

GOOGLE CREEKS

Anyone interested in urban watersheds and local history will be delighted with a new Google Earth tool, now available on the Oakland Museum of California's web site (museumca.org/creeks/GIS/index.html). Developed by Fugro WLA, the interactive map pulls together previously published creek and watershed maps for western Alameda County and adds historical layers and icons for watershed-related points of interest. "You can zoom around and view your watershed from any angle, and click data layers on and off," says Fugro's Janet Sowers. The historical view shows shorelines and wetlands as they were 70 years ago.

Sowers, who was recruited by the Museum's Christopher Richards to develop the original printed watershed maps, says the Google Earth map incorporates the San Francisco Estuary Institute's historical wetland data. The historical layers show beaches, creeks, salt ponds, sloughs, willow groves, and marshes. Historical creek information came from 1939 aerial photography, the Thompson-West historical atlas, and other sources. The modern layer highlights surviving daylighted creeks, plus flood control channels, culverts, storm drains, and reservoirs and other artificial water bodies. "We took the data from the printed watershed maps and zoomed in a bit with 2009 aerial photography," she explains. "We went through and hand-edited the visible stuff. That was a job, but very satisfying."

Blue dots identify points of hydrological interest, past or present. "An example would be De Anza Park in Hayward, historical because that's where De Anza camped and it's also the last natural stretch of San Lorenzo Creek before it turns into an engineered channel," says Sowers.

Sowers believes the new map is the first such treatment of an urban watershed: "I haven't seen anybody else doing this on Google Earth."

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ESTUARY NEWS

Bay-Delta News and Views from the San Francisco Estuary Partnership | Volume 20, No.1 | FEBRUARY 2011

SIGNALS FROM SENADOR

Most people visit the oak-dotted hills around the Senador mercury mine, now a county park, on warm dry days, but not Lester McKee. A geologist and water quality specialist with the S.F. Estuary Institute, McKee visits these Santa Clara County hillsides in stores. Ever since 2003, when heavy rainfall brought enough mercury down the Guadalupe River watershed and into the Bay to alarm water quality monitors, McKee has been working his way upstream with his bottles and baggies and sampling kits in search of the source. Or at least the biggest, most problematic, source in a watershed whose mines produced 38 million kilograms of "quicksilver" for world markets between 1846 and 1975. Based on all the available data, McKee



The Senador Mine reduction works, circa 1900, where miners separated quicksilver, aka mercury, from slag. Mercury comes from the red ore called cinnabar. Mexicans began mining the New Almaden district just before the Gold Rush. In its heyday, the district contained hundreds of miles of mining tunnels, several small towns and 1,800 homes for miners—all working to produce and export flasks of liquid mercury. The creek in the photo was one of more than 80 miles of streams that drained the mining area into the Guadalupe River watershed and San Francisco Bay. Photo courtesy History San Jose.

thinks Senador is one of the larger sources. And this winter, local water quality researchers and regulators got the go ahead to do more targeted stormwater sampling to nail down the really bad spots.

The landscape is not one that hides its movements in a storm, says McKee. In the heyday of the New Almaden mercury empire, miners made huge cuts in the hills, rerouted creeks,

graded slopes, dug tunnels, and built cabins, furnaces, elevator shafts, and chimneys. Then, in the early 1990s, engineers preparing for county park use moved things around again—grading trails and roads, demolishing structures, hauling earth and rock to landfills, and capping piles of mining debris in the five most contaminated areas.

Today's landscape remains immensely disturbed. "You can see and feel the whole place moving when it's raining," says McKee. "First little runs of water spring up all over the place, then concentrate into creeklets, then run down roads and over mine tailings piles, sinking into the ground one minute and then popping up again the next. When it's raining, you get such strong visuals on the interaction between water and soil it's not hard to imagine the pathways mercury takes down to the Bay."

