



NATURE OR NURTURE

Mother Nature doesn't need dredge spoils to restore a salt marsh on the old Cullinan hay ranch, a new federal study concludes. According to the study's U.C. Davis computer model, natural tidal flows from San Pablo Bay would create a better theoretical marsh on flat land than on land piled with sediment.

"On the models that did not utilize sediment, channels formed more quickly and the tidal marsh worked better," says Betsy Radtke of the San Pablo Bay National Wildlife Refuge, to which the Cullinan Ranch was added in 1991. The ranch, a former tidal wetland, has dikes that have caused soils to literally shrivel up and sink. If dikes were broken today, a brackish lake, not a marsh, would be produced. A century of oxidation has also produced acidic soils, unsuitable for growing vegetation favored by species such as the salt marsh harvest mouse and clapper rail, says Radtke. Spreading dredge spoils on the property has been offered as a means to raise soil levels and improve soil quality.

The computer model used five different configurations of internal levees, channels and entry points of water and added dredged material in one scenario. The results showed that within 5 years, natural flows from sediment-rich San Pablo Bay could create a marsh on 30% of the property. Within 10 years, the amount of marsh grew to 70%. Land covered with a thick layer of dredge spoils and opened to Napa River waters from the back of the ranch produced the suitable marsh elevations more quickly — in 3-5 years — but impeded development of tidal sloughs and created marsh that might not prove self-sustaining, according to Radtke.

The S.F. Bay Commission's Steve Goldbeck, whose job it is to find beneficial uses for dredge spoils, says the Cullinan study should have included a model combining sediment-lifts and San

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ESTUARY

YOUR BAY - DELTA NEWS CLEARINGHOUSE

The Delta Re-Hab Jigsaw

In the western foothills of the Sierra Nevada, there is a ghost forest. Where trees once stood, mounds of striated earth rise, denuded pyramids of unnatural provenance. A crater more than a mile wide marks the earth, footprint of a creature too large for the imagination.

This is the badlands.

Although Malakoff Diggins is a state park, it memorializes not the crystalline intricacies of natural erosion, but the residue of hydraulic gold mining, the first great pulse of human activity in California. The mine at Malakoff was the largest in the world in 1884 when it was all but shut down by court order. Water sluicing out of its tunnels had made the Delta's Carquinez Strait unnavigable and flooded the town of Marysville. Today soil scientists taking cores from the bottom of San Francisco Bay describe a giant wave of sediment that forever changed the peat moss composition of the Bay bottom. The wave was followed by other sediments that read like a history of the region's economic development: farming, ranching, industry.

Today, only a few miles from here, the poet Gary Snyder lives. He produces essays and poems, describing the experience of reinhabiting land that he admits is "barely good" from an economic standpoint. Still, he writes in *The Practice of the Wild*, "It is the place on earth we work with, and where we stick out the summers and winters. It has shown us a little of its beauty."

It may seem appropriate that the most eloquent interpreter of the ethic of bioregionalism — living in accordance with the ecology of place — should reside alongside the first and perhaps the most dramatic of

the many human forces that changed Northern California's landscape. But Snyder is not alone.

There are others in the Delta — where the region's biological connections are clustered — who are trying to help nature reinhabit land humans have made "barely good."

Their success, in part, has come down to how sure-footed they are in the maze of natural, political, economic and historical forces at play in the Delta, a maze as labyrinthine as the region itself. It has also come down to the genesis of a certain critical mass of public and private will around their projects. Whatever their method or motive, all have found their own way toward the beginnings of a regional ecology.

Here and inside are the stories of six Delta restoration and research projects.

Delta Wetlands Project

In 1985, a State Department of Water Resources engineer came up with the idea of using Delta islands for water storage. The idea fell by the wayside until a real estate developer named Peter Bedford and his associate, John Winther, found out about it a year or so later.

Winther originally planned to use four islands as reservoirs. Eventually, the plan was changed to include a substantial mitigation component. Under the current plan, two of the four islands, Bacon and Webb, at approximately 5,500 acres each, would be used as reservoirs for 240,000 acre feet of water. The other two, Bouldin and Holland, at 6,000 and 3,000 acres respectively, would be restored to wetland habitat.

