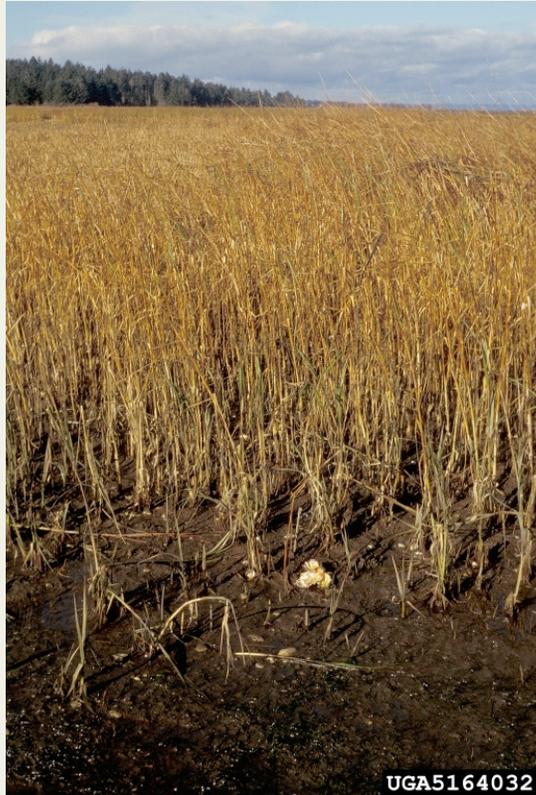


# Alaska *Spartina* Prevention, Detection and Response Plan



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907-745-8127



# Special thanks to the plan authors

Vanessa Howard Morgan and Mark Sytsma

Aquatic Bioinvasion Research and Policy  
Institute

Center for Lakes and Reservoirs

Portland State University



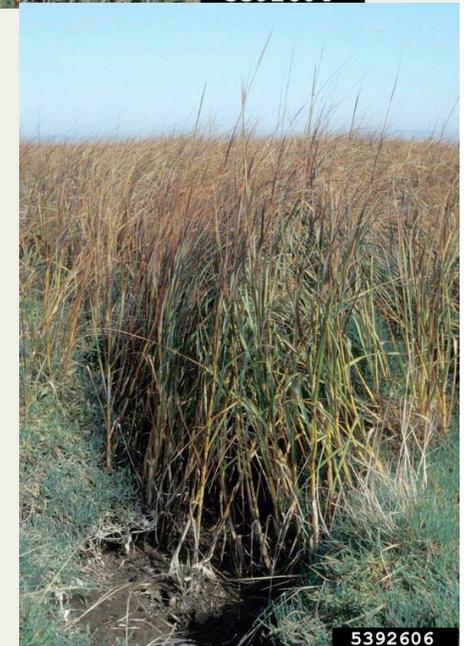
# Biology

- Cordgrass
- 17 species worldwide, 4 introduced to North America
- *Spartina anglica*, *S. alterniflora*, *S. densiflora*, *S. patens* and hybrids
- Native to the East Coast
- Perennial, Rhizomatous grass
- Dense stems and thick roots
- Adapted to grow in marine environment



