



SALT POND RESTORATION PROGNOSIS

A forthcoming study commissioned by Save the Bay suggests that restoring wetlands on some of the South Bay's salt ponds may cost a pretty penny. Though the region has long sought the ponds as rare restoration turf in a built-up bayshore-line, and though Cargill has offered to sell up to 19,000 acres of its South Bay ponds to federal and state agencies interested in boosting the region's long lost supply of tidal marsh, the endeavor has its trade offs and expenses, say authors of the study.

"It's very doable, but we have to acknowledge upfront what the full costs are and appropriately fund them, or we'll face extreme consequences, like failing flood control levees," says Stuart Siegel, who is co-authoring the study with Philip Bachand of Wetlands and Water Resources (WWR).

The two researchers expect to release their South Bay salt pond restoration feasibility analysis in early 2002. This report, funded in conjunction with the Coastal Conservancy and WWR, describes the biological, chemical, physical and environmental characteristics of the salt ponds and the issues related to their restoration as tidal marsh and managed open water.

According to Siegel, the report identified four key challenges to restoration, two of which were obvious, and two unexpected. One obvious one is the bittern, the hypersaline byproduct of salt production, and who will end up disposing of it. Siegel and Bachand estimate that Cargill is storing over 15 million tons of liquid and solid bittern in its facilities. Under current negotiations, Cargill is expected to retain all the bittern. But given the combined long time frame for restoration, and the apparent decreasing economic feasibility of Bay Area solar salt production, Siegel says any agencies taking over the ponds should investigate their bittern disposal options.

The second obvious challenge is that restoring the salt ponds to tidal marsh may displace some birds. Several species have prospered from the managed salt ponds, and many are now protected by state and federal endangered species laws. Any comprehensive restoration program will have to preserve roughly a third to half the salt ponds as managed open water habitats to continue supporting these important wild-life resources.

"One reason the costs of this restoration effort will be so high is the region's desire to maintain some managed open water in perpetuity," says Siegel.

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Dutch Treat for the Delta

Twelve hundred acres of farmland near Oakley could soon become a unique restoration and research site, but environmentalists worry that unless CALFED acts quickly, the opportunity will be lost and thousands of housing units will occupy the property instead.

The Natural Heritage Institute, The Conservation Fund and the Coastal Conservancy have submitted a proposal to CALFED that would allow for the purchase and restoration of more than thirty miles of shoreline, including tidal, riparian, seasonal wetland and upland habitat. CALFED is a federal-state program working to balance water supply needs with environmental restoration in the Bay-Delta Estuary and its watershed. Dutch Slough, as the area is called, may be the only large-scale site in the western Delta with an elevation suitable for immediate tidal marsh restoration, says Natural Heritage's John Cain. It is also one of the few opportunities to restore tidal marsh in the western Delta, where most native fish congregate. "It's ideally situated — everything has to swim past it," says EPA's Bruce Herbold.

Even more compelling than the site's restoration potential, however, may be its research and adaptive management potential. The site encompasses three parcels, separated by sloughs, with similar area, topography and shape that can be managed independently — a setup that would allow scientists to test and compare different restoration strategies. "The site is unique from the standpoint of adaptive management, which is an essential part of the CALFED plan," says Cain. The project would be designed as a series of experiments to test key restoration hypotheses

regarding hydrodynamics, salinity, temperature and other physical regimes. "We could use the site as a nice experimental tool to see what really works," says Herbold.

The project faces little if any opposition, but does face a development threat. The area has been farmed for more than a century, but was rezoned for development in 1990. In 1997, the families that own the land entered into a development agreement with Contra Costa County that would allow for the construction of 4,500 to 9,800 housing units on the property. They have, however, agreed to sell the land to CALFED for \$28 million — some \$10 million to \$20 million less than it has been appraised at, but still a hefty price tag. "The bad news about the site is that it is expensive to acquire because it is zoned for development," says Cain. "The good news is that because of its elevation, it will be inexpensive to restore — unlike many Delta properties, it's partially above sea level." The estimated final cost of the project is \$30,000 per restored acre.

Cain says it is critical that CALFED make a commitment to the project soon. "If CALFED doesn't demonstrate that it has the interest and resources to acquire the land, the landowners plan to go ahead with their previous plan to develop the land," he says. CALFED is scheduled to rank the project on its technical merits by late January, after which there will be a six-week public comment period.

Proponents of the project say CALFED should do whatever it takes to make sure the opportunities offered by the site are not missed. "It would be hard to find another spot quite so built for what CALFED needs to do," says Herbold "But if we don't do something quickly, it's going to be covered in little pink houses." Contact: John Cain (510) 644-2900 **CH**

"If we don't do something quickly, it's going to be covered in little pink houses."