Winther's two major investors are the Kemper and Lumberman's insurance companies. He refused to reveal the amount of capital required, but contends that his water will cost 30% less than water from other proposed projects, such as the Auburn

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NEWS ROUND-UP

VOLUNTEERS MONITORING WALNUT AND SAN RAMON CREEKS this summer turned up some striking results by comparing temperature gains and losses with channel type and shading. Partial creek channelization has left some stretches encased in concrete and out in the blazing sun. Despite such upstream hot spots, the monitoring showed that during low-flow summer conditions, the two creeks cool back down within a few thousand feet of where the natural earthen channels and creekbank tree shading resume. Such indications of quick recovery back to fish-friendly temperatures imply that piecemeal habitat restoration on a creek's lower reaches may not be so bad after all. (510)935-1978

LEGAL BRIEF

TIDELINE REALIGNED

The California Supreme Court handed Bay shoreline owners a major victory recently when it declined to hear the S.F. Bay Commission's appeal of a recent court ruling that redefines the agency's jurisdiction. The ruling changed the dividing line between what is shore and what is bay by setting the shoreline at the mean high tide line rather than at the line of the highest tide recorded since 1965. "Up until now, we had the authority to protect all the wildlife resources in the Bay," says the Commission's Steve McAdam. "Now the upper edges of the tidal zone along about 95% of the shoreline, which contain significant resources, can't be protected." The other less than 5% remain protected as designated wildlife priority use areas. McAdam says the Commission hopes to reclaim its lost authority through legislative action. "But first we have to create a scientific consensus as to what line would adequately protect important Bay resources," he says. Contact: Steve McAdam (415)557-3686 KA

FAIRY SHRIMP JOINED THE ENDANGERED SPECIES LIST this September, disappointing Central Valley farmers and developers who claim the tiny crustaceans live not only in ecologically valuable vernal pools but also in the common mud-puddle. The listing provides ammunition for environmentalists seeking to halt development of California's remaining vernal pools, 60-70% of which U.S. Fish & Wildlife estimates will be destroyed in the next two decades. (916)978-4866

S.F. DRYDOCK IS UPGRADING ITS STORMWATER CONTROL PROGRAMS this fall, spurred by an October site inspection by BayKeeper. This citizen watchdog group pointed out problem slag piles, treatment opportunities and discharge points that should be added to the ship repair company's stormwater management plan. S.F. Drydock, BayKeeper and the S.F. Regional Board are now trading comments on an updated plan. The company's response has been positive, according to BayKeeper, and includes a donation to a local Hunter's Point community group. (415)567-4401

A DEVELOPER WILL FINANCE A WATER TRANSFER between Alameda and Kern Counties to secure supplies for a 5,000 home project near San Ramon known as Dougherty Valley. Windemere Partners has agreed to pay the tiny Berrenda Mesa Water District near Bakersfield \$3.5 million plus about \$65 an acre foot for up to 3,500 acre feet of agricultural water a year. The equally tiny Dublin San Ramon Services District will handle the diverted Delta water. Though the Dougherty Valley lies with the giant East Bay Municipal Utility District, the district says it doesn't have the water to serve the proposed development. Water officials and homebuilders are eagerly awaiting the outcome of the water transfer, which is unprecedented but far from a done deal. If the transfer succeeds, it could jumpstart other developments stalled by water supply problems. (510)867-3250 PE

THE CLAVEY RIVER GOT A REPRIEVE when the Federal Energy Regulatory Commission tentatively denied the Turlock Irrigation District's request to build 5 hydro dams on the river and several of its tributaries. The district has until December 5 to provide more information on two project alternatives. (209)532-9605

HOW TO IMPROVE SAN JOAQUIN RIVER FISH AND WILDLIFE HABITAT is the subject of a series of studies now being launched by BurRec and U.S. Fish & Wildlife to comply with the Central Valley Project Improvement Act of 1992. The studies will revolve around the development of a comprehensive plan for the river. The agencies hope to gather preli-



primary ideas for possible habitat improvements, new water supplies and operational changes at public meetings this November (see calendar) (209)487-5116

BUTTE COUNTY WELLS DROPPED TO RECORD LOWS this year due to revisions made in water bank operations to please farmers. When the water bank was begun in 1991, it allowed farms to be fallowed and surface water allocations to be sold directly to the state. But pressure from pro-farming groups led to a prohibition on fallowing in the 1994 water bank. Sellers this year were paid for unused surface water allocations based on the amount of groundwater they pumped to keep farming. The pumping push lowered Butte County wells as much as 30 feet, according to Supervisor Ed McLaughlin, and led the county to approve an emergency ordinance denying all new agricultural wells this September. (916)538-7281