# Biology

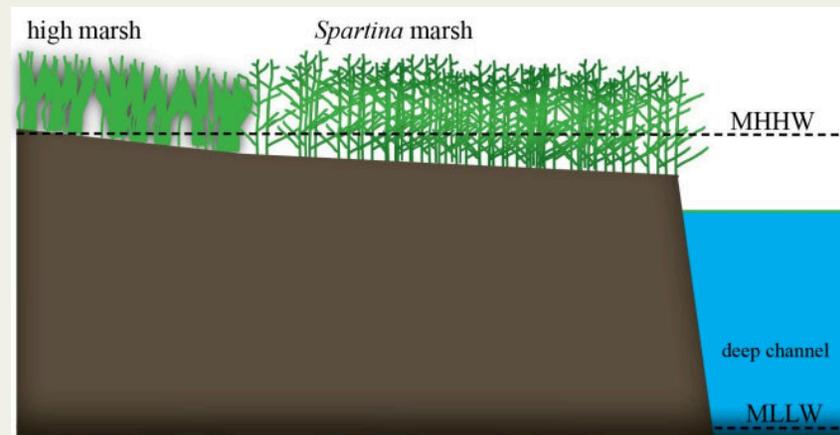
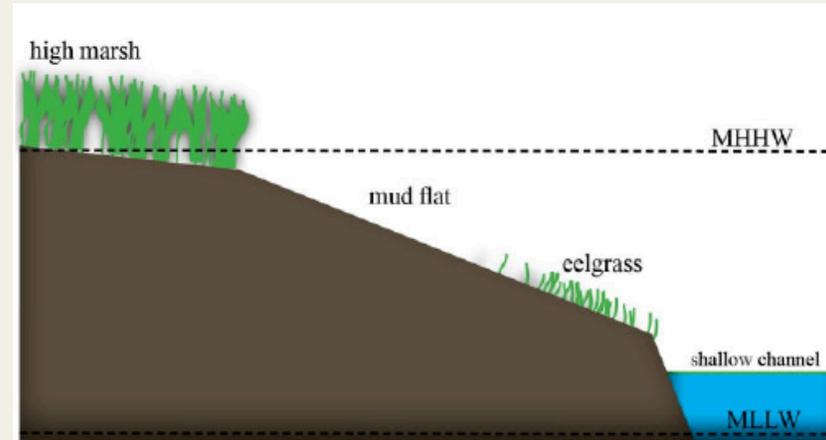
- Spreads by seed or root fragments
- Plant pieces may float for two months or more
- Originally introduced for erosion control and forage
- Transforms mudflats into salt marsh
- *Spartina* complex ranked 86/100



