

The Story of Invasive Spartina: The Bolinas Lagoon



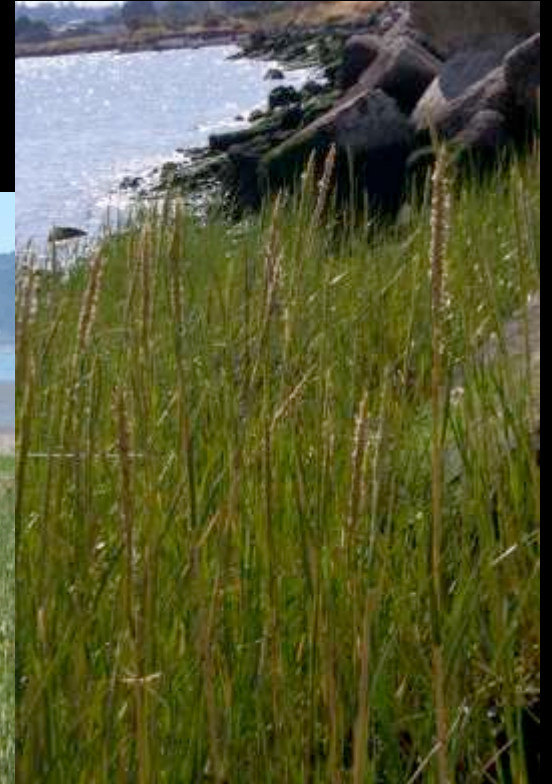
Katy Zaremba
Olofson Environmental, Inc.
ISP Restoration Program Manager



Outline

- A. History of the Invasive *Spartina* Project in the San Francisco Estuary
- B. Invasive *Spartina* : Point Reyes, Tomales Bay and in particular in Bolinas Lagoon

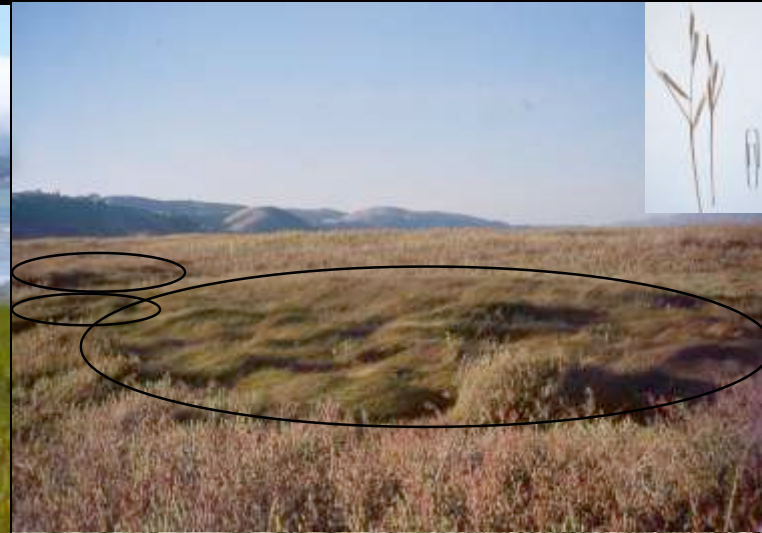
Native Pacific Cordgrass
Spartina foliosa



