

BALLOON BACKFIRE

The poignant story of a red balloon trailing a little boy through the streets of Paris it was not. On March 2, THQ, a Southern California company, released 10,000 red balloons over downtown San Francisco to promote a new video by Gamestop. The rain and winds quickly blew the balloons into the Bay, causing a viral uproar on social networking sites and blogs.

"Releasing thousands of balloons into the air was an irresponsible act," says Save The Bay's Amy Richard. "The bulk of those balloons ended up in San Francisco Bay, where they can seriously threaten wildlife and sensitive habitat. Plastic pollution from urban runoff is one of the biggest threats to the Bay, and this balloon stunt only added to that pervasive pollution that harms our natural treasure."

THQ's Tyrone Miller said that "cleaning crews were sent out yesterday immediately after the release. This stunt was managed by a third party, who secured all the permits, and guaranteed that everything was environmentally sound." When asked how many balloons were retrieved, Miller said none, and that no balloons had landed in the Bay.



Photo by Mathew Grimm.

THQ also released a statement that the balloons were made from a "100% organic product"—latex—and "are 100% biodegradable." When asked how long said biodegradation would take, Miller cited a study by the balloon industry concluding that latex balloons take about six

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ESTUARY NEWS

Bay-Delta News and Views from the San Francisco Estuary Partnership | Volume 20, No. 2 | APRIL 2011

RAILS ON THE RUN

Talk to the professionals who deal with invasive spartina and the California clapper rail, and you'll hear a mixed bag of opinions.

According to the California Coastal Conservancy's Invasive Spartina Project (ISP), the prolific plant will, in the long run, choke the tidal marsh channels where the endangered rails forage. Others, while agreeing that invasive spartina is bad for mudflat-dependent shorebirds, believe it provides prime habitat for clapper rails. East Bay Regional Park District biologist Steve Bobzien points out that eastern and Gulf Coast clapper subspecies thrive among the same species of spartina that has invaded San Francisco Bay.

The short-run problem is that spartina eradication eliminates cover that the birds have relied on for shelter from predators, high tides, and extreme weather, and natural revegetation is taking longer than anticipated. Surveys by the Park District and ISP have detected sharp declines in clapper rail populations in areas treated for spartina. PRBO Conservation Science's Len Liu estimates that Bay-wide numbers have fallen from a five-year average of 1,425 in 2005-08 to a current population of around 800. The decrease has been particularly noticeable at Arrowhead Marsh in San Leandro Bay, which may have had the Bay's densest population of clappers in the past decade. That's where Save The Bay has stepped in to plant native species by hand on a mudflat where invasive spartina was removed.

"Arrowhead is a special case because they're using different spartina treatment methods," says Jen McBroom, who coordinates ISP's rail surveys. "Half the marsh got a chemical mow, a sublethal application of the herbicide Habitat to halt seeding and flowering but keep it alive for clapper rail habitat. The other half was fully treated for three years and has only a few sprigs of spartina left."

Despite the partial treatment, EBRPD's winter high tide visual counts show clapper rail numbers at Arrowhead, which peaked at 112 in 2008, dropping to 40 in 2010 and 35 this year. (Other agencies and organizations, including the California Department of Fish and Game, PRBO, and ISP, do call count surveys.) Bobzien says the two methods produce consistent results. He says clapper rail numbers are down in the entire San Leandro Bay marsh complex, which includes other treated sites. And it's not just clappers: the more common Virginia rail and sora have also declined, Virginias from 23 in 2007 to zero in 2011, soras from 84 to 11.

That pattern was repeated at Colma Creek (also known as San Bruno Marsh), on the San Francisco peninsula. "Before invasive spartina, there wasn't much marsh there," says Mike Casazza of the US Geological Survey, who has done radiotelemetry studies of clapper rails in the South Bay since 2007. "Most of the historic marsh had been filled in for commercial development, leaving fringe marsh and mudflat. Spartina was able to grow out on to the mudflats." Rail expert Jules



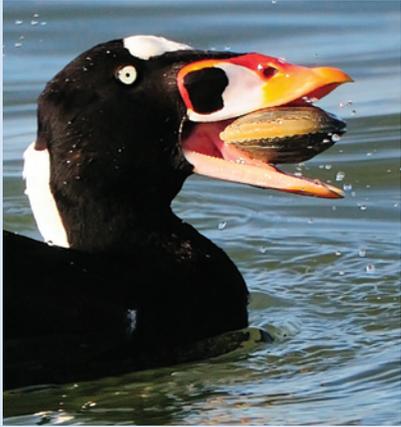
Photo by Verne Nelson.

