

Is Gale Norton going green? On July 27, the Interior Secretary testified before Congress on competing bills that would authorize the estimated \$8.7 billion CALFED effort to reconcile the interests of water-users and endangered species. She outlined specific problems with a bill introduced by Rep. Ken Calvert (R-CA) — and many of them just happened to be the same objections voiced by environmentalists.

Calvert's proposed legislation, HR 1985, would allow the Interior Secretary to essentially pre-authorize water projects. If committees in Congress don't object, and the secretary gives the go-ahead, the projects are considered approved. But Norton testified that "some language also circumvents Congressional oversight of individual projects" and may violate the Constitution.

Calvert's bill is one of three competing pieces of legislation. Though Rep. George Miller (D-CA) and Sen. Dianne Feinstein (D-CA) have also introduced CALFED implementation bills, Calvert's bill has been the most turbocharged. It has also provoked vociferous opposition from the conservation community, not only because of what one environmentalist called it's "blank check" to the Interior Secretary on new water projects, but also because it guarantees at least 70% of contracted water for agricultural users south of the Delta. The Westlands water district near Fresno, with 600 agricultural users, would be the primary beneficiary.

The Calvert bill is also notable for what it does not include: any specific mention of money allocated to environmental restoration, as well as any explicit mention of the "beneficiary pays" principle featured in the final record of decision issued by CALFED last August.

Democrat George Miller, former head of the House Resources Committee, has lost so much turf to the Republican majority that one lobbyist called his legislation, HR 2404, "a placeholder." Calvert, on the other hand, chairs the House Water and Power subcommittee, which is the first line of offense for CALFED legislation. On Sept. 13, while everyone else was glued to replays of the World Trade Center attack, Calvert was hard at work forwarding HR 1985 out of his subcommittee.

Without parallel action in the Senate, the Calvert bill is going nowhere fast. In the Senate, Dianne Feinstein started out with a bill that resembled the Calvert bill far too closely for most conservationists' comfort. Rather than "preauthorization," Feinstein's legislation (S-976) mandates "fast-track" Congressional approval for water projects supported by the Interior Secretary. That means no committee review, no hearings,

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Two Hundred Pound Canaries Warn of New Poisons

Like the canaries of coal mining lore, harbor seals are our harbingers of new pollutant problems for the Bay, not to mention for its human neighbors. Flame retardants recently turned up in the tissues of Bay seals and Bay Area women at levels among the highest ever reported in the world. Scientists warn that these PBDEs, shorthand for polybrominated diphenyl ethers, are only some of hundreds of new chemicals approved by the FDA, EPA, and other agencies and entering the market, and the environment, before all of their potential impacts are known.

"Just because a chemical is not in the regulatory books doesn't mean problems don't exist," says consulting scientist Rainer Hoenicke, formerly with the S.F. Estuary Institute. "Regulations are about 10 years behind the curve."

PBDEs — unregulated chemicals used in relatively high concentrations as flame retardants in electronic equipment, computers, TVs, textiles, and many home furnishings, particularly those containing polyurethane foam — have become ubiquitous over the last decade. Exactly how they end up in the Bay isn't quite understood. "It's hard to see how my foam mattress ends up in the seals," says researcher Myrto Petreas, environmental scientist for State Department of Toxic Substances Control's Hazardous Materials Lab in Berkeley. According to Petreas, while there are some point sources of PBDEs—foam manufacturers and electronic equipment dismantlers, for example—no one understands all of the chemical's pathways into the Bay. But whatever the pathway, the Bay and its biota are getting more than a fair share. A study by She,

et al., co-authored by Petreas and soon to be published in the journal *Chemosphere*, revealed PBDE levels in Bay seal tissues as high as 1730 nanograms per gram of fat (equivalent to parts per billion). Concentrations of PBDEs in seal tissues doubled every 1.3 years (on average) in the decade between 1989 and 1998.

Harbor seals, long-lived marine mammals at the top of the aquatic food chain, are considered good indicators of Bay health, in part because they are exposed to persistent organic compounds that bioaccumulate in the food web. But in the Bay Area, it is not only seals that have elevated levels of PBDEs in their bodies. According to the study, the highest levels of PBDEs ever reported in humans are showing up in the fatty tissues of Bay Area women—an average of 86 ng/g (none of the women in the study regularly ate fish from the Bay). While the PBDE levels do not appear to be correlated with breast cancer (the original focus of the study), they are present at higher levels in younger women, consistent with the fact that PBDEs are a recent environmental contaminant.

"PBDEs are in so many things," says Petreas, noting that California requires all furnishings to pass flammability tests (unlike some other areas of the country and world). "We don't know exactly how women are ingesting them—whether they are inhaling them as dust from indoor chair cushions or other home furnishings, or other nonpoint dust." PBDEs have also been found in sewage sludge, which is then applied as fertilizer on crops. The loop may be closed when people ingest crops, or animals that have grazed on sludge-fed crops.

Scientists say people shouldn't panic about this new contaminant, but that there are health concerns for both humans and

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ENERGY

PADDING LIGHTLY IN SUISUN MARSH



Suisun Marsh may be a haven for waterfowl and special-status mice and rails, but beneath its layers of life-rich muck and mud, lies a lesser-known resource—one that has recently come into great demand, thanks to the state's energy shortage. This year alone, the S.F. Bay Conservation and Development Commission (BCDC) has received nine applications and issued five permits for natural gas development in the marsh—a sharp increase from the historical pace of one application per year since the late 1960s.

