



# Spartina DISPATCH

Quarterly Newsletter of the San Francisco Estuary Invasive *Spartina* Project

## Director's Note

### Greetings!

Welcome to the first edition of the "Spartina Dispatch," the ISP's new publication for keeping partners and stake-holders up to date on important *Spartina* news. We hope you find it interesting and informative.

As we prepare for our fourth season of regional *Spartina* control, we have much cause for optimism. Over the last three years, ISP partners have made a big dent in the invasive *Spartina* population; we are killing it much faster than it is growing back! At the same time, we still face significant challenges in locating and removing all remaining invasive *Spartina*, and we must continue to be ever mindful of the endangered California clapper rail and other environmental factors.

Even so, with the continued dedication and hard work of the ISP partners, we are clearly well on our way to freeing the Estuary of aggressive, invasive *Spartina*, and restoring a healthier ecosystem.

Peggy Olofson

## Inside

*Spartina* moves north to Petaluma

Catching the sea drift on seeds

Treat early, treat well

New herbicide source

Water quality report



Photo by Jen McBroom

This California clapper rail gets checked over before being outfitted with a hightech backpack.

## Radio rails

### Wireless tracking of endangered bird may fine-tune *Spartina* control program

The California clapper rail, once abundant in San Francisco's estuary, is the subject of a new study designed to learn more about this endangered subspecies. With loss of 85 percent of its natural marsh habitat since the 1800s, only a few thousand birds remain here, with none surviving at other California coastal marshes.

But a new study launched last November by the United States Geological Survey (USGS) may reveal more about this elusive

bird's habitat needs, and guide ISP efforts at invasive *Spartina* eradication in areas where the rails live. ISP is participating in the project, which uses telemetry, or remote tracking of rails by radio frequencies. The study is expected to span a year to a year and a half.

"We're looking for ways to minimize impacts to rails while maximizing the ability to control an invasive species," commented USGS wildlife biologist Mike Casazza, one *continued on page 2*

## Rails

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of the principal investigators of the study.

In January and February, USGS and ISP staff caught 30 of these shy marsh birds at three Bay Area marshes and outfitted them with transmitter “backpacks.” Since their release, the birds are being tracked twice daily by radio. Rails are being tracked at Colma Creek Marsh, north of San Francisco Airport, Cogswell Marsh at Hayward Regional Shoreline, and Faber-Laumeister Marsh in East Palo Alto.

In the long run, the non-native *Spartina alterniflora* will likely harm the rails as the dense weed chokes out the tidal sloughs and channels where they feed. But in the meantime, many rails use the plants for nesting and cover from predators.

As a result, large-scale *Spartina* removal could cause temporary problems for the rails in some places. So at two sites, including Colma Creek, ISP has adopted phased eradication plans, allowing native plants to reestablish enough cover in one area before routing the aggressively spreading weed in an adjacent area. And at Cogswell, control efforts have been restricted to a little more than a third of its 56 acres of the weed.

ISP’s concern about the clapper rails is not new. For the past three years the ISP has conducted “call surveys” at project sites to estimate rail numbers and locations. This year, as in the past, ISP staff visited sites at dawn and dusk during rail breeding season, listening for the characteristic “clatter” calls of individual rails or the duets of mates or rival males.

Yet information provided by such surveys, while valuable, is limited. The telemetry study is expected to fill in important gaps.

“It will help us to see how the clapper rails move within the San Francisco Bay marsh as we begin to treat portions of it, and to determine whether we need to consider additional measures to reduce impacts of *Spartina* treatment,” explained ISP director Peggy Olofson.

In contrast to call surveys, a telemetry study can identify individual rail locations more precisely, whether the birds are feeling talkative or not, and can track movements of specific individuals.

“We’re asking what’s their home range and how does it differ between types of marshes?” said ISP biologist Jen McBroom. “If they disperse, where do they go? How much space do they need?”

The sites under study were chosen, in part, to reflect different marsh types, said

McBroom. At Colma Creek, *Spartina alterniflora* turned mudflats into a thick *Spartina* meadow. At higher elevation is Cogswell marsh, which has man-made channels and a mix of invasive *Spartina* and native pickleweed. Faber-Laumeister, on the other hand, has a diverse mix of native plants, including *Spartina foliosa* and natural channels.

The study’s first step, catching the birds, was its most challenging, especially at Colma Creek.

“They’re really tough to catch. You get close to them, but can’t get them quickly enough with all the vegetation in the water,” said Toby Rohmer, a UC Davis graduate student researcher working on the project. “We’d go out ... at the highest tide and chase around trying to herd the birds as best we can.”