Photos by John M. Randall, The Nature Conservancy, Bugwood.org

# Impacts

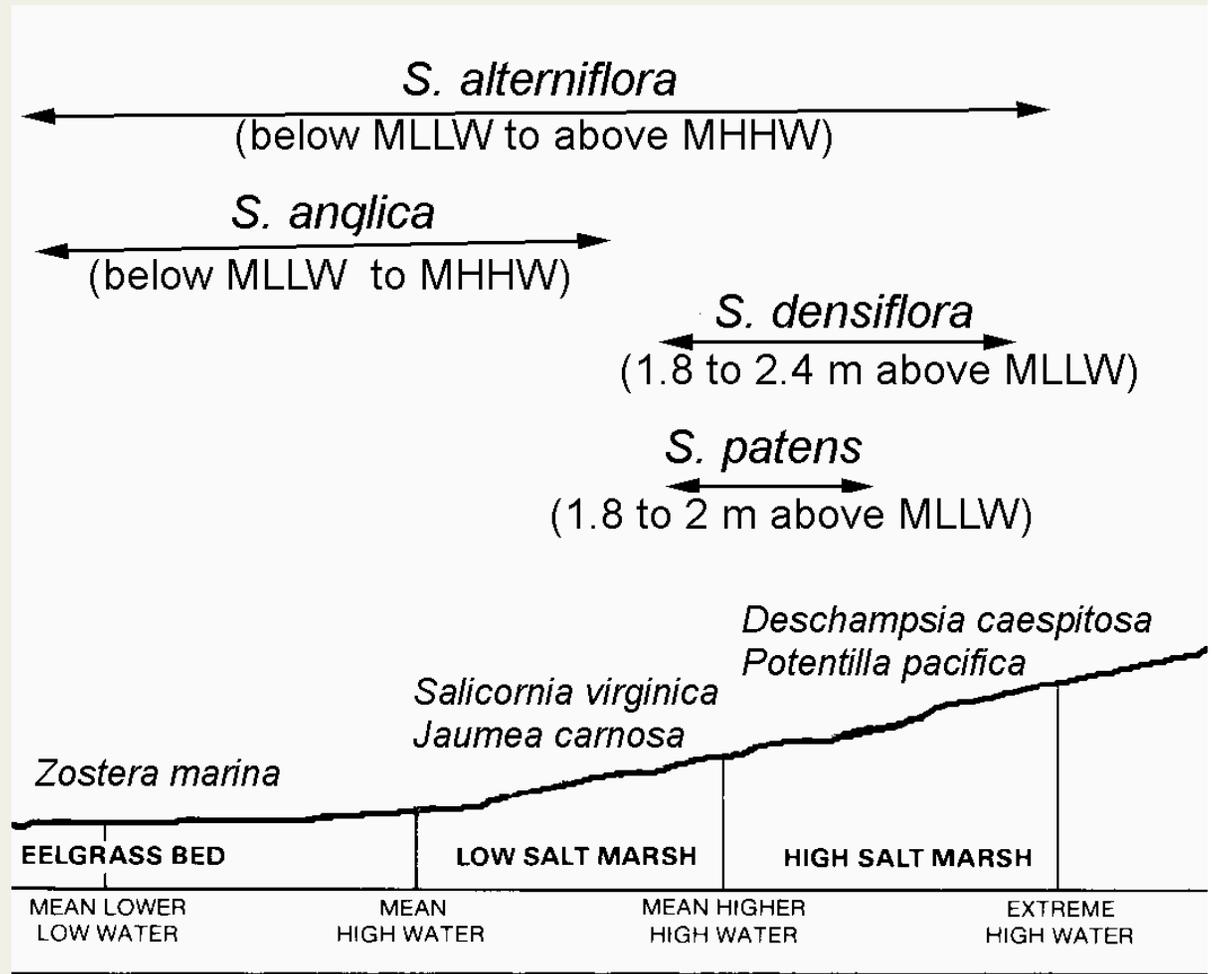
- Increase elevation of tidal areas
- Eliminates use of area by shore birds
- Shift from algae-based food web to detrital
- Kachemak Bay and Copper River Delta support 1.1 million shorebirds