Unfortunately for the marsh, reaching and extracting natural gas deposits is a complicated—and hardly environmentally benign—process. First steps involve seismic tests to develop three-dimensional maps of the geologic strata, then the drilling of 30-foot-deep holes and the setting off of explosive charges (gas locations can be determined based on the seismic energy released). Once a potential gas deposit is found, gas companies conduct exploratory drilling to determine its commercial viability. To get an even, stable surface for the drilling and equipment, they must clear vegetation and install pads and pilings. They then drill a 12-inch-wide hole down to about 1,000 feet, and from there a smaller hole down to 4,000 to 8,000 feet deep. If they find a good gas supply, the next step is to encase the hole and cement it into place. Extraction activities begin in earnest as monitoring and production equipment—including tanks for waste containment, heaters, separators, etc.—are brought to the pad. Post-extraction cleanup activities can involve both further disturbance and restoration, including the placement of large cement plugs in old wells, hole filling, equipment removal and seeding with native vegetation.

The marsh's many sensitive species—salt marsh harvest mice, California clapper and black rails, Suisun song sparrows, various species of waterfowl and shorebirds, and others—can all be disturbed by natural gas development activities, says Cal Fish & Game's Dennis Becker. "Suisun Marsh is to California what the Arctic National Wildlife Refuge is to Alaska," says The Bay Institute's Marc Holmes. "It should be preserved for wildlife; nothing else should happen there."

But drilling is going ahead. In June, BCDC staff began soliciting advice on the drilling and mitigation through meetings with federal, state, local agencies and the California

Waterfowl Association. By October, BCDC had prepared a staff report on mitigation requirements.

"We're all trying to steer them away from the wetlands and to get them to use old, existing pads as much as possible," says Becker. Other mitigations include prohibiting drilling during sensitive breeding seasons and in the winter when migratory waterfowl and shorebirds cover the marsh. Adds BCDC's Michelle Levenson, "We're also encouraging them to use existing roads to build the pipes, and to camouflage their equipment." Resource agencies also want to

see remote sensing used to monitor the wells to minimize traffic in and out of the marsh.

Agencies are also considering the idea of requiring gas development companies to submit one permit application for all anticipated natural gas development proposals within a given season and to monitor long-term subsidence in the marsh. "The idea is that the applicant would then have to provide a more detailed analysis of the cumulative impacts of all proposed activities," says Levenson. Contact: Michelle Levenson (415)352-3659

SPECIES SPOT

MOONSCAPE NESTINGS

If you were an American avocet flying over the Estuary on your usual migration path this fall, you might be surprised to see a once watery landscape turned moonscape. Little rainfall last spring and difficulties with water management, both in Cargill's South Bay ponds and refuge ponds in the North Bay, have transformed many of the Bay's salt ponds into cracked, dry beds. "If you took a satellite image from space," says U.S. Fish & Wildlife's Peter Baye, "You'd see a lot more reflection than usual" salt pans look white from space. But the birds may be the only ones surveying the full scene. "No agency is keeping track of this in terms of the cumulative Bay picture," says Baye.

In the South Bay, the dried ponds offered an unexpected boon for a threatened species. This past spring, shallow ponds normally used by shorebirds and deeper ponds inhabited by ducks suddenly became dry pans covered with nesting snowy plovers. The new, accidental habitat, combined with avian predator enclosures being used on the refuges, helped make this a banner year for the plover, says the S.F. Bay National Wildlife Refuge's Joy Albertson. While final numbers aren't in yet, hatching success was definitely up, especially on the Baumberg Tract, she says. Redwood City ponds normally heavily used by shorebirds were also covered with nesting snowy plovers. Some of the "new" habitat in the South Bay resulted from the way Cargill managed its ponds this year, says Albertson. "They stopped water movement into one of their ponds and it had a domino effect on the other ponds. Once the plovers were nesting there, it was too late to fill the ponds."



The changes to North Bay ponds may not be as benign. Chronic circulation problems were compounded by the lack of late spring rainfall, says Baye. "Some of the ponds are just sitting there evaporating, turning into bittern, which is so heavy it's plugging the pipes. You've basically got constipated brine transfer." Several ponds are becoming hypersaline and acid, which may ultimately raise the stakes and costs of tidal marsh restoration.

For now, the birds seem to be avoiding what looks bad and moving on to other areas, according to Tom Huffman, who manages the North Bay marshes for Cal Fish & Game, although he too, is worried about possible long-term habitat damage. But others say there may be more immediate impacts on the birds using the Pacific Flyway this fall. According to the U.S. Geological Survey's John Takekawa, "At some point, there are going to be impacts on shorebirds and ducks. Without invertebrates [in the dried playas], there's habitat loss. On their fall migration, these birds need lots of resources." While the birds can move to other areas, he adds, many of them prefer salt ponds because they are somewhat private and protected from predators. The other problem, says Takekawa, is that most migration takes place between August and October when there is usually not much rain, and — this year anyway — the ponds are still dry. "The birds are just getting down here, and the habitat isn't very good. It's likely a stress on their populations." Contact: Peter Baye: (707)562-3003 **LOV**

LEGISLATION

SHOW ME THE WATER

Randy Kanouse's eleven-year quest reached its end this October. Since 1991, Kanouse, East Bay MUD's Sacramento lobbyist, has been pushing for a law requiring developers to secure water for their projects before building them. This year, for the first time, the legislation passed in both the State Senate and Assembly and was signed by the governor on October 9.

