



"It was a statistical fishing expedition," recalls the Contra Costa Water District's Marianne Guerin. She had been sifting through years of data for clues to the precipitous decline of the Delta smelt, finding little or no relationship between water exports and smelt abundance. Then, says the District's Greg Gartrell, Guerin produced graphs showing a strong correlation between spring runoff, fall salinity in the western Delta, and the following year's summer tow net survey numbers. "We looked at the relationship between runoff and salinity and that's where we hit the jackpot." From the mid-1980s on, fall salinity as measured at Jersey Point on Jersey Island closely predicts the following summer's smelt abundance. The higher the salinity, the fewer smelt.

How were changes in salinity impacting the smelt population? Gartrell points to the invasive overbite clam (*Corbula amurensis*) as a prime suspect: "Prior to the clam invasion of the 1980s, you don't see a relationship between smelt numbers and salinity. The clams are very sensitive to salinity levels. Clam counts go up and down with salinity, increasing in fall after the salinity comes in." Guerin has also detected relationships between winter and spring clam densities and the fall smelt index. Gartrell believes the filter-feeding clams are consuming zooplankton—primarily copepods—that the smelt need at a crucial time of year, prior to their upstream migration and spawning season. Stress due to lack of food in late summer and fall would decrease fecundity the following spring, depressing summer numbers. Gartrell says independent researcher B.J. Miller has found a strong relationship between fall smelt index and the co-occurrence of the smelt and its food.

Although there's a lot of buzz over the CCWD study, it's not clear that Guerin has found a smoking gun. The U.S. EPA's Bruce Herbold, who sits on the Pelagic Organism Decline (POD) research team, has concerns about the statistical analysis, but says: "They've got the salinity nailed nicely and that part I really buy. In fall, salinity has really changed in relation to how it has been historically." The Bay Institute's Tina Swanson, who calls the study "a good contribution to our understanding of the system," feels the interpretation lacks analytical weight: "They have a whole series of very plausible links, but they're examining the ends of the chain without looking at the middle links." And she wonders whether the

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ATLANTIS REVISITED?

A demand for more affordable housing in the Bay Area has cities like Oakley—with lots of empty land—itching to build, including 4,000 new homes on a 2,546-acre tract just outside its eastern border. Trouble is, this land, known as the Hotchkiss Tract, is located behind levees and six feet below sea level.



Bob Twiss and CALFED

The Oakley plan is at the heart of a lawsuit filed in April by the Greenbelt Alliance to stop the development. Presently, the environmental group is meeting with developers and state agencies to see if they can reach a settlement—something David Reid sees as unlikely. "Frankly, we're just opposed to the project, and so it's unlikely we're going to sign off on anything short of stopping the project," says the Greenbelt Alliance's Reid.

Oakley was recently cited as one of the cities in the Bay Area that has more than kept up its end of the bargain of planning for and building new homes. The city received a grade of A-plus from the Bay Area Council in its third edition of the Bay Area Housing Profile, published with the financial support of the Home Builders Association of Northern California. The council is a business-oriented think tank that includes in its membership Shea Homes and KB Homes South Bay, two of the four developers named in the lawsuit.

The Hotchkiss Tract is in an unincorporated area, on which 544 homes already stand, either behind or on top of a 100-year-old levee along the Sacramento-San Joaquin River Delta. These residents use East Cypress Road—the area's only road—to get in and out of the tract, and all traf-

fic runs through Oakley. Oakley's development director Rebecca Willis says the city looked at what already existed on the tract—high-pressure gas lines, sewer overflow ponds, piecemeal development (including 1,330 homes currently under construction)—and realized it was no longer a question of whether people were going to live near the levee but

how they were going to do so.

"The city had the foresight to say if that area is going to develop, it would be better if it were master planned to deal with infrastructure like roads and levees," Willis says.

Plans for the tract require the developers to strengthen the existing levee and construct dry levees built to meet standards set by the Federal Emergency Management Agency (FEMA), which call for 100-year flood protection. Developers also will be required to preserve and restore 244 acres of wetlands and dunes in the northwest and southeast portions of the tract. One additional levee will be built by the developers on the eastern boundary of the Dutch Slough Restoration Project, a project of CALFED. The four developers—in order to get approval for their plans—must foot the bill for shoring up the old levee, building the new ones, maintaining the whole system, and restoring the wetlands at a cost of \$25 million.

But meeting federal standards is not enough, says Jeff Mount of UC Davis. Mount says those who live behind a 100-year levee have a one in four chance of being flooded within the life of

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MURDER MYSTERY, CONTINUED

overbite clam is a cause or a symptom—an exotic that thrives in a degraded ecosystem in which variation in freshwater outflow has been reduced.

Another POD scientist, DWR's Ted Sommer, says unpublished research from his group parallels the Water District's findings. POD researchers factored in salinity and "let a statistical program tell us which variables really mattered to the fish," modeling optimal habitats for Delta smelt and other declining species. During fall, smelt appear bounded by a relatively narrow range of salinity and turbidity conditions. The scientists found no dramatic trends in summer habitat. "For fall data, it was a different story," Sommer says. "There had been some sort of reduction in the calculated amount of habitat during the POD years," comparable to that in previous drought years—although the POD years were not particularly dry.