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GRIZZLIES IN EL CERRITO

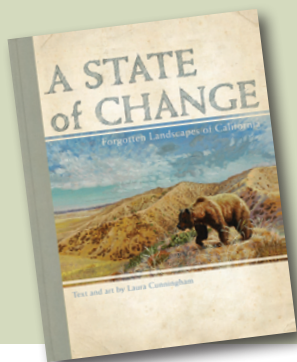
Laura Cunningham's *A State of Change/Forgotten Landscapes of California* (Heyday, 2010) is a unique contribution to California natural history. Lavishly illustrated with the author's own paintings and sketches, the book opens a window into the prehistoric past. It's the next best thing to a personal time machine. Here are Pleistocene herds of native horses and ancient bison, grazing on what is now the floor of San Francisco Bay; grizzly bears hanging out under an oak tree at the present site of El Cerrito Plaza; Yokuts goose hunters poling their tule boat in long-vanished Tulare Lake.

Unlike others who have written about natural California (Elna Bakker and John Schoenherr come to mind), Cunningham does not attempt region-by-region coverage. Her approach is more idiosyncratic: chapters deal with a selection of iconic species (grizzlies, oaks, elk, condors, salmon), ecosystems (grasslands, interior marshes), and processes (ocean regimes, fire.) There are surprising omissions: very little about redwoods, for example. But she covers a lot of ground and summarizes a huge amount of information in an accessible way. Building on the historical ecology studies of Robin Grossinger and others, she reconstructs what pre-contact ecosystems looked like, how they worked, and how they have changed.

Cunningham makes it clear that California has always been a work in progress, shaped by global climatic forces, local ecological cycles, and Native American practices. Historical ecology, she writes, reveals "patterns of natural variability in the landscape, a range of historic variation within

which we can work towards restoring the land."

JE



How I See It



SAVING THE ESTUARY, 2011

Lately I've been reflecting on how many bad practices related to the Estuary have been turned

around over the past few decades—the senseless filling of the Bay, the witches' brew of pollutants, the thoughtless discharge of dredge spoils, among others. The cadre of citizen stewards has grown, and collective progress in implementing the CCMP (Comprehensive Conservation and Management Plan for the Estuary) by agencies and citizens alike is impressive.

But I am hardly assured that this Estuary is saved and secure. For there are some unsettled issues and serious threats that could change the way the Estuary functions: In turn, the ways in which the Estuary benefits all of us would be lost. How can I be simultaneously optimistic and pessimistic? It is easy to do if I close my eyes to the unresolved threats while focusing on all the good things getting done—because the threats are seemingly intangible, ephemeral, intractable, and unmanageable. With eyes wide open, here are the issues I think we need to tackle.

Estuarine freshwater inflow and outflow: The State Water Resources Control Board issued a report in 2010 finding that twice as much water is being diverted as should be to protect trust resources. If you read or listen to any media, you know that the plumbing for even more Delta diversions is foremost on the minds of many. After 40-plus years of indecision, procrastination, endangered species listings, incredibly damaging water project operations, and too many successive failed efforts at ecosystem restoration, one can sense that something has to give. We are draining the Estuary's life blood. We need to make sure the state and federal governments address this issue with the best science and economic understanding available and that our legislators make decisions in the best public interest, not special interests. People are in control of this future, not nature.

Reluctance to rely on science and the scientific method: Without strong public demand for information and understanding via the scientific method, we will not get the information we need and deserve, and public

opinion will fail to appropriately shape public policy. The alternative understanding that we accept will be wrong—that we can mitigate having less water and flows for aquatic resources with a structure; a dam with a hatchery; and more diversions with better screens. Once again, people are in control of this choice.

Public science agency caving: Simply said, special interests and political forces will dictate a good bit of what public science agencies say and don't say for the benefit of advancing special interests. For decades we have been shorted by these agencies—the state and federal wildlife agencies and the State Water Resources Control Board primarily—and misled by what they have said and haven't said and especially by laws and regulations they have ignored and/or not enforced. All too often politics have spoken for resources, cloaking policy as science. People are in control of this behavior too.