Spartina alterniflora



Spartina patens

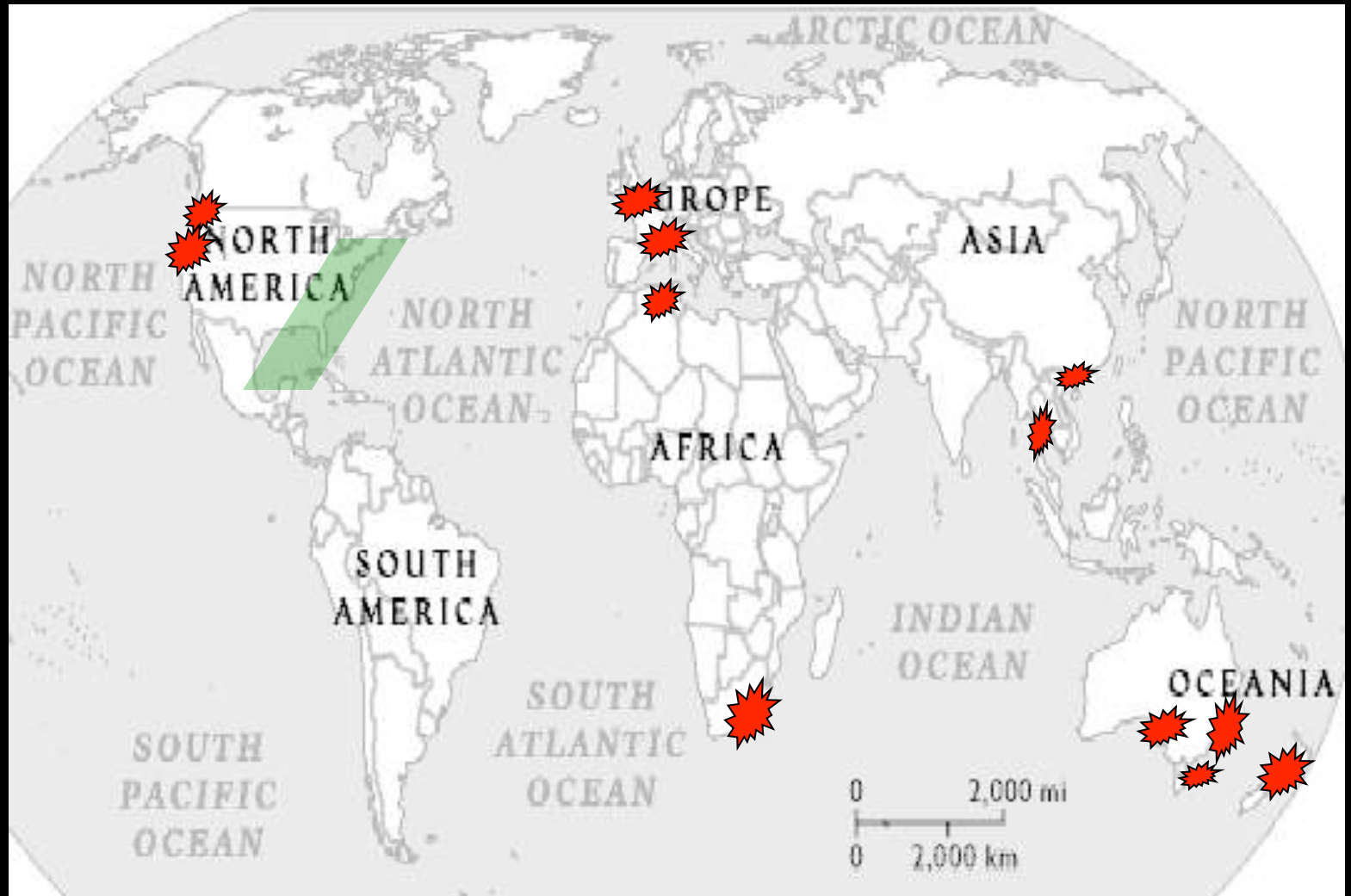


Spartina densiflora



Spartina anglica

Worldwide Introductions of *Spartina*





Hybridized Atlantic Cordgrass
(S. alterniflora x foliosa)



Colma Creek 2006

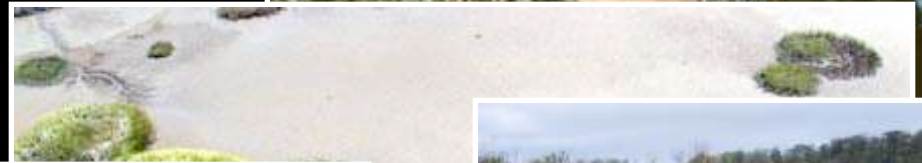
California Clapper Rail

- Secretive hen-sized bird
- Lives in salt and brackish marsh
- Hides in dense vegetation
- Only in San Francisco Estuary
- 1800s: 10s of thousands
- Currently: < 1,000



*Why is hybrid *Spartina* a Problem ?*

- Degrades endangered species habitat
- Dominates mudflats and changes hydrology
- Potentially endangers native Pacific cordgrass
- Reduces flood control capacity
- Creates mosquito breeding areas
- Causes failed tidal marsh restoration



- **1970s:** Introduced
- **1980s:** Hybridized
- **2002 :** 200 net acres east and south bay
- **2006:** 800 net acres disbursed through 24,000 acres of estuary

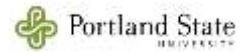
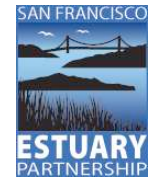
**Including
Every tidal marsh
restoration project**



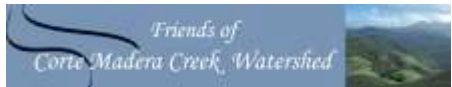
Coordinated Regional Response

- Mapped entire infestation
- Acquired funds
- Developed strategies
- Prepared plans
- Acquired permits
- Formed partnerships
- Conducted treatment
- Monitored results
- Improved plans each year





