

Troubled Delta System Is California's Water Battleground

By ERICA GOODE JUNE 24, 2015

BYRON, Calif. — Fighting over water is a tradition in California, but nowhere are the lines of dispute more sharply drawn than here in the Sacramento-San Joaquin Delta, a 720,000-acre network of islands and canals that is the hub of the state's water system.

Giant pumps pull in water flowing to the delta from the mountainous north of the state, where the majority of precipitation falls, and send it to farms, towns and cities in the Central Valley and Southern California, where the demand for water is greatest.

For decades, the shortcomings of this water transportation system, among the most ambitious and complex ever constructed, have been a source of conflict and complaint.

But in the fourth year of a profound drought, the delta has become a central battle zone, pitting north against south, farmers against environmental groups, farmers against one another and many local residents against California's governor, Jerry Brown, whose plan to fix the delta's problems upsets them almost as much as the drought itself.

"In major battles, crossroads are always fought over," said Steve Mello, who farms in the north delta. "And this is the crossroads for most of the water in the north state that they are seeking to export south."

Water pumped from the delta, the largest estuary on the West Coast, accounts for only about 15 percent of the total water from aboveground sources that is used in California.

But the delta pumps help feed more than three million acres of farmland, much of it in the San Joaquin Valley, the agricultural heartland of the state. The estuary's water is also home to hundreds of wildlife species, including fish — like the winter-run Chinook salmon and the delta smelt — that are listed as endangered and federally protected.

Casualties in this tug of war are counted in fallowed fields and the loss of species. And as the drought has intensified, so has debate over how the delta's limited supply of water should be apportioned. Farmers in the Central Valley call it a "man-made drought," complaining that water needed for crops is going to fish instead. This month, an environmental group filed suit against the state and federal governments, claiming that endangered species were being sacrificed to agricultural interests.

The big-dreaming politicians and land barons of the last century, who saw in the delta a promising water supply for an arid state, gave little thought to such concerns. Engineering — huge dams, massive tunnels, powerful pumps — could provide as much water as was needed, they believed, simply moving it from the north, where it was plentiful, to the drier south.

But the drought — not the last or the worst, if scientists' predictions about the effects of climate change are any indication — has made it clear that imposing a human-engineered water system on nature carries risks.

And the delta, the nexus of competing interests, may carry a lesson for every part of this thirsty state: “You can't supply unlimited amounts of water to every person for every purpose,” said Phil Isenberg, vice chairman of the Delta Stewardship Council and a former mayor of Sacramento.

‘A Novel Ecosystem’

Fly over the delta and the landscape that spreads out below is more reminiscent of the Netherlands than the Golden State, with narrow channels dividing levee-encircled islands of cropland. A pleasure boat motors lazily toward a marina. A cow grazes in a field of alfalfa.

But the Spanish explorers who stumbled upon the delta in the early 1770s saw only an expanse of freshwater marsh, inhabited by elk, grizzly bears and huge flocks of waterfowl, the water teeming with fish.

In its natural state, the estuary was a dynamic tidal system that followed a daily and seasonal rhythm, with salty water from the ocean moving east during the summer dry season and receding west in the winter, flushed out by freshwater runoff.

But the architects of California's water system envisioned a different directional flow for the delta's waters: north to south.

They dammed rivers, so that water could be stored in the winter and released in the summer when it was needed most. And they installed pumps at the delta's southern edge to lift billions of gallons of water up to the canals, pipes and tunnels that would carry it to customers as far south as Los Angeles. The 700-mile California Aqueduct defied gravity, carrying water almost 2,000 feet up over the Tehachapi Mountains.

The amount of water flowing south never reached the volume projected in the 1960s, when the State Water Project was championed by Gov. Edmund G. Brown Sr., the current governor's father — a shortfall that has fueled tensions in the latest drought. And much of the water that would naturally flow into the delta is diverted upstream before it ever reaches the estuary. But the exports allowed farmers downstream to irrigate more fields and to plant them with crops like almonds that required more water.

The engineering of the waterways also put pressure on the estuary, however, lowering water levels and playing havoc with the tides.

The pumps, in particular, were so powerful that they reversed the northward flow of the San Joaquin River where it ran near the pumping stations. The cross-flows were deadly for fish, pulling in smelt, sturgeon and other species already struggling with reduced water levels in the estuary.

Over time, instead of being flushed out in the winter, saltwater began to linger in the delta's inner reaches. Alien species moved in, flourishing in the altered environment.

“By the 1990s, we knew the delta was in big trouble,” said Jeffrey Mount, a watershed scientist and senior fellow at the Public Policy Institute of California. “It's been death by a thousand cuts.”

Six species of fish, including delta smelt, steelhead trout and winter-run and spring-run Chinook salmon, which migrate up the Sacramento River to spawn, are now listed as endangered or threatened by the state or federal government or both. And 150 years after the arrival of the first settlers, the delta has undergone a total makeover in human hands.

"I would call it a novel ecosystem," said Peter B. Moyle, a professor of wildlife, fish and conservation biology and assistant director of the Center for Watershed Sciences at the University of California, Davis. "Nothing like this has ever existed before," he said.

Tomatoes vs. Salmon

It was Dr. Moyle who, in March, delivered the bad news about the delta smelt, a slender, silvery fish found only in the waters of this region. A state survey in March netted only six delta smelt, compared with 296 in March 2012.

The species appeared to be nearing extinction, Dr. Moyle told a meeting of the stewardship council, set up in 2009 by the State Legislature with the goals of protecting the estuary and providing a more reliable water supply.

The smelt's perilous decline has added yet another concern for the Water Resources Control Board to juggle as it strives to allocate the state's most precious resource.