GEOGRAPHY DROVE CCMP IMPLEMENTATION this fall, as the Implementation Committee's three geographic subcommittees held their first meetings. The South Bay committee divided into work groups covering stormwater and water quality, wetlands and riparian corridors, watershed management and land use, and interagency outreach. The North Bay committee began efforts to coordinate with the North Bay Initiative Task Force and Cal Fish & Game's Biodiversity Task Force and to increase incentives for local government participation. The Delta committee delved into data collection. All three will report back to the CCMP Implementation Committee at its November 4 meeting (see calendar). (510)286-0780

INSIDE THE AGENCIES

WATER STUDY REDIRECT

A \$2 million study aimed at achieving zero Bay Area municipal discharge has a new name — Central California Regional Water Recycling — and a bigger scope. It will now look at more options than just shipping the region's treated wastewater to thirsty inland farmers via new pipelines and the Delta Mendota Canal.

"We're worried that potential San Joaquin Valley receiving areas are going to demand an outlet to the ocean via the same right-of-way," says the Sierra Club's David Nesmith, who provided some early feedback on the study's scope and who doesn't want to see west side farmers getting an easy out from their selenium-laced drainage problems.

This kind of feedback is just one of the reasons the study — organized by BurRec and Bay Area wastewater agencies — will now examine a much wider array of reuse options, according to coordinator Randy Raines. The study's new first priority is to maximize local water reclamation, then work out from the Bay in concentric rings to find options for the remaining supplies, says Raines. Outer ring options may include deliveries to the South San Joaquin, Modesto, Turlock and Merced water districts located on the canal's east side. So far only the west side districts have selenium and salt build-up problems. Raines says a rough first cut on other potential water recipients has singled out the Gilroy-Morgan Hill area and the Salinas Valley. He hopes to gather more substantial feedback on the study's scope at public meetings this November (see calendar). Contact: Randy Raines (510)251-2888 ext. 3402 *ARO*

CALTRANS APPEALS PERMIT

A permit issued by the S.F. Regional Board this August requires Caltrans to create and carry out a Bay Area stormwater management plan for its operations. It's the first permit of its kind for a major metropolitan area in California, according to the Board's Tom Mumley. The permit and plan target Caltrans' maintenance facilities and operations, such as road sweeping or

vegetation control, as well as construction activities that disturb over 5 acres.

"Fixing a guardrail is not a concern," says Mumley. "Instead, we're focusing on larger projects that can significantly impact water quality." The permit requires Caltrans to plan for erosion control, chemical and waste management and employee training, and to identify ways to lower pollution from roadway runoff.

Despite two years of cooperative work on the permit, Caltrans is appealing it before the State Water Resources Control Board. Caltrans' Dianne Steinhauser says Caltrans will have to pull people and resources from other mandated programs, such as safety, to meet the permit's

conditions. "We're not whining that this permit isn't necessary," she says, "but I'd hate to see us not repair a seismically damaged bridge in order to implement water quality programs."

Steinhauser says it will cost \$1.5 million to implement the permit this fiscal year and that Caltrans intends to do its best to carry out as many of the conditions as possible with existing resources. Mumley points out that there's a lot of money associated with new construction projects. "What we're asking is that Caltrans use it wisely relative to stormwater," he says. Contacts: Dianne Steinhauser (510)286-5678; Tom Mumley (510)286-0962 *KA*

HOW I SEE IT



From an interview with
MARGARET JOHNSTON
EXECUTIVE DIRECTOR
S.F. ESTUARY INSTITUTE

RESEARCH INSTITUTE REBORN

"This September we closed the Aquatic Habitat Institute (AHI) and created the San Francisco Estuary Institute. Our new mission is to provide the scientific understanding necessary to manage the Estuary. Currently, monitoring and research are done in a fragmented manner, and there is no mechanism to guarantee that scientific study addresses priority management issues in a comprehensive, coordinated, cost-effective way. The Estuary Institute addresses both these needs. And the approval of the CCMP and the evolving state-federal Bay-Delta Ecosystem Partnership show that a new level of cooperation among research interests and agencies may be possible.

"The Institute faces multiple challenges. First we must make sure that resource protection and restoration goals are specific enough to be measured; we must also design our monitoring program so that we can actually evaluate the success of management actions. Another big challenge will be to promote the kind of sustained, long-term ecosystem research program necessary to really understand how the Estuary functions.