UC Davis' Bill Bennett is also dubious about the CCWD statistics and doesn't consider their results new or striking: "As far as summer being a limiting time for Delta smelt and the food web, it's an old issue, something we've been working on for almost a decade. The data leads in the direction of the food web, but no one has proven a link. Tying it together is more difficult than saying it." He says Wim Kimmerer at San Francisco State University has just begun working on food web interactions. Bennett suggested in a recent review that smelt might be exceeding the carrying capacity of their habitat at a lower level of abundance than before the decline set in. Along with a shrinking volume of habitat, high seasonal numbers of competing plankton-eating fish may be a factor. And when packed into a smaller volume of habitat, smelt are more vulnerable to catastrophic events.

If the case against the overbite clam is less than air-tight, what else could be responsible? "I've told audiences it's like 'Murder on the Orient Express,'" says Herbold. "There are lots of suspects; which one is most important I'm not willing to say." Another candidate is entrainment, as measured by fish "salvaged" from pumping stations. Pollutants are a concern, notably pyrethroids, whose use in the Central Valley doubled between 1991-95 and 2000-03. There have also been

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PEOPLE**MAN OF STEEL(HEAD)**

As Jeff Miller describes the glistening steel-colored fish he has held in his hands, carried past dams, and advocated for, often in front of hostile audiences, I can't help but think how much the man resembles the fish. "They're amazing. They're inspiring and awesome—they're designed to fight their way upstream, and they don't want to be denied," says Miller.

Neither does he. For the past decade Miller has been arguing that there is—and could be a much greater and more sustainable—steelhead run in Alameda Creek, the East Bay's largest creek, despite its many dams, water rights issues, and other constraints. Miller got involved in 1997, when he founded the Alameda Creek Alliance, building on the long-standing efforts of a group of fishermen who had been advocating throughout the 1980s for steelhead restoration. "They grew up fishing on the creek; they were out there moving fish past the rubber dams," says Miller. "They ran up against the water districts telling them to forget it." CalTrout filed a water rights complaint against the San Francisco PUC, and the complaint was settled in the mid-1990s, yet the PUC still has not released any of the promised water, says Miller.

Miller's interest in Alameda Creek came at a good time for the steelhead, which had just been federally listed as threatened. "People had kind of given up," he recalls. Miller had been working on old growth (Headwaters) forest issues, but wanted to get his hands wet in something more local. After seeing the coho salmon run on Marin County's Lagunitas Creek, he "kept thinking, 'there's gotta be a creek in the East Bay where we could restore salmon and steelhead like that; I tried to figure out who needed help.'" He started walking Alameda Creek.

"I talked to everyone I could—fly fishermen, biologists, the Cal Trout people involved in the settlement, people at the water districts. I tried to learn everything I could about the creek." At that point, says Miller, he realized that if dams were ever going to start coming down, "it was going to take a lot of pressure and some effective organizing. The water districts had already rejected the idea of restoring a steelhead run; in their view the issue was over. I set about trying to do some community organizing, getting people excited and documenting the fact that steelhead and salmon were trying to get upstream to spawn." Although the fisherman knew there were fish in the creek, says Miller,



the water districts—and even Fish and Game—said there were no fish or if there were, they had to be hatchery strays.

The Alliance had genetic analysis performed on fins that proved that the Alameda Creek fish were not hatchery strays. Miller visited all of the agencies in person to try to convince them to sign on to the restoration effort. "I was naïve," he says. "I thought it would take a few letters, some lobbying, the threat of a lawsuit—after all, steelhead were a listed species. Well, it didn't work that way." He remembers going to an Alameda County Water District Board meeting representing the Alameda Creek Alliance, which, at that point, had an official membership of one. "They looked at me like some hippie from Berkeley," he laughs. Miller quickly realized that he was in the fight for the long haul. "It's such a big watershed, and there are so many agencies involved, and issues like water supply and flood control." What he also began to realize is that he was tackling an even bigger obstacle than removing dams—that of agency culture. "We had to try to get them to change that old way of thinking that any water that made it to the Bay was wasted."

Miller cultivated relationships with the media, sending out press releases and sponsoring media events. Forty to 50 people began showing up at each Alliance meeting, says Miller, and coming out for fish rescues, many of which were written up in local papers or shown on TV. (Today, the alliance has 750 paying members.) "It was/is a multi-pronged attack," he says. "We came at them from every angle. We leaned on the regulatory agencies, got them to talk tougher, bombarded them with pressure. We went to some elected representatives and got them to weigh in—that was very helpful." Miller says that basically, he's an "old school activist. I'm a big fan of community organizing. To be able to go to a meeting and say you represent 750 residents—that gives you a bit of moral authority and force."