*Spartina invasion of mudflats results in sediment accretion, an increase in elevation, and alteration of estuarine hydrology.*

# Impacts

- Loss of eelgrass
  - Loss to waterfowl and invertebrates
- Associated with Green crab (*Carcinus maenas*)
- Clamming industry- lost habitat
- Dungenous crab- altered invert communities and salmonids



# Vectors

- Solid ballast - Barges and the Yaquina USACE vessel
- Contact with hulls
- Ballast water-not likely
- Transport of live shellfish – not likely
- Migratory birds
- Floating seeds and wrack

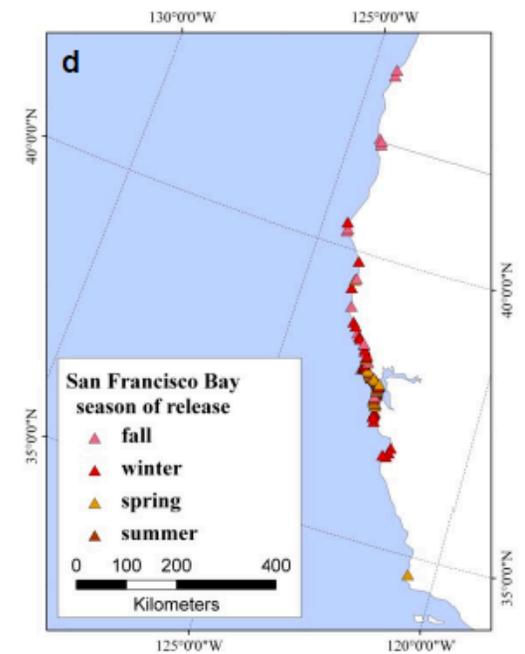
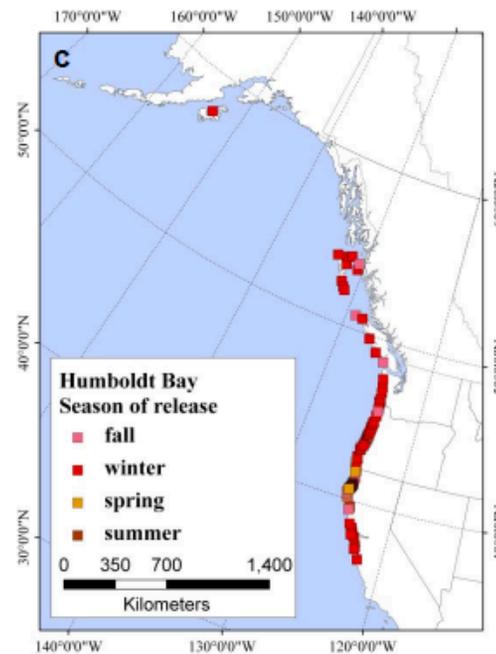
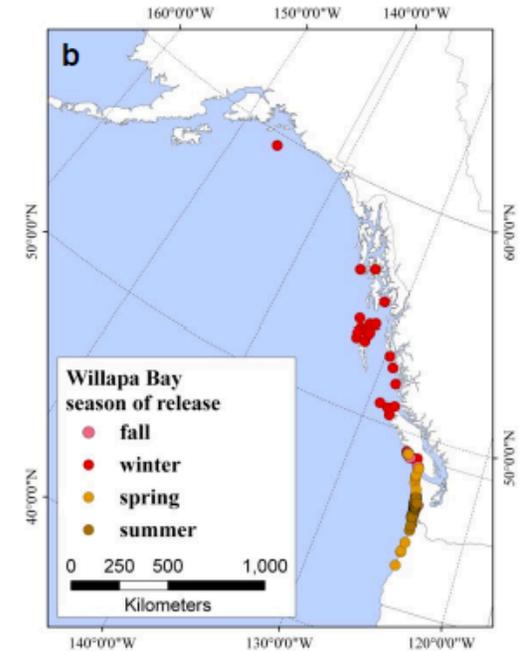
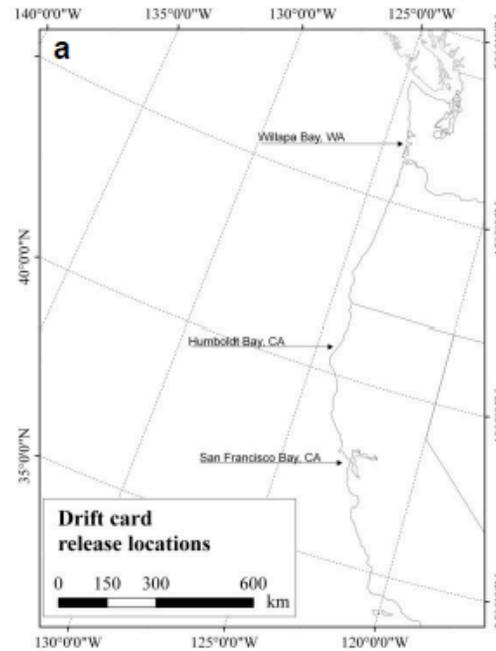


## Documented *Spartina* Infestations

- *S. anglica*
- ★ *S. patens*
- *S. densiflora*
- *S. alterniflora* & hybrids



# Will *Spartina* invade Alaska?



# Where to Look

Alaska Shorezone mapping identifies suitable habitats

Highly suitable

Moderately suitable

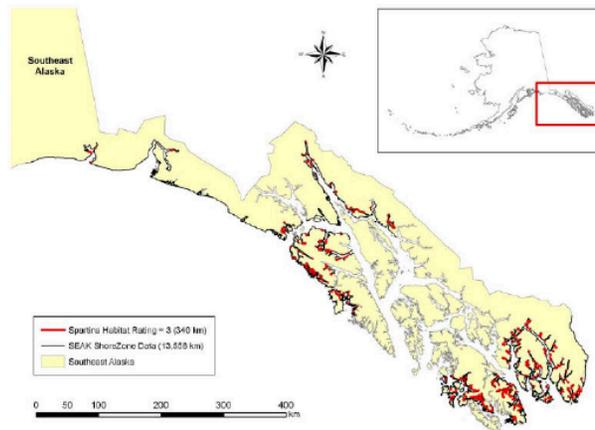


Figure 10. Areas rated as highly suitable for *Spartina* in Southeast Alaska. All areas in black were analyzed; those in red exhibit three critical habitat characteristics (protection from wave exposure, wide sediment dominated flats, estuarine) determined by a habitat suitability model to be conducive to *Spartina* colonization. Figure provided by Jodi Harney (Coastal and Ocean Resources Inc.).