SB 221, authored by Santa Monica Democrat Sheila Kuehl, requires developers of 500 or more housing units to identify a source of water before building permits are issued, and to show that their projects won't endanger the water supply of a district's existing customers. A complementary bill, SB 610, authored by Jim Costa, (D-Fresno), requires water assessments early in the development process, but the results aren't binding on land-use agencies. Kanouse calls SB 221 "a safety net" in relation to SB 610.

The original 1991 bill was a model of brevity. "No lead agency shall approve a development project unless the applicant identifies a long-term, reliable supply of water to serve the proposed project." At the time an environmentalist — supported majority was running the EBMUD board, and developers and more traditional water managers protested vehemently. The bill died quickly. A few years later, a more development-friendly majority was running the board, and to many people's surprise, continued supporting "water before development" bills. In 1995, what Kanouse calls "a modest version" of the current legislation was passed. "It didn't have many teeth to it," he says, adding that a recent study looked at 119 projects covered by the law. Only two had actually complied. Stronger legislation was introduced every year, but rarely made it out of committee.

Earlier this year it looked like the legislation would again go down to defeat. "Another dry year looms for water policy," ran an August headline in the *Sacramento Bee*. But then opponents from the development faction began to back off, and declared themselves neutral on SB 221. Just before the legislature adjourned, the bills passed both houses handily and moved on to the governor. In the final weeks, some opposition remained, most notably from the Association of California Water Agencies, which says SB 221 "does not include the reforms necessary to ensure



water supply availability for new development." Kanouse says that water managers have long been hesitant to become involved in land-use

policy, but he points out that several agencies, including Yolo County, Sacramento, and the Northern California Water Association supported the bills. So did a variety of interests — The Natural Resources Defense Council, Clean Water Action and the Sierra Club spoke out for the bill, as did the state's Farm Bureau Association and the Western Growers Association. "There aren't that many water issues where you see the Farm Bureau and the Sierra Club working arm-in-arm," he says. "It was a very interesting coalition."

Agriculture signed on because farmers are worried about losing their already-scarce water to new housing development, and industry is becoming increasingly concerned about the possibility of water being subject to "rolling blackouts," or strict rationing in the future. SB 221 requires a determination that the additional water used by a development won't be taken away from either farmers or factories. The sponsors did make important concessions in order to win wider support, including a relaxation of rules governing the use of groundwater. But Kanouse says that the developers' decision to remain neutral on the issue probably stemmed from fears that a multi-year drought could result in the enactment of even more stringent legislation. "Delaying this would not make the issue go away. Even with the compromises, it's still a strong bill," he adds. Kanouse thinks that EBMUD's often contentious politics may have played a positive role in getting the bill passed. When the environmentalists on the board endorsed the first bill, the bill was embroiled in a huge battle over the 11,000 unit Dougherty Ranch housing project, and the opposition could write the bill off as more evidence of EBMUD's "no growth" philosophy. Even after the enviros lost their majority, however, the legislation was endorsed every year by a seven-to-nothing vote, which made that argument much harder to sustain.

Karouse thinks that the simple logic of putting the water before the house is the real reason for the legislation finally getting passed. "It isn't communism. It isn't going to stop housing from being built in California," he says. "It's just common sense." Contact: EBMUD (510)835-3000

OB

LANDUSE

PINPOINTING PRIORITIES

Creating a strategic, statewide approach to preserving California's natural resources is the goal of the Resource Agency's California Continuing Resource Investment Strategy Project (CCRISP), which kicked off a series of stakeholder meetings in late September.

Using a science-based process, CCRISP aims to identify and prioritize large areas, such as river basins, that support any of five key conservation values: aquatic and terrestrial biodiversity, working landscapes (crop, forest or range lands), watershed values, lands for recreation and educational facilities in natural areas and urban open space. The project also plans to work with existing local and regional conservation programs to integrate their priorities into a statewide framework.

At the September meeting, more than 50 environmentalists, ranchers, farmers, developers, local and regional government representatives and members of tribal groups convened as CCRISP's Stakeholder Advisory Committee. This committee, along with a Management Advisory Committee comprised of nonprofits, state and federal agencies and foundations that invest in conservation and stewardship, will guide CCRISP programs and advise its executive committee.