In 1999, he helped put together a stakeholder group of federal and state wildlife agencies, water districts, enviros, fishermen, and

others. About three years into the effort, he says, he realized that what he was doing was really almost a full-time job, so he started writing grants to support himself. He also realized that he would have to help the agencies find funding for restoration and made it clear to them that they would receive lots of kudos for their efforts. CEMAR's Andy Gunther lauds Miller's ability to encourage cooperation and consensus. "What makes Jeff so effective is his excellent combination of public organizing skills, knowledge of the law, and a willingness to work with other stakeholders and not just be confrontational. That has resulted in building a very productive dialogue in the Alameda Creek watershed." The S.F. PUC's Tim Ramirez concurs. "Jeff is one of those unique people who can see the big picture of a national policy issue and can also speak to the details of its application to a specific creek. He takes firm positions, but understands and values building trust among diverse interests to solve problems."

Although there is still a lot of work to be done on Alameda Creek before fish will migrate upstream again freely, Miller is both surprised and thrilled to see a sea change in agency attitudes. "There's genuine enthusiasm and ownership now. All of the agencies who own barriers on the creek are pursuing funding to take them down," he says. "It's just a matter of finding the money and making it happen." Specifically, he hopes that dams at Niles Canyon and Sunol will be removed by this time next year.

When he's not wearing his Alameda Creek hat, Miller works for the Center for Biological Diversity on endangered species/urban sprawl issues. "I do everything from writing endangered species listing petitions to media to campaigns to protect condors, raptors at Altamont Pass, endangered species from pesticide use, green sturgeon, Delta smelt, etc." Although he doesn't have a background in biology (he majored in engineering, math, and rhetoric, and studied botany), he says he reads all the literature, and has learned a lot from the experts he works with.

What keeps him motivated despite what must seem at times like a snail's crawl pace in restoring this watershed? "I'm stubborn. I don't like being told 'no,' or 'we can't do it,' especially when I know something's possible. When I walk the creek, it's crying out to me that it wants its fish back." His most rewarding experiences have occurred when he's been out on the creek rescuing and moving fish upstream past barriers. "Seeing people's reactions—their enthusiasm about being able to do something, anything to help is really gratifying—especially people who have never seen a steelhead before and ask 'what's that?'" Miller says a friend of his put it best. "It's such an amazing thing when you're rescuing these fish—you have the raw power of nature right there in your hand. It made me

understand fly fishermen a little bit the first time I netted one."

As Ramirez puts it, Miller is both persistent and optimistic, a combination that bodes well for the future of Alameda Creek fish. But Miller also knows that the time to move forward is now. "It's hard to get momentum and public support, and we have it. That's one of my motivations—if the ball gets dropped now, forget it." Looking at the state's future water challenges is another motivator, says Miller. "I want to make sure we get flows legally dedicated for these fish. In 20 years we may not be able to have this conversation." **LOV**

Ed's note: Watch for a special insert this fall on the challenges facing Alameda Creek.

MURDER MYSTERY, CONTINUED

changes in the smelt's prey base: the native copepod *Eurytemora affinis*, historically the main food for all life stages, has been supplanted by the less-acceptable exotic *Pseudodiaptomus forbesi*. Much remains to be learned about the smelt's life history (its actual spawning locations are still unknown) and how the fish responds to changes in water temperature, turbidity, and other variables. According to Bennett, research by Matt Nobriga at DWR suggests that decreasing turbidity plays a role in the reduction of habitat.

Again and again, the discussions come back to water project operations. "There's been a big change in winter hydrodynamics during the POD," Herbold explains, with water export rates up 50% and minimal flows from the San Joaquin River. And it's much bigger than exports—via the State Water Project and Central Valley Project—alone, when you consider upstream diversions to Sacramento Valley rice farms, flows to urban customers in the Bay Area, water use by power plants, and water storage that has reduced spring freshwater runoff. "The increasing intensity of water project operations is a key driver in the POD," asserts Swanson.

Water exports remain a hot topic, but there's no consensus on how—or if—they limit smelt populations. Herbold mentions record high winter salvage numbers; Bennett says winter entrainment affects "a very small percentage of the population" and sees larger potential effects in early spring. Gartrell speculates that increased fall salinity may be pushing juvenile smelt from

Suisun Bay into the southern Delta earlier than usual, making them more vulnerable to entrainment. Sommer cites a USGS study that found no recent remarkable changes in pumping in fall. But even if pumping does not cause significant direct mortality, it may contribute to the seasonal changes in salinity that reduce suitable habitat.

Gartrell sums up the state of the research: "I think we all agree that the knowledge base for Delta smelt ecology and population dynamics and for the underlying food web is characterized by large gaps." The uncertainty about causal mechanisms didn't step a coalition of environmental groups—the Bay Institute, Natural Resources Defense Council, Environmental Defense, Pacific Coast Federation of Fishermen's Associations, and California Sportfishing Protection Alliance—from asking the state in June for immediate action to prevent the smelt's extinction. Their priorities include reducing fall salinity to levels comparable to past years when overbite clam distribution was farther downstream; reducing winter exports or increasing San Joaquin River inflows; and preventing exporters from increasing pumping after the fall's first significant rain event. They also recommend using Environmental Water Account water or funds to achieve established target levels for smelt protection.