What is the public's role, then, in saving this Estuary? Should everyone drop the constructive things they are doing and focus on the few big remaining threats? To the contrary: Each and every action up and down the watershed is needed. We need to champion and honor everyone who contributes to the cause, regardless of scope. We need to embrace and support restorationists, recreationists, advocates, activists, educators, researchers, reporters, those who sue to enforce existing protection laws, recyclers, legislators, artists, etc.—anyone who contributes to the mission of protecting and restoring the San Francisco Estuary. But think and act a bit more the issues I have raised above in the coming year. Just because a problem seems "intangible, ephemeral, intractable, and unmanageable" does not mean you cannot make a difference in the outcome. Think Sylvia McLaughlin, Kay Kerr, and Esther Gulick.

Richard Morat is a retired U.S. Fish and Wildlife Service biologist. For 16 years he managed the San Francisco Bay Coastal Program. A long term member of the Estuary Partnership's Implementation Committee, he now serves on the Board of the Friends of the Estuary.

The Friends and the Estuary Partnership deeply regret the passing of Kay Kerr on December 18, 2010. Kay Kerr was one of the three insightful and determined women who fought the fill of San Francisco Bay.

SIGNALS FROM SENADOR

(CONTINUED FROM PAGE 1)

The main problem is erosion. Mercury, a heavy metal, mostly sticks to sediments. In most chemical forms it's fairly innocuous. But biological processes in creek fringes and wetlands can convert inorganic mercury into methyl mercury, which is much more easily absorbed by algae, zooplankton, fish, and birds. Methyl mercury "biomagnifies" at a dizzying rate as it moves up the food chain. In Almaden reservoir, the USGS's Jim Kuwabara measured levels in bass more than two million times higher than levels in the water. He and his colleagues showed that these game fish at the top of the reservoir food chain were accumulating unhealthy amounts of mercury, just like marine fish. Indeed so much mercury has made its way downstream from various sources that state health advisories not only warn against eating too much Bay-caught fish, but also against consuming any fish from the Guadalupe River.

While it's easy to measure traces of mercury coming out of a discharge pipe or smokestack, pinpointing the sources of mercury running off the landscape with rainfall takes some doing. McKee has done his legwork, and now sees a distinct signal from Senador. Describing what comes down the Guadalupe River to a sampling site on Highway 101, he talks in terms of hours after the first rainfall. In hours 1-3, he sees the signs of runoff from urban areas lower down in the watershed—namely "trash and reedy plants." By the 4th hour, water from the upper open hills and ridges starts to arrive at the Highway sampling point. This water carries more eroded sediment and brings branches and woody debris. "Mercury goes from 0.5 – 1.2 parts per million of sediment in the water in the first hours up to an average of 2.5 ppm later." By hour 6, water from Loma Prieta Ridge and Mt. Umunhum (Native American for "hummingbird") is dominating the runoff. At times, McKee has measured mercury loads in sediment in this runoff emanating from around the mining area of more than 10 times greater than that from the urban areas below.

"We think McAbee Creek, in the heart of the Senador area, may be one place where we can spend a lot of money and get a big bang for the buck in terms of load reduction," he says.

Pinpointing the areas around the creek of biggest risk to the health of the Bay will involve evaluating three basic factors, according to Xavier Fernandez, who is managing the project for the Estuary Partnership. The Partnership is helping the SF Bay Regional Water Board enforce state limits ("TMDL") set on the amount of mercury humans can allow to enter the Bay every year. With the help of SFEI and various consultants, they hope to rank sites around the creek based on susceptibility to erosion and mercury concentration, while avoiding damaging a sensitive native flower with a purple daisy-like bloom called smooth lessingia. "If erosion and mercury factors are both high, that's a place where we will want to do remediation," he says.

Avoiding the lessingia may be difficult, because this species is an early colonizer of roadcuts, rocky outcrops, and steep hillsides with little vegetative cover—all common in the mining area. "We're hoping to do erosion control in ways that restore, not destroy native vegetation," says Fernandez. "We plan to select and collect plant species from nearby water courses on the same ridge, and seed them at our remediation sites."

The remediation project will also likely involve roadwork to direct runoff into vegetated areas, rather than straight down the roadside ditch. Fernandez also foresees some bioengineering work on McAbee Creek itself, which is head-cutting into a contaminated slope and fighting to meander, causing more erosion.