BULLETIN BOARD

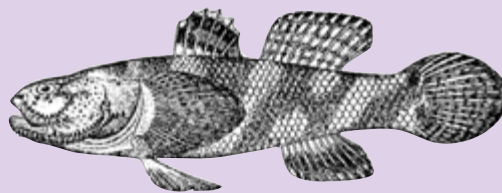


NO TREASURE LIES at the foot of Blossom rock in San Francisco Bay. Nor are there any wrecked Gold Rush ships scattered around nearby Arch, Shag or Harding Rocks, or next to the geologic structure known as the Golden Gate Mound. The Army Corps is proposing to lower the rocks, all of which are considered potential navigation hazards, and as part of the required environmental documentation, it had to conduct a cultural/historic resources survey. Archeologists ran magnetometer and sonar scans of the five sites. Even though a dozen wrecks had occurred in the vicinity of the rocks, their remains had disintegrated or disappeared over time. Instead, the researchers located an unidentified 125-foot sunken barge near Blossom Rock, which was most likely sunk "not much before" the mid-1980s. On Arch Rock, they found an anchor "probably lost sometime after 1932, when the rock was last blown up." The archaeologists noted dryly that neither the anchor nor the barge appear to be likely candidates for a listing on the National Register of Historic Places.

A SPARTINA INVASION SURVEY, done with GIS by the Coastal Conservancy, pinpoints the extent of the spread of this Atlantic cordgrass throughout the Bay. Hybrid *S. alterniflora*, a hybrid of the native *S. foliosa* and *S. alterniflora* from the East Coast, now covers 469 net acres within the Bay (acres counted as if there were no gaps in coverage). *S. densiflora*, transplanted from Humboldt Bay, covers approximately 13 net acres, while *S. patens*, from the East Coast, totals half an acre. *S. anglica*, originally from England but introduced to the Bay Area from Washington State, was mapped at .09 acres. "The major—and unsurprising—finding is that the densest areas are closest to the sites of original introduction," says project manager Debra Smith. In the East Bay, non-native spartina species have spread as far north as Point Pinole, and in the West Bay, to northern San Rafael, says Smith. In November two new populations were discovered, one in Bolinas Lagoon and the other in Tomales Bay. A draft EIS/EIR for an eradication project is now being completed, and control will likely begin as soon as NPDES permits are obtained. Although spraying with glyphosate is one method being proposed, manual and mechanical removal are also in the works. "We're plan-

ning a full toolbox of treatment methods," says Smith. Methods also include more monitoring and education (see Now in Print for info on a new field guide to recognizing the different spartinas). Contact: Debra Smith (510)526-4628 **LOV**

A SECRETIVE SHRIMP and a fierce fish from Asia—the shokihaze goby—are among the latest invaders to turn up in scientists' nets. Not much is known about the mysterious shrimp, says Tom Greiner of Cal Fish & Game, other than that it is similar to another non-native shrimp, *Palaemon macrodactylus*, that's been seen in the Estuary for decades. So far, the unidentified shrimp has only been found upstream of the Delta, and it is too early to tell whether it presents a serious problem, according to Greiner. The shokihaze goby, on the other hand, is very aggressive in captivity and has the potential to harm native gobies, sculpin and shrimp. The goby somewhat resembles a sculpin but has pelvic fins that have been modified into a suction cup device and a wide head covered with barbels, which also distinguishes it from the other, previously introduced gobies—the chameleon and shimofuri. All three gobies have rows of trilobed teeth on their upper and lower jaws. The shokihaze probably entered the Bay in ballast water and has been found from San Pablo Bay to the Western Delta. In the total catch for the year 2000, the shokihaze goby outnumbered both of the other introduced gobies. Contact: Tom Greiner (209)942-6080 **LOV**



Shokihaze goby

A BAY-DELTA SCIENCE CONSORTIUM was launched via Memorandums of Understanding signed by 20 different agencies and research institutions in 2001. The consortium represents CALFED's new effort to create an interdisciplinary, multi-agency approach to science and monitoring, without asking everyone to come under one new umbrella. "Each existing monitoring program is designed around a different question, and we can't suddenly ask them all to focus on something else," says CALFED's Kim Taylor. "What we need is a switchboard between institutions already conducting the research. We not going to force coordination, we're going to foster it." Initial tasks for the consortium include, among other things: hiring an executive director; identifying more ways to pool the strengths and resources of all existing research institutions and facilities; developing master contracts between institutions to facilitate coordination; and creating post-doc CALFED fellowships to take on the job of analyzing the backlog of environmental data collected in recent decades. "We want to match each fellow with an academic mentor and an agency scientist," says Taylor.