Swanson sees another possible approach, recognizing freshwater outflows as a key driver of the system: "The CCWD analysis suggests if we make things fresher in the fall, it will be better for the smelt. A better way would be to increase freshwater outflows in the spring. This limits the clam, which was way down during the wet period in the 90s." Would such changes be politically viable? "I don't think the obstacles are political," she says. "I think it's operational. Water project agencies have operated with maximizing the amount of water moved as the only objective, and minimized concern for maintaining viable populations of species and ecosystems." Gartrell counters that the difficulties are hydrological: "The kinds of flows in the spring that relate to the smelt index appear to be much larger than operational changes the water projects can make."

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SCIENCE SPOT

PHYTOPLANKTONBLOOM.COM

They may be tiny, but they fuel the Estuary's complex food webs: diatoms, microflagellates, and other photosynthesizing microorganisms, collectively known as phytoplankton. Like multicellular plants, they're primary producers, converting sunlight and nutrients into living biomass.

In the past, they followed a predictable cycle in South San Francisco Bay, with peak blooms in spring. But James Cloern, Senior Research Biologist with the US Geological Survey, says all that has changed.

Beginning in the late 1990s, Cloern reports, phytoplankton blooms also began to occur in fall and winter, and chlorophyll levels, a measure of phytoplankton biomass, progressively increased. The result: a near doubling of primary production over the last decade.

Most of the microorganisms involved are marine species, the kind that proliferate offshore during upwelling events. Unusually strong upwellings may have swept more of them into the Bay. But Cloern says other possible factors include reduced sediment loads from the Sacramento and San Joaquin, a decline in suspension-feeding clams, and lower inputs of toxic metals from wastewater treatment plants.

In the short run, the extended bloom is good news for zooplankton, fish, and other consumers. However, Cloern says a further doubling could create water quality problems. In other estuaries such as Chesapeake Bay, phytoplankton blooms have caused a decline in dissolved oxygen. Locally, scientists have documented large biological changes concurrent with the increase in phytoplankton—a fish kill earlier this year, red tides, growing abundance of shrimp—but have not established causal linkages.

The South Bay Salt Pond Restoration Program adds a wild card to the deck; early stages have already resulted in changes in dissolved oxygen and harmful algal blooms. Cloern recommends close monitoring of how the process impacts the South Bay's water quality and its natural communities, from phytoplankton on up.

A full report on phytoplankton trends will appear in this year's Pulse of the Estuary report, to be released by the San Francisco Estuary Institute in September.

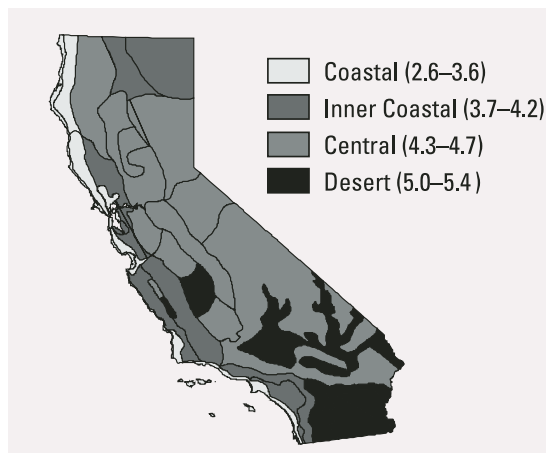
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LAND USE

LOSER LAWNS

With 11 million more residents predicted for California, half of them in the hotter inland regions of the state where lush green lawns have traditionally been *de rigueur* in new developments, the amount of water used by outdoor landscapes could increase by as much as 1.2 million acre-feet a year, according to a new report by the Public Policy Institute. Those acre-feet are enough to serve about 4.8 million people and enough, says NRDC's Ronnie Cohen, to "restore the San Joaquin River twice." The Institute found that land use—including residential landscaping—influences water demand even more than climate in future demand projections (see Now in Print, page 7). "We have no business having lawns in California," says the Bay Institute's Marc Holmes (who vows he will soon be ripping out his front yard). "There are very attractive alternatives to lawns, and the lawns here are just pitiful imitations of the old English lawns anyway—it's not like you can play or ride your polo ponies on them."

But will new residents get it? Many move to California from elsewhere—often the East Coast—and the lawn is part of the American Dream. "Everybody points to opinion polls about what the public expects, but the public expects what they've had in the past or what is marketed to us in the present," says Holmes. "When we're up against such overwhelming evidence that these practices can't continue, then it's up to our leaders to step forward and educate the public about what has to happen."