Sometimes using nets from boats, more often simply wading through the frigid waters, occasionally up to their necks, and trying to catch them in their hands, USGS and ISP staff spent some long, tiring days in the marsh.

At Cogswell and Laumeister, things were easier. Less dense vegetation permitted the use of small animal traps along channels that are the rails natural highways. USGS biologist Cory Overton re-engineered the traps by adding fishing line triggers sensitive to the rails lighter weight.

By March the tracking, mostly by Rohmer and Overton, began in earnest. Already the study has produced some exciting news.

In April, two birds at Colma Creek disappeared from the tracker and were feared lost. In mid-May, to everyone’s surprise, USGS researchers tracking gulls by airplane picked up the signal of one of the birds in Marin, an unexpected 27 miles away from its home site.. Rohmer subsequently located the bird on the ground and confirmed that it was alive and well.

“This may be the furthest distance ever recorded of California clapper rail movement,” said McBroom. “This is just the be-



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The San Francisco Estuary Invasive *Spartina* Project is a coordinated regional effort to address the rapid spread of four introduced and highly invasive *Spartina* (cordgrass) species in our bay.

Established by the California State Coastal Conservancy in 2000, the project is progressing toward its goal of eliminating this aggressive introduced species, working in close cooperation with its many partners around the Bay. This newsletter helps keep our partners informed about project news and activities.

Current funding for the Invasive *Spartina* Project comes from the California Wildlife Conservancy Board and the California State Coastal Conservancy. Previous major funders include the CALFED Bay-Delta Program, United States Fish and Wildlife Service, and National Fish and Wildlife Foundation.

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ginning of the study. In the year to come, we hope to find out more exciting information like this.”

## Imazapyr goes generic

A new generic version of the aquatic formulation of the herbicide imazapyr is now available. The international agricultural chemical company Nufarm markets the new product under the name Polaris™ AQ. The herbicide is distributed by UAP and Wilbur Ellis among others.

According to the product label, the concentration of imazapyr in Polaris AQ is identical to that in Habitat® (BASF), the

herbicide product used by ISP partners for the past two treatment seasons. Like Habitat, Polaris AQ is labeled for estuarine use and may be broadcast aerially by helicopter. It currently costs about six percent less than Habitat but may not come with the technical support that the BASF staff can provide.

For more information, contact your herbicide distributor.

# Spartina hybrids found on Petaluma River

Invasive *Spartina* was found along the Petaluma River last fall, the first sighting of the weed in Sonoma County. Until then, the closest known patch lay 16 miles south, making this discovery the northernmost location of the non-native plant now in the Bay Area.

After several surveys and DNA analyses, ISP has confirmed three areas where hybrid *Spartina* is growing, from the Route 101 bridge in southeast Petaluma to Lakeville Marina. (See map.)

“Our biggest concern is the threat to Petaluma Marsh, one of the largest prehistoric marshes in the Bay,” said ISP Monitoring Manager Ingrid Hogle. “Our second concern is how did it get up this far, because it’s pretty remote from other infestations in the Bay. And how do we prevent this kind of thing from happening elsewhere?”

Botanist Gene Cooley, of the California Department of Fish and Game, first raised the alarm when he noticed some plants at a riverside park in southeast Petaluma that looked suspiciously like invasive hybrid *Spartina*.

After alerting ISP and other environmental groups, Cooley organized a tour last November to survey the area and collect samples. Soon after, another CDFG botanist reported non-native *Spartina* nearby, and ISP conducted more extensive field surveys this spring.

As a result, ISP confirmed the presence of the hybrid weed a mile from downtown Petaluma near Haystack Landing and Shollenberger Park and in two small outlier

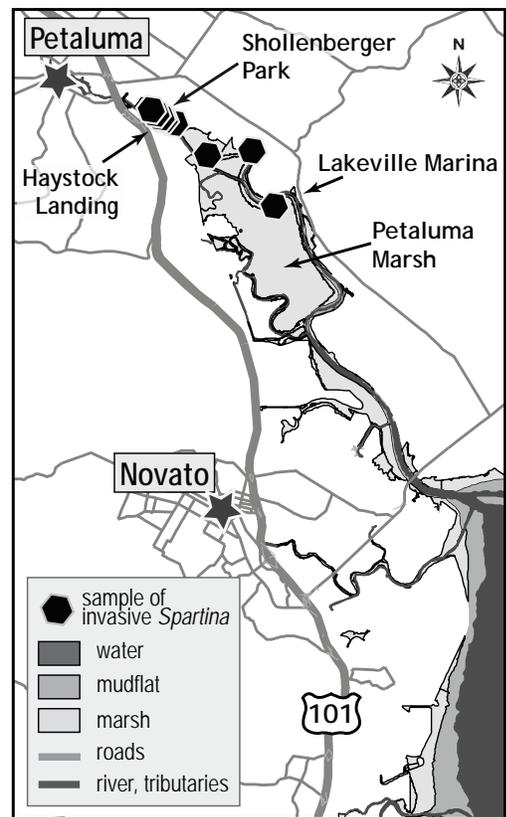
patches further downstream, but upriver from Lakeville Marina.