These seemingly localized projects could prevent mercury from compromising the enormous ecological benefits of the South Bay salt pond project at the base of the Guadalupe River watershed, and reduce water quality and wildlife impacts Bay-wide, according to Carrie Austin at the Water Board. "We've had the practice of hazardous waste remediation and we've had the practice of ecological restoration, and here we're trying to combine them, so this a restoration site, not an engineering contract."

As part of a county park near a major urban area, New Almaden is a bigtime destination for local hikers, runners, and equestrians. "If we do a good job of preserving the ecological integrity of the site, visitors will get a positive view of what we can achieve for everyone's benefit," says Fernandez.

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FLYING HIGH

One way to gauge the health of the Estuary is to look far above it—on the bridges that span it and the tallest buildings in the cities perched on its edges. Peregrine falcons—with only two known pairs statewide in 1970—are making a comeback, thanks to the ban of DDT in 1972 and help from scientists and citizens. Today there are 30 pairs in the Bay Area alone—from San Jose to San Francisco, the Richmond shoreline, Alameda, North Bay, even downtown Berkeley and Oakland.

"Peregrines are important indicator species for the health of ecosystems," says UC Santa Cruz Predatory Bird Research Group's Glenn Stewart. "If the shorebirds are doing well in the Estuary, so are the peregrines." (See page 6.)



Photo by Glenn Nevill

"What's really changed in the last 10 years is that more and more of these falcons are showing up either to perch or breed on urban structures," says Stewart. "They see our buildings as cliff faces."

As the peregrines rebound and funding shifts to needier species, Stewart has recruited citizen scientists to watch fledglings during the spring at two nest box locations—in San Jose and San Francisco—and this past December, to help conduct the first Bay Area-wide winter point count survey to get a snapshot of wintering populations each year. "People are thrilled to sit in a peregrine falcon nest territory," says Stewart.

Stewart says when he put up the first nest camera in 2000, the site in Redwood City (at Oracle) was the one site where there was a pretty good chance of seeing a peregrine falcon. "It was unimaginable then that today we'd now have 50 places to see them."

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Planning

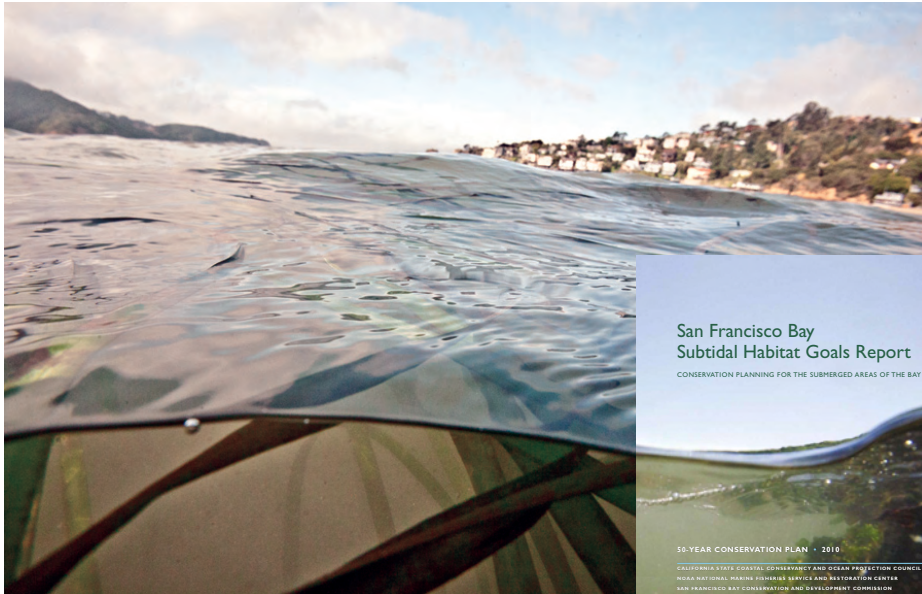
UNCOVERING THE HIDDEN BAY

Over the past few decades, oodles of energy, elbow grease, and dollars have helped protect and restore the wetlands fringing the Bay, ensuring that these giant pickleweed and cordgrass-coated sponges will continue to attenuate floods, filter pollut-