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DUCK DENSITY



Surf scoter by Verne Nelson.

San Francisco Bay hosts thousands of migratory waterfowl every winter. How many ducks can the Bay support? US Geological Survey biologists Susan De La Cruz and John Takekawa have been working with the San Francisco Bay Joint Venture and the nonprofit group Oikonos to determine carrying capacity for three diving duck species—surf scoter, greater scaup, and lesser scaup—in San Pablo Bay. The results will be used to translate continent-wide population objectives set by the North American Waterfowl Management Plan to the local level. NAWMP's continental goals include a population of 6,300,000 for greater and lesser scaup combined, with no target set for surf scoter. Current Joint Venture goals for the Bay, based on the 1989-90 Midwinter Survey, are 139,214 for scaup and 61,248 for scoters, but these may be unrealistically high. All three species are declining for unknown reasons. Habitat changes on their far-northern breeding grounds, migration routes, or winter quarters may be involved.

De La Cruz says her team pulled together a decade of USGS radiotelemetry data on scaup and scoter movements, involving over 200 birds. They also used a Department of Water Resources survey of the exotic overbite clam (*Corbula amurensis*)—the primary prey of all three species—in San Pablo Bay. Jim Lovvorn of Southern Illinois University contributed a computer model that can calculate the

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Pollution

HUFFMAN TO BEEF UP OVERSIGHT OF FUEL TRANSFERS

While the impacts from last year's Gulf oil spill linger in the environment and human memory, one California lawmaker is determined to make sure a similar disaster does not sully California's coast—or the Estuary. Last year, Assemblymember Jared Huffman (D-Marin) introduced AB 234, which would have required ships transferring fuel in the open waters of the Bay and other harbors to deploy boom in advance; the bill would also have raised the cap on the per-barrel fee from 5 to 6 cents. Although it passed through the state legislature, then Governor Schwarzenegger vetoed the bill. Undaunted, Huffman has just introduced AB 1112, trying another tack at ensuring the best possible protection for the Bay and other state waters.

AB 1112 raises the per-barrel cap from 5 to 8 cents and requires OSPR to assess vessels engaged in bunkering and lightering operations to determine the highest risk transfers, whether they take place at anchor in open water or at a refinery refueling dock. It also requires OSPR to increase its monitoring and inspections during those high risk transfers by 2% annually, until a minimum of 10% of all identified high risk transfers are being routinely inspected.

According to Jackie Dragon of Pacific Environment, the bill's sponsor, "The most recent data indicates that OSPR inspected 1.8% of bunkering operations in 2010. However, we learned that no operations at anchorage were inspected—and that is completely unacceptable. It is imperative that when you are transferring oil over open water, particularly in San Francisco Bay, there needs to be better oversight."

Ultimately, the bill requires that a minimum of 50% of all high risk fuel transfers taking place at anchor in the Bay—and in other harbors—be monitored. Dragon says another spill occurred in Long Beach Harbor this past November when the Chinese-flagged bulk carrier, the *Da Tang*, was transferring fuel during calm conditions. "Skimmers were not allowed on site until two hours after the Coast Guard was notified of the spill, allowing the oil to flow freely away from the ship in the dark of night," says Dragon.

Huffman says "everything is still on the table" and that he is still considering a pre-booming requirement for vessel-to-vessel

transfers during certain conditions. Says Huffman, "I am still interested in pre-booming, and I think that in many situations it is a practice that really should occur, but we're also interested in all the different types of things that can go wrong and how we can do a better job of tightening up oversight and prevention. It may be that we can't afford to have Fish and Game wardens on every vessel-to-vessel transfer. But maybe there are strategies that can help in the absence of a live warden—for example, videotaping; you've got a video recorder on the front of every police car now to document what happens at every traffic stop; there are any number of important events that are now recorded when we need a clear unimpeachable record of what happens. Vessel-to-vessel transfers are just as important. There were over 6,000 incidents in recent years involving vessel-to-vessel transfers; this is one of our areas of greatest exposure."