Contact: Eddie Hard, (916)278-3197

DO YOU NEED NATIVE PLANTS for your restoration project or school garden? Are you concerned about the preservation of native habitats in your wetlands and watersheds? Do you want to beautify your garden or solve an erosion problem while restoring native habitats? Hands-On Native Plants is a Richmond/San Pablo-based, youth operated contract business dedicated to the enhancement of native vegetation in the Estuary watershed. It propagates a variety of native plants, offering a wide range of vegetative options from deciduous or evergreen species to colorful varieties of shrubs and wildflowers. Services provided include assessment of your site or garden to determine the best plants for your setting and to protect local biodiversity; propagation of native plants for school or small-scale restoration projects; landscape design; help with growing your own plants in a greenhouse or your site; plant installation; and maintenance of your newly enhanced habitat or garden. Hands-On Native Plants is a program of Friends of the San Francisco Estuary. Call (510)215-2539 or 622-2337 for more information.

CONSERVATION

FLUSH WITH RECYCLED WATER

Visitors to Oakland often stop to marvel at the 22-story glass-and-steel skyscraper rapidly arising from a long-vacant lot at the corner of 12th and Jefferson Streets, watching as tall cranes sway back and forth and workers scurry along beams high overhead. Ask someone from East Bay MUD what most impresses them about the building, however, and they'll likely point to a single four-inch pipe running up the building's core. The pipe is encased in a bright purple wrapping and marked every six inches with the words "reclaimed water." Smaller connector pipes will link it to the building's hundreds of toilets and urinals, so that they can be flushed with treated wastewater, saving an estimated 20,000 gallons per day of Sierra snow melt.

The building is being constructed by the Shorenstein Company and is the first skyscraper in Northern California to be outfitted to use recycled water. It's also an important part of EBMUD's ambitious East Bayshore Recycled Water Project, which will ultimately have pipes running through Oakland, Berkeley, Emeryville, Alameda and Albany. The project is currently in the design phase. When completed, it will have

EAST BAYSHORE RECYCLED WATER PROJECT



up to 24 miles of pipeline, with deliveries expected to start in 2003. EBMUD hopes that once enough users are hooked up, it will save 2.3 million gpd, or more than 2,500 acre-feet per year. Potential users include the new Eastshore State Park, Golden Gate Fields race track, a federal building in Albany and some former military properties.

The water will come from EBMUD's main wastewater treatment plant in Oakland. EBMUD's Laura Johnson says that it will receive a third stage of treatment, which includes filtration and additional chemical disinfection, in compliance with California Department of Health Services regs. The purple pipe wrappings are also mandated by the department, and EBMUD will have to bury the pipes carrying recycled water in separate trenches at least 10 feet away from those transporting potable water.

Shorenstein's Nick Loukianoff estimates that his crews are installing 500 feet of extra pipe, plus fittings, in the building. Until the recycled water project is actually on line, the commodes will use regular, potable water, so each is being equipped with two sets of pipes. The construction costs total about \$75,000, and EBMUD will reduce connection fees to cover that amount, says Johnson. "The developer is not out any money."

Johnson adds that a number of skyscrapers in Southern California use recycled water, as well as several smaller buildings here in the Bay Area, including the Marin County Jail. EBMUD has had an active water recycling program for years. Most of the water has been used for irrigation on golf courses, landscaping and the like, but EBMUD has also outfitted some of its own facilities and Richmond's Chevron Refinery, saving millions of gallons per day.

Last year, the state passed legislation that requires cities to enact regulations mandating dual plumbing systems where appropriate in large projects. Johnson says that one key to success will be for EBMUD to work closely with planning officials to identify upcoming projects that could be hooked up via the purple pipes. EBMUD has already been able to take advantage of one big construction project — the widening of the Eastshore Freeway. While Caltrans had the roadbed torn up, crews were able to install almost four and a half miles of pipe, which will soon carry recycled water.

THE MONITOR

MITIGATION MALAISE

Just a few months after a damning report by the National Academy of Sciences concluded that the national goal of no net loss of wetlands is not being met, the Army Corps has released a regulatory guidance letter with new standards for wetland mitigation that has environmentalists churning with anger. Although the letter was supposed to address some of the concerns in the NAS report, it instead "lowers the bar" on mitigation standards, according to Robin Mann with the Sierra Club's National Wetlands Working Group.

According to Mann, the Corps' new guidelines would allow vegetated buffers, uplands and wetlands preservation to count as mitigation when a wetland is destroyed. "This is backing away from no net loss," says Mann. "I have no argument with preserving wetlands, but to substitute preservation for mitigation is not acceptable." Neither does an upland or a vegetated buffer zone equal a wetland, says Mann. The guidance letter also weakens protection for streams, stating that 50-foot buffers are sufficient—rather than the 100-foot minimum many scientists argue is needed. "All of the science says we need wider streamside buffers, for floodplain functions, nutrient uptake, etc." says Mann. "Instead, the Corps seems to be taking an 'anything goes' approach here."

Not only do environmentalists and some regulators feel that the guidance letter weakens already weak protection standards for wetlands, they are concerned that, as the NAS study pointed out, wetlands mitigation is not even working. Says Mann, "You can dig a hole somewhere and fill it with water and call it a wetland. But that doesn't mean it has the functions, habitat value, or even groundwater recharge value the natural wetland did."