Now in its second year, CCRISP is slated to develop a variety of maps, data sets and decision-making tools over its six-year life, according to CCRISP outreach coordinator Heather Barnett. While CCRISP won't fund conservation projects directly, its recommendations will "make the case for where state investment in conservation should be made," she says. CCRISP could also help local stakeholders decide which on-the-ground projects make the most sense in light of statewide conservation priorities, she says. Contact: Heather Barnett (916) 653-5656 **KA**



SEALS CONTINUED

harbor seals. PBDEs are suspected of altering the regulation of both thyroid and steroid hormones that are essential for basic metabolic and reproductive functions, explains Dianne Kopec, harbor seal biologist and another of the study's authors. In the case of the seals, the long-term, chronic effects of these endocrine disrupters may not be apparent until a population is exposed to additional stress—a virus, for example, which already-weakened seals might be less able to fight off. Also of concern, says Kopec, is the addition of a new contaminant to the existing mix of harmful chemicals and metals in the Bay. “Unlike the well-known contaminants that have been recognized, monitored, and regulated for years,” says Kopec, “there are currently no regulations limiting the release of PBDEs into the environment.”

Though PBDE levels in the seals are about 100 times higher than those found in humans, recent studies by Cal EPA researchers using rodents show that PBDEs could impact human neurological functions. When researchers gave lab rats high dosages, their offspring showed learning and memory problems, says Cal EPA's Tom McDonald. McDonald echoes Kopec's concern: that exposure to PBDEs is being added to exposure to existing pollutants, like PCBs, and that the cumulative impacts are unknown.

So what should regulators and policy-makers be doing to address this threat? Local agencies took a first step this fall, when they made the identification and characterization of emerging pollutants in the Bay—and roadblocks to their regulation—a new priority for cooperative action (as part the S.F. Estuary Project's CCMP review process). According to McDonald, this is just one example of a groundswell of concern on the part of the regulatory agencies. Hoenicke says that that interest comes none too soon. “We don't want to leave the barn door open and let other horses escape. We already made that mistake with PCBs and DDTs,” he says.

Kopec agrees. “Not only further research, but also immediate action is needed to address this threat.” Contacts: Mytro Petreas (510)540-3624 or Dianne Kopec (dkopec@maine.edu) **LOV**

EDUCATION

ESTUARY HEALTH CHECK



Eight hundred people lounged in the red seats of the Palace of Fine Arts auditorium in San Francisco this October to hear 48 experts present the newest research, the best maps, the latest technologies, and the hottest debates over the resources, health and restoration of the S.F. Bay-Delta Estuary.

First up at the podium was Richard Katz, a member of the State Water Resources Control Board, who hammered at the theme of good science leading to good policy. His homework for the audience was to stop just talking to each other in science speak and to get out and educate “newbies” in the state assembly about how this ecosystem we are trying to save provides drinking water to 20 million Californians and affects jobs and the economy. After the dose of political realism came a little history from author Malcolm Margolin, who commented on how impressive the knowledge level of environmentalists attending such conferences had become. “Thirty-five years ago carrying a picket sign and having a flimsy poetic idea was enough, but today's activists have extraordinary scientific, political, economic, and technological expertise,” he said.

A coming of age also figured in the subsequent speech by the U.S. Geological Survey's Fred Nichols, who noted that progress made in such things as reducing the impacts of raw sewage and learning about the Estuary's natural processes has been accompanied by a recognition that “the objectives of any group or interest will not be achieved simply by voicing unyielding denials of the objectives of others.” Nichols closed by mentioning a number of challenges for the future, predicting what would be the regional effects of local construction or restoration projects; judging how non-lethal contamination levels in the Estuary's invertebrates and fish affect the fish, wildlife, and humans who eat them; and overcoming the “reticence of our institutions to take a whole system approach.”

Further talks on urban challenges followed, with Tom Schueler of Chesapeake Bay's Center for Watershed Protection reminding listeners that “the greatest threat to estuaries continues to be the conversion of natural spaces to car habitat.” He said research shows a decline in sensitive species at about 30% impervious cover, a decline of food variety and abundance at about 15% and a rise in chronic coliform (fecal) contamination at less than 10%.

The water-energy connection was then made by Peter Gleick of the Pacific Institute — every acre foot of water we use costs about 2-3,000

kilowatts of power, he said. “The more water we save, the more energy we save,” he said. Gleick debunked a number of popular “myths,” among them that there are water and energy shortages. He attributed both these problems not to a lack of the resource, but to a shortage of “intelligent management.” He added that there were no rolling black outs this summer not because, as the TV ads would have us believe, we've quickly built new power plants but because Californians practicing a minimal level of conservation managed to shave 10-14% off peak demand levels. “The regulators need to watch the generators,” he cautioned.

Shaving demand might also help with the global warming problem, which the U.S. Geological Survey's Mike Dettinger described as just one part of the region's long history of climatic variability. As a result of warming, Dettinger predicted “fresher winters and saltier summers,” for the Bay, and less than 20% of current snowpack levels by mid-century. “In the past 1000 years, there have been much drier centuries with 100 year droughts and extreme flood periods. These old trends, superimposed by global warming impacts, promise that major hydroclimatic changes threaten the Estuary in the near future,” he said.

Another threat will be earthquakes, said Mary Lou Zoback, also of the Geological Survey. Zoback spoke of a 70% chance of a major earthquake shaking the region's bridges and levees before 2030, but more ominously of the likely return to the days before 1906 when the region experienced a magnitude six quake every four years. “The stress shadow of the 1906 quake created a docile environment in the Bay Area,” she said. “Future quakes will be larger, closer together and more costly.” In terms of the Estuary, they might not only wipe out some levees, but also release a lot of old contaminants buried in the soft Bay mud, she added.