San Mateo County Mosquito and Vector Control District

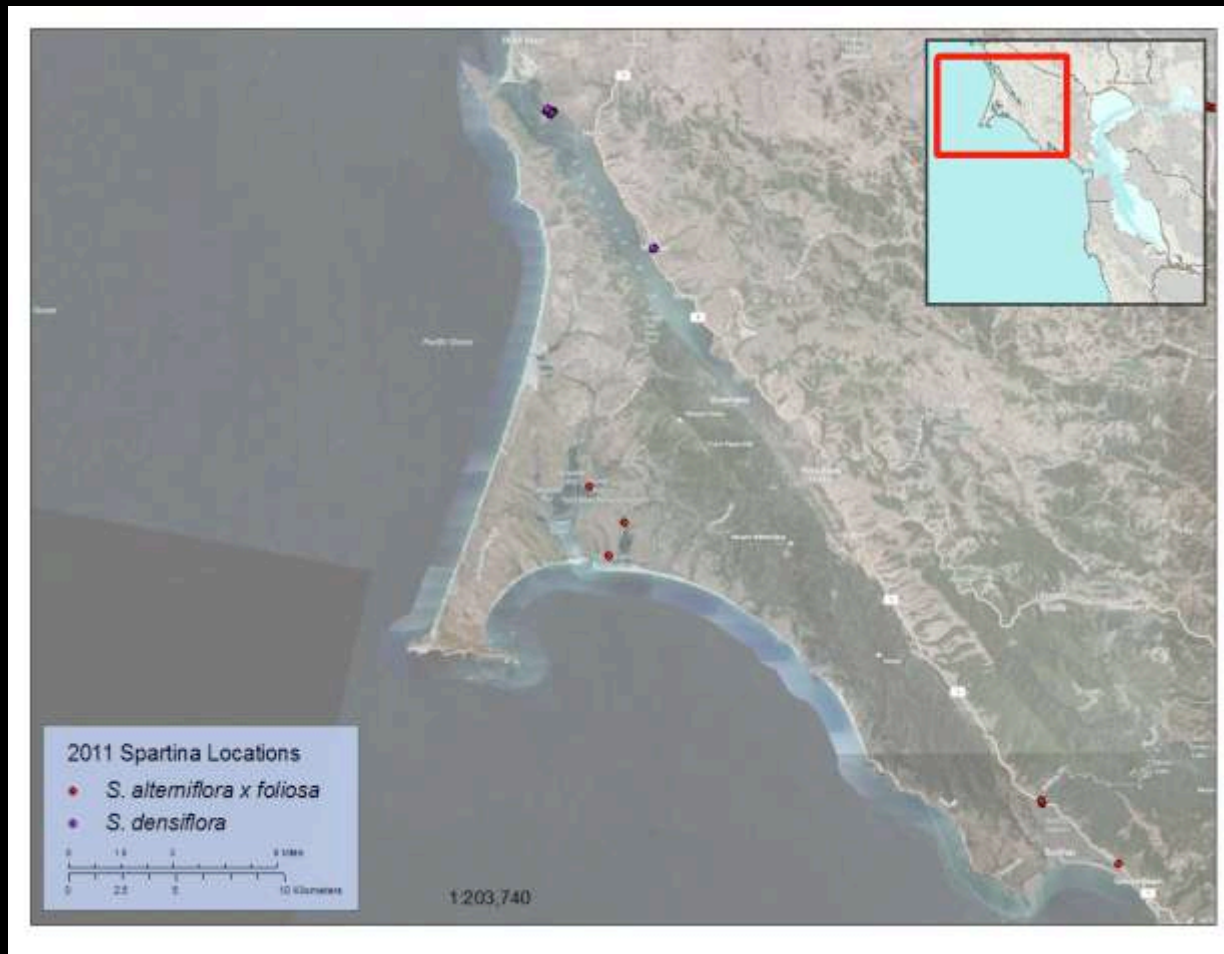


Evolution of Monitoring

- Extent of infestation → location of plants
- End of year → tomorrow
- Efficacy → what was missed?