"Of course, the understanding we gain of the Estuary will not be very useful to society if

it is limited to a few scientists and decision-makers. We'll not only be working to make sure the data we and other agencies collect is available to everyone who wants it, but also to educate the public about the Estuary, and the relationship of their neighborhoods and their personal activities to its health. We also want to involve the public in watershed and wetlands monitoring. Much of the needed data could be collected by volunteers. In addition, we hope to develop some simple but meaningful measure of the "health of the Estuary" that reveals our progress towards environmental improvement goals.

"Two new committees will help us meet these challenges. Our committee of science advisors will provide scientific review of monitoring and research done by the Institute and other organizations and ensure these efforts fit together and address the big picture. A second advisory committee of user group, public interest and management agency representatives will help us strike the necessary balance between science and policy.

"Ultimately, what the public will get from the Institute is some assurance that good science is providing the basis for Estuary management. We will be collecting good information, providing thorough analysis and promoting free debate so that the closest possible thing to truth is what emerges." *ARO*

HARD SCIENCE

SUBSIDENCE SURVEYS

One thing everyone can agree on is that the Delta's islands are sinking. Bronwen Wang, a hydrologist at the U.S. Geological Survey, is trying to promote just as much agreement on what can be done to slow the process down or, in some cases, stop it completely.

The Geological Survey has been working in the Delta since the late 1980s, charting historical rates of subsidence and studying the process of peat oxidation, which is the main cause of subsidence. Since the summer of 1993, Wang has been conducting a third study, manipulating water flows into three plots on Twitchell Island to gauge the effects of different water regimes: year-round flooding; winter flooding and summer irrigation; and seasonal winter flooding only. Such studies will also help planners evaluate different habitat development and restoration options for Delta islands — among which Twitchell is a candidate.

As intuition might suggest, Wang has discovered that converting to a permanently flooded wetland environment controls subsidence best. What remains to be seen is how a field subjected to winter flooding and summer irrigation — basically a managed fallow field — fares in terms of moisture content and oxidation. That will be compared to a third site subjected only to seasonal winter flooding.

Although she's hoping for interesting results from her more intensively managed fields by the time her study ends in 1995, Wang says that her biggest surprise so far has been the richness of Delta peat. In some areas, her crew has had to drill through 30 feet of organic matter to reach stable ground. Contact: Bronwen Wang (916)978-4648 ext. 342 SZ

Delta: continued from cover

Dam or Los Banos Grandes, and be produced in a far less environmentally destructive manner.

The Delta Wetlands project would operate only on what Winther calls "surplus flows." The reservoirs would be filled mostly during spring floods. Winther expects to sell the water — or someday perhaps the project itself — to the state or federal government.

Although Winther has received qualified support from environmentalists like David Fullerton of the Sierra Club, the project has some critics. The Bay Institute's Gary Bobker disagrees with Winther's characterization of spring flows in wet years as "surplus."

"This project relies on the assumption that in wet years there's 'extra' water," says Bobker, who filed a protest of Winther's water rights application last fall. "Before Anglos came in, you had dry years and wet years, and it all balanced out. And, basically, the wetter it is, the better the fish like it. Now only in very wet years do you have the wet year benefits. We know these benefits exist; we don't know if we'll lose them if we divert this amount of water."

Bobker says that Winther and the other backers of the Delta Wetlands project have tried to be environmentally sensitive. But he questions the wisdom of moving forward with a water project when the regulatory atmosphere in the Delta is in flux. He says Winther has in effect agreed to meet environmental regulations without knowing what they will be.

The project will face its biggest hurdle in proving that it won't adversely affect endangered or threatened fish when it takes in water. Included in the group is the San Joaquin fall-run Chinook salmon, which is not officially listed as endangered but is facing hard times.

Cal Fish & Game has a team of six biologists studying the project, including Frank Wernette. Wernette calls Delta Wetlands, "a very clean project from the standpoint of wildlife, but not the salvation of the Delta." He says it should be viewed primarily as water development; there are other ways of re-shaping Delta islands that would provide more habitat. However, the project could have an interesting side benefit, according to Wernette. If newly developed water were released during the

spawning period, it could help mimic the Delta's original outflows.

The EIR for the Delta Wetlands project should be out in January 1995.

Staten Island

Two hundred years ago, the whole Delta was a tule swamp through which tides streamed in and out. A few trees may have grown in the center of the marshes, where sediments collected. But it was only after the Gold Rush that islands were formed by farmers who wanted to cash in on the Delta's fertile soil.

Agricultural dikes were first built in 1853 by workers using wheelbarrows and shovels. Staten Island, which is now a model for environmental restoration, was created this way, leaving the rich peat moss of the Delta bottom to dry out. But as the peat oxidized, it began to erode. Like the Delta's other 50-odd islands, Staten Island now lies below sea level and must depend on levees to keep river water at bay.