The Corps claims that it requires 1.8 acres of new wetlands (on average) to be created for every one acre of wetland destroyed, which would suggest that wetland acreage is actually increasing. But the NAS report concluded that the Corps' data was inadequate to allow it to determine whether mitigation projects the Corps had permitted had even been per-

MALAISE CONTINUED

formed—or were successful. Other criticisms in the report were that the Corps does not design effective wetlands replacement plans, does not ensure that those plans are followed and has no method for making sure the created wetlands are permanent. The NAS researchers also found that the Corps does not track mitigation projects sufficiently or keep any record of the wetland functions that were lost when a wetland was filled. The one site researchers were able to visit in Southern California was a complete failure, an artificial wetland that had dried out when a PVC pipe filled with dirt and failed to deliver any water.

While not defending the Corps' guidance letter—or its lack of data—the S.F. Bay Regional Water Quality Control Board's Andree Breaux says she can sympathize with its lack of personnel and funding to monitor mitigation projects. She says the Board has the same problem. "Wetlands mitigation can work, but it's the big projects that people are more likely to keep an eye on. It's harder to know if the smaller ones are working."

Breaux says the Board has detailed data on 110 projects that were put in the ground between 1988 and 1995, but that the projects desperately need follow-up in the field. "We need to go out and look at those projects and come up with a consistent way of monitoring them," she says. Breaux doesn't reject out of hand the idea of buffer zones as compensation for wetland loss, but says each site should be evaluated independently. A vegetated buffer could have more ecological value than simply creating another little pond in an area surrounded by large industrial buildings, for example, she says. However, Breaux agrees that caution is necessary when it comes to mitigation. "We need to be very careful about uplands, buffers and out-of-kind compensation." Contact: Robin Mann (610)527-4598 or Andree Breaux (510)622-2324 **LOV**

PEOPLE

WASHINGTON VIEW: JASON PELTIER

During his 12-year tenure as manager of the Central Valley Project Water Association, which represents users of CVP water, Jason Peltier earned a reputation in the California water community as a dogged advocate of agricultural water users. Last summer, after his wife was appointed Counselor to the administrator of the Environmental Protection Agency, Peltier moved to Washington and took up an Interior Department post: Special Assistant to Assistant Secretary for Water and Science Bennett Raley. ESTUARY recently spoke with Peltier about his new job.

ESTUARY: So what exactly does your new position involve?

Jason Peltier: The Assistant Secretary is responsible for the U.S. Geological Survey and the Bureau of Reclamation. My responsibilities include assisting Mr. Raley in dealing with completing construction of the Central Utah Project, and working on issues related to the Klamath and Colorado rivers, the CVP and projects all across 17 Western states. The most exciting part of my job is working on issues outside of California, although the learning curve is steep. It is also fascinating to see how others deal with and view water problems in California. I love my job and have the highest regard for Bush administration appointees.

E: Has your experience in California been helpful?

JP: Yes. There are amazing parallels between California and the rest of the West in terms of the tensions between competing demands for water and power. There are the same types of questions about what is the best way to improve the environment and make balanced progress. On the user side, there are the same types of challenges in terms of increasing efficiency and modernizing operations.

E: Are you working on CALFED at all?

JP: I am trying to be helpful on CALFED. Mr. Raley has been designated the lead Interior official on the CALFED policy group, so I've been spending a lot of time helping him and others at Interior get up to speed. There is surprisingly little institutional knowledge about CALFED here. I have had a real challenge explaining this monolithic planning effort that is CALFED, including the history and the various obligations, opportunities and challenges created by the Record of Decision.

E: Tell us more about the challenges you're finding.

JP: They just get greater and greater. Things have changed a lot since the CALFED Record of Decision was approved in 2000. That was about planning, which is relatively easy because a lot of it is theoretical. But now we are transitioning into the implementation phase where we have to deal with reality, which is a lot more complex. It's very difficult to make progress with so many conflicting voices coming out of the state. Also, the ROD included certain expectations and assumptions that have not come to pass on the fiscal side of things. For example, the ROD called for \$400 million in federal funds in fiscal year 2002 — we have \$30 million. The aggressive progress envisioned in the ROD is now at risk. Timelines are going to have to be modified to deal with programmatic and financial realities. September 11 has also changed everything about Washington in terms of budgets and priorities. The war effort now comes first.

E: Has your perspective on CALFED and other water decision-making processes changed since you went to Washington?