Dragon says she expects AB 1112 to be honed in coming months "to make sure we are truly achieving the best achievable protection. Bunkering and lightering operations are going to involve spills in the future. We have work to do; this is the bill where we're going to get at that."

Huffman says he is also working with the State Lands Commission through AB 1112 to improve the safety of offshore platforms. He expects AB 1112 to fare well this year—and hopefully, this time to be signed by the Governor. "With the oil spill response fund headed toward insolvency, it is critical that we keep that fund in the black so we can do monitoring, inspections, and prevention," says Huffman. "I don't think Governor Brown wants our state's oil spill prevention and response system to grind to a halt because we didn't have the political guts to keep it solvent." **LOV**



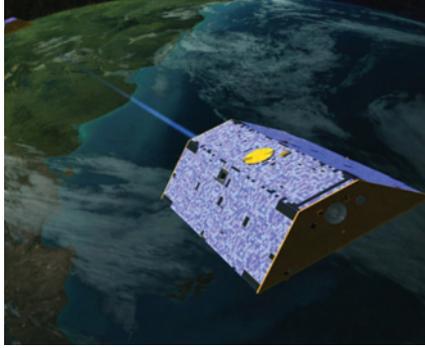
Common loon in Richmond's Marina Bay by Peter Krottje, one of the winning entries in the Estuary Partnership's 2011 Birds of San Francisco Bay calendar contest. Loons were among the species harmed during the *Cosco Busan* spill.

RACE TO THE BOTTOM

The squeeze is on. California's water supply is going down and demand up. Here and there rivers are running dry more often, leaving fish with nothing to swim in except the pages of new lawsuits. Delta planners at the controls of the great switching yard of California's water supply are weighing big infrastructure changes and praying the next big quake is still a few years out. Meanwhile orange trees in the breadbasket of the world stand topped next to billboards announcing "Congress-created dust bowl." While the guy on the street points to the rainy skies, the experts watching snow pack, tracking climate change and monitoring runoff—and the farmers pumping from deeper and deeper in their wells—are all nervous.

"In the water community, we don't talk about the fact that the system is finite and over-appropriated openly, publicly. These elephants have been in the room for a long time, but somehow we've managed to avoid them," says The Nature Conservancy's Leo Winternitz, a veteran water regulator. The State Board recently guesstimated that on paper it had issued water rights for eight times more water than actually exists in the system, and new satellite data suggests that in the last five years we've over-drafted Central Valley aquifers by 15 million acre feet. "It's time to talk about water supply reliability cold turkey," he says.

While the estimates of "paper water" over-allocation are alarming, there is scant solid data to compare them to real wet water on the surface. The science behind what's going on with water underground, however, recently took quantum leaps in accuracy. The new measurements come from two satellites chasing each other around the globe. The satellites aren't taking pictures of Earth's green and blue beauty, they're only interested in each other, or more specifically, how far apart they are from each other. The distance is usually about 220 kilometers, says hydrologist Jay Famiglietti of the University of California, Irvine. When that distance changes, it means the gravity pull of the Earth on the two orbiting satellites has changed. And the only thing on the planet moving around in large and heavy enough quantities, and at fast enough speeds, to change the global gravity field every month is water. "It's all about mass distribution," says Famiglietti. "When the



Hydrologists are using satellite data to measure groundwater overdraft. Photo courtesy of NASA.

lead satellite encounters a mass change like a big storm, it gets pulled down toward the anomaly, then drifts back into orbit, and the same thing happens to the second satellite, causing a measurable difference in the gravity field."

Sound complicated? Maybe, but the results are pretty straightforward. When Famiglietti first added up 78 months of satellite measurements of total water mass changes, and subtracted on-the-ground data for reservoirs, snow, and soil moisture, his mouth dropped. The bottom line suggested such a big decline in groundwater he thought he'd made a mistake—but he hadn't. The Sacramento and San Joaquin basins lost more than 20 cubic kilometers of groundwater between 2003 and 2010—the third most rapid decline in the last 50 years and enough to fill two thirds of Lake Mead.