A few years ago, Jim Shanks, who has managed the M & T Staten Ranch on the island since 1952, realized that the waterside soil berms that once surrounded his property had washed away. (In Delta parlance *berm* is the slope on either side of a levee, either natural or constructed.) Sally Hearne, the ranch's environmental coordinator, began planning to reconstruct two 750-foot long and 15-30-foot wide sections of berm at the margins of the 9,200-acre island.

It took almost a year to get the necessary approvals. The approach Hearne planned — using vegetated low-level berms instead of barren riprap to protect levees — is still in the experimental stage. Hearne had to prove her project would not affect winter-run Chinook salmon, a federally listed endangered species, or threatened and rare species such as the Delta smelt, Sacramento splittail, Western pond turtle, Delta mud-wort or California hibiscus.

Altogether, eight agencies had a say in Hearne's project. The red tape involved made her feel like "the only place I could put this project was in my swimming pool," she says.

But Hearne persevered. In 1992 and 1993, the ranch built up berms and

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protected existing ones, planting willow, alder, elderberry, cottonwood and other vegetation to provide shade and habitat. With the approval of the State Lands Commission, Hearne also fortified two lagoons in the river channel to protect them from boat wake. Restored at the ranch's expense, the habitat attracts otter, beaver, coyote, night heron, mockingbirds and California quail.

In 1994, the project's third year, the ranch received \$565,363 through SB34 levee protection funds and restored 1.5 miles of shoreline along five narrow channel islands by installing riprap on one side. One of the islands is the home of a night heron rookery. Hearne hired the California Conservation Corps to assemble fish habitat fences, install filter fabric and plant vegetation. The Bureau of Land Management supplied logs to build the rookery fence.

Ed Littrell, an environmental specialist for Cal Fish & Game, says that Hearne's pioneering effort will make it easier for others to navigate the bureaucracy.

Hearne isn't so sure. Rules made for developers shouldn't necessarily be applied the same way to people trying to restore the environment, she believes. "I'll never do it again," she says. "The government can go to hell."

Prospect Island

As Sally Hearne pointed out, virtually every project in the Delta involves a plethora of government agencies. Often their agendas overlap; occasionally they don't. In the case of Prospect Island, officials are trying to head off potential problems before they occur.

From the 1960s, Prospect Island was owned by a farming family named Sakata. As the brothers who were partners in the farm grew older, they decided to sell out. In 1992 they contacted Nancy Schaefer of the Trust for Public Land.

Schaefer knew the Army Corps of Engineers had done a study in the late 1980s on breaching one of the levees along Ship Channel. The channel lies on the island's west side, and its levee was proving difficult and costly to maintain. U.S. Fish & Wildlife officials had expressed

interest in the plan, which would have included restoring Prospect Island for wildlife habitat. But it failed to make headway because the Corps did not have authority to buy property.

Given the opportunity to sign an option to buy Prospect Island, Schaefer went for it. It was a gutsy move, because she didn't know who would eventually ante up the purchase price.

"We knew the Corps was supportive," Schaefer says. "They were dangling the carrot of 'we can restore the island if someone could buy it.' It was a significant carrot, with a \$2-5 million estimate for restoration."

By the spring of 1993, Congressman Vic Fazio had secured \$1.5 million in Central Valley Project Improvement Act restoration money so that BurRec could purchase the island. The following year, Fazio was able to get an additional \$1.3 million from general funds. In the meantime, the appraisal for the land had come in \$200,000 lower than the Sakata brothers had expected. It wasn't until September that the Sakatas agreed to the new purchase price.

But that was only the beginning of the Prospect Island negotiations. The hard bargaining will be going on in the next year or two, as Fish & Wildlife officials talk to Corps engineers about the eventual shape of the island. Fish & Wildlife wants the design chosen to provide optimum protection for fish — particularly Delta smelt, which are classified as threatened under both federal and state law.

"We want to make sure it's good fish habitat, not wimpy in-between habitat," says Fish & Wildlife's Mike Thabault. "I would prefer not to see gates and weirs and culverts. They create fish entrapment areas."