SUMMER WATER REQUIREMENTS OF TURF GRASS
(monthly gallons per square foot)

One politician is taking steps in that direction. Assemblyman John Laird (D-Santa Cruz) just got a bill passed through the Assembly that would legislate the recommendations of the Landscape Task Force convened under AB 2717 (also initiated by Laird; see Now in Print, page 7).

Although Laird's bill stops short of outlawing lawns, it includes measures such as requiring separate landscape water meters for new develop-

"We have no business having lawns in California."

ments where the size of the landscape is 5,000 square feet or greater—such as condo or multi-family developments. But what about all of those single-family homes? "You do things incrementally," says Kate Williams of Laird's office. Williams says the other big accomplishment in the bill is that it will require the California Energy Commission to develop standards for irrigation controllers and schedulers, so that homeowners who buy timed-irrigation devices will (in the future) be buying "smarter"

such devices that are keyed to weather and soil moisture conditions. NRDC's Cohen commends Laird for tackling the landscape issue. "To date water conservation efforts have focused primarily on indoor conservation. AB 1881 is taking steps in the right direction." Yet, says Cohen, the battle is far from over. "A lot more needs to happen after this bill. The turf industry has been intractable on any efforts to reduce the amount of turf as part of new construction."

In the meantime, say Cohen and others, we need to do a better job of educating California residents—new and old—about alternatives to lawns. The South Bay's Middlebrook Gardens' "Lose the Lawn" campaign is designed to show people that there are replacements for lawns that are beautiful and drought-tolerant. For those who still insist on some kind of lawn, Middlebrook Gardens even offers permeable fake turf made of recycled plastic. "If you really have to have a lawn or need a place for kids to play, we leave a tiny patch of fake turf and then landscape around it with natives and low-water-use plants," says Alrie Middlebrook. Imagining a Central Valley covered with more houses, each with a fertilized, watered lawn, she says, "When you think that 60% of household water use goes to landscaping...it's inconceivable...it just can't happen."

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LEGAL

WILL STATE STEP UP TO THE PLATE?

Depending on whom you ask, the Supreme Court has left the Clean Water Act drinking glass half empty or half full in two recent rulings—and hydrologists and environmentalists scratching their heads in confusion. One ruling, named for Justice Anthony Kennedy, who did not cast a vote for either side in a split decision but instead wrote a solo third opinion, limits the federal government's power to stop landowners from polluting wetlands under the Clean Water Act. In it, Kennedy stated that the new regulation will restrict the Army Corps of Engineers' previous authority, in which they regulated all wetland-related projects, to projects with obvious hydrological connections.

For the Bay Institute's Marc Holmes, the ruling was a devastating blow to the Clean Water Act. "I would characterize us as hanging on to a thread for a moment to protect the wetlands of the U.S.," he said. "The question is: how much longer will it hold?"

Meanwhile, a lesser-known ruling from the same cast of justices has given heart to those who believe states can fill in the regulatory gaps. This ruling, known as the Warren Decision, stems from a case involving the owner of several hydropower dams in Maine. The owner, the S.D. Warren Company, was in the process of renewing its license to operate the dams, which were used to generate power to run a paper mill.

During the renewal process, Maine's Department of Environmental Protection did what it was expected to do under the Clean Water Act and its own water quality and environmental laws: require the licensee to keep a minimum flow in the parts of the Presumpscot River its hydropower plant impacted and to allow for fish and eel passage. The Warren Company found Maine's standards inappropriate and sued.

The Supreme Court decision in this case clarified that the term "discharge" also includes water a dam owner takes from one part of a river to dam up and then release into another part of a river. Overall, the decision reaffirmed that states do have a right to enforce their own environmental laws as part of the dam license renewal process. And while the specifics of Warren break little new legal territory, North Coast Regional Water Quality Control Board attorney Samantha Olson sees a silver lining in it in the context of the Kennedy decision.

"The Warren decision reaffirms the state's role in enforcing laws to protect wildlife and

the environment, and I think they'll be emboldened to do more of this to fill in where the federal government pulls back," Olson says.

Where Warren served to clarify the definition of a discharge, the ruling in the Kennedy decision made the precise definition of wetlands—and thus the regulation of them—clear as mud.

Central to that decision were two Michigan cases. John Rapanos, a landowner, filled 50 acres of wetlands located 20 miles from Saginaw Bay with sand in 1989 so that he could sell to a developer. The wetlands were connected to the bay by ditches and streams. In a second case, two other developers were stopped from building condos on a parcel that included 16 acres of wetlands separated by a berm from a drainage ditch that emptied into a creek and a lake.

So justices were left to answer the question: just when is a drainage ditch, seasonal swamp, or other wetland linked to navigable waters? The conservative block of the high court held that the federal government has authority only over "relatively permanent, standing or flowing bodies of water" with surface connections to navigable waterways. Under this definition, vernal pools and other isolated, seasonal water that may be dry most of the year—common in the West—are not wetlands and are not subject to federal regulation, an interpretation Holmes finds laughable.