JP: I recognize that I'm in an entirely new role here. As an advocate it was easy to throw stones at the process — it's much harder to work on the inside with the responsibility to consider all the obligations that the Secretary has and to try to make progress — it's quite humbling. **CH**



SCIENCE

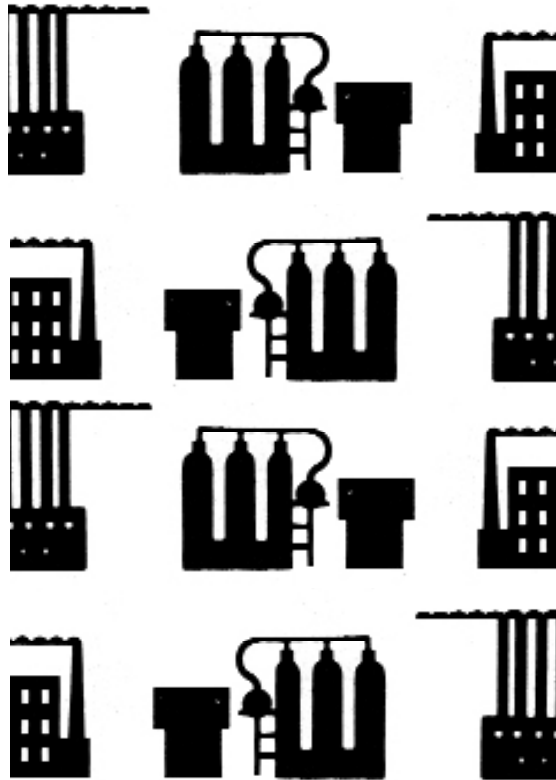
MERCURY FALL OUT

Atmospheric deposition contributes almost seven times as much mercury to the Bay as wastewater discharges, but is nonetheless not the primary source of the pollutant, according to a pilot study released last summer by the San Francisco Estuary Institute (see Now in Print).

The study analyzed mercury in the ambient air and in precipitation to estimate dry and wet deposition from both direct and indirect sources. (Indirect loading derives from mercury being deposited to the watershed and then transported to the Estuary through runoff and tributaries.) The study did not include estimates of indirect loading from remote watersheds, such as the Sacramento and San Joaquin River drainage areas.

Among the study's findings were that the ambient air concentration of mercury in the Bay Area is approximately twice that considered the global background level, although the Institute's Don Yee says that level is similar to that of many other U.S. urban areas.

Annually, direct atmospheric deposition contributes approximately 27 kg to the Estuary, and indirect deposition contributes approximately 55 kg. Nevertheless, the most significant source of mercury continues to be the erosion of mercury-laden soils and runoff from abandoned mines.



The study concludes that strategies for minimizing mercury loading to the Estuary should include an investigation of measures to mitigate sources that contribute to mercury in the atmosphere, such as electric utility boilers and municipal waste combustion. However, Yee says that will come down the road. "The dominant sources of mercury are still the tributaries and mercury already in the Bay, and those will have to be dealt with first," he says. Contact: Don Yee (510)746-7369 [CH](#)

MERCURY LOADING TO THE SAN FRANCISCO ESTUARY

Source/Pathway	Data Source	Mercury Loading (kg/yr)	Uncertainty Level ¹
Atmospheric Deposition ²	Current Pilot Study	82	Moderate-High
Wastewater Discharges ³	Ellgas 2001	12	Low
San Francisco Bay Region Watershed ⁴	Abu-Saba and Tang 2000	168 (58-278)	Unknown
Sediment Remobilization ⁵	Abu-Saba and Tang 2000	500 (200-800)	Unknown
Central Valley Watershed ⁴	Abu-Saba and Tang 2000	607 (558-1150)	Unknown

¹ Low uncertainty: error of the estimate is within 50%; Moderate uncertainty: error of the estimate is up to two-fold; Moderate-high uncertainty: error of the estimate is two- to five-fold. Unknown uncertainty: level of uncertainty is unknown but possibly very high.

² Includes atmospheric deposition through direct and indirect routes.

³ Data is extrapolated from 83% of the wastewater discharges.

⁴ Estimate includes a loading component that is atmospheric in origin; Although the Central Valley Watershed is not included in the watershed area for the San Francisco Bay Region, it contributes pollutant loading to the North Bay.

⁵ Sediment remobilization is an internal process that redistributes pollutants within the Estuary, and not an external source of pollutant loading to the Estuary.

OUTREACH

WORKSHOPS TACKLE IMPACTS ON COMMUNITIES

The potential effects of CALFED activities on rural communities that depend on often heavily contaminated groundwater were among the issues raised by participants in a public workshop in Stockton last September.

The workshop was one of five held around the state to kick off CALFED's long-term effort to turn a commitment to environmental justice into concrete policy. The CALFED Record of Decision obligates the program to incorporate environmental justice concerns as it makes decisions about raising dams, restoring habitat and implementing scores of other water supply and ecosystem improvements over the next decade.

The workshops — organized in conjunction with the Environmental Justice Coalition for Water, which represents a broad range of low-income, rural, tribal and community groups — were designed to both inform local interests about CALFED's plans and to begin to identify activities "that might cause disproportionate impacts on certain communities," says CALFED's Dan Wermeil. The next step will be to develop goals and strategies to mitigate those impacts, a task that a new Environmental Justice Work Group working with the Bay Delta Advisory Committee will tackle.