After lunch, the Point Reyes Bird Observatory's Nils Warnock spoke about factors affecting bird life in the Bay today, among them habitat changes (conversion of salt ponds to tidal marsh), proposed airport runways, the spread of invasive cordgrass and contaminants. Some of the contaminants come from the birds' food — invertebrates, zooplankton and fish — whose status was surveyed by Cal Fish & Game's Kathy Heib. Heib said a long-term shift from a warm to a cool ocean climate has benefited some species, like Chinook salmon and English sole, but not others. A plant that is not benefiting anyone, however, is exotic Atlantic cordgrass and it's hybrids, which Peter Baye of U.S. Fish & Wildlife said continues to colonize Bay mudflats and reshape the shoreline. “If we forge

HEALTH CHECK - CONTINUED

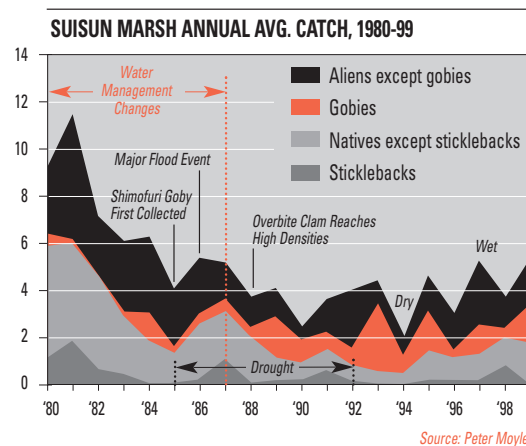
ahead and do restoration without getting rid of invasive plants, we won't achieve a lot of our objectives for ecosystem recovery," he warned. As of 2001, a total of 237 invasive species (both flora and fauna) were well documented within the Estuary, added the S.F. Estuary Institute's Andy Cohen.

Getting down to ground level, hydrologist Phil Williams then discussed how our view of sediment as a nuisance — choking shipping channels and muddying swimming beaches — has changed over the last few decades. But declining sediment delivery to the Bay (only 5 million cubic yards per year now), along with sea level rise and the creation of large new sediment sinks (restoration of subsided Delta islands, for example) will all reduce the mud supply. "Managing mud will be as important as managing toxics and exotics in the future," he said. "Large-scale restoration will be constrained by the small sediment supply."

After Williams, Stanford's Steve Monismith gave an overview of how numerical models have helped us understand hydrodynamic processes and the S.F. Estuary Institute's Rainer Hoenicke described strides in reducing toxicity in the Bay. One pollutant reduction effort has been the negotiation of TMDLs, a regulatory tool that sets a regional goal for a total allowable maximum daily load of a contaminant. The Bay's new mercury TMDL "beats on all the sources," said the S.F. Bay Regional Board's Khalil Abu-Saba. But because five old mines account for about 90% of the mercury problem, he said, "We need more bulldozers and fewer Ph.D.s to work on this." Three more speakers wrapped up the day, with talk of pesticides, biomarker research, and attributes of a healthy ecosystem. And retired Army Corps debris boat captain Eric Carlson sent everyone home with first hand tales of railroad cars full of whiskey stuck in the Bay mud, sea lions on his deck, and a snake adrift on a clump of peat moss.

Day two of the conference opened with the theme of ecosystem restoration, which CALFED's lead scientist Sam Luoma said required three things to be successful: a sophisticated investment strategy; careful documentation of what works and what does not; and an institutional system that responds to the evaluation of effectiveness.

Three groups of speakers then addressed restoring Central Valley rivers, the Delta and the Bay. The Resource Agency's Tim Ramirez kicked off by examining how salmon have responded to river restoration strategies.



Then U.C. Davis' Jeff Mount said "flood management is the single most useful tool of ecosystem restoration," but four hurdles had to be overcome to use it: a 150-year history of hard engineering approaches to river management; working within a system specifically designed to limit interchange between the channel and the floodplain; the often small and disconnected scale of restoration projects; and the need to

embrace restoration as a social, not just biological and physical, science.

We also need to recognize, said Stanford's David Freyberg, that ecosystem restoration is "fundamentally a design process, and that design is a different activity than discovery," which is what most scientists perceive their work as being. The challenge then, he said, is to design for complexity, variability and long term change using tools — dams, channels, levees — designed to simplify the ecosystem. You can't rely on nature to do all the rest of the work either, said Denise Reed of the University of New Orleans, who went on to debunk other restoration "myths," including "build it and they will come." Reed said "We shouldn't expect the system to have enough sediment in it to build new land, because it's not what our rivers ever did before. We don't need to build new marshes as high as natural ones, but we do need to rebuild the

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FEEDBACK

REPORT CARD: "B" FOR BETTER

How many acres of wetlands have we restored since 1999? What progress have we made on controlling exotic species? These and other questions relating to *Comprehensive Conservation and Management Plan (CCMP)* priorities are addressed in the S.F. Estuary Project's third *Bay-Delta Environmental Report Card*, released to coincide with the State of the Estuary Conference (see *Now On-Line*).