“The good news is that samples from the Petaluma Marina were negative,” said Hogle. Since the marina supports a lot of small boat traffic, the weed’s presence there could have allowed further far-ranging spread as seeds hitch rides to other locations. Unfortunately, however, genetic analysis did confirm the hybrid at Haystack Landing where barges dock.

Hybrids of the invasive *Spartina alterniflora*, which are crossed with native *Spartina foliosa*, can vary enough in appearance that some of them can be difficult to distinguish visually from pure native *foliosa*, which grows naturally along the river. This may explain why field surveys along this same stretch of the river several years ago revealed no apparent infestations. While ISP has always used DNA sampling in its work, the new finding underscores its importance for reliable identification of those hybrids with less distinctive physical traits.

After the plants mature, ISP will conduct more surveys and DNA analyses at potential infestation sites. ISP field operations staff will partner with Friends of the Petaluma River to organize control efforts along the river and has already prepared site specific plans for eradicating the weed.

“By having those in place and ready to go once the plants are at the stage for peak field ID, which starts in late June, all hybrids found can be controlled immediately,” said



Hogle.

As for how the plants got there, Hogle said there are three likely scenarios. One is boat transport, anything from barges to kayaks. Or seeds could have been eaten by birds and deposited in their droppings. The third possibility is that seeds were carried by tides.

## Early herbicide use most successful

Recent ISP surveys of *Spartina* sites treated with the herbicide imazapyr in 2006 show good results overall, with the earliest applications most effective, reported ISP Field Operations Manager Erik Grijalva.

The *Spartina* control program began with aerial spraying in July that resulted in 85 to 100 percent reduction in the invasive weed on treated stands.

“Since that represents the bulk of our treatment last year, it shows good results and a high degree of control of the weed,” said Grijalva.

Ground-based applications of the herbicide, which typically occurred in September and October, were only 40 to 80 percent effective. However, these efficacy surveys

also showed that the few ground-based applications undertaken in July and August revealed better results. Similarly, aerial spraying conducted later in the season was less effective.

At the present time, sites with endangered clapper rails receive the late-season treatments. Herbicide application and access for other control methods are prohibited during the birds’ breeding season, from February through August. (See Telemetry article.)

Aerial applications are conducted from helicopters spreading the herbicide from 30 foot booms 10 to 20 feet above the marsh. On the ground, the herbicide was applied by truck, backpack, boat, and amphibious vehicle, depending on terrain and accessibility.

ISP has also tried digging and covering *Spartina* in the Corte Madera Creek Watershed. However, this method was found to

be very time and labor intensive, and only appropriate in very small infestations where overall disturbance of the marsh could be contained.

Imazapyr works slowly and results are not obvious until the following year. ISP staff begins looking for results in January, but it isn’t until later in the spring both qualitative and quantitative analyses become more reliable.

In May, and again in July, ISP records marsh conditions with photographs taken at established points at key marshes. This information is added to that gathered by ISP’s inventory monitoring field surveys on the ground from July through September.

ISP plans to provide a detailed report on treatment efficacy of the 2006 season in July, which will be available on our Web site.

# Drift cards launched to track seed spread by water

It may not look like a message in a bottle, but a “drift card” delivers a similar cry for help to its finder.

Over 1,000 bright yellow wooden “cards” released by ISP staff this spring are designed to find out how invasive *Spartina* can spread by water throughout the San Francisco Bay. They hope that public response to the cards’ message — a request to report where the cards washed up — will make monitoring and treatment more efficient and effective.

*Spartina* spreads in several ways, by pollen in the air and underground propagules, but the drift cards target seed dispersal by water, with a potentially far-flung reach.

“We’re releasing the cards in areas that are known to have high density populations of invasive *Spartina* to try to mimic the natural dispersal of seeds that potentially could be distributed throughout the Bay,” explained Field Operations Manager Erik Grijalva.

They began releasing the 4-by-6-inch cards from seven different sites around the Bay this past March. (See map.) At each site cards are released in three batches several weeks apart.

The cards are bright and visible to entice curious members of the public to pick them up and read its message — a brief explanation of the study and a request to tell ISP where the card was found and its code

number. The code signifies where and when the card was released. People can telephone ISP or fill out a simple online form at the ISP Website.