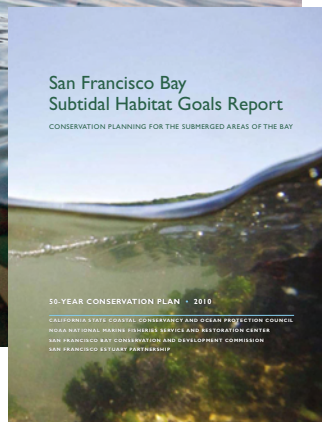
Subtidal Habitat Goals Report—shines the spotlight on these secret submerged features by presenting 263 goals, objectives, and actions for protecting, restoring, and conducting scientific research on them. It also quantifies and maps their extent. The interagency effort was led by BCDC, the Coastal Conservancy, NOAA, and the San Francisco Estuary



Over 33,000 derelict pilings can be found throughout the Bay. While they offer surfaces for creatures like mussels and oysters to attach to, the creosote they were treated with can be toxic.



Eelgrass beds shelter salmon and other fish in the Bay; their blades collect diatoms and other food for invertebrates, which are in turn eaten by fish and seabirds. Photos by Greg Lorenz.



Native oysters attach themselves to rocky habitat.

Partnership; with more than 75 contributing researchers, and non-profit and agency staff.

Says the Coastal Conservancy's Marilyn Latta, "Subtidal habitat has been the missing link and the hidden piece of the Bay that people know the least about. Many people drive over it on bridges or live in the Bay Area because of the Bay but never get to see what lies beneath the surface. The habitats on the bottom of the Bay and in the water column link to all of these important species that we care about—sea lions, harbor seals, sturgeon, salmon, Dungeness crab, and many endangered species. But we don't often think about what they're living in, what they're eating, what they depend on."

One section of the report presents ideas for designing subtidal habitat restoration projects to integrate with wetlands, using bioengineering techniques and structures that create "living shorelines"—softer, more natural shorelines that provide more habitat and resilience than the riprap that lines much of the Bay. Although these techniques have

been pioneered in other parts of the country, they are just beginning to be tested in parts of the Bay (see "He Built it and They Came," June 2009 ESTUARY NEWS).

The subtidal report is one of three "Goals" reports; the other two target Baylands (completed in 1999) and uplands (to be completed later this year). Says the Estuary Partnership's Judy Kelly, "The model for this new subtidal work is the well-regarded *Baylands Ecosystem Habitat Goals Report*, completed in 1999 by a consortium of public agencies including the Partnership. The *Baylands* report established science-based goals for tidelands at the Bay's edge and has provided a firm vision of what our Baylands were once like—and can be in the future." Kelly says the Baylands goals have both guided and influenced a myriad of planning and restoration projects around the region. "Together, the subtidal, Baylands, and uplands habitat goals reports create a complete vision of what good planning and restoration can achieve as we continue, project by project, to make progress on protecting and restoring our Estuary and its watersheds."

Adds Latta, "This is the first time there's been a region-wide, long term plan for subtidal habitat protection in the Bay. Many restoration practitioners and resource managers haven't had access to basic data about where these habitats exist, what functions they have in the Bay, or the interconnectedness they have with other habitats. Now for the first time they can find all of that in one place and on one web site." The report is available in full as a pdf or downloadable by chapter at www.sfbaysubtidal.org or www.sfestuary.org; it is also available on disk or in hard copy by contacting Latta.