Saving and restoring Bay-Delta wetlands continues to be the top priority of those championing the CCMP's vision, and the news is relatively good, according to the report. Acquisitions of fields, creekbanks, islands, floodplains and other former, current and future wetlands have tripled since the last reporting period, with at least 33,042 acres secured and protected. Restoration and enhancement work continued at a steady pace, with 11,420 acres and 1,320 linear feet of completed projects. Plans for 19 habitat projects will improve an additional 25,502 acres and 36,020 linear feet.

Regional interests have also steamed ahead with plans, partnerships and fundraising to implement the *Baylands Ecosystem Habitat Goals*, a 1999 report providing a scientific rationale for what kinds of wetlands

are needed to restore the Bay ecosystem and where they should be. Though no regulatory-based regional wetlands management plan has been developed, in 2001 26 agencies, organizations and private companies signed on to the S.F. Bay Joint Venture's Goals-based implementation strategy, Restoring the Estuary. And while CALFED poured dollars into ecosystem projects and planning, the S.F. Bay Commission updated the wetlands and wildlife section of its Bay Plan, a regional wetlands monitoring program was launched, and the S.F. Estuary Project, ABAG and local agencies created a Joint Aquatic Resource Permit Application Center to provide improved wetland protection and regional coordination while streamlining the permitting process for wetland-related projects.

Exotic species control also got a big boost recently, with the 1999 enactment of a new state law (AB 703) requiring mid-ocean ballast water exchange for all ships coming into California from more than 200 miles offshore. More research is also being done on on-board ballast treatment technologies, and active invasive species control programs are underway for Atlantic cordgrass, purple loosestrife, water hyacinth, giant reed and the mitten crab.

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FEEDBACK - CONTINUED

With regard to other CCMP priorities, watershed management activities — aimed at reducing runoff and protecting stream environments and wetlands — grew in San Jose, the Santa Clara Basin, Oakland and Sacramento. Programs to reduce pollution from urban and agricultural runoff burgeoned, with regulatory “Total Maximum Daily Loads” in place or underway for copper, nickel, mercury and PCBs in the Bay region, and for selenium, mercury, pesticides, boron and other contaminants in the Central Valley.

The S.F. Bay Regional Board began working on tougher new and redevelopment requirements to prevent runoff and erosion in 2001, while the Brake Pad Partnership focused on reducing copper in brake pads, California’s Zero Emissions Vehicle Program put several thousand electric vehicles on Bay Area highways — helping reduce pollution from energy and transportation systems — and the Estuary Project organized 10-12 erosion control workshops per year and distributed 82,000 maps to boaters encouraging use of shoreline sewage pump outs. In the Central Valley, the Regional Board began reevaluating a ten-year-old waiver exempting irrigation return flows and runoff from waste discharge requirements and shepherded one of the first discharge requirements ever imposed on agriculture (the Grasslands Bypass Channel project to reduce selenium-tainted runoff) into a second phase.

On the science front, fostering coordination among the myriad research and monitoring efforts continued to be an uphill battle, but all programs continued to work at it through CALFED, SFEI, IEP and a newly founded Bay Delta Science Consortium.

Last but not least, CALFED’s 2000 Record of Decision included requirements for a maximum allowable ratio of export rates to water inflow rates, and for the location and duration of the “x2” salinity standard, both moves advancing the CCMP priority aimed at promulgating baseline inflow standards. Likewise, the San Joaquin River Agreement of 2000 is experimenting with inflow and export rates to optimize flows for needy fish. Other flows for fish and the environment are now coming from the CVPIA’s “B2” water and CALFED’s fledgling Environmental Water Account.

Overall, the report card shows encouraging advances on several fronts, particularly wetlands and exotic species control, but indicates that CCMP implementation still has plenty of room for improvement. **ARO & CH**

HEALTH CHECK - CONTINUED

substrate to the level where vegetation can take over.”

Some of the substrate is so low that restoration via such processes as microbial decomposition is fast becoming the only option, according to the Department of Water Resources’ Curt Schmutte, referring to his work on subsided Delta Islands. “The only other option is to let these holes get deeper and deeper,” he said.

Further downstream, Bay restoration is now revolving around the *Ecosystem Habitat Goals* completed by scientists in 1999. Much work has been done in the North Bay, according to consultant Stuart Siegel, whose new inventory of North Bay restoration projects estimates 13,569 acres of tidal marsh has been or will be constructed in the near future — a big leg up on the Goals Project’s recommendation of 28,000 acres of this sub-region for optimum ecosystem health. A healthy ecosystem comes not only from bay wetlands, but also from healthy creeks and watersheds, according to the next speaker, the S.F. Estuary Institute’s Laurel Collins. Collins showed intriguing charts comparing levels of erosion, debris, sediment, vegetation and other factors along nine creeks draining into the Bay. Other speakers expanded on shoreline and watershed restoration efforts.

After lunch, the subject matter honed in on Suisun Bay — that pivotal zone of the Estuary that has one foot in the Delta and one foot in San Francisco Bay. A parade of speakers explored layer upon layer of Suisun science, from the impacts of long-term rises in spring salinity levels since the 1930s (a 5 ppt increase, according to speaker Noah Knowles) to changes in sedimentation rates from a historical depositional situation in which 3 million cubic meters (mcm) were being deposited in the Bay every year to more recent times when 1-2 mcm are eroding away annually, according to the Geological Survey’s Bruce Jaffe.