The concerns raised at the workshops have varied widely depending on locality, says Wermeil. In Richmond, for example, residents are worried about contamination in Bay fish and want to know how low-income urban communities might tap into watershed and water quality grants available through CALFED. Meanwhile, in the San Joaquin Valley, workshop participants asked how CALFED's plans to restore farmland to habitat might affect farm workers.

Martha Guzman of United Farm Workers, who worked with CALFED to organize these meetings and conduct public outreach, says the workshops have been useful, although she notes that few CALFED agency folks were in attendance. "We were talking mostly to ourselves, which was a little disheartening," she says. Contact: Dan Wermeil (916)657-3649 [CH](#)

RESTORATION



FROGS ON THE MOVE

California red-legged frogs were still so common at the end of the 19th century that tens of thousands ended up on dinner plates each year. But after urbanization, and the introduction of predators like the bullfrog and various exotic fish, the frog disappeared from approximately 70% of its historical range. Although it hangs on in small numbers where its habitat hasn't been destroyed, little is known about its behavior and needs.

At the East Bay Regional Park District, biologists Steve Bobzien, Joe DiDonato and Pete Alexander have been trying to learn more about the frog on the district's lands—where it breeds and what types of habitat it uses. One area they've focused on is upper Alameda Creek, where they fitted 27 frogs with radio transmitters and pit tags (a scannable tag) and tracked them for several sea-

sons. "People used to think these frogs acted like a bunch of bricks," says Bobzien. "But we're finding that their behavior is more variable and more puzzling than we thought."

Last summer, when Alameda Creek dwindled to a trickle with a few remnant pools, the frogs were on the move. After disappearing for three weeks, one male frog turned up 132 meters from where he had been tagged, high up a dry, rocky tributary, under a log amid some rattlesnake skins. Several of the tagged females traveled great distances too—one moved 640 meters downstream—think 10 city blocks—to lay her eggs. Another male was discovered 60 meters away from the creek, beneath some leaf litter. No one is sure quite why the frogs are traveling so far or why they are moving away from the creek, although Bobzien thinks they may be dispersing in order to find food. "People used to think the

"People used to think these frogs acted like a bunch of bricks."

frogs stayed close to the streams, near water," says Bobzien. "But these frogs have evolved in our Mediterranean climate. As long as their skin can stay cool and moist, they seem to be able to hide out in unusual places—ground squirrel burrows or cracks in the mud in drying ponds."

Red-legged frogs are also often thought of as preferring pond or marsh-type habitat, says Bobzien. So he was excited to document for the first time frogs breeding in the creek. "The early 1990s were drought years, and later we had El Niño flood flows, which red-leggeds don't do well in. So last winter may have been the first ideal breeding year for them in the creek," he explains.

The scientists were also surprised to learn that in certain areas of the park district, red-legged frogs over-wintered as tadpoles (typically, a tadpole will develop into a small frog within its first growing season). The biologists aren't quite sure why this is happening, but speculate that cool water (and lack of food associated with the cooler temperatures) may temporarily inhibit metamorphosis. The district is collecting water temperature data to further study this unusual phenomenon.

Bobzien is encouraged by what they have learned so far. "Before we did the studies, we thought maybe we had a few remaining adults trying to breed occasionally. But instead it appears that certain years are really nice for breeding—especially years in which we've had relatively mild winter stream flows, which creates ideal late winter-early spring breeding conditions." One challenge for the district is educating the public about the need to protect the frogs. "As soon as a golf course or urban development comes in nearby," says Bobzien, "someone throws a bunch of bullfrogs or exotic fish into the ponds. We're trying to encourage people not to put non-natives in the ponds."

Bobzien hopes that predators can be controlled to the point where the frogs, already present in the park in greater densities than in many areas of the state, will make a comeback over time. He predicts that with this year's early heavy rains, they will breed early in the ponds (which are already full to the brim) but delay breeding, until flows have subsided, in the creeks. But that's just a guess. If he's learned anything about red-legged frogs, he says, it is "not to be surprised by the surprises."

Contact: Steve Bobzien (510) 544-2347 **LOV**

FEEDBACK

Dear Estuary,

Certain statements in the article "CALFED Quarterbacks" [in the last issue of ESTUARY, which discussed now-pending CALFED authorization and funding legislation] were erroneous, incomplete and/or misleading. First, [the article] states that the Westlands Water District would be the primary beneficiary of the 70% [water] supply guarantee. It is more accurate to say the farmers of the Westlands Water District would be benefited...and that the primary beneficiaries would be California and United States consumers of food and fiber produced by [these] farmers. Westlands provides a convenient media target...but of all California farming regions, the Westlands-area farmers have been most severely impacted by CVPIA and CALFED actions that have reduced agricultural water supplies.