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ants, and offer much needed wildlife habitat. Meanwhile, other types of habitat that are partially or fully hidden beneath the Bay's surface—mudflats, shallow shoals, sand, rocky islands, beds of eelgrass, seaweed, and native oysters, and even some artificial structures like old piers and docks—provide some of the same benefits. A hot-off-the-press document—the *San Francisco Bay*

PERMEABLE IN PUYALLUP

Seattle and Portland have long been known as green streets/green stormwater leaders, but another, smaller Pacific Northwest city is now stepping up to the plate with an innovative residential rain garden program. Working with a non-profit and resource conservation district and funding from the state Department of Ecology, the city of Puyallup, a suburb of Tacoma, has helped residents install 20 rain gardens in clusters in three different neighborhoods over the last year and a half. The driver behind the project is Clarks Creek, home to five species of salmon but also to lots of urban pollutants, and low oxygen levels. Instead of being shunted straight into the storm drain system and the creek, runoff from roofs and other hard surfaces is directed into and absorbed by the rain gardens. In conjunction with the rain gardens, restoration work also took place on tributaries to the creek.

Approached by a Seattle non-profit, Stewardship Partners, Puyallup city planners provided some funding to install the first cluster of rain gardens, which were so popular with residents and functioned so well, they decided to create more of them—plus create additional permeable areas. Says Puyallup's Mark Palmer, "We're taking it one step further now by replacing the impervious gravel in the alleys behind the homes with porous pavement. We're taking 100% impervious surface and making it 100% pervious." Palmer says the alleys flooded frequently, causing maintenance woes for the city, and that by replacing impervious surface with permeable pavement the city will save money in the long term. Another cost savings is that homeowners

are required to maintain the rain gardens: each resident signs a maintenance pledge that is passed on to future owners when the property is sold. Palmer says this is important since each rain garden represents a public investment of \$2,000 to \$3,800 per site.

To install the projects, the city partners with the Pierce Conservation District's Stream Team. Stream Team staff meet with homeowners to perform site visits and percolation



Puyallup, Washington is creating clusters of residential rain gardens (one example, before and after.) Photos courtesy of City of Puyallup.

tests, plus explain the process and benefits of installing rain gardens. Once things are set in motion, a landscape designer from Stewardship Partners steps in to help with location and plant selection; then the Stream Team coordinates volunteers to plant the gardens. Says Stream Team's Jayme Gordon. "Instead of a demo here and a demo there, we wanted to do 5 to 7 in a neighborhood to have more of a cumulative effect." The city and its partners plan to install more rain garden clusters in 2011.

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FISH-FRIENDLY CAR WASH



Photo courtesy of Jonathan Koehler.

Fish probably aren't foremost in most folks' minds as they suds up their cars on the blacktop. But some city planners—and car wash owners and associations—are starting to think downstream. In Puyallup, Washington, which boasts several thriving salmon streams, the city is encouraging residents to wash their cars on lawns. They also offer a free fish-friendly car wash kit that residents can check out and return—the kit includes a stormwater drain insert and a pump for diverting dirty water to the sewer system or a grassy area.

Another easy way to help fish is for people to take their car to the car wash, yet that idea is not always popular in an economic downturn, says the Western Carwash Association's Ross Hutchings. According to the Association of California Water Agencies, about 40% of Californians wash their cars at home on a monthly basis—adding up to about 160 million home washes per year. ACWA estimates that each wash uses, on average, 100 gallons of potable water. Potable water contains chloramines, known to harm fish (see "Deadly Disinfectant," October 2010 ESTUARY NEWS), and the soap, grease, and tiny pieces of metal and rubber from dirty vehicles degrade local streams and other receiving water bodies. Charitable "parking lot" fundraisers, too, usually send most of their suds untreated into storm drains and local creeks. To address the problem, Western Carwash Association members have begun offering non-profits and schools the opportunity to "rent a bay for the day" or to buy car wash coupons at a discount, which the organization can then sell at a profit to raise funds.

Hutchings says that while taking your car to the car wash may seem expensive, the 100 gallons of water used per home wash can also be hard on the wallet—especially during droughts—as well as on water quality and supply. "Once it's gone, it's gone," says Hutchings. "At the car wash, it's recycled and re-used while the soap and sediments are filtered out and treated."

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FILTRATION BY FUNGUS

Once again, Seattle may be ahead of the curve in innovative approaches to stormwater management. The city is considering enlisting a local mushroom to filter pollutants from urban surface runoff.