Other changes include revisions to the circulation model for the Bay and Carquinez Strait, said the Survey’s Jon Burau, who showed slides of where scientists now think the water goes, and how tides, currents and topography influence turbidity, food production and sediment movement. Indeed scientists now know the area of maximum turbidity is not necessarily where the salinity hits 2 practical salinity units (or “x2”), as until recently thought, but on the seaward side of sills such as as Garnet Sill adjacent to Grizzly



Bay, according to presentation by the Survey’s Dave Schoellhamer.

Two other scientists went on to explore the impact of the invasive Asian clam *Potamocorbula* on the Suisun Bay food web, and how contaminants affect the clams and the birds and fish that eat them. The Survey’s Robin Stewart, for example, showed a chart indicating a big increase in selenium concentrations in top predators like Suisun Bay sturgeon, which feed on the clams, between 1986 and 1999 but no increase for striped bass which feed on other organisms. On the heels of all this science was a multi-agency management presentation describing the current acrimonious debate over how much of Suisun Marsh should be kept as heritage waterfowl habitat and hunting grounds and how much converted to much-needed tidal marsh.

Day three of the conference dawned with snapshots of key biological components of the ecosystem — fish, habitat and flows. U.C. Davis’ Peter Moyle looked at the ever changing balance between native and alien fishes, but said both kinds of populations are in decline: “the peaks and valleys in their numbers are both getting lower” (see graph p.5). Habitat for the fish came next, with S.F. State’s Wim Kimmerer discussing characteristics of the fish-friendly low salinity zone in the Estuary, and how it moves with changing flows (x2), and the U.S. Geological Survey’s Larry Brown exploring the benefits of “shallow water habitat” (shoals, marshes, river flood plains) for fish. The recent push to create new shallow water habitat, and the use of this new habitat by alien species, has raised many questions about what kind of habitat is best to restore for natives. Brown says research on alien and native fish abundance in Suisun Marsh showed natives favored the small sloughs. “This helps us choose from the universe of shallow water habitat restoration options — we want the ones that look like small sloughs,” he said.

Other speakers talked about Pacific herring and the benthic community, and Water Resources’ Brad Cavallo closed with the proverbial big fish in the pond: salmon. He said we had to stop trying to manage them as “freeway fliers” speeding straight up and down the rivers, and start noticing that they’re more like “Sunday drivers” stopping off here and there in side channels and often moving back and forth. “Fish don’t follow the robotic life history we invent for them,” he said. “So we can’t just continue to focus on minimizing mortality at bottlenecks.”

PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

NOV
14
15
WEDS—THURS

SALMON AND STEELHEAD SYMPOSIUM

Topic: Restoration and management of anadromous fish in Bay Area watersheds. Progress of restoration activities in Bay Area watersheds; regulatory agency perspectives on local fish populations; restoration funding opportunities; resource agency recovery plans; restoration programs in local watersheds; successful strategies for restoring anadromous fish in urbanized regions.

Sponsor: Center for Ecosystem Management and Restoration

Location: Oakland Museum
www.cemar.org/symposium/symposium.html or (510) 420-1570

NOV
15
THURS

MERCURY MINES, RIVERS AND YOU

Topic: Mercury issues in the Sierra Nevada watersheds, including an overview of mercury contamination in the Bear and Yuba watersheds from historic mining; methyl mercury toxicity as it relates to fish consumption; mercury collection efforts in Nevada County; Tahoe National Forest Abandoned Mine Land Reclamation Program; mercury in San Francisco Bay sediments; regulatory issues associated with mercury; the mining landscape of the Yuba River and neighboring watersheds.

Sponsor: So. Yuba River Citizens League
Location: Nevada City
(530) 265-5961x201 or kayle@syrc.org

NOV
17
18
SAT—SUN

5TH STATE OF THE SACRAMENTO RIVER CONFERENCE

Topic: Issues impacting the overall health and well-being of the river, including: economics of riparian land acquisition; public and private lands management; habitat preservation science; water quality and public education.

Sponsor: Sacramento River Preservation Trust

Location: Red Bluff Community Center
Cost: \$5 - \$40
(530)345-1865

NOV
28
29
30
WEDS—FRI

WATER & POWER: WHO CONTROLS THE SWITCH?

Topic: ACWA Fall Conference on how acre-feet and megawatts both define California's future.

Sponsor: ACWA
Location: San Diego
www.acwanet.com



MEETINGS & HEARINGS

DEC
5
WED

LAKE MERRITT MASTER PLAN

Topic: Public meeting on city plans for Oakland's watery centerpiece.

Location: Sailboat House, 568 Bellevue, Oakland
(510)238-2290



HANDS ON

NOV
10
SAT

OWLS, SONGBIRDS & GARDENS

Topics: A family bird walk in the marsh; a search for owl clues; and what to plant to attract songbirds to your garden — three events at the South Bay wildlife refuges.

Sponsor: Don Edwards S.F. Bay National Wildlife Refuge

Location: Fremont & Alviso
(510)792-0222

NOV
15
THURS

RIVER CONSERVATION

Topic: Role and impacts of management in a meandering river system.