As the drought has worsened, the board has found itself playing King Solomon, balancing the needs of delta smelt and other endangered fish against those of farmers and water districts that also rely on fresh water from the delta.

No one has been happy with the results.

The board is obligated under federal and state laws to protect the fish, and studies have shown that cool fresh water increases reproduction in so-called pelagic species like the delta smelt, which inhabit the open water column away from the bottom.

But the continued flow of fresh water through the delta into the ocean for the fish does not sit well with many farmers, especially those in the western part of the San Joaquin Valley, who rank low in the state's "first in time, first in right" seniority system and have had their water rights cut off.

"They want all the water," Cannon Michael, a tomato, melon and wheat farmer whose land has been in his family for six generations, said of the fish. He said he plans to fallow 2,500 of his 10,500 acres this year owing to water shortages and that the efforts to protect the fish deserved part of the blame.

Paul Wenger, president of the California Farm Bureau Federation, said that salmon and other fish "have been through extensive droughts before, and they still survived."

"But I'm not sure 39 million people in California have gone through a sustained drought," he said.

Environmental groups, for their part, bristled at the board's decision in early April to reduce freshwater releases below mandated levels, an action scientists said would almost certainly harm smelt and other fish, including juvenile salmon making their way to the ocean.

The economic loss of fallowed fields can be recovered in the long term, said Jonathan Rosenfield, a conservation biologist at the Bay Institute in San Francisco. Not so for the fish. "If species go extinct, we have no way to get them back," he said.

The water board, Dr. Rosenfield said, has systematically sacrificed the needs of the fish in favor of keeping water flowing to farms.

The fishing industry, which employs about 20,000 people in the state, is equally rankled by what it considers an unfair system.

The farmers say they've got to have it, they run to the politicians and say they've got to have it," said Richard Pool, the president of a nonprofit organization, Water4Fish, and the owner of a fishing-equipment company called Pro-Troll.

Agricultural interests, he said, "are targeting the fish because they think we're the easiest place."

Reducing fresh water flows might harm the smelt, the water board said, but it could also help the salmon, allowing more water to be held back in upstream reservoirs for release later in the year, when temperature-sensitive salmon eggs are fighting for survival in the Sacramento River.

Because of a miscalculation last year, the federal water project had been unable to release enough cold water to maintain the 56-degree temperature that salmon eggs require. Instead, the water warmed to 62 degrees, killing 95 percent of the eggs.

The loss hit a salmon population that had already dropped precipitously: In the 1970s, the number of winter-run salmon ranged from 20,000 to 30,000; they now number in the low thousands.

The Bureau of Reclamation, which operates the water project, said it hoped it would do better at keeping the salmon eggs alive this year.

But Dr. Rosenfield said that under pressure from senior water rights holders, the bureau had ended up releasing more water in April and May than it planned, once again placing the eggs in danger.

"Now all bets are off," he said, "and they are scrambling to figure out what they can do."

Neither side in the struggle over water, however, has been scrupulous in placing facts over rhetoric.

Some farmers who want exports to be increased, for example, have complained that water allowed to flow to the ocean is "wasted."

But an analysis of ocean outflow in 2014, the third year of the drought, found that 71 percent went to preserve water quality for drinking water and irrigation. Only 18 percent was specifically for fish habitat, according to the analysis by Dr. Mount, who used data assembled by the water board.

"There's been way too much simplification to fit things on a bumper sticker," said Michael George, the delta water master, an independent post created in 2009 to oversee water rights disputes in the region.

Seeking a Solution

Mary Hildebrand points to the 40 acres of land she has fallowed because the water level is too low.

The irrigation water for her south delta farm, near Manteca, comes from the San Joaquin River. But the salt that infects the soil limits what she can plant.

Salt levels, Ms. Hildebrand said, have increased over the decades as the federal water project's pumps in Tracy have sucked down the water in the narrow channels, reducing tidal flushing and creating stagnant zones where the salt can collect.

Mr. Brown has proposed a solution for the saltwater problem — twin 30-mile-long tunnels that would carry water underground from the Sacramento River at the north end of the delta to the pumps at the south end, bypassing the estuary.

In theory, the tunnels, an updated version of the peripheral canal Mr. Brown championed unsuccessfully in the 1980s, could increase the water available for export and reduce the saltiness, by drawing from the cleaner Sacramento instead of solely from the San Joaquin. The plan could also help keep delta smelt and other fish from being pulled into the pumps.

But Ms. Hildebrand and other farmers in the delta oppose the \$15 billion plan, saying that they doubt it would solve the problem of saltwater intrusion.

"You're just transferring the same impact from one area to another," said Russell E. van Löben Sels, whose family has been farming in the delta since the 1870s.

Environmental groups are also leery.

"I don't think anybody disputes that they could be operated in a way that is good for the environment," said Jay Ziegler, director of external affairs and policy for the Sacramento office of the Nature Conservancy, which owns land in the northeastern part of the region. "But the devil is in the details."

Like others, he believes something must be done if the delta is to survive the drought and continue as both a natural habitat and a water supply — eventually, the lack of freshwater could increase saltiness in the estuary to the point that pumping out water for exports becomes impossible, a dire situation even for those who care little about fish.

But is the solution to a problem caused by human engineering more engineering?

"I think we're all skeptical about that," Mr. Ziegler said.

More plausible, in a state that is likely to become drier over the decades, is a scaling back of expectations, an acknowledgment that all sides may have to give up something — not every farm will have water, not every shower will be long, not every species will thrive.

Said Mr. Isenberg, of the stewardship council: "It's a much more adult discussion to acknowledge that the problems are serious, the solutions are tentative, and it's going to take a lot of money."