"Look, every hydrologist and scientist knows that even though there may be no surface connection—no stream, ditch, or permanent flow—for the vast majority of these isolated wetlands there is a connection to water quality because there are subsurface flows," he says.

But while the conservatives of the court rejected the idea of regulating any subsurface waters, Kennedy's opinion questions this blanket denial of government authority. Yet the Justice said only wetlands that have a "significant nexus" to navigable waters—like lakes and rivers—fall within federal authority, meaning that the Army Corps can protect wetlands where they act as a filter against pollutants or a barrier against floods, or if polluted water from a ditch or pond would flow into a larger waterway. Holmes does not take comfort from Kennedy's opinion. He worries about seasonal wetlands in particular. "We have a lot fewer vernal pools than we used to because they've been paved over by roads and developments, and those we have left are now in greater jeopardy."

Justice Kennedy sent the question of whether subsurface waters can be regulated back to the lower courts, and so lower courts and federal agencies will decide how much to regulate. And that, says Arthur Feinstein of the

INVASIVE SPECIES

DEVIL FROM DOWN UNDER

Except for bluegum eucalyptus, Australian plants are underrepresented in the rogue's gallery of unwelcome additions to California's flora. But another invader from Oz, Australian bentgrass (*Agrostis avenacea*), is beginning to be recognized as a serious threat to vulnerable native wetlands, including coastal marshes and vernal pools. It's not a new arrival, having been detected in Santa Barbara County as early as 1904, but in recent years it has become much more visible in San Pablo Bay.

Paul H. Zedler of the University of Wisconsin-Madison, who studied *A. avenacea* in San Diego County vernal pools, identified a set of traits that make it a successful invader. It can be either an annual or perennial. It's prolific—a single plant produced 14,000 seeds. The wind-dispersed seedheads break off easily, piling up against fencerows like miniature tumbleweeds. And, critically for its ability to colonize seasonal wetlands, bentgrass can tolerate winter flooding and summer drought.

After persisting for years under the botanical radar, Australian bentgrass made major incursions at Cullinan Ranch near Mare Island beginning in 1998, then in the Napa-Sonoma marshes and the Sonoma Land Trust's North Parcel at Sears Point. Coastal plant ecologist Peter Baye saw it take over freshwater pond beds after Cullinan Ranch was converted from oat hay farming to waterfowl habitat. He's also found it growing on levees in Marin County's Muzzi Marsh.

At Sears Point, the Sonoma Land Trust's Nathan Boone saw bentgrass come in through drainage ditches and take over land being managed as summer pasture for natural beef ranching and winter shorebird habitat: "The seed spills out into the shallow ponds, and then all hell breaks loose." It is now established in every pond on the 300-acre site.

Although the California Invasive Pest Council still lists *A. avenacea* as low-impact, its spread triggers a sense of déjà vu for Baye:

"It reminds me of invasive *Spartina* in the early 1990s—anxious observation, deliberations among experts and resource agencies, no clear jurisdiction, policy debates for 10 years while the population increased at exponential rates." Baye says there's no institutional mechanism in place to deal with early stages of wetland invasions.

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OUTREACH

GOOD FISH/BAD FISH

Colorful, new, multi-lingual fish advisory signs are popping up around the Delta this summer in favorite fishing spots. Artful enough for framing and hanging at home—if you're an angler that is—they were designed by the California Department of Health Services (CDHS) with input from community groups and funding from CALFED's Fish Mercury Project. Their carefully-crafted message reads that some fish, especially striped bass and sturgeon, contain harmful chemicals, and that women of childbearing age and children should eat them no more than once a month and other adults no more than twice a month.

"Unfortunately, awareness of the advisory is poor," says CDHS's Alyce Ujihara. "But so much thought has gone into designing and placing the new signs, that we think they'll grab attention." Says CDHS's May Lynn Tan, who oversees the sign project, "We used the Bay's sign as a model because it had been field tested, but we tweaked it. Over the past year, we held a bunch of angler focus groups, conducted a field survey, and hired community groups to translate the advisory into Hmong, Laotian, Cambodian, Vietnamese, Spanish, Russian, and Chinese—the languages spoken by populations who typically fish the Delta." Research showed that people want to know which fish are safe too, so the signs depict five fish to eat "with caution"—like catfish and carp—and four "best choices," including salmon and bluegill. Color photos make the signs eye-catching, as well as accurate and informative.

This past spring Tan scouted the Delta by land and water, on the lookout for prime fishing sites—ideal spots to post the signs. Health department staff from several counties pitched in, toting small posters of the signs to marinas and bait and tackle shops, and found proprietors happy to display them. Over the past three months, as more than 150 signs and posters were going up, staff followed up on reactions, chatting casually with anglers in the field. "The response has been very positive," says Tan.

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WILL STATE STEP UP, CONTINUED

Citizens Committee to Complete the Refuge, is another cause for concern. Feinstein says he sees lower courts in states like Texas cribbing mostly from the conservative block on the Supreme Court—and its limited view of government regulation—in wetlands decisions simply because Kennedy's opinion was so nebulous.