Point Reyes – Bolinas 2011



Bolinas Lagoon 2001



Bolinas Lagoon 2002



Bolinas Lagoon 2003



Bolinas Lagoon 2004



Bolinas Lagoon 2008



Bolinas Lagoon 2010



Bolinas Lagoon 2011



Bolinas Lagoon South 2003



Bolinas North 2008



Southern end



East side



North end



Bolinas Lagoon 2009



S. foliosa

Bolinas Lagoon 2011

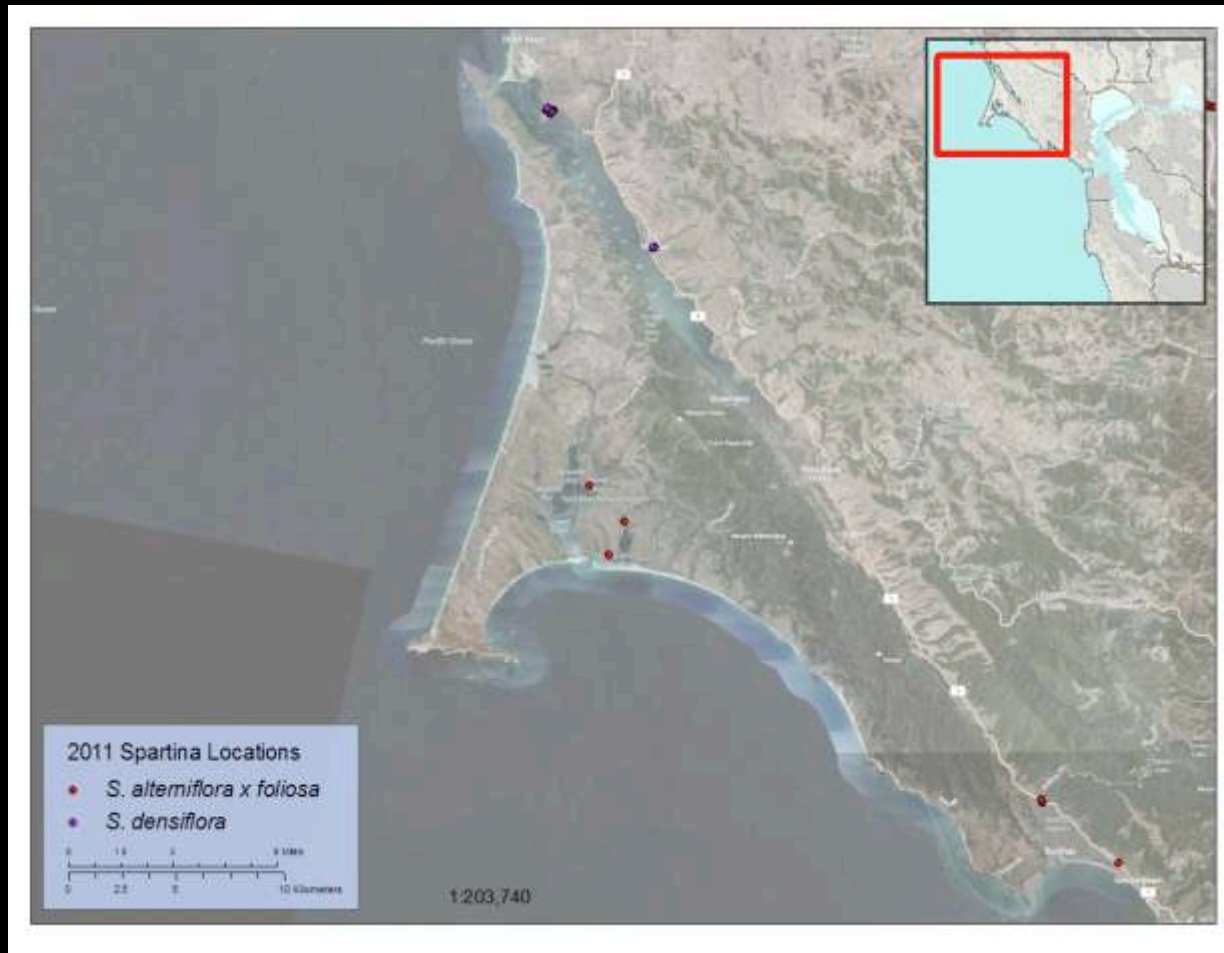


S. foliosa

Bolinas Lagoon 2011



Point Reyes – Bolinas 2011



Point Reyes 2003