You don't have to be in space to see evidence of groundwater loss. Just drive down Highway 5 and a keen eye will pick out subsided land levels, fallowed fields, dry riverbeds. So much groundwater pumping been going on around the Cosumnes River, for example, that the lower 36 miles has been losing water to the underlying aquifer 356 days a year, according to a 2006 study. When more water percolates down than runs through, all you get is a dry channel.

Channels have also been running dry more than average up on the Scott River—a Klamath tributary and major salmon producer—prompting the Pacific Coast Federation of Fishermen's Associations and the Environmental Law Foundation to complain. Last October, they filed a lawsuit arguing that the Public Trust Doctrine was being violated by groundwater overdraft around the river, which is leaving public resources such as endangered coho salmon swimming in thin air.

The plaintiffs make the argument, like other experts, that groundwater and surface water are one, and should be managed as

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HOPE FOR HERRING

It must have seemed like old times to Point Richmond residents as the Pacific herring came inshore to spawn. At its peak, February's run attracted an estimated 20,000 gulls and an uncounted number of diving ducks. "California sea lions and harbor seals, their fur covered with herring eggs, were joining in the feast," reported birder Eric Lichtwardt.



A gull plucks herring eggs from a pier.

The run brought the last urban fishery in the United States back into action for the first time in two years. Thirty boats went after the fish, whose roe is prized in Japan. "This is a year unlike any I've seen," Ernie Koepf of the *Ursula B* told the *Contra Costa Times*. "This is an epic year for harvesting." The 1,900-ton quota was filled early.



Herring eggs in *Gracilaria*, a macroalgae.

Although estimates won't be released until later in April, Department of Fish and Game biologists agree that this was a good season. "Field staffers feel it's going to be a pretty high biomass," says John Mello. Most of this year's spawn-

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BEAUTY AND THE (TRASH) BEAST

Redwood City's Redwood Creek—named for the tall evergreens that once lined it—is a typical urban stream, making its way to the Bay through culverts but popping above ground now and again,



adorned by some remnant redwoods and willows. But in many of those open stretches, trash collects in meanders, clogs riffles, and blights the landscape. On a rainy Saturday in February, 60 stoic volunteers braved hail pellets and sleet to tackle trash in the creek, the winner of Save The Bay's 2010 "trash hot spot" contest, near where it enters the Bay. The 2010 hot spot list included 225 creeks and shoreline areas identified by cities around the Bay as overrun with plastic bags, cigarette butts, fast food containers, old tires, and more. Runners-up for this dubious award included San Jose's Coyote Creek, the Hayward Regional Shoreline, Oakland's Damon Slough, South San Francisco's Colma Creek, Sunnyvale's Guadalupe Slough, and Fremont's Mission Creek.

Redwood Creek won with nearly 700 votes, says Save The Bay's Jessica Castelli. Save The Bay hosted the contest on its web site and promoted it through social networking and blogs, asking the

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Imperiled

VOLUNTEERS AT RISK AGAIN



Volunteers use GPS to map riparian vegetation.

Everyone knows that the Estuary needs enough freshwater rumbling in from its rivers to keep it alive and healthy. But its health is also increasingly tied to the blood, sweat, and tears of the thousands of volunteers who clean trash and invasive plants from its shores, test its water quality, and restore its watersheds. In Marin, the Bay Institute's STRAW (Students and Teachers Restoring a Watershed) program—began in 1992 by fourth graders as a classroom project to save the endangered California freshwater shrimp—has grown to rely on 2,000 teachers, students, parents, and other community members to put over 30 stream restoration projects in the ground every year, according to the Institute's Laurette Rogers. To date, more than 28,000 students have participated in over 300 restorations on rural and urban creeks, restoring over 21 miles of creek banks, says Rogers.

Save the Bay's community-based restoration program was created in 2000 and has used more than 50,000 youth and adults in hands-on restoration projects at eight sites around the Bay, according to the group's Jessica Castelli. This year, over 5,000 volunteers will donate 20,000 hours to restore 120 acres of Bay habitats by hand. "That's the equivalent of 10 full-time employees," says Castelli. Save the Bay also has a huge contingent of citizen volunteers who regularly tackle trash "hot spots" in creeks (see side story, this page).