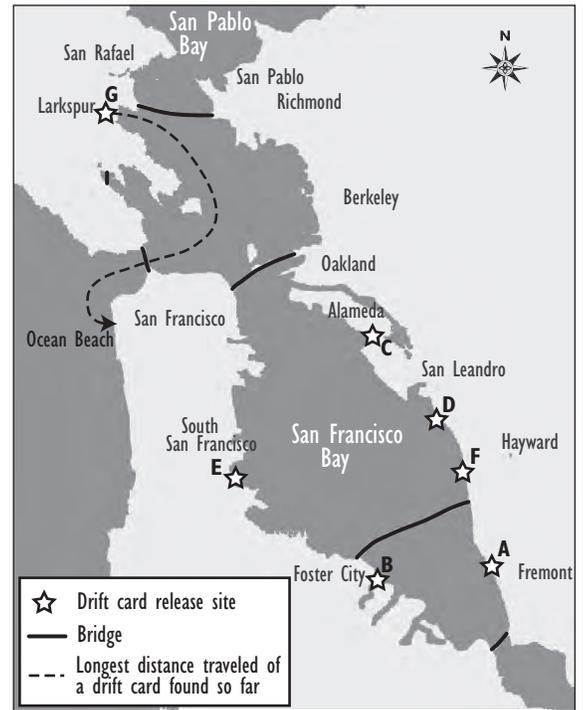
“Our greatest hope is that we can use this information to refine our methods in the future,” said Grijalva. “This can be an important tool for better monitoring and potential control if new infestations crop up.”

As of mid-May, 45 cards have been reported, but cards could be found for up to two years. Most cards will biodegrade within the year.

Drift cards have been used elsewhere to track pollutant discharges, and invasive species, including *Spartina*, but mostly in ocean and coastal waters, rather than bays and estuaries.

So far the longest distance traveled by one of ISP’s drift cards is from Corte Madera Creek in Marin to Baker Beach outside of the Golden Gate. (See map.)

New *Spartina* infestations can easily be overlooked in areas not accessible to the public. But by knowing where these drift cards end



- A Alameda Flood Control Channel mouth, Fremont
- B Bair/Greco Islands, San Mateo County
- C Elsie Roemer Bird Sanctuary, Alameda
- D San Lorenzo Creek mouth, San Leandro
- E Colma Creek, So. San Francisco
- F Cogswell Marsh, Hayward
- G Creekside Park, Corte Madera Creek, Corte Madera

up, ISP learns more about the range of possibilities where new seeds can take root.

“We’re getting pretty good control over the existing largescale infestations,” said Grijalva. “The drift card study is part of moving onto the next stage.” This means paying close attention to locations of possible new patches of *Spartina* to eradicate them before they become well established.

## Treatments have little effect on water quality

Water quality monitoring following herbicide treatments of invasive *Spartina* last year by ISP partners showed low herbicide levels, which then quickly fell further. Tests covered imazapyr, the main herbicide used, and glyphosate, applied at one site.

ISP staff collected water samples in 12 percent of the project’s treatment applications. At each site they sampled three times: within 24 hours before treatment, as soon as the tide rose to the treated site after treatment, and a week later.

“In every case, our levels are two to three orders of magnitude lower than those which would be a concern for aquatic life as noted in the published scientific literature,” said ISP Field Operations Assistant Drew Kerr of the first sampling. That translates into less than one hundredth to one thousandth of generally acknowledged thresholds of en-

vironmental safety, although the USEPA has not specified any numeric standards for these herbicides in aquatic environments.

Moreover, he noted, even these low levels dropped by 98 to 100 percent the following week. As expected, all other water quality measures for the samples showed no change after treatment.

Sites monitored included tidal marshes, bay front wetlands, major sloughs and flood control channels, as well as manmade rock embankments and docks, and covered different types and concentrations of treatments.

Kerr deliberately collected samples in spots closest to treated *Spartina*, where herbicide levels would likely be highest.

The water quality monitoring program satisfies compliance with the National Pollutant Discharge Elimination System (NPDES) permit administered by the State Water Re-

sources Control Board. The ISP obtained programmatic coverage under the permit, which requires the monitoring. It also obliges ISP partners to submit “notices of intent” (NOI) to use the herbicides.

Whether the application of an aquatic pesticide comes under the jurisdiction of a federal waste discharge permit is currently a matter of legal uncertainty. The USEPA has decided the permit does not apply to such herbicidal applications, said ISP director Peggy Olofson.

However, until the matter is definitively resolved, the ISP program continues to fulfill the NPDES requirements.

“It’s prudent not to assume the EPA position will prevail in this state,” explained Olofson. “We don’t need to put ourselves or any of our partners in the position of being legally vulnerable in any way.”