Drakes Estero 2006



Drakes Estero 2006



Drakes Estero 2007



Home Bay 2007



Home Bay 2008



Home Bay 2010



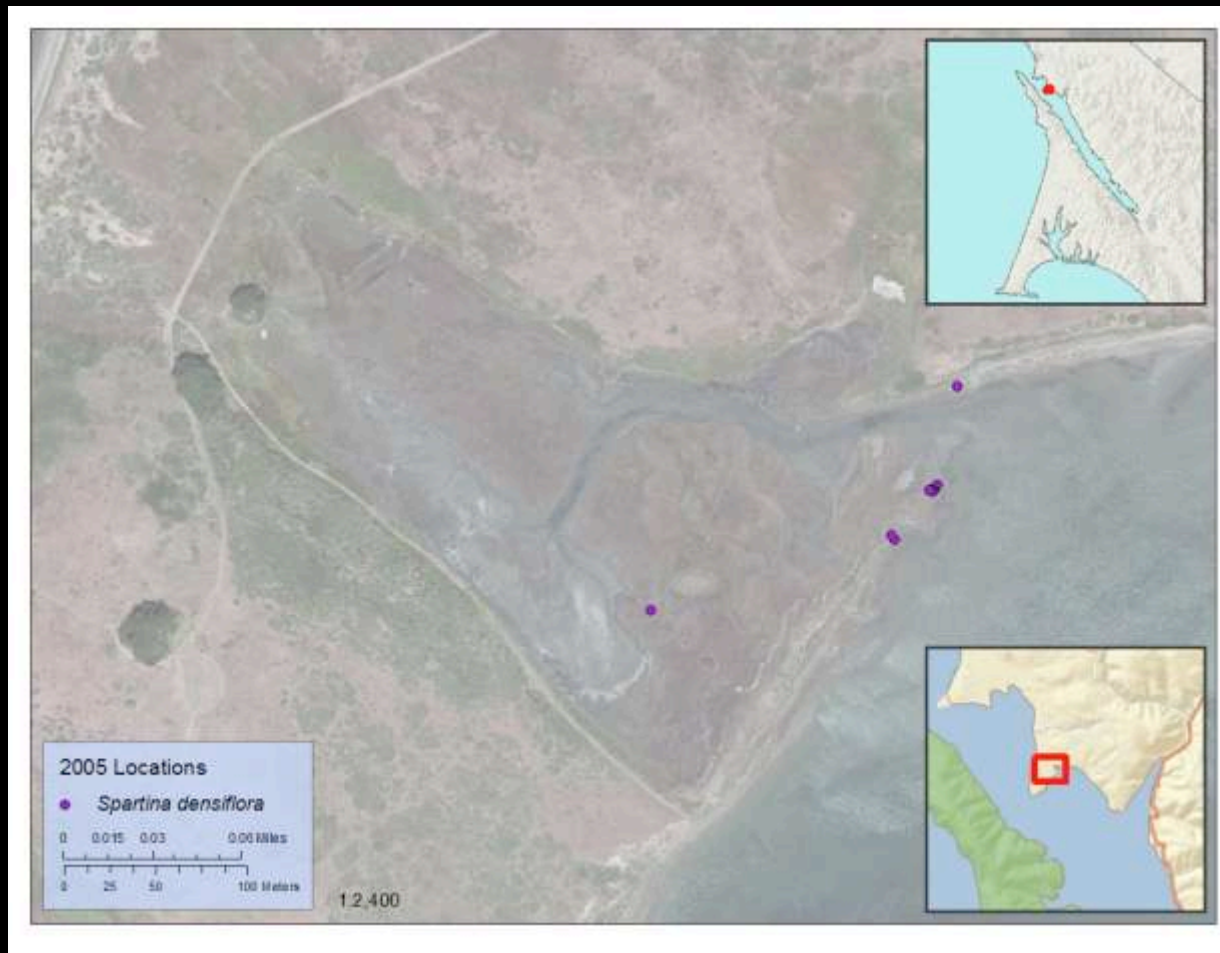
Tom's Point 2001



Tom's Point 2004



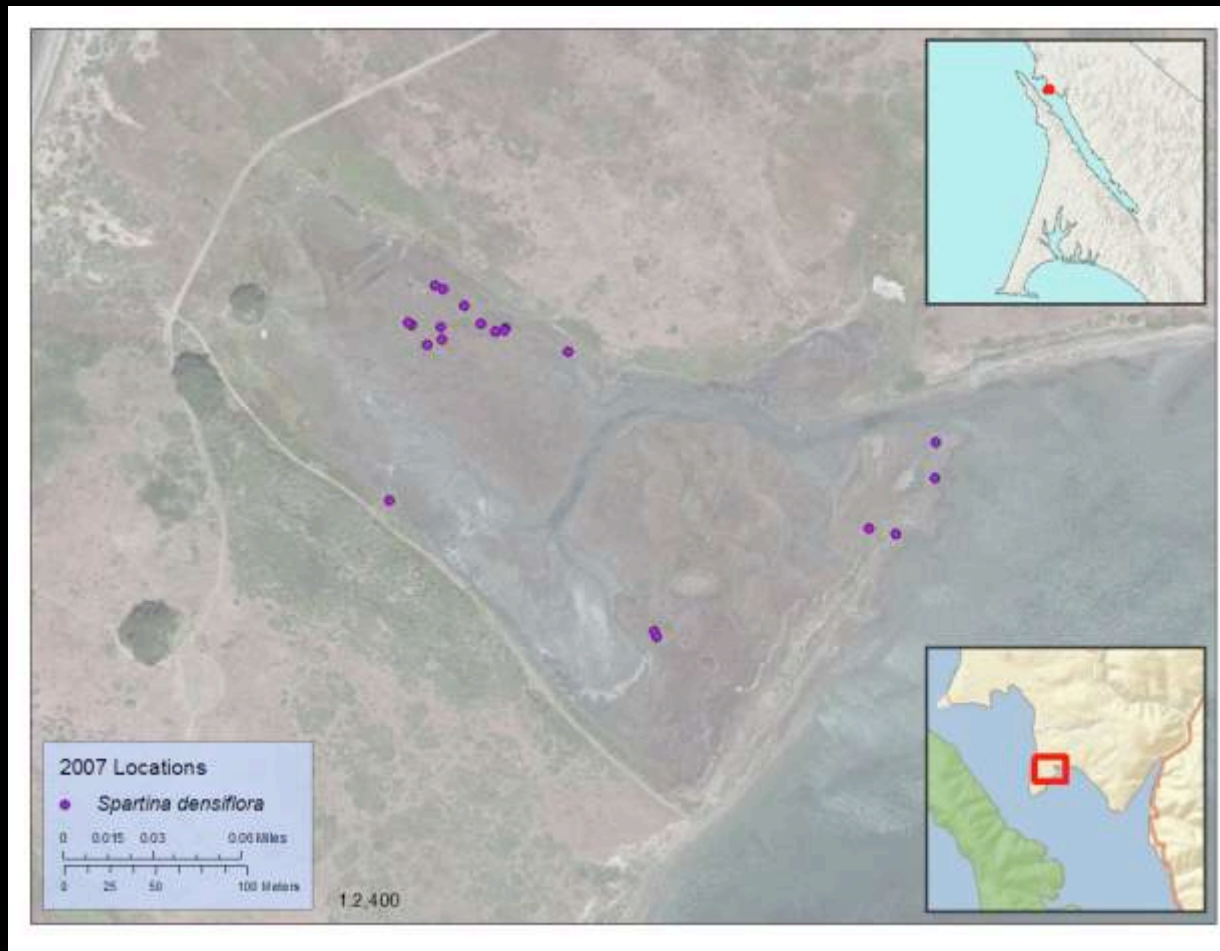
