Native to Argentina, *Spartina densiflora* is thought to have been introduced to Humboldt Bay in the ballast of lumber ships traveling from Chile in the 19th Century. It has also invaded the Mediterranean coast of Europe. Plants of the genus *Spartina* are now found invading marshes of Humboldt Bay, San Francisco Bay and other estuaries along the West Coast.

Over 90% of Humboldt Bay’s historical salt marshes have been lost since the 1850s. Of the remaining 10%, almost 90% is infested with *Spartina*. In essence, only 1% of historical native salt marsh remains. In addition to the risk to our own Humboldt County marshes, the *Spartina* in our bay is capable of spreading to other salt marshes up and down the Pacific Coast. This very real risk prompted the governors of California, Oregon and Washington to set a goal of eradicating all invasive *Spartina* coast-wide by 2018.

Humboldt Bay NWR was recently allocated $1 Million by the US Fish and Wildlife Service to control *Spartina* over all Refuge lands. After several years of research, Refuge staff have developed a range of mechanical methods to eliminate *Spartina*. Mechanical removal of *Spartina* leads to the natural re-colonization of the salt marsh by native flora within three years.
Humboldt Bay Owl’s Clover is a rare endemic to Northern California salt marshes, with most of the populations found in Humboldt Bay. The Owl’s clover is a hemiparasite, meaning it can photosynthesize and produce its own food, but also parasitizes other salt marsh plants. The vivid pink “flowers” are in fact bracts, or specialized leaves of the plant.

Point Reyes Bird’s Beak is another rare plant found only in northern California’s salt marshes. Like the owl’s clover, it is hemiparasitic. The presence of these plants is important in maintaining species diversity of the marsh. By suppressing more vigorous plants through parasitization, they allow weaker competitors to survive as well.

**What methods is the Refuge using to control Spartina?**

- **Left**: A test site in Mad River Slough dominated by invasive Spartina. This view is a typical scene in Humboldt Bay’s salt marshes, with Spartina expanding and crowding out native plants.
- **Left**: Researcher Luc Lagarde removes Spartina. Brushcutter blades grind up the shallow rhizomes (underground stems) of Spartina, resulting in mortality after just one to a few applications.
- **Left**: The test site after mechanical treatment. Some Spartina was left to measure how effectively native plants can re-colonize the site.
- **Right**: Three years after treatment the site is nearly completely restored. Native plants have rapidly re-colonized the areas where Spartina was removed. Only one follow up treatment was required for this site to be restored.

**What methods is the Refuge using to control Spartina?**

- **Left**: A test site in Mad River Slough dominated by invasive Spartina. This view is a typical scene in Humboldt Bay’s salt marshes, with Spartina expanding and crowding out native plants.
- **Left**: Researcher Luc Lagarde removes Spartina. Brushcutter blades grind up the shallow rhizomes (underground stems) of Spartina, resulting in mortality after just one to a few applications.
- **Left**: The test site after mechanical treatment. Some Spartina was left to measure how effectively native plants can re-colonize the site.
- **Right**: Three years after treatment the site is nearly completely restored. Native plants have rapidly re-colonized the areas where Spartina was removed. Only one follow up treatment was required for this site to be restored.

**What are some local native species negatively impacted by invasive Spartina?**

- **Humboldt Bay Owl’s Clover** is a rare endemic to Northern California salt marshes, with most of the populations found in Humboldt Bay. The Owl’s clover is a hemiparasite, meaning it can photosynthesize and produce its own food, but also parasitizes other salt marsh plants. The vivid pink “flowers” are in fact bracts, or specialized leaves of the plant.
- **Point Reyes Bird’s Beak** is another rare plant found only in northern California’s salt marshes. Like the owl’s clover, it is hemiparasitic. The presence of these plants is important in maintaining species diversity of the marsh. By suppressing more vigorous plants through parasitization, they allow weaker competitors to survive as well.

Thank you to the Humboldt Bay Harbor, Recreation and Conservation District; California Coastal Conservancy; US Fish and Wildlife Service; Friends of the Dunes; Friends of Humboldt Bay NWR; the USFWS Coastal Program; California Conservation Corps; Ducks Unlimited; Humboldt County Sheriff Department; City of Arcata; City of Eureka; and the North Coast Resource Center for their support of the Humboldt Bay NWR Spartina Removal Project.