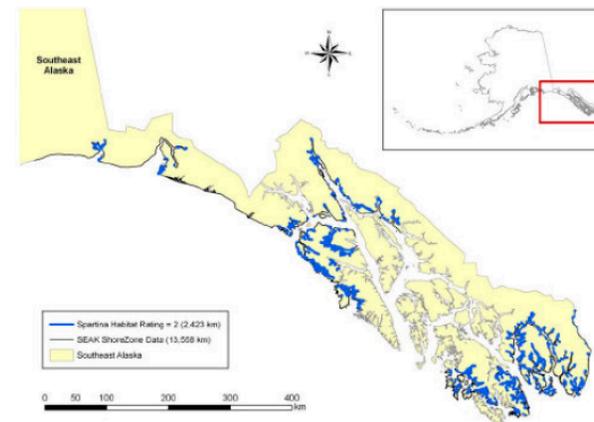


Figure 11. Areas rated as moderately suitable for *Spartina* in Southeast Alaska. All areas in black were analyzed; those in blue exhibit two of three critical habitat characteristics (protection from wave exposure, wide sediment dominated flats, estuarine) determined by a habitat suitability model to be conducive to *Spartina* colonization. Figure provided by Jodi Harney (Coastal and Ocean Resources Inc.).

# Climate modeling for suitable habitat



Figure 12. Current predicted bioclimatic range model for the cordgrass complex (*Spartina* spp.).  
Figure provided by Elizabeth Bella (HDR Alaska, Inc.).

# How to perform Early Detection

- Combine data from climate and habitat suitability
- Review history of oyster spat/equipment importations
- Inventory areas-active
- Train volunteers to detect- passive
- Train key field crew staff - passive

Relative cost effectiveness of inventory methods in OR

Method	Risk area % covered	Annual cost \$K	Relative cost effectiveness	Relative Reliability	Adjusted relative cost effectiveness
Volunteers	25	5.0	5.0	0.1	0.5
Ground	50	15.0	3.3	0.5	1.7
Helicopter	75	6.0	12.5	0.2	2.5
Fixed wing	75	2.0	37.5	0.1	3.8
Air-both	90	8.0	11.3	0.2	2.3
Boat - passive	25	5.0	5.0	0.1	0.5
Boat - active	50	24.0	2.1	0.5	1.0



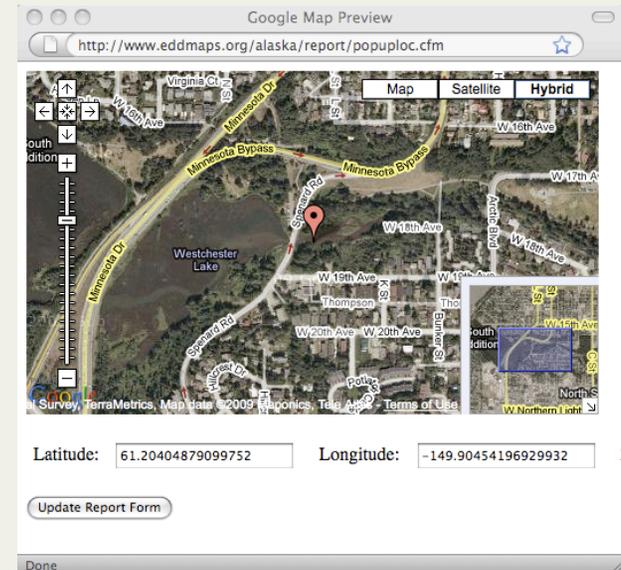
Resurrection Bay beach cleanup

# Early Detection Reporting System

- 1-877-invasiv
- Trainings in key communities
- EDDMapS.org/alaska/
- Alaskainvasives.org
- CNIPM.org