Tom's Point 2005



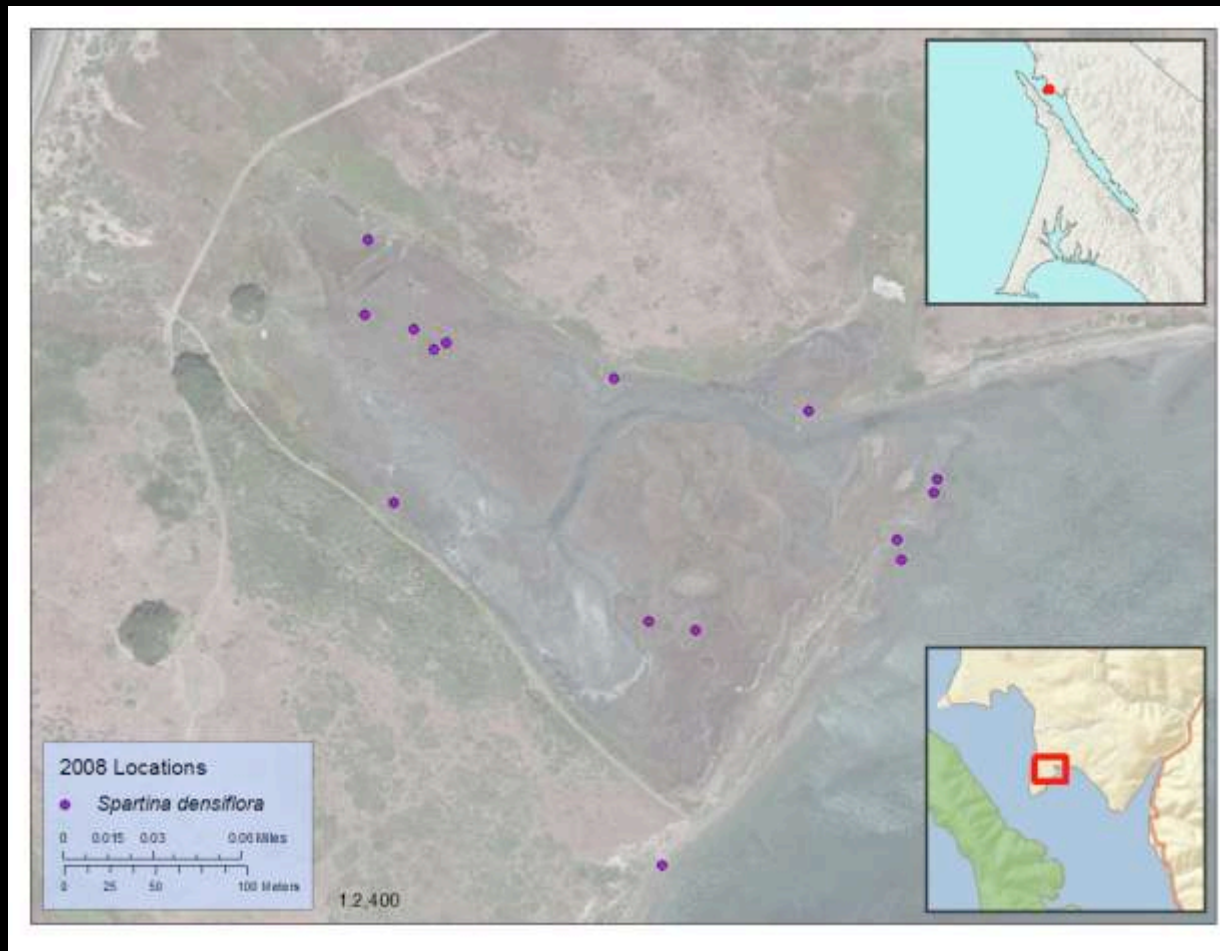
Tom's Point 2006



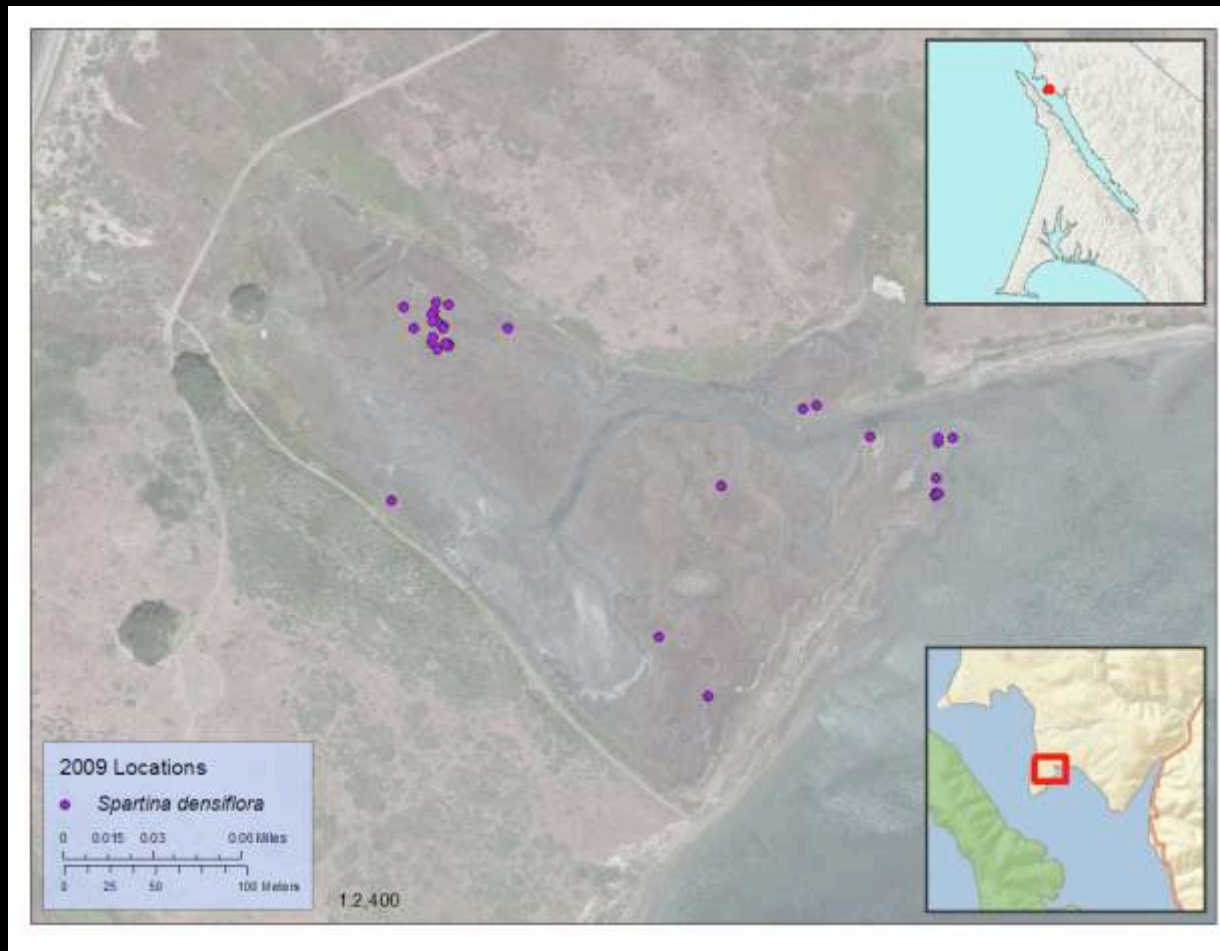
Tom's Point 2007



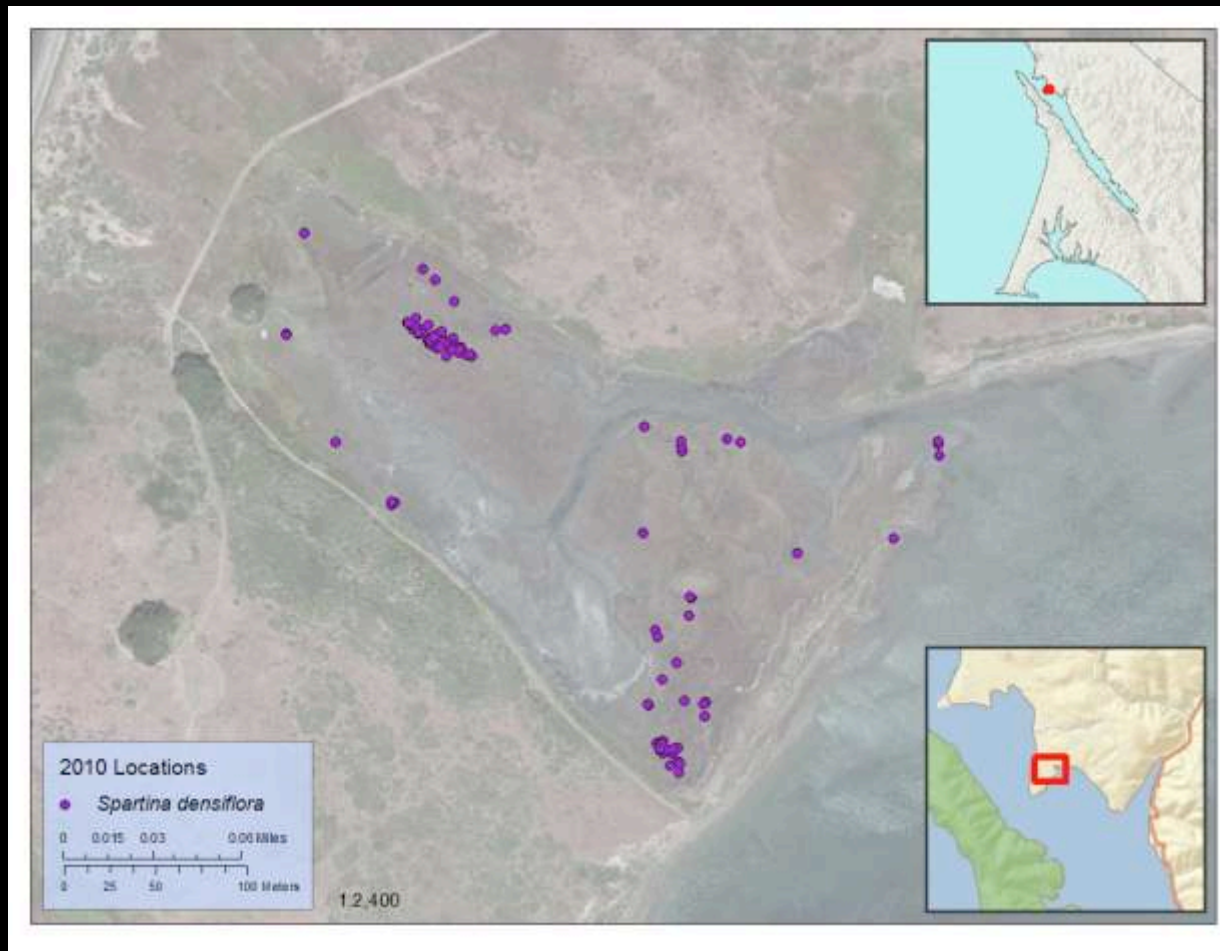
Tom's Point 2008