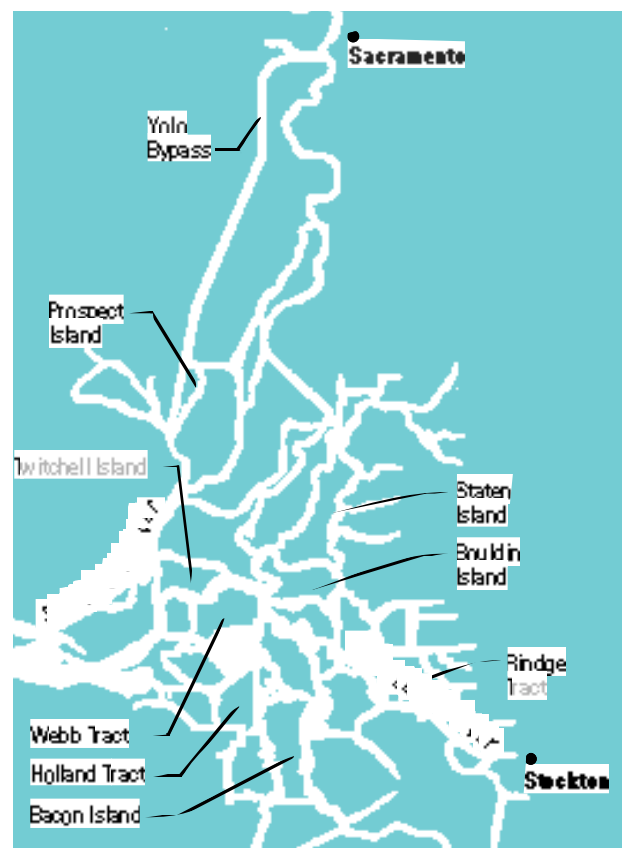
The bigger problem faced by planners is that Prospect Island is only about five miles from North Bay Aqueduct pumps at the end of Barker Slough. Solano County Irrigation District officials fear that if Delta smelt start spawning at Prospect, the pumps will have to cut back operations.

Officials from Fish & Wildlife and State Water Resources have been meeting with Solano County representatives to allay their fears. If Delta smelt abundance at the North Bay pumps appears to increase as a result of the restoration project, Fish & Wildlife may agree to increase take limits. It's not quite a Faustian bargain, but officials do seem willing to sacrifice at least some fish.

"There would still be a net gain, that's the plan," says Thabault. "We don't want to go out there and promote this great project for fish, then come in with a biological opinion and severely limit operations."

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DELTA RESEARCH AND RESTORATION PROJECTS



Note: Only those projects mentioned in article are shown here.

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Of course, nobody knows whether the smelt will spawn on Prospect Island or merely use it as a way station, in which case it might not cause any problems at the pumps. Most of those involved agree that the benefits of restoring Prospect Island outweigh potential pumping hassles. Not only will it provide a haven for smelt and other fish, who congregate in nearby Cache Slough, but it will also provide excellent waterfowl habitat.

"I think we should move ahead of the science in this case and just do the project to learn more in the field," says Leo Winternitz of Water Resources. "It won't hurt the smelt, and it may make them better."

Yolo Basin

A similar situation was faced by agencies involved in restoring a 3,400-acre tract near Sacramento called the Yolo Basin Bypass. In this case, the Davis-based Yolo Basin Foundation acted not as a financial middleman, but actually played a role in negotiations. The nonprofit brokered an agreement signed in January by the Reclamation Board, Water Resources and Cal Fish & Game that paves the way for the creation of a new wildlife area.

The effort to turn the Yolo Bypass, part of the Sacramento River Flood Control Project, into a wildlife area, was facing possible extinction unless flood control agencies could feel confident that they would be able to manage for flood protection as well as wildlife habitat.

Two memoranda of understanding were signed that ensured — as far as any such document would be able to do — that flood control would remain the top priority in the bypass. The language — and the negotiations — were delicate, since no agency can override federal law. Essentially, the memoranda acknowledged the primacy of the Endangered Species Act, but cemented a sense of cooperation between agencies with sometimes disparate missions.

"There was some criticism of our group that we were too willing to compromise," says Renee Fitzsimons of the Yolo Basin Foundation. "But look how much we've accomplished."

This fall, the U.S. Army Corps of Engineers began restoring the bypass to seasonal wetlands.

Completing the Puzzle

Are there lessons to be drawn from these examples? Maybe, maybe not. Anecdotal evidence might suggest that restoration efforts are smoother when an environmental group with sensitivity to different points of view — and the patience for red tape — acts as an intermediary between private citizens and regulatory agencies or even between agencies with conflicting missions.