The idea of mycofiltration has been around for a while. Mycologist Paul Stamets, founder of Fungi Perfecti and author of *Mycelium Running*, used the king *stropharia* mushroom to remove bacteria from livestock pasture runoff and residential graywater. Others have experimented with *stropharia* in laundry-to-landscape systems. The Seattle initiative would use another species, the pearl oyster mushroom, for mycofiltration in a park at the end of 24th Street in the Ballard district, near the Salmon Bay waterway.

"We found a native strain of pearl oyster mushroom at a local park in Ballard and cloned it," says Elizabeth Dunigan of the non-profit Groundswell NW. "We'll use that strain for mycelium mats to install in bioswales and excavated rain gardens." The mycelium—the threadlike subterranean part of the fungus—is being cultivated at a farm on Vashon Island. Jute-and-straw mats inoculated with mycelia will be sandwiched between layers of amended soil. It's expected that petroleum contaminants washing off streets and other impermeable surfaces will be broken down into harmless fungal sugars by the mycelia.

The Ballard project, which is still a couple of years away from implementation, has "quite a bit of community support," according to Dunigan. Groundswell NW is working with the Seattle Public Utilities Commission to include mycelium installations in rain gardens as part of its Rainwise program.

Dunigan says the oyster mushroom is less prone to hyperaccumulate heavy metals carried by stormwater than other candidate species. The fruiting bodies will be unsafe for human consumption, though: "We're drafting a proposal to the city to harvest any fruits and test them, and planning on signage to discourage folks from harvesting and eating the mushrooms."

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Monitoring

FEATHERED CENSUS



Western sandpiper by Bob Lewis.

Shorebirds, like other groups of birds, are excellent indicators of environmental health. One vehicle for tracking that indicator is the Pacific Flyway Shorebird Survey, conducted by PRBO Conservation Science (PRBO) and its partners Audubon California, San Francisco Bay Bird Observatory (SFBBO), USGS, and U.S. Fish & Wildlife. The survey is done during the winter, when multitudes of migrant shorebirds forage in San Francisco Bay's mudflats and salt ponds.

Comparing surveys done during 1990-92 and 2006-08 shows that winter shorebird populations in San Francisco Bay appear to be stable or rising. "Some species are increasing and some decreasing, but more are increasing than decreasing," says Julian Wood of PRBO. Trends differ within Bay regions for some species. Others were more uniform: the least sandpiper count rose throughout the Bay, while western sandpiper and dunlin numbers fell in all regions.

"Overall, wintering shorebirds seem to have shifted from the Central and South Bay to the North Bay," Wood adds.

The survey results indicate that the Bay is still an important foraging ground for wintering shorebirds. To relate local numbers to overall shorebird abundance across the Pacific Flyway, however, more studies will need to be done. "By conducting surveys in both San Francisco Bay and at other key shorebird wintering locations throughout the Pacific Flyway, we will be able to distinguish whether

changes within San Francisco Bay represent local shorebird population changes or indicate a larger problem with shorebirds on the Pacific Flyway," suggests PRBO's Matt Reiter.

Shorebird habitats around the Bay changed between survey periods. Salt ponds in the North Bay were transformed to mudflats, and salt pond levees in the South Bay were breached as part of the South Bay Salt Pond restoration project. The levee breaches have resulted in the initial creation of tidal flats as the habitat transitions from salt pond to tidal marsh. The number of shorebirds foraging in these areas is predicted to increase in the short term, but that number is likely to decline as tidal flats are replaced by tidal marsh.

In addition to tallying numbers of birds, the survey also helps scientists learn which parts of the Bay the birds are using most frequently. "We want to know more specifically what parts of the Bay they are using, and which habitats so we can be sure we have enough and the right types of habitat for them," says Reiter. Future environmental changes, especially from restoration and management of salt ponds, will need to be monitored closely to gauge the effects on shorebird abundance.

This winter the Pacific Flyway Shorebird Survey became an annual event. "Lots of effort goes into restoring, acquiring, and enhancing habitat around the Bay. These shorebird surveys help us tell managers how best to do that to ensure the populations are stable," says Wood.