In the South Bay, on Alameda Creek, volunteers have donned hip waders every year to help carry threatened steelhead past barriers in the stream when needed, and to conduct regular creek cleanups (today they work hand-in-hand with resource managers to transport the fish). Farther west, the

Stevens & Permanente Creeks Watershed Council relies on volunteers to monitor water chemistry, collect benthic macroinvertebrates for assessing aquatic habitat, map riparian areas, remove invasive plants and revegetate with natives, lead nature walks, and conduct community outreach, among other many other tasks. Says the Council's Joanne McFarlin, "I have over 50 different volunteers working with me in an average month, with many of those volunteers working several hours several times during the month. Our volunteer hours totaled more than 3,700 last year. We would cease to exist without volunteers."

Yet efforts like these could grind to a halt if legislation—AB 587, introduced in February by Assemblymembers Richard Gordon (D-Los Altos) and Warren Furutani (D-Long Beach), and SB 644 by Senator Loni Hancock (D-Berkeley)—to amend the Labor Code does not pass this year. The bills extend an existing law that exempts volunteers from having to be paid for participating in public works projects. The law was first passed in 2004 after the Department of Labor took the position that unions would be threatened unless volunteers working on publicly-funded projects (including many stream and wetland restoration projects) were paid prevailing wages (See "Use a Volunteer/Go to Jail?" ESTUARY NEWS, February 2004).



Volunteers identify aquatic invertebrates.

"We first got wind from creek restoration groups around the state who reached out to us saying that the Department of Industrial Relations had decided that any public works projects—anything with public financing whether bond or local money—fell under the requirement to pay prevailing wages to anyone doing the work. That completely shut down a lot of restoration projects as well as other projects using volunteers—like beach cleanups—until we clarified the existing statute," says Hans Hemann, Hancock's Chief of Staff. Hancock's bill clarified the

law so that volunteers could in fact be used to do volunteer work without having to be paid prevailing wages. Her bill was passed with the caveat that it would sunset in three years because there were still concerns from laborers and building trades, according to Hemann. A subsequent 2008 bill carried by Assemblymember Furatani extended the sunset to 2011; this year's legislation would extend it five more years. "The building trades and laborers are concerned; they have the same concerns that they did years ago," says Hemann.

Says the State Building and Construction Trades Council's Cesar Diaz, "As an organization representing union construction workers, prevailing wage is a core issue that provides for quality of life, the middle-class lifestyle. It's proven to be very beneficial to the industry with delivery of construction on time and on budget. There are constant attacks on prevailing wage that we very much fight against." Diaz says his organization is remaining neutral on the bills and is content to see yet another sunset provision. "We want to make sure that everyone is still working under the rules provided by the legislation. At this point there aren't any problems with volunteers. I do know there are a lot of concerns from some of our affiliates regarding who is certified on what type of equipment, for example, a backhoe, safety issues associated with that."

The California Watershed Network's Michael Wellborn says the non-profit and community-based groups he works with are hugely conscientious about using skilled laborers to operate heavy equipment. "From our perspective working with a coalition of land trusts and watershed organizations around the state, big active groups doing a lot of work, we are 100% supportive of hiring skilled people to do skilled work. That is especially true of heavy equipment operators. Every non-profit group I've worked with is not even hiring beginners; they're looking for journey-level skilled operators to do the work that's on the restoration plan. The skill is worth the money, and non-profits will happily pay for that kind of skill to get reliability and dependability. We are very supportive of paying good fair wages for people that are hired; those people are a part of our community also."

Wellborn says there is no reason why heavy equipment operators and other professionals cannot work side by side with

volunteers—it happens all the time without any problems. But the need to revisit the labor code with a bill every few years is driving him—and the groups in his network—crazy. The Watershed Network must rely on donations to work on these bills every few years when "we'd rather be using that money to restore a creek," says Wellborn. "It's really frustrating for the small community groups that are trying to do baby steps in their communities, whether it's brush-clearing on a hiking trail or a beach cleanup or a scout troop learning how to stick willow branches into the ground to start rehabbing a stretch of creek. This is a real mom and apple pie issue: Californians want to contribute, especially in these times of economic crisis." Figures for the cost of every bill that gets introduced in the state legislature vary, but a February 17, 2011 article in *The Desert Sun* reported that each bill can cost as much as \$20,000 to research and process.