But anyone can encounter the bureaucratic barriers that Sally Hearne

complained about. In terms of the Delta, the biggest roadblock appears to be the overlapping jurisdiction of local, regional, state and federal authorities. Margit Aramburu of the Delta Protection Commission, which is charged with determining land use on a regional basis, points out that there is no master plan for habitat enhancement in the Delta. "What we have is a lot of entities exercising their smaller area of authority on smaller projects," says Aramburu. "Instead, there should be an overlapping habitat plan

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TOUGH CHOICES

THE BIRD-BUG BALANCE

Back in the bad old days of DDT, mosquito control was a simple, if deadly, matter. Now it's often a balance of biological controls, like introducing mosquito-eating bacteria and minnows into flooded agricultural fields. Complicating the mix is the new emphasis on rehabilitating wildlife habitat, some of which takes the form of seasonally flooded farm fields. What's good for birds is also good for bugs. And that's not always good for humans.

This fall, the San Joaquin County Mosquito and Vector Control District will be working with other agencies, Ducks Unlimited and several Delta farmers on a series of studies aimed at finding a flooding regime that maximizes waterfowl habitat and minimizes mosquito breeding.

On Staten Island, biologists will be gauging the effects of water depth on mosquitos by flooding one field with 4-8 inches of water and another with over 18 inches. "We're looking at the possibility that the wind and wave action that occur in deeper water are less conducive to female mosquitoes laying eggs," says the District's John Stroh.

Just west of Stockton, on Rindge Tract, the study will focus on three pieces of ground all flooded at the same depth but given different vegetative treatments. One tract will be mowed

or disked. Having nothing on the ground is ideal for mosquito abatement, although undesirable for birds.

A second tract will contain cornstalks and other agricultural residue, which is more beneficial to farmers and wildlife. A third will be mowed or disked in strips. The biologists speculate that this patchwork vegetation will leave room for mosquito fish to breed and eliminate large numbers of mosquitos, while still attracting waterfowl.

The project, which will continue until the fields are drained in the spring, isn't merely a matter of itchy arms and legs. Encephalitis has made a reappearance in the Central Valley according to lab studies of exposed chickens, and officials are under the gun to control the vectors. Ducks Unlimited, because of its longstanding ties with the farming community, has been crucial in the mosquito abatement district's dealings with landowners. The conservation group has, for many years, been giving technical assistance to farmers who want to flood their fields to increase waterfowl habitat, says spokesperson Bill Harrell.

"We had about 20,000 acres in the Delta enrolled in the program last year," Harrell says. "Next year, we'll be using information from the studies to give farmers a clear picture of water guidelines."

Contact: John Stroh (209)982-4675 SZ



PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

Teaching About Wetlands

SAT•11/5•All day, plus various field trips on other dates

Topic: Teacher workshop on wetlands.

Sponsor: San Francisco Estuary Institute California State University, Hayward

Cost: \$30; \$20-\$25 for field trips (510)231-9539

Setting a Site-Specific Copper Standard: The New York Harbor Experience

MON•11/7•All day

Topic: How New York Harbor developed its site-specific copper standard and how this might apply to SF Bay.

Sponsors: US EPA, S.F. Regional Board, Bay Area Dischargers Association and others Health Education Center, Oakland

Cost: \$15 (510)286-0460

TMDLs and Watershed Assessment

TUES-THURS•11/8-10•All day

Topics: How assessment of watersheds and total maximum daily loads (TMDLs) of contaminants can serve as the basis for effective watershed management.

Sponsor: U.S. EPA

U.S. EPA, 75 Hawthorne, San Francisco (415)744-2012

Urban Stream Restoration Training

WED•11/16•All day

Topic: Innovative urban stream restoration techniques.

Sponsors: Golden State Wildlife Federation and Urban Creeks Council

Various East Bay field locations

Cost: \$110; \$50 for students (510)550-6669

California Water Policy IV: Evolving Relationships

THURS-FRI•11/17-18•All day

Topics: Practical information on how new relationships can develop between former opponents to achieve positive results, plus groundwater planning, conservation and reclamation.

Sponsor: Public Officials for Water and Environmental Reform

Los Angeles Biltmore, Los Angeles

Cost: \$65-\$195 (619)238-6500

Putting Science & Sanity Back into the Regulatory Process—ACWA Fall Conference

WED-FRI•11/30-12/2•All day

Topics: The "Unholy Trinity:" unfunded mandates, takings and risk assessment.