Second, [the article] states that 80% of the state's water goes to farms. It is time this statistic, which has received wide circulation for years, is debunked. The correct statement is that, in an average year, 42.5% [of California's water use] is agricultural; 46.5% is environmental; and 11% is urban. This data is from Bulletin 160-98, the California Water Plan Executive Summary. Finally, the article makes it seem as if [Senator Feinstein's authorization bill] is simply an attempt to pre-authorize massive water projects. In reality, it is an attempt to achieve the difficult political goal of keeping all political elements engaged and supportive of CALFED by assuring that all the CALFED goals (not just the easy and cheap ones...like the environmental restoration projects with short implementation and low funding needs relative to water supply and water quality improvements...) are achieved. Notwithstanding these criticisms, I normally find your publication meets

its goal of providing accurate and balanced information on Bay-Delta issues.

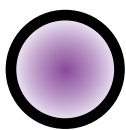
ROBERT KUNDE, Assistant Engineer-Manager
Wheeler Ridge-Maricopa Water Storage District

Dear Estuary,

I read the report on "Moonscape Nestings" in the October 2001 issue with considerable interest. It was one of the more amazing bits of fantasy I've read in a long time. There is nothing "accidental" about the unusual number of dry ponds this year, and it has very little to do with rainfall. Instead, the dry ponds are a direct result of the U.S. Fish and Wildlife service asking us to stop moving water through the ponds to avoid flooding snowy plover nests that had crept down the sides of the levees. We agreed to these measures even though they have had and will have a detrimental effect on our salt-making operations and will make efforts to return the ponds to normal patterns far more difficult. Managing salt pond habitat is extremely complex, and decisions to promote the needs of one species often conflict with the needs of other species, especially when endangered species considerations seem to trump all others. That seems to be a more interesting, real-world story than the superficial one that was published in Estuary.

LORI JOHNSON
CARGILL

PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

JAN
THURS
10

STORMWATER WORKSHOP

Topic: Stormwater Pollution Prevention Solutions: Successful redevelopment Strategies and New Ideas to Ensure Clean Runoff to SF Bay. 8:30 A.M. -5:00 P.M.

Location: Oakland

Sponsor: ABAG

\$125-\$185

(510)464-7900 or

www.abag.ca.gov/events/storm

JAN
TUES
15

CALFED DELTA REGIONAL OUTREACH FORUM

Location: Stockton

Sponsor: CALFED

(916)240-8433

JAN
THURS - SAT
24
25
26

HEALTHY COMMUNITIES CONFERENCE

Topic: New Partners for Smart Growth: Building Safe, Healthy and Livable Communities

Location: San Diego

Sponsor: Local Government Commission, Pennsylvania State University

www.outreach.psu.edu/C&I/SmartGrowth

JAN
FRI
25

BASIN PLAN WORKSHOP

Topic: Review of the Water Quality Control Plan for the Central Valley, Sacramento River and San Joaquin River Basins, which identifies beneficial uses of surface water and groundwater, establishes water quality objectives to protect these uses and describes an implementation plan to achieve these objectives.

Location: Sacramento

Sponsor: Central Valley Regional Bd (916)255-0743

MAR
THURS
14

EXECUTIVE BRIEFING

Topic: The latest on water marketing, the Bay-Delta, CALFED, the Colorado River, drinking water, groundwater, floods and drought, water ballot measures and legislative proposals, the Central Valley Project Improvement Act, the Endangered Species Act and water quality.

Location: Sacramento

Sponsor: Water Education Foundation (916) 444-6240



MEETINGS & HEARINGS

JAN
MON - THURS
7
THRU
17

SANCTUARY MANAGEMENT PLAN REVIEW MEETING

Topic: Joint management plan review for Cordell Bank, Gulf of the Farallones and Monterey Bay National Marine Sanctuaries to ensure that sites continue to conserve, protect and enhance their living and cultural resources.

Location: Various

Sponsor: National Marine Sanctuary Program

(415)561-6622 or

<http://sanctuaries.nos.noaa.gov/jointplan>



HANDS ON

JAN
SAT
5

WATERSHED WATCHER CLEAN-UP

Topic: Keep pollution out of our waterways, stencil a storm drain and find out how neighborhoods connect to the coasts. 2:00 P.M. — 4:00 P.M.

Location: Alviso

Sponsor: S.F. Bay National Wildlife Refuge (408)262-5513

JAN
SUN
6

REFUGE CLEAN-UP

Topic: Help the Environmental Education Center keep the mustard and other non-natives down.

10:00 A.M. — 12:00 P.M.

Location: Alviso

Sponsor: S.F. Bay National Wildlife Refuge (408)262-5513

JAN
SAT
12

WATERSHED WALK

Topic: Headwaters streams and urban runoff.

9:00 A.M. — 12:00 P.M.