"The real issue in California will be what the 9th Circuit and lower courts do and what the Corps does," says Feinstein.

Leaving room for states to determine how to regulate wetlands may be a positive, at least for California. Feinstein notes that the State Water Resources Control Board has adopted a policy of regulating isolated waters not regulated by the Corps, one that will cover

"The real issue in California will be what the 9th Circuit and lower courts do and what the Corps does..."

seasonal wetlands. "But they don't have a process in place in much of the state to do this," says Feinstein.

The State Board's Oscar Balageur concurs, noting that the distinction between federal and state waters—and thus, jurisdiction, has yet to be made. For now, it's all part of a working document that has yet to be finalized. "It's a big technical jump right now to estimate what waters are the state's to regulate," says Balageur. A final draft of the plan spelling out the difference between federal and state waters is due out this fall.

CONTACT: Marc Holmes (916)648-1161; Arthur Feinstein (415)282-5937 KC

AVISO WARNING CEEV FAAJ

Some fish in the Delta have chemicals that may harm your health. Women age 18 - 45, pregnant or breastfeeding women, and children 17 years and under should not eat more than 1 meal of striped bass or sturgeon a month. Other adults should not eat more than 2 meals of striped bass or sturgeon a month.

Health Advisory for Striped Bass and Sturgeon

STRIPED BASS STURGEON

1 MEAL A MONTH NO Striped Bass over 27 inches
Women age 18 - 45, breastfeeding or pregnant women, children, and teens

2 MEALS A MONTH NO Striped Bass over 35 inches
Other adults

CAUTION

Catfish Carp Pike/minnow Crappie Largemouth Bass

BEST CHOICES

Salmon Sunfish Trout Bluegill

警告事項 BHMMAHNEI

LUU YI!

EAT DELTA FISH SAFELY

PLACES TO GO & THINGS TO DO



WORKSHOPS & CONFERENCES

SEPT
TUESDAY
12

REGIONAL MONITORING PROGRAM ANNUAL MEETING

TOPIC: Estuary water quality: emerging contaminants, TMDL updates, changes in phytoplankton, contaminants in fish; persistent PCBs

LOCATION: SFEI, 7770 Pardee Lane, 2nd Floor, Oakland

SPONSOR: San Francisco Estuary Institute
(510) 746-SFEI
www.sfei.org

SEPT
SUN.-WEDS
17-20

CALIFORNIA AND THE WORLD OCEAN CONFERENCE

TOPIC: A new vision for protecting and managing ocean and coastal resources.

LOCATION: Hyatt Regency, Long Beach

SPONSORS: California Resources Agency, California EPA, Coastal Conservancy.

<http://resources.ca.gov/ocean/cwo06>

OCT
MON.-WEDS
23-25

4th BIENNIAL CALFED BAY-DELTA PROGRAM SCIENCE CONFERENCE

TOPIC: Making Sense of Complexity: Science for a Changing Environment

LOCATION: Sacramento Convention Center

SPONSOR: CALFED Bay-Delta Program
<http://science.calwater.ca.gov/conferences/conferences.shtml>



HANDS ON

QUARTERLY
ON
SATURDAYS
8AM-NOON

BIRD MONITORING

LOCATION: Sequoia Arena, Joaquin Miller Park, Oakland
SPONSOR: Friends of Sausal Creek
(510)531-3887

SEPT
WEDS.-FRI
13-15

NORTHERN CALIFORNIA TOUR

TOPIC: Tour of the Sacramento Valley and river; Yolo and Sutter Bypasses, restoration sites, houseboat cruise on Lake Shasta. A must for water policy-makers, water boards managers, consultants, journalists—anyone interested in California water issues.

LOCATION: Tour begins at Sacramento International Airport, 7:45 a.m. Sept. 13

SPONSOR: Water Education Foundation, Department of Water Resources, BurRec
(916)444-6240
www.watereducation.org

SEPT
SATURDAY
16

COASTAL CLEANUP DAY

TOPIC: Clean up beaches, creeks, wetlands.

LOCATION: Bay-wide

SPONSOR: California Coastal Commission
<http://www.coastal.ca.gov/publiced/ccd/ccd.html>
(800) COAST-4U
coast4u@coastal.ca.gov

SEPT
FRI.-SAT
22-23

WETLAND SCIENCE COURSE SERIES

TOPICS: Ecology of invasive species in tidal marshes of San Francisco Estuary, September 22- 23, 2006; Geographic variation in San Francisco Estuary wetlands: conserving & restoring diversity, October 13-14, 2006; Tidal marsh birds: research and monitoring for conservation and restoration, October 27-28, 2006

LOCATION: Tiburon
SPONSOR: Romberg Tiburon Center, San Francisco State University; Instructor Peter Baye
Aimee Good (415)819-2073;
wetlands@sfsu.edu
<http://online.sfsu.edu/~wetlands/>

OCT
SATURDAY
14

PLANT TURNS 50

TOPIC: San Jose/Santa Clara Water Pollution Control Plant Open House to celebrate 50 year anniversary. Includes tours and presentation.

