among the most productive ecosystems on the planet and this bay used to support several commercial fisheries," says James Cloern, a water specialist with the U.S. Geological Service.

"Now it doesn't support a commercial fishery of any kind. That is a really profound sign that this is a disturbed system."

In fact, there still is a herring fishery and a small bait shrimp fishery in the bay. But clams, oysters, shad, salmon, Dungeness crabs, sturgeon and bass—all once abundant here—are no longer commercially fished in its waters.

"The bay's food chain is sick," says Greg Karras, senior scientist for the organization called Communities for a Better Environment. The trend of decline in biological productivity "has not been reversed and it is not even clear, across the estuary, if it has been slowed significantly," Karras says.

No one believes that any single factor caused the fisheries to collapse, but declining fresh water flows from the delta are thought to be a contributor.

Life in the estuary depends on a delicate interplay between the fresh waters of the delta and the saltwater of the Pacific Ocean. Fresh water flows from the delta are crucial to flushing the bay, building its food chains and supporting the hundreds of plants and animals that live in, on, under and around its waters.

## New Proposals Draw Criticism

For years, the heart of California's bitter water wars has been the fight over how to divide the delta's water in a way that ensures both the survival of the bay and delta ecosystems and a steady supply of irrigation and drinking water for the state. Several times, the U.S. Environmental Protection Agency has rejected state plans that it thought robbed the delta and bay of too much water.

Four years ago, state and federal agencies began working with environmental groups and water users to develop a plan for restructuring the bay-delta water system. That process is dubbed the CalFed Bay-Delta Program, and involves dozens of agencies and organizations.

CalFed aims, minimally, at ensuring that no more water gets diverted from the delta and the bay. Ultimately, the project hopes to increase water flows into the bay while ensuring reliable supplies to the south by increasing the system's storage capacity and restructuring its pumping facilities.

CalFed published three alternative proposals for reworking the system this summer, and asked for public comment. The proposals immediately drew fire from environ-

mental groups and scientists who complained that too much emphasis was placed on building structures to move more water south and too little emphasis was put on water conservation, restoration projects and basic research.

CalFed, critics complained, was making two fundamental errors: It was treating the bay-delta as two separate systems and focusing its efforts on reworking the delta water delivery system rather than on restoring the bay and delta ecosystems.

"The bay and the delta are an interconnected system," says Sam Luoma, senior scientist with the U.S. Geological Survey's bay-delta monitoring project. If the watershed can be fixed, it is only by treating it as a single system, he says.

Luoma and other scientists who have spent decades studying the bay say there still are many basic questions about how it functions, about its relationship to the delta, about its plant and animal life. CalFed, the scientists say, should try to find answers to those questions before investing millions of dollars in delta restoration projects that may not help the bay and may even hurt it.

"We're going down a path where it is likely we're going to change the quantity and flow of fresh water into the bay, and the scientific community can't say what impact that will have on the bay," says Cloern, the federal water specialist.

Steve Richey, former executive director of the San Francisco Bay Regional Water Quality Control Board and now a CalFed official,

agrees that the bay is not getting as much attention as it probably should in CalFed's tentative plans. But CalFed, Richey says, must start taking concrete steps to save endangered salmon, the clapper rail and other endangered species now.

"It is extraordinarily difficult to understand and to do anything useful about the bay," Richey says. "The things that CalFed plans for the delta will have an efficacious effect on the bay. Will we have a definitive bay plan in addition to a definitive delta plan? I think we will stop short of that."

Scientists and environmentalists retort that they don't know whether the bay can wait much longer for a comprehensive restoration program.

"They are both in trouble, the

whole system is in trouble," says Lozeau, the environmentalist.

## A Natural World Within a City

Out in the bay, the Sunrisers head toward Aquatic Park and the saunas of the South End Rowing Club, a bay swimming and rowing organization that recently celebrated its 125th anniversary.

After changing out of her bathing suit, Judy Irving, a 50-year-old documentary filmmaker who came to film the club 21 years ago and got lured into the water by the swimmers, tries to explain why she comes out here three or four times a week.

"You can be wild in the city," says Irving. "When I swim, I see sea lions

in the water with me. I see pelicans soaring over my head. It is a chance to immerse yourself in the natural world within the city limits."

Perhaps the bay's best hope for recovery, the U.S. Geological Survey scientists muse during a round-table discussion with a reporter, lies in acquainting more Californians with what it used to be and could be again, if its problems were addressed.

"There are 6 million people living in counties that touch this bay," says Cloern, the water specialist. "We haven't done a very good job of communicating with those people about what the bay could be. A lot of them can't imagine that you used to be able to order fish from the bay in a restaurant."

Or what it feels like to dive beneath its waters.