Wellborn says he knows of no violations of any prevailing wage requirements or safety issues and hopes the final legislation will be something everyone can live with. "We have a good stepping stone here to move forward working with legislators and labor and for everyone to provide good honest information that should help settle any animosity. Otherwise, if things go sideways we'll come up against this deadline at the end of the year that will put all these restoration efforts throughout California at risk." The Stevens & Permanente Creeks Watershed Council's Mondy Lariz is even more succinct. "This could be disastrous for us."

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Volunteers collect macroinvertebrates. Photos courtesy Stevens & Permanente Creeks Watershed Council.



public to vote for one of seven selected hot spots and agreeing to adopt and clean up the winning site. The February event removed 1,200 pounds of trash from the creek, with volunteers combing the banks but also taking to canoes and kayaks to capture floating debris.

Event organizer Allison Chan says the bulk of the trash consisted of plastic bottles and Styrofoam pieces. "What this proves on the ground is that these are the types of trash that are most impacting our creeks. That's why Save The Bay is focused on plastic bags and polystyrene: that's what you find out there." With one exception: an intact "Beauty and the Beast" snow globe, the most unusual object found, says Chan. Most importantly, she points out, the community is developing greater awareness of and interest in a variety of environmental issues—including the fight over the nearby "Saltworks" development (see "Infill or Bay Fill?", June 2009 ESTUARY NEWS) as well as the trash epidemic in the Bay's waterways.



Photos courtesy Save The Bay.

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ers were hatched in 2008, just after the *Cosco Busan* spill that contaminated many spawning sites. “Our feeling is that it was such a strong year class that it can support a fishery if managed properly for several years,” Mello adds.

Some herring fishers reported the fish were avoiding oiled sites. Mello says he has heard this anecdotally, but hard data is lacking: “I don’t think we’ve had enough spawning events since the spill to judge that this is the case. The herring do jump around. They don’t hit all the known spawning areas every year.”

Along with rocky substrates and man-made structures like piers, female herring deposit their eggs on eelgrass and *Gracilaria* algae. The health of the fishery clearly depends on that of the subtidal and intertidal ecosystems.

“We’re quite happy we’re seeing a rebound in the population,” says Fish and Game’s Ryan Bartling. Fisheries activist Zeke Grader agrees: “I was feeling pretty good when they decided to open up the fishery this year.” But he adds a cautionary note: “One thing that’s troubling in all this is that Prince William Sound had good returns for four years after the Exxon Valdez spill and then never saw the fish again.”

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JE

Watch a video of the herring run at <http://bukaymedia.com/videos/PtRich/Herring/herrun.htm>



Gulls arrive for the feast. All photos for this story by Michael Bukay.

RAILS ON THE RUN

(CONTINUED FROM PAGE 1)

Evens estimated a population of 48 clapper rails in 2005, three years before spartina treatment began. ISP surveyors had no clapper rail detections there in 2009 or 2010. At least one bird must have hung on until this winter, when the last radiotagged bird was taken by a red-tailed hawk.

Although reluctant fliers, clapper rails are capable of long-distance movements. Two birds tagged at Colma Creek were tracked to Santa Venetia Marsh in Marin County. “They do disperse naturally, though irregularly and rarely,” says Evens. “They’ve shown up on the Farallons, in Golden Gate Park, and on Market Street in downtown San Francisco.” Most of Casazza’s subjects, though, either stayed put or made only short hops.

Have rails from Arrowhead, Colma, and other treatment sites emigrated to new locations? Last year PRBO documented an increase in clapper rail detections in South San Francisco Bay (Bair and Greco Islands, Palo Alto) and San Pablo Bay. It’s unknown whether this reflects dispersal or local breeding success.

In fact, there are a number of known unknowns, to use a Rumsfeldism, about the Bay’s clapper rails. “All we have is a snapshot in time,” says Liu. “We have limited information about breeding success in different marshes, whether they’re successfully producing young or being hammered by predators, whether the eggs are nonviable because of contaminants, how the weather affects them.” It’s difficult to obtain permission for intrusive research on this endangered species. Also unknown: the genetic structure of the Bay’s population. “We took genetic samples and sent them to the USGS lab,” Casazza says, “but the analysis hasn’t been funded yet.”