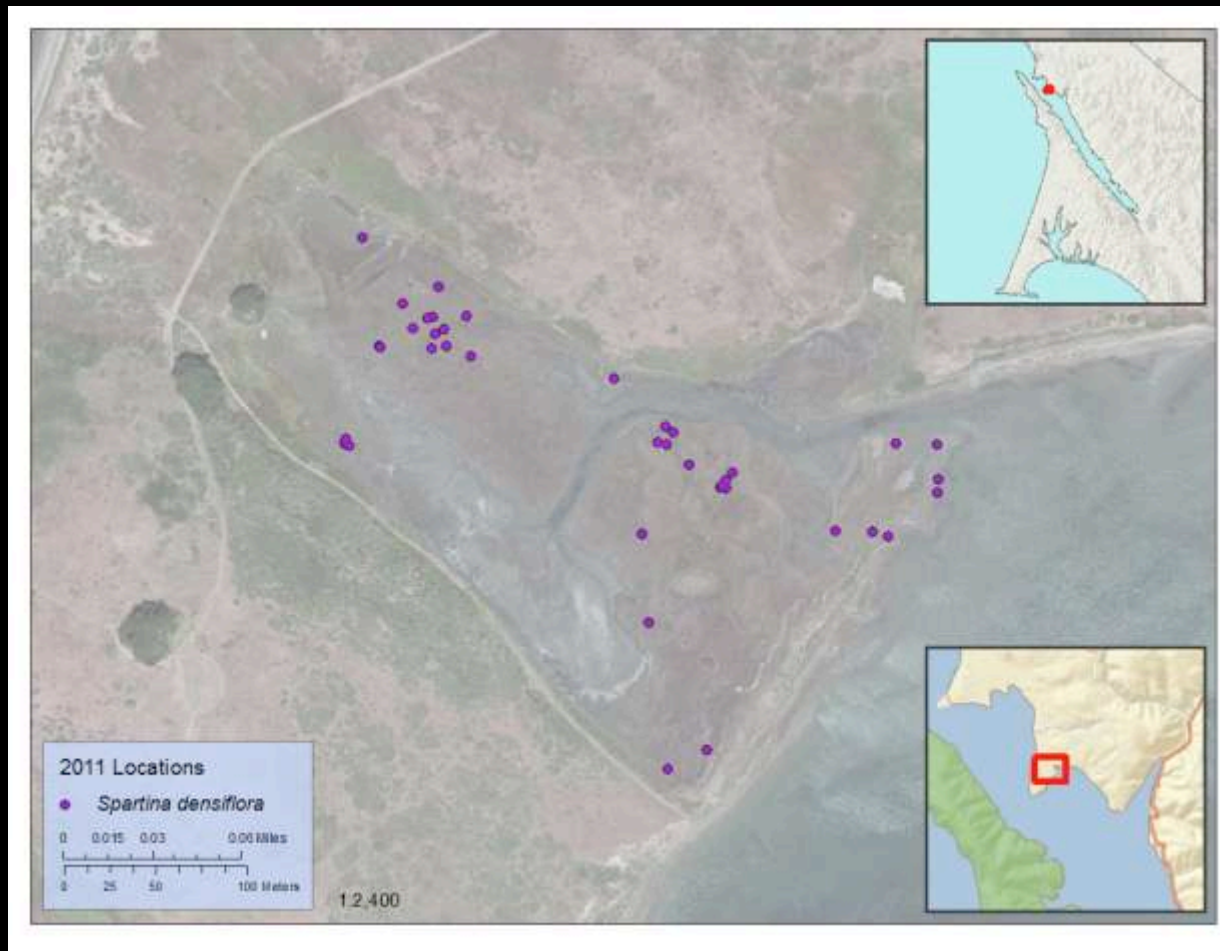
Tom's Point 2009



Tom's Point 2010



Tom's Point 2011



Tomales 2008



Tom's Point 2008



Tom's Point 2009



The Story of The Invasive Spartina Project: *"Preserving Native Wetlands"*



Thank You!