

## Nine Years Fighting Invasive Cordgrasses: Still Hard at Work

by Sandy Goldman

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We are working to eradicate all of the invasive cordgrasses found in tidal marshes along Corte Madera Creek and its tidal tributaries. *Spartina densiflora* and *S. anglica* were introduced around 1970 when the tidal marsh at Creekside Park was recreated. *S. densiflora*, native to Chile, has spread aggressively throughout our tidal marshes; it is our most serious cordgrass problem. Hybrid *S. alterniflora* has spread indirectly into Corte Madera Creek from marshes in the South Bay where it was introduced by the U.S. Army Corps of Engineers. *S. anglica*, from England, is not as aggressive as the other two at this latitude because our watershed is at the southern end of its range; it is only found upstream of Bon Air Bridge. Cordgrasses hybridize readily and in 2007 we began to find *S. densiflora* had crossed for the first time with the native cordgrass, *S. foliosa*. Hybrids can have a wide variety of characteristics.

State and Federal agencies with responsibility for managing wildlife and natural habitats realized that these invasive cordgrasses were jeopardizing all salt marsh restoration projects around San Francisco Bay, converting existing tidal marshes into meadows, reducing the capacity of sloughs and limiting flood-flow capacity and navigation, and eliminating habitat for several threatened species. Thus, the Invasive Spartina Project (ISP), managed by the California Coastal Conservancy, was born in 2000.

Just as the ISP was just getting started, the Marin Rowing Association approached Friends about a public service project to benefit the creek. We had heard about the ISP and called to volunteer. Our first day of digging invasive cordgrass was December 3, 2002 when four volunteers from the Marin Rowing Association and three from Friends spent 4 hours digging *S. densiflora* at Piper Park in Larkspur, an experiment to see how much we could dig in half a day of hard, muddy work. As a follow-up, on January 11, 2003, a group of 43 teenagers from MRA and nine adults continued the experiment. This work helped the ISP estimate the effort and money needed to treat invasive cordgrass by digging.

Because the tidal marshes infested with invasive cordgrasses are home to many special-status species, a complex planning and permitting process was required before the full effort to remove invasive cordgrasses could be implemented. Finally in September 2005, the permits were all issued and the project kicked into high gear.



*(Above) Invasive Spartina Project monitors learning to identify two species of invasive cordgrass introduced to San Francisco Bay at Creekside Park, Spartina densiflora and S. anglica.*

*(Below) The same area on a foggy day in November 2011. The big bunches of S. densiflora have been replaced by bulrush and gumplant, native plants that moved into the area after the invasive cordgrass was dug up.*

*Photos by Sandy Goldman*



Since 2003, Friends has served as the coordinator for the ISP effort in Corte Madera Creek, with funding from the California Coastal Conservancy.

Corte Madera Creek tidal marshes are in the hands of many private owners and ten public agencies. There are 267 properties where invasive cordgrass is found or has the high potential to occur. The public agencies own a total of 46 properties, including all of the large marshes where the California clapper rail lives and breeds: Piper Park, Creekside Park, Corte Madera Ecological Reserve, and the marsh south of the Ferry Terminal. We contacted all of the property owners, public and private, to obtain permission to treat invasive cordgrasses, with success for the most part.

A big change occurred in July 2010 when the California Department of Food and Agriculture listed all of the invasive cordgrasses as noxious weeds. This action gave the Marin County Agricultural Commissioner authority to require the removal of invasive cordgrasses. In mid-October 2010, the Commissioner contacted all of the owners of infestations of invasive cordgrasses who had not previously agreed to treatment. As of December 2011, everyone had finally agreed. This is a major step forward, because increasingly our work has been removing seedlings that sprouted from seeds dispersed from untreated properties.

*Spartina densiflora* seeds, which are carried upstream and downstream by the tides, are viable for up to five years, so we expect to continue this project for another six to eight years. *S. anglica* and hybrid *S. alterniflora* seeds are viable for shorter periods. The ISP's criterion for eradication, based on the best available wildland weed science, is to have three years of surveys without finding any of the invasive cordgrasses. Although we can continue some of the effort without outside funding, we cannot hire crews to do major work unless money to do so is provided. Indeed, if funding through the ISP is not provided, the burden to treat the infestation will fall on the owners of infested property, particularly the County of Marin, which owns Creekside Park and large sections of the main channel of Corte Madera Creek, and the City of Larkspur, owner of Piper Park and sections of the main channel below Bon Air Bridge. This becomes increasingly likely as the State of California's financial condition continues to be grim and reductions in federal funding loom.

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