What little we’ve learned about population dynamics is not encouraging. A US Fish and Wildlife Service study of reproductive success, with a small sample size, found that only 45% of monitored nests hatched even one egg. Predators, mostly Norway rats, destroyed a third of the monitored eggs. Flooding takes a toll; a remote camera at Arrowhead recorded eggs floating away. The year-to-year survivorship of adults has fallen from the 49-52% range reported by Joyce Albertson in the early 90s to 35% in the recent USGS study.

“During high tides with no vegetative cover, the birds are extremely exposed either to the elements or to predation,” says Bobzien. He has seen peregrine and prairie falcons, northern harriers, red-tailed hawks, and gulls take rails at Arrowhead. Casazza’s group has put 10 “floating islands,” structures like miniature duck blinds, there as high tide refugia; all of them are being used.

The floating islands can be only a stop-gap measure, though. That’s why Save The Bay is trying to speed the pace of revegetation at the treated half of Arrowhead. Save The Bay’s Laura Wainer says they piloted the effort last year with 100 gumplant (*Grindelia stricta*) seedlings. Among the lessons learned: Canada geese eat gumplant. Covering the plants with plastic cages kept them safe. “We’re growing all the plants in our Martin Luther King Shoreline native plant nursery, trying to acclimate them to the same salt levels as the actual marsh” she says. This year, 200 seaside arrowgrass (*Triglochin maritima*) and 300 gumplant seedlings are going in. “*Triglochin* has similar structure to spartina, with really tall lateral leaves, Wainer explains. “We’re experimenting to see what species will survive in the marsh: what we can plant and where we can plant it.”

Wainer calls Save The Bay’s partnership with the Park District “a great collaborative effort.” Her organization was already monitoring New Marsh, an adjacent restoration marsh, and other nearby sites: “It seemed to make perfect sense to connect all our restoration work in the area. We have the resources, and the Park District and the Spartina Project needed someone to push it forward.”

Cogswell Marsh, restored in the 1980s, underscores the importance of native vegetation. “Cogswell had a lot of invasive spartina but also a good stand of pickleweed,” says Casazza. “The rails had something to go to.” The ISP has planted gumplant there for nesting habitat. Significantly, clapper rail numbers at Cogswell have remained relatively stable since 2008.

“If you restore their habitat, the clapper rails will hopefully be OK,” sums up Liu. “They recolonize restored areas readily. The question is whether we can build it fast enough.”

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CONFERENCES, WORKSHOPS, EXHIBITS & TOURS



HANDS ON

**APRIL 9 AND MAY 14
SATURDAYS, 9:30 AM-12 PM**

CREEK RESTORATION

TOPIC: Help restore two stretches of urban creek. Learn about native plants, gardening tips, and meet your neighbors. Tools, gloves and refreshments provided. RSVP for groups of 5 or more.

LOCATION: Corner of May Rd. & Santa Rita Rd., El Sobrante CA

SPONSOR: SPAWNERS; The Watershed Project (510) 665-3538 or femke@thewatershedproject.org

EARTH DAY EVENTS

**APRIL 16
SATURDAY, 9 AM- 5 PM**

BAY FESTIVAL

TOPIC: Environmental education; hands on activities, including the Estuary Partnership's environmentally-friendly ant control workshop

SPONSOR: City of Berkeley

pdonald@cityofberkeley.info
www.cityofberkeley.info/marina

**APRIL 16
SATURDAY, 10 AM- 4 PM**

EARTH DAY CELEBRATION

TOPIC: John Muir Birthday
SPONSOR: John Muir Association (JMA) and the National Park Service (NPS)

LOCATION: John Muir National Historic Site, Martinez, Ca
Visit the Estuary Partnership's display at the festival!

**Listen to and subscribe for free to our
new Estuary Report video podcasts at
<http://sfestuary.org/podcast/>**

**APRIL 13-15
WEDNESDAY-FRIDAY**

CENTRAL VALLEY WATER TOUR

TOPIC: See the State Water and Central Valley Projects.

LOCATION: Tour starts in Bakersfield; travels up the east side of the San Joaquin Valley; includes the San Joaquin River.