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Dunlin by Bob Lewis, one of the winning entries in the Estuary Partnership's 2011 Birds of San Francisco Bay calendar contest.



CONFERENCES, WORKSHOPS, EXHIBITS & TOURS

**FEBRUARY 3
THURSDAY**

SOUTH BAY SCIENCE SYMPOSIUM 2011

TOPIC: Research Supporting Restoration of the South Bay

LOCATION: US Geological Survey Campus, Menlo Park

SPONSOR: South Bay Salt Pond Restoration Project

www.southbayrestoration.org/science/2011symposium/

**FEBRUARY 12
SATURDAY**

13TH ANNUAL BAY AREA CONSERVATION BIOLOGY SYMPOSIUM

TOPIC: Conservation in the Matrix: Ecological and Social Implications of Conservation Outside Protected Areas

LOCATION: International House, UC Berkeley

SPONSOR: Society for Conservation Biology and others

www.bacbs2011.org

**FEBRUARY 16
WEDNESDAY**

GREEN STREETS/CLEANER STORMWATER FORUM

TOPIC: Project designers, engineers, planners, and others will discuss projects that have gone in the ground to date around the Bay and elsewhere, and lessons learned. Hear concerns and perspectives about the challenges of retrofitting urban areas; design innovations; how to move these projects forward in the Bay Area.

LOCATION: El Cerrito City Hall

SPONSOR: San Francisco Estuary Partnership
RSVP to Debbi EgterVan Wissekerke (510) 622-2304



Curb cuts send street runoff into stormwater planters, El Cerrito.

**FEBRUARY 16-18
WEDNESDAY-FRIDAY
BAY AREA KING TIDE INITIATIVE**

TOPIC: Preview Sea Level Rise with Winter "King Tides"

LOCATION: Bay Area shorelines

SPONSOR: San Francisco Bay National Estuarine Research Reserves

www.sfbaynerr.org/ctp/kingtides

**APRIL 19-20
TUESDAY-WEDNESDAY**

GREEN CALIFORNIA SUMMIT

TOPIC: Green Paths to Economic Recovery

LOCATION: Sacramento Convention Center

SPONSOR: Sacramento Municipal Utility District and others

www.green-technology.org/gcsummit



HANDS ON

**MARCH 1
TUESDAY**

TOPIC: Dockwalker Training

LOCATION: Village West Yacht Club, Stockton

SPONSOR: California Department of Boating and Waterways

www.coastal.ca.gov/ccbn/dockwalkers.html#Trainings

Also March 26, San Francisco Bay Area location to be determined. Contact Vivian Matuk for details. vmatuk@coastal.ca.gov

Editor's Note:

"Putting the Brakes on Copper" (ESTUARY NEWS, December 2010) implied that brake pad wear on Bay Area vehicles releases an amount of copper equivalent to \$2 million worth of pennies into the local environment every year. In fact, this is an annual statewide amount (1.3 million pounds of copper.) We regret any confusion that may have resulted.

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NEW VIDEO PODCASTS: WWW.SFESTUARY.ORG/PODCAST

GREEN STREETS AND INFRASTRUCTURE

Cut the Curbs to Claim the Rain!:

How can cities green their streets, making them more livable and attractive, while helping San Francisco Bay? Two El Cerrito city pioneers and two scientists from the Estuary Institute explain how green stormwater treatment systems help slow and filter polluted water before it reaches local creeks and San Francisco Bay.



El Cerrito stormwater planters.

LESS SPRAY/BETTER BAY

Greener Pest Control: The Estuary Partnership's Athena Honore and EcoWise Certified's Ted Shapas talk about the importance of integrated pest management and offer tips for homeowners and building managers.

Controlling Ants in Your Home: Ant pesticides are so toxic that even tiny amounts sprayed in and around your house can kill the microscopic creatures at the base of the food chain in creeks many miles downstream. This report offers environmentally-sound methods to deter ants from entering your home.



The Estuary Partnership's Athena Honore talks ants.



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