Patch-level Treatment Monitoring an End-Game Strategy

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Outline

• Brief History of the Invasive *Spartina* Project
• Past Monitoring & Control Strategies

**New**
• Patch-Level Treatment Monitoring Strategy
• Pros & Cons of Adopting This Strategy
What is invasive *Spartina*?

*Spartina* is a cordgrass that grows in salt marshes, mudflats and brackish channels.

Four introduced species of *Spartina* invading San Francisco Bay.

*Spartina alterniflora* and hybrids

*Spartina densiflora*

*Spartina anglica*

*Spartina patens*

One native species (*Spartina foliosa*) occurs in San Francisco Bay marshes.

Occupies specific niches in the marsh, balanced with the other important parts of the ecosystem (unvegetated mudflats, healthy channels, pickleweed mid-marsh, etc.)
Why is non-native Cordgrass a Problem?

- Degrades endangered species habitat
- Hybridizes with native Pacific cordgrass
- Fills in restoration sites
- Degrades flood control capacity
The Invasive *Spartina* Project

- Created in 2000 by the Coastal Conservancy and the USFWS
- Coordinate Estuary-wide *Spartina* monitoring and control efforts
- Long term goal: eradicate invasive *Spartina* from the San Francisco Estuary
Monitoring Program

- Annual Inventory
- New Features (pt, ln, poly, grid) Yearly
- New Overlay Old Features
- Mapping Grade GPS (ArcPad)
The Past

- Extended tidal range
- Longer, wider leaves
- Longer, fatter inflorescences
- Taller

This is easy!
Invasive *Spartina alterniflora x foliosa* hybrid

Native *Spartina foliosa*
Control Program
Net cover of Invasive Spartina 2004-2010

2004: 691 - 789 acres
2005: 721 - 824 acres
2006: 589 acres
2007: 215 acres
2008: 296 acres
2009: 161 acres
2010: 67 acres (to date)

- S. alterniflora/hybrid
- Possible S. alterniflora/hybrid
- S. densiflora
- S. patens
- Inventory Boundary (50,000 acres)
Not so easy anymore, huh?
The Present

- All obvious plants sprayed 2+ years
- Regrowth stunted by herbicide
- Regrowth may not flower

Is this hybrid regrowth, or native?
Backcrossing and Introgression

Sanchez Marsh, October 2008 – Laura Feinstein, UC Davis PhD Student
The Future

• Use GPS to guide treatment
• Record patch-level treatment effort

Spray this one!
ArcPad Custom Treatment Survey Forms
TS survey work

Where to next, ma’am?
Pros

• Easier for Treatment Crews 😊
Pros

- Easier for Treatment Crews 😊
- Accountability of Treatment Crews
Pros

• Easier for Treatment Crews 😊
• Accountability of Treatment Crews
• Better Monitoring Information
  – More Patches Mapped
  – Past Treatment Info Informs ID & conf
  – Track What Works
Cons

• TIME
• MONEY
Cons

- More Staff Required
- Increased Geodatabase Complexity
THANK YOU

Project Director – Peggy Olofson
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Assistant Monitoring Program Manager - Tripp McCandlish
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Funders – California State Coastal Conservancy, CALFED, ARRA
Questions?
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