SPONSOR: City of San Jose Environmental Services Department
CONTACT: kirsten.struve@sanjoseca.gov

GRANT OPPORTUNITY

DEADLINE: OCTOBER 7, 2006

The San Francisco Estuary Project (SFEP) is pleased to announce its 5th annual Small Grants Program.

We invite any Bay Area resident, organization, school, business, or public agency to apply for funds ranging from \$3,000 to \$10,000.

SFEP seeks proposals for projects that educate and involve people in improving the health of the Estuary, restoring and protecting existing wetland, creek, or wildlife habitats, or monitoring the health of fish and wildlife populations.

We have a total of \$90,000 to award. Request a copy of the RFP from Carol Thornton at SFEP (510) 622-2419 or cthorton@waterboards.ca.gov, or on-line at www.abag.ca.gov/bayarea/sfep/projects/index.html and click on Small Grants Program. Selected proposals will be announced in early November.

NOW & ONLINE

Celebrating Wildflowers Pollinators. U.S. Forest Service and the North American Pollinator Protection Campaign. July 2006.
<http://www.fs.fed.us/wildflowers/pollinators/index.shtml>

Coyote Creek Watershed Historical Ecology Study—Final Report. May 2006.
San Francisco Estuary Institute for the Santa Clara Valley Water District.
<http://www.sfei.org/HEP/reports/coyotecreek1.htm>

EBMUD Annual Water Quality Report (2005). East Bay Municipal Utility District. For hard copy: custsvc@ebmud.com, or call (866) 403-2683.
Download at:
http://www.ebmud.com/water_&_environment/water_quality/annual_report/ebmud_wqr_2005.pdf

Final EIS for the San Luis Drainage Feature Re-Evaluation. May 2006.
<http://www.usbr.gov/mp/sccao/sld/docs/index.html>
scroll to "final EIS." (916) 978-5100;
jmccracken@mp.usbr.gov

Lawns and Water Demand in California. California Economic Policy Vol. 2, No. 2. July 2006. Public Policy Institute of California. www.ppic.org

San Joaquin River Water Quality Issues. Lee, G. F., Jones-Lee, A. June 2006.
<http://www.members.aol.com/annejlee/sjr-WQIssues.pdf>. PowerPoint Slides:
<http://www.members.aol.com/annejlee/SJR-April2006.pdf>

Water Smart Landscapes for California. AB 2717 Landscape Task Force. December 2005.
http://www.cuwcc.org/landscape_task_force/AB2717_LTF_Report_FINAL_Dec-2005.pdf

Watershed Program Performance Measurement – Draft Watershed Assessment Status (map). California Bay Delta Authority (CALFED). http://www.calwater.ca.gov/Programs/Watershed/Maps/Watershed_Performance_Indicator_Map.pdf

What would happen in an earthquake measuring 6.5 on the Richter Scale? Delta Warning DVD.
www.water-ed.org. (916) 444-6240.

CALL FOR ENTRIES

WILD AND SCENIC FILM FESTIVAL

DEADLINE: SEPTEMBER 30, 2006

Presented by Patagonia and the South Yuba River Citizens League, the Wild and Scenic Environmental Film Festival celebrates the natural wild world. Submit your environmental and adventure films that educate, motivate, and inspire. Prizes awarded and filmmakers invited to attend the festival January 12-14, 2007 in Nevada City. Download an application at www.wildandscenicfilmfestival.org (530)265-5961

ATLANTIS, CONTINUED

their mortgages. "Does that strike you as being out of the floodplain?" Mount asks.

By meeting FEMA standards, Oakley can legally allow the new homes to have ground-floor living areas. In addition, owners do not have to carry flood insurance. The Greenbelt Alliance's Reid is skeptical that the millions pledged to shore up protections for existing and future housing will do the trick. "This is fundamentally an unsafe place to build a house," says Reid. "And even if you build to 200 or 300-year levels, you have to remember that New Orleans' were 250-year levees."

Oakley's Willis contends that the city is stepping up to take responsibility. "The status quo is a huge liability—we've got existing homes and a levee system that doesn't meet FEMA standards. We have people living next to levees that are not that strong and so the real question is how do we want to fix it?"

Mount says smart growth means developing areas that can be defended or that don't need protection in the form of a levee. And that means building in areas that won't later require millions

in state and federal money—from taxpayers—to bail out residents once a disaster such as the flooding of Jones Tract strikes. That levee breach required \$100 million just for cleanup.

But while there's much talk in Sacramento about repairing levees—Gov. Schwarzenegger and legislators have batted around figures to the tune of roughly a half a billion dollars—little has changed in Mount's mind. "There's an undeniable disconnect between local land use decision-making and the costs absorbed by everyone else."

CONTACT: David Reid (925)932-7776; Rebecca Willis (925)625-7000 KC



Story ideas or scoops? Send to lowensvi@earthlink.net

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