Sponsor: Association of California Water Agencies

Doubletree and Marriott Hotels, Monterey (916)441-4545



MEETINGS & HEARINGS

San Francisco Estuary Project Implementation Committee

FRI•11/4•10 AM-12:30 PM

Topics: Geographic subcommittee reports, funding, SFEP 1995-1996 Draft Workplan, Friends of the S.F. Estuary's Public Involvement and Education Program, the proposed addition of new members to the Implementation Committee and other issues.

S.F. Regional Board, Board Room 2101 Webster, Oakland (510)286-0780

Scoping Sessions on Central California Water Recycling Project

11/14 -12/1•Evening

Topic: Presentation of an array of options for achieving zero discharge from Bay Area municipalities via local and regional reclamation.

Sponsors: BurRec and Bay Area water and wastewater agencies.

San Francisco, Sacramento, Tracy, Los Banos, Salinas and San Jose (415)989-1446

San Joaquin River Plan Public Meetings

Week of 11/14

Topic: Development process for the San Joaquin River Comprehensive Plan called for in the CVPIA.

Sponsor: BurRec (916)978-4919

Bay Commission

THUR•11/17•1 PM

Topics: Public hearings on Port of Oakland Howard Street Terminal, Caltrans I-580 Project in Albany and Redwood Shores levees.

Room 455—State Building, San Francisco (415)557-3686

Bay Delta Oversight Council

FRI•11/18•Call for time

Topics: Reports from Aquatic and Plant and Wildlife Technical Committees; review of Fish Harvest briefing paper.

Beverly Garland Hotel, Sacramento (916)657-2666

Bay Planning Coalition Annual Meeting & Luncheon

FRI•12/9•11:30 AM-1:30 PM

St. Francis Yacht Club, San Francisco (415)397-2293



HANDS ON

Estuary Expedition

SAT•12/3•All day

Activity: Teacher workshop and seminar aboard the Marine Science Institute's research vessel.

Marine Science Institute, Redwood City (415)364-2760

Christmas Bird Count

SUN & WED•12/18 & 28•All day

Activity: Help count the birds that live in and migrate through the Estuary (volunteers should call by 12/1, excellent birding skills not required).

Sponsor: Golden Gate Audubon Society Oakland & San Francisco (510)843-2222

NOW IN PRINT

1993 Annual Report: San Francisco Estuary Regional Monitoring Program for Trace Substances

San Francisco Estuary Institute
Copies from (510)231-9539

Policy Framework and Efficient Water Management Practices for Agricultural Water Suppliers; On-Farm Practices

Association of California Water Agencies
Copies from (916)327-1788

Symposium on Ecological Restoration (conference proceedings)

U.S. Environmental Protection Agency
Copies from (202)260-7074

San Francisquito Creek—Our Natural Resource (map/information sheet)

Peninsula Conservation Center Foundation
Copies from (415)494-9301

Where Does It Go?

(pollution prevention video for students)

Central Marin Sanitation Agency
Copies from Jenny Bender (415)459-1455, ext. 143

HEARD IT THROUGH THE GRAPEVINE...

The latest on the CVPIA planning process is just a phone call away. Dial BurRec's water information phone service—the Grapevine—at (800)742-9474 for information on each phase of the process.

CONTINUED STORIES

DELTA...

coordinated with the commission's master plan."

This sort of regional approach would not only clarify whether innovative projects like Delta Wetlands are a good fit with the larger ecosystem, but also might streamline efforts by people like Sally Hearne to bring back a thriving Delta.

The thing to avoid would be the addition of yet another layer of bureaucracy in an already creaky and cumbersome process. For instance, at Malakoff Diggins, a hundred years of civilization seems to have hampered rather than enhanced the government's ability to deal with environmental problems. In the late 1980s, a trio of agencies tried to stop water from the old pit at Malakoff from entering the Yuba River drainage. Despite evidence that turbidity was affecting fisheries, the attempt failed. State water authorities, it seems, couldn't buck regulations prohibiting change at historic sites. SZ

Contacts: John Winthers (510)283-4216; Sally Hearne (916)776-1531; Mike Thabault (916)978-4866; Renee Fitzsimons (916)756-7248; Margit Aramburu (916)776-2290

CULLINAN...

Pablo Bay flows and that the study never gave dredged material-facilitated restoration a fair chance. "It should not be construed that dredged material in general can't help," he says. "The situation is always site-specific."

Radtke agrees but says in the Cullinan model, the use of dredged material did not facilitate the marsh's development. "We're looking for the best biological option here, not just for the option that uses dredged material," she says. Contact: Betsy Radtke (510)792-0222 FH

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