Location: Oakland

Sponsor: Watershed Assmnt. Resrc. Ctr.

(510)832-3101 or email:

marcusassoc@ix.netcom.com

JAN
SAT
19

TWILIGHT MARSH WALK

Topic: Experience the salt marsh at twilight on an easy stroll along the Tidelands Trail. Reservations required.

4:00 P.M. — 5:30 P.M.

Location: Fremont

Sponsor: S.F. Bay National Wildlife Refuge (510)792-0222

FEB
SAT
16

WATCHING OUR WATERSHEDS

Topic: Grade 6-12 educators will learn environmental activities that improve the health of our watersheds, such as monitoring creeks, propagating native plants and surveying homes and schools for household hazardous products.

9:00 A.M. — 4:30 P.M.

Location: Richmond, Berkeley

Sponsor: Aquatic Outreach Institute (510)231-5783 or

www.aoinstitute.org

NOW IN PRINT & ON LINE

Bay Area Stream Fishes

S.F. Estuary Institute

www.sfei.org/basf

Delta Map: 2001 Edition

Water Education Foundation

Copies from (916) 444-6240

Field Identification Guide for Non-Native Cordgrass

Invasive Spartina Project, Coastal Conservancy

(510)286-1015

Layperson's Guide to Agricultural Drainage

Water Education Foundation

Copies from www.watereducation.org

Potential Wild & Scenic Rivers in California: 2001 Inventory

Friends of the River

www.friendsoftheriver.org

Protecting and Restoring America's Watersheds

U.S. EPA

www.epa.gov/owow/protecting/ #

San Francisco Bay Atmospheric Deposition Pilot Study: Mercury

S.F. Estuary Institute

Copies from (510) 746-7369

The State of California Rivers

The Trust for Public Land

Copies from (415) 495-5660

State of the Sanctuary Report:

Gulf of the Farallones

National Ocean Service

Copies from (415) 561-6622

State of the Sanctuary Report: Cordell Bank

National Ocean Service

Copies from (415) 561-6622

TECHNICAL ASSISTANCE WITH WATERSHEDS

The Watershed Assessment Resource Center (WARC) is offering technical assistance to watershed groups in the Bay Area, with funding provided by the California Coastal Conservancy's Bay Program. The center is directed by Friends of the San Francisco Estuary, a non-profit outreach and education organization, and its mission is to assist local agencies and community groups in instituting monitoring and assessment protocols, to provide technical assistance and training to new and ongoing watershed programs, and to help watershed groups develop inter-agency agreements for technical assistance and data sharing. For more information on technical assistance, contact Steve Cochrane, sc@rb2.swrcb.ca.gov

FLUSH CONTINUED

The technology does have its limits. Loukianoff notes that the cost of retrofitting existing skyscrapers would be "prohibitive," because workers would have to tear into the core of the building and replumb every restroom. Johnson says that EBMUD has no plans to equip residential buildings with dual plumbing, and it will focus on larger industrial and commercial users. These customers are more likely to have skilled professional maintenance staff who will know that the purple pipes shouldn't be connected to the drinking fountain.

But there are also plenty of opportunities. Shorenstein is planning to add three more skyscrapers to its City Center development in Oakland, and notwithstanding current economic conditions, there is always new industrial and commercial development slated for the East Bay. EBMUD says that the recycled water can be used for cooling towers and other industrial applications, as well as for outdoor landscaping of public and large private tracts, and possibly for wetland restoration efforts.

There are also several major opportunities coming down the pipeline, most notably the conversion of the Oakland Army Base and the Alameda Naval Air Station to civilian use. In both places, most of the infrastructure — roads, electrical and plumbing — is outmoded and will have to be replaced. "Everything is being redeveloped. It's a key opportunity for us to have one more line put in the street," says Johnson. "This is when it will be most economical to set up the system."

Contact: (510)835-3000 **OB**

SALT PONDS CONTINUED

Two other less obvious factors will make things costly, the sediment deficit and levee maintenance. Extensive groundwater withdrawal and other processes have caused subsidence that equates to a sediment deficit of over 100 million cubic yards to restore salt ponds to marsh plain elevations. Under natural sedimentation, it would take over 100 years to restore the salt ponds without scouring nearby mudflats. Though dredged material could accelerate restoration, its use will add to the costs.

In addition, the forthcoming feasibility study concludes that salt pond restoration will entail substantial interim and permanent management costs on top of purchase costs. Flood control levee maintenance and water management will require approximately \$250 – 500 per acre annually. During restoration planning, total annual costs would be highest, between \$5 and 10 million for a 19,000-acre purchase and \$3 to 6 million for a 13,000-acre purchase. As tidal marsh restoration proceeds, these costs would decline to a fixed minimum corresponding to acreage of ponds retained as managed open water (plus adjustments for inflation).

The new feasibility study will be available in early 2002. **SS & ARO**

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