SPONSOR: Water Education Foundation (916) 444-6240

www.watereducation.org

**APRIL 29-MAY 1
FRIDAY-SUNDAY**

CALIFORNIA GEOGRAPHICAL SOCIETY CONFERENCE

TOPIC: 62nd annual conference: speakers, workshops, tours

LOCATION: Tri-County Fairgrounds, Bishop, CA

SPONSOR: California Geographical Society

www.csun.edu/~calgeosoc/meetings/bishop/home

**MAY 4-5
WEDNESDAY-THURSDAY**

FLOOD MANAGEMENT TOUR

TOPIC: Sacramento's flood management system

LOCATION: Tour begins and ends in Sacramento

SPONSOR: Water Education Foundation

www.watereducation.org

**MAY 7-JUNE 4
PADDLE TO THE SEA 2011**

TOPIC: Three-week festival celebrating the Tuolumne River

LOCATION: Groveland to San Francisco Bay

SPONSOR: Tuolumne River Trust

www.tuolumne.org

RACE TO THE BOTTOM (CONTINUED FROM PAGE 3)

such. "California is one of the few states that does not regulate groundwater, which, given the importance of water here, is stupidity of the first class," says the Fishermen's Associations' Glen Spain. "As a result, every county has an interest in taking as much water for their county, and for their inhabitants, as possible before it all goes away. It's literally a race to the bottom, as wells have to be dug deeper and deeper. There is only so much water. All the congressmen in the world cannot make more rain."

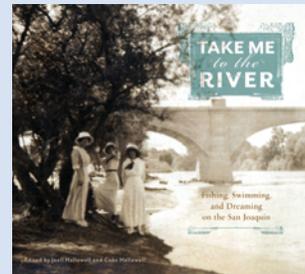
Spain hopes his lawsuit will establish that aquifers are public resources, and should be managed as such, instead of for narrow interests. "This is a bread and butter issue for the commercial salmon fishing industry. As streams all up and down the coast get dewatered, salmon populations crash, and it puts our people out of work,"

he says. Spain sees Assemblymember Jared Huffman's (D-Marin) groundwater monitoring bill, soon to be reintroduced in the California legislature, as an important first step to more sustainable management and state oversight.

In the meantime, Famiglietti has done some back of the envelope calculations that suggest that if we keep pumping the way we are, we'll encounter serious problems within 50-100 years. That may seem like a long time in politics, but to a hydrologist it's nothing. "We can't be shortsighted and forget that we have a major water crisis, perhaps even of epic proportions affecting national security, ahead of us," he says. As the billboard on Highway 5 reminds us, "Food grows where water flows."

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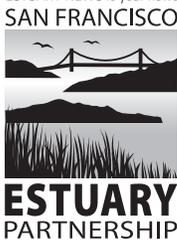
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BALLOON BACKFIRE

(CONTINUED FROM SIDE PAGE 1)

months to degrade (a study by the Marine Conservation Society says it can take up to a year). Either way, that leaves plenty of time for wildlife to ingest pieces of latex, says the San Francisco Bay Regional Water Board's Bruce Wolfe. "Will it biodegrade before a bird thinks it's food and eats it? Will it biodegrade before it gets stuck in an eelgrass bed or washes up on a beach or the rocks surrounding the Bay? I doubt it. This is similar to our concern over plastic bags and trash of all types that reaches creeks or the Bay—they'll likely break down into smaller pieces over time, but, at best, they are still a nuisance and, at worst, have serious habitat impacts."

Wolfe says his agency is still in the process of an investigation that will "determine whether to take enforcement action." **LOV**

DUCK DENSITY

(CONTINUED FROM SIDE PAGE 2)

prey density required for the ducks to forage profitably. That in turn builds on Loworn's laboratory studies of the energy costs of diving, which differ among species. "Scoters are foot- and wing-propelled," De La Cruz explains. "Scaup are foot-propelled only. That coupled with body size can result in different energy costs and profitability thresholds. Scoters require a higher threshold prey density."

Loworn's model can also incorporate the role of fish, including sturgeons and bat rays, and crabs as competitors with the ducks for molluscan prey. "We want to know how much of the *Corbula* they take is the size ducks would eat so we can determine what remains for the ducks," says De La Cruz. "Based on data collected by the Department of Fish and Game, we believe we can get estimates."

De La Cruz calls the San Pablo Bay project "definitely just a starting point to try to get good numbers to help us set new population goals for the Estuary. In the future we'd like to expand the model to other subregions of the Bay."

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