Location: Red Bluff Community Center
Sponsor: Sacramento River Partners
Cost: \$125
(530)345-1865

NOV
16
FRI

SACRAMENTO VALLEY RIPARIAN HABITAT BIOREGIONAL WORKSHOPS

Location: Red Bluff Community Center
Sponsor: Riparian Habitat Joint Venture
Cost: \$20, includes lunch
(916)329-7458

NOV
17
THRU

APR
14
SAT

CALIFORNIA'S VANISHING LANDSCAPES

Topic: Paintings celebrating California's natural scenic and biological diversity.

Sponsors: Oakland Museum & Nature Conservancy
Location: Oakland Museum
(888)OAKMUSE

NOV
17
SAT

FROGS, CANOES OR GLOBAL ACTION?

Topics: 3 Saturday Institutes of the Creeks, Wetlands and Watersheds Conference: *Calling all Frog Lovers* for an amphibian survey in Coyote Hills; *Canoes in Sloughs* in Arrowhead Marsh; and *Restoring the Earth - Think Globally, Act Locally*, hands on biotechniques for watersheds.

Sponsor: Aquatic Outreach Institute
Locations: East Bay
(510)231-5778

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www.delta.dfg.ca.gov/mittencrab/sighting.asp

Field Identification Guide for Non-Native Cordgrass
Invasive Spartina Project, Coastal Conservancy
(510)286-1015
spartina@scc.ca.gov

Protecting the Nation's Wetlands
National Academies
www.nationalacademies.org/headlines/#0809

San Francisco Bay Sediment Data Report, Water Year 1999
U.S. Geological Survey
water.usgs.gov/pubs/ofr/ofr01-100/

State of the Environmental Water Account Report
The Bay Institute
(415)506-0150
www.bay.org

TMDL Report for Selenium in the Lower San Joaquin River
Central Valley Regional Board
www.swrcb.ca.gov/rwqcb5/TMDL/selenium.htm

Tracy Fish Test Facility: Summary of Final Environmental Assessment & Initial Study
BurRec and Department of Water Resources
www.mp.usbr.gov/tftf
(303)445-2237

HEALTH CHECK - CONTINUED

Near the end of the conference, two old hands in Estuary management provided some interesting perspectives. Steve Ritchie, formerly of the water quality board and CALFED, looked at our management track record and said that the S.F. Estuary Project's 1993 consensus-based plan for the Bay-Delta (see *Feedback* p.5) "changed the way we do our business, moving from legislative to more collaborative efforts like CALFED." But the eloquent words that rang in the ears of many leaving the conference were those of U.S. EPA retiree John Wise: "It's time to move science into the public domain, to communicate the beautiful chaos of the Bay-Delta system to those around us, and to re-engage the public in long-term programs to protect the Estuary." **ARO**

CALFED CONTINUED

just a straight up-and-down floor vote on water projects that could have billion-dollar pricetags. The top priority projects listed in the CALFED record of decision are: raising the Shasta Dam, increasing storage at Los Vaqueros, an existing offstream reservoir in eastern Contra Costa County, and in-Delta storage, which would flood low-lying Delta islands to provide water storage.

While the CALFED record of decision talked only about "studying" these alternatives, Steve Evans of Friends of the River fears that the open-ended permission given by both the Calvert and Feinstein bills could result in massive increases in the scope of these projects without appropriate review. If recent Congressional history is any guide, a Congressional authorization of a new water project is likely to fly under the radar, attached as a rider to a much larger bill that legislators are under pressure to pass, such as a defense spending bill.

At press time in mid-October, Feinstein had finally worked out a compromise with Senator Barbara Boxer (D-CA). Boxer had

wanted Feinstein to eliminate not only fast-track authority but also the guarantees to Westlands. The new slimmed down compromise bill removes the Westlands guarantees but still short circuits the authorization process — something Washington insiders say the rest of the California delegation isn't likely to get behind.

Without a unified California delegation, the smart money says Senate Majority Leader Tom Daschle won't let CALFED make it to the Senate floor. The struggle between Westlands and CALFED may be a dealbreaker — or dealmaker. Although California appears heavily urbanized, 80% of the state's water still goes to farms, according to Barry Nelson of the Natural Resources Defense Council. "Alfalfa alone consumes more water than every man, woman and child and all of California's urban industries," says Nelson. "Around the West people have been saying the era of big dams is over, but in California the fight is very, very real."

Alfreda Sebasto of the Westlands water district agrees with Nelson on this point,

but on very little else. "What we are trying to do is bring balance back into CALFED. It was supposed to do that, but it has not, as illustrated by decreasing allocations for Westlands," says Sebasto.

When all is said and done, the biggest fights over CALFED are likely to be about money, not water (numbers banded about in bills and budgets for this round's federal share range from \$10-\$40 million).

Environmentalists have been promoting a "zero subsidy" stance on water. The CALFED record of decision called for an approximate three-way split of the program's \$8.7 billion pricetag among the federal government, the state of California and project beneficiaries.

CALFED, like the Endangered Species Act, may do better just getting funded without formal authorization by Congress. In the meantime, Interior Secretary Norton's stance on CALFED could be a bellwether for similar stakeholder initiatives undertaken by the Clinton administration and now needing implementation. **SZ**

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