

Non-native beach grass thwarts dune's drift

by **Jacoba Charles**

A hardy grass imported from France has thrived and spread across the California dunes over the last 130 years. For many people, its dense labyrinthine clumps are a familiar part of trips to the beach and childhood games of hide-and-seek. But for ecologists and land managers, *Ammophila arenaria* or European beachgrass is a scourge that jeopardizes rare species of animals and plants by changing the nature of the dunes.

"It's taking over habitat and stopping the natural processes that the local species depend on," said Jane Rodgers, a plant ecologist with the Point Reyes National Seashore (PRNS).

Environmentalists want removal of the grass from the Tomales Dunes to be required in the forthcoming Environmental Impact Report for Lawson's Landing RV campground in Dillon Beach. However, removal of the grass is much simpler in areas with minimal human infrastructure or impacts and the only restoration project in Marin County to date was done by PRNS at Abbotts Lagoon.

History and ecology

Decades ago, the grass was seen as a boon, not a bane. Park managers, ranchers and homeowners desperate to stop the incessantly blowing sands embraced it as an easy solution.

Beachgrass was first transplanted from its home in Europe to stabilize the sparsely vegetated dunes at Golden Gate park around 1870, said Andrea Pickart, an ecologist at the Humboldt Bay National Wildlife Refuge, who oversaw the first beachgrass removal project on the west coast in 1992 and co-authored a book called "Ecology and Restoration of Northern California Coastal Dunes."

The grass flourished and successfully stabilized the dunes at that first location, said Pickart. Soon other parks and private landowners began to transplant it up and down the coast.

"People used it to keep sand from going on ag lands, and from going on railroads, and from crossing roads," Pickart said. "It was introduced hundreds of times, and also spread on its own."

Today, European beachgrass is found from Santa Barbara to British Columbia. It produces few seeds, but even fragments of its rhizomatous roots can grow into new plants, surviving in the ocean until they land on receptive ground. Consequently, it spreads fast and grows thick. Wind and tides move fertile chunks from beach to beach, where it quickly develops into a dense mat, said Pickart.

"It's like the scene in *Fantasia* when Mickey Mouse tries to break up the broom, and it turns into a lot of little brooms – that's what beachgrass is like," said Rodgers.

Native animals and plants are adapted to a very different type of dune than those colonized by European beachgrass. The native American dunegrass grows in scattered low bunches, leaving highly mobile sand, sparse shelter for predators and room for other plants.

Conversely, European beachgrass grows in dense carpets. As new sand accumulates on the dune, the grass simply grows a longer root, simultaneously preventing burial and anchoring the dune.

Snowy plovers – fickle shorebirds that lay their eggs in a scrape in the sand – are one of the federally threatened species jeopardized by beachgrass. "It takes away places for them to nest or hunt insects, and is a great hiding place for predators like rats and skunks and foxes," Rodgers said. Between 13 and 20 pairs of plovers nest in the Point Reyes area each year.

In West Marin, other federally endangered species threatened by beachgrass include Myrtle's silverspot butterfly, beach layia, and Tidestrom's lupine, Pickart said.

"If you have local extinctions of species, they are hard to bring back," she added. "Even if they survive somewhere else, they may not be the same genetically."

Social impacts and restoration

Eradication of the grass is often not a simple decision. A banner that reads "Save our dunegrass" hangs at the gate to the Lawson's Landing RV campground. It is one owner's response to pressure from the Environmental Action Committee to eradicate at least some of the European beachgrass from the Tomales Dunes on their property.

Because a community has built up

around the beachgrass-stabilized dunes, removing beachgrass on a large scale would force the campground and nearby houses to move.

"The grass holding the coastal dunes enables all the uses that have taken place on the land for the last hundred years or so, and we would hate to see it go," said Willy Vogler, one of the campground's owners.

"I grew up out there in the dunes, and they a draw for our clientele as well. If some means could be found to encourage them and continue to provide coastal access and camping that we provide to the public, we would be in favor of that," he said.

Ecologist Peter Baye, who gives lectures on the complex history and ecology of the Tomales Dunes, says that removing the plant is not a simple proposition. Though the dunes are a rare habitat that will eventually be wiped out by the beachgrass, removing it would also threaten the wetlands that have developed behind the dunes, as well as nearby buildings and campgrounds.

"If *Ammophila* removal mobilized all the stored sand at once, a large dune 'wave' could bury extensive areas of mature dune wetlands and, of course, the campgrounds as well," Baye said. He added that the wetlands could eventually re-form, but that a trade-off between dune restoration and preservation of mature wetlands is inherent in remobilization.

Beachgrass removal is simpler when buildings aren't involved, and projects are taking place along the California coast. "Beachgrass is beneficial to humans, but it's not beneficial ecologically," said Patty Clifford, natural resource manager at Lanford Dunes in Humboldt. "Because people like it, and removals are expensive, it is not usually removed from private lands."

The nearest beachgrass removal projects are at Tenmile Dunes in Fort Bragg, where the plant has been controlled using a combination of burning and herbicide application, and at Abbotts Lagoon.

The first phase of the PRNS project devoted three years to clearing 30 acres with hand tools, digging deep to kill the plant's extensive root system. But the method proved too costly and time-consuming to be sustainable.

"You dig it up and then six months later there is 20 percent cover of resprouts," said Rodgers, who took over the project from a predecessor. "Some places we came back to 17 times before getting it to a manageable level."

When she received more funding, workers cleared 20 more acres – this time using heavy machinery. A backhoe and excavator moved methodically through the dunes, digging trenches that were filled with beachgrass and capped with clean sand. "Essentially what we were doing was turning the dunes upside down," Rodgers said.

The process was much more effective, though sprouts continue to reappear and must be removed by hand. "The project was successful, but it requires continued vigilance and attention," Rodgers said. "It's not a restoration project that you can do and then walk away from."

In addition to the problem of resprouting, cleaned areas can be re-colonized by material from other areas. There are an estimated 800 acres of dunegrass on the western shore of Point Reyes, 300 at Limantour, and scattered patches toward Bolinas.

PRNS also anticipates funding to come through for a 300-acre project in 2010, Rodgers said. She plans to expand the mechanical removal of the grass to the larger area, and that baseline studies from the existing projects indicate positive results.

"At Point Reyes, there is no conflict between dune mobilization and infrastructure such as campgrounds," Baye said. "But in both cases, it's important to consider the sensitivity or uniqueness of habitats downwind before you plan on reactivation of a mobile dune by removing *Ammophila* upwind."

Rodgers described her interest in removing the grass as fulfilling the park's legal mandate to preserve rare species and manage for wild systems.

"The casual observer might not be aware of the losses beachgrass leads to," she said. "There is no convincing someone that one environment or setting is better than another. It's just that there are choices to be made on this planet, and this is just one local example of a system that is unraveling."



Dunes at Lawson's Landing have been set in place by the non-native dune grass planted over a century ago for that purpose. Photo by **Jacoba Charles**.