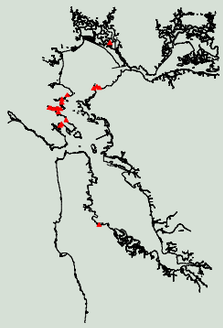
San Francisco Estuary Invasive Spartina Project

Preserving native wetlands

Invasive Spartina Project



S. densiflora distribution (2001)

Introduced

Spartina densiflora (dense-flowered cordgrass)

Above: Cluster of *S. densiflora* clones along the Bay edge.

Right: Inflorescence of native *S. foliosa* (left) and *S. densiflora*. *S. densiflora* has narrow, inrolled leaves compared to the relatively flat leaves of *S. foliosa*.

Above: A dense, caespitose (tufted) cluster of stems of a *S. densiflora* clone.

- **Description:** Perennial, salt tolerant grass that grows erect in dense, caespitose (tufted) clumps.
- **Leaf blades** are narrow, long and inrolled. They are tough, grayish in color, and 1/4-1/3 an inch in width. The native has relatively flat leaves.
- **Culms (stems):** Stems range from 27-150 cm in height.
- **Inflorescence** is 6-30 cm long with dense, compact colorless flowers (compared to the 9-25 cm *S. foliosa* inflorescence). *S. densiflora* blooms from April through July (compared to June –September for *S. foliosa*).
- **Tidal range:** Its elevational range is relatively high compared to the native *S. foliosa*. The *S. densiflora* grows in the upper intertidal zone near the mean high water, among the pickleweed or just below it on open mud (Daehler and Strong, 1996).

- ***S. densiflora*** is now commonly found invading marshes of Humboldt Bay, in Humboldt County. In San Francisco Bay it is located at Creekside Park, Corte Madera Creek, Muzzi Marsh, Greenwood Cove in Marin County and Pt. Pinole Regional Park in Contra Costa County. Native to South America, *S. densiflora* is thought to have been introduced in the solid ballast of lumber ships from Chile to Humboldt Bay, CA in the 19th Century (Mobberly 1956; Spicher and Josselyn 1985). It has also invaded the Mediterranean coast of Europe (Figuerra and Costellanos 1988 in H.T. Harvey 1993).

Potential impacts of introduced *Spartina* to the native ecosystem:

1. Competition with native flora such as *Salicornia virginica* (pickleweed) and *S. foliosa*, may lead to a loss of native plant diversity.
2. Invasion of high marsh *Salicornia* zone may negatively effect the habitat of the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), as well as the federally and state endangered California clapper rail (*Rallus longirostris obsoletus*).
3. Competition with the native *S. foliosa* and invasion of the mudflat and channel edges of the low marsh may eliminate foraging habitat for numerous shorebirds and waterfowl, including the California clapper rail.
4. Invasion by the *S. densiflora* may increase marsh elevation due to the presence of dense clusters of clones at channel and mudflat edge. These dense clones may slow the flow of water, and thus increase rate of sedimentation.

Below and left: Endangered California clapper rail (*Rallus longirostris)* forage in channel habitat and nest in native pickleweed *(Salicornia virginica)* marsh, both of which are impacted by *S. densiflora*.

Above: *S. densiflora* invasion of Bay edge above mudflats.

Below: *S. densiflora* beside native *Triglochin maritima*. Competition with native flora may lead to a loss of native plant diversity.

Above: Invasion of mudflats may lead to the loss of foraging habitat for shorebirds and waterfowl.

S. densiflora may be confused with the native *S. foliosa* (California cordgrass), or with other native plants in the cyperaceae family (sedges, triangular stem), or juncaceae family (rushes, round stems). Two examples of species with which *S. densiflora* may be confused include the brackish marsh plant *Scirpus maritimus* (alkalai bulrush) or *Triglochin maritima* (arrow grass).

Triglochin maritima, left. Superficial differences include round stem of the rush, and semiterete (cylindrical) blades. *Triglochin* inflorescence are a spike-like raceme born on a naked scape, with flowers on short, slender or stout pedicels compared to the dense, closely appressed spikelets (panicle) of *Spartina.*

Scirpus maritimus, left. Superficial differences include triangular stem of the *Scirpus.* Cordgrass stems are round, spongy, and hollow. *Scirpus* inflorescence are an open umbel, cluster of spikelets or solitary spikelet compared to the closely appressed spikelets of *Spartina*.

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SAN FRANCISCO ESTUARY INVASIVE SPARTINA PROJECT

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Coastal Conservancy

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Please let us know if you find any non-native *Spartina* species

Include the following information:

- *Spartina* Species
- Location (GPS coordinates if possible or drawing on topo map)
- Approximate size of plant/clone or population
- Date seen
- Your name and contact information

v2

Thank you to The California Coastal Conservancy, National Fish & Wildlife Foundation, CALFED Bay-Delta Program, and the USFWS Coastal Program for their financial support of the Invasive *Spartina* Project.