

# Case Study: *Spartina alterniflora* (Smooth Cordgrass) Control in a Wetland Environment

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The tidal wetlands in San Francisco Bay consist of a discontinuous fringe of marsh. Land reclamation and the filling of the bay for industrial building and activities has destroyed all but fifteen percent of tidal wetland. This loss of habitat is a significant factor in the decline of marsh species such as the California clapper rail (*Rails longirostris obsoletus*) and the salt marsh harvest mouse (*Reithrodontomys raviventris*) which are listed as endangered by both federal and state wildlife agencies. A critical component of the recovery plans for these species is to protect and restore habitat. Ecological preserves have been designated and significant resources have been allocated for the restoration of former marsh land to provide new habitat in hopes of bolstering populations. Now, however, all of these tidal wetland areas are invaded by exotic vegetation and are being radically altered or are immanently threatened by invasion.

Currently, *Spartina alterniflora*, a perennial grass, is the most alarming exotic to establish in the salt marshes. Rapid spread is one reason for concern. In twenty five years, since its introduction, it has become nearly pervasive south of the San Francisco Bay bridge. In 1998, however, the bridge ceased to mark the northern extent of *S. alterniflora* as new populations were reported in Richardson Bay and the Emeryville Crescent. In Cogswell Marsh, Hayward, California, the *Spartina alterniflora* covers over 78 acres of the 250 acre marsh, 46 acres more than just two years ago. Growth and spread at this high rate is significant because *Spartina alterniflora* radically alters the salt marsh in at least three ways. Tall, dense, rigid stems, and a massive underground network of roots and rhizomes work to accrete and stabilize sediment which results in a rapid rise in elevation of the wetland. In some marshes increased siltation in channels has reached a level which allows colonization by *S. alterniflora*. A new network of deeper, narrower channels is being formed. Secondly, *S. alterniflora* not only displaces most native plant species forming monotypic meadows, it is able to hybridize with the native *S. foliosa*. Finally, *S. alterniflora* can grow at a lower elevation and withstand longer periods of tidal submergence than all other native species. Clones are beginning to colonize the tidal mud flats in San Francisco Bay, and without any competition, are expected to quickly form solid stands covering many acres. These tidal flats serve an important link in nutrient cycling of the estuary. They are also the foraging habitat for hundreds of thousands of shorebirds.

In San Francisco Bay, a few agencies have been working to control *Spartina alterniflora*. Efforts have largely been stymied by regulations protecting the California clapper rail. Specifically, no access into the salt marsh is permissible during the breeding season. This effectively closes the marsh for seven months of the year as the clapper rail has an unusually long breeding season. Efforts to control *S. alterniflora* during the period of September - February 1 have proven to be largely unsuccessful although it has resulted in a great deal of knowledge concerning *S. alterniflora*. Regionally, momentum to coordinate between agencies on a baywide scale is gaining. The challenge for resource managers will be to commit to long term, methodical, and coordinated efforts. The presence of endangered species in the marsh will necessitate difficult judgements and probably imperfect solutions regarding the long term health of the estuarine ecosystem. Ultimately, it is in the recovery of these endangered species, of all native marsh species, and the overall estuarine ecosystem that fuels efforts to eradicate exotic *Spartina* species from the San Francisco Bay.