The screenshot shows the "EDDMapS Alaska - Early Detection Reporting Form" in a web browser. The form is titled "EDDMapS Alaska - Early Detection Reporting Form" and includes a navigation bar with links for "ABOUT EDDMAPS", "DISTRIBUTION MAPS", "REPORT SIGHTINGS", "SPECIES INFORMATION", "TOOLS", "NEWS", "PARTNERS", and "PROJECTS". The form contains several sections: "Personal Information" with fields for Name (Flora Graziano), Address, E-mail (babeweedsout@conservation.org), and Phone Number (1-877-invasive); "Weeds Sighted" with a list of weeds and checkboxes for "spotted knapweed", "purple loosestrife" (checked), "giant hogweed", and "leafy spurge".



Daddy, I think  
I saw some  
purple loosestrife

Go to  
[Alaskainvasives.org](http://Alaskainvasives.org) and  
report exactly where you  
saw it. (Daddy said)







**Home**

1-877-INVASIV

Report an Invasive to  
EDDMapS

Free Weed Guide!

Calendar

Contact Us

Minutes & Newsletters

News and Research

Resources & Links

Subcommittees

**OUR PROGRAMS**

- ▶ Agriculture & Horticulture
- ▶ Health, Home & Family Development
- ▶ Natural Resources & Community Development
- ▶ 4-H & Youth Development

**OTHER LINKS**

## Welcome!

Logos for agencies concerned with invasive species in Alaska.



### Mission of Alaska Invasive Species Working Group

The mission of the AISWG is to minimize invasive species impacts in Alaska by facilitating collaboration, cooperation and communication among AISWG members and the people of Alaska.

### What is an Invasive Species?

The following definitions are from Executive Order 13112, a Presidential statement of national policy:

**"Alien species"** means, with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

**"Invasive species"** means an alien species whose introduction does or is likely to cause economic or environmental harm to human health.

### Why do we need to work together?

Alaska is a **BIG** place; 365,000,000 acres, with a coastline longer than all the other 49 states combined. Land is managed by the State of Alaska, the U.S. Government, private holdings, and tribal entities.

Alaska is a major location for sea and air shipping, tourism and resource production. Long borders, long coastlines, busy shipping centers, and a large amount of imported goods give invasive species a lot of ways in.

EDDMapS Alaska - Early Detection Reporting Form

http://www.eddmaps.org/alaska/report/report.cfm

Most Visited ▾ Latest Headlines ↻ Getting Started https://webmail.asd... AISWG homepage EDDMapS Alaska - Early Detect...

# EDDMapS

Early Detection & Distribution Mapping System

Home | About | Cont

ABOUT EDMAPS DISTRIBUTION MAPS REPORT SIGHTINGS SPECIES INFORMATION TOOLS NEWS PARTNERS PROJECTS

## EDDMapS Alaska - Early Detection Reporting Form

If you think you have spotted an infestation of an EDRR weed please provide as much of the information described on this form as possible. Send the information to one of the contacts above. Please provide pictures if possible. We will document the occurrence, and have the plant professionally identified and controlled if possible.

### Personal Information

Information provided will only be used to contact the reporter for additional information about the sight.

**Name:**

**Address:**

**E-mail:**

**Phone Number:**

---

### Weed/s Sighted

Place an "X" next to the weed sighted. "Other" weeds may include those identified by your local Cooperative Weed Management Area or Soil and Water Conservation District as EDRR species.

**Weeds:**

- spotted knapweed
- purple loosestrife
- giant hogweed
- leafy spurge

Done

EDDMapS Alaska - Early Detection Reporting Form

http://www.eddmaps.org/alaska/report/report.cfm

Most Visited Latest Headlines Getting Started https://webmail.asd...

AISWG homepage EDDMapS Alaska - Early Detect...

### Infestation Description

Place an "X" next to the categories for each descriptor of the number of individual weeds. Please include units (e.g. feet squared, acres etc.) when describing the estimated size of the infestation. Place an "X" next to the Plant Description that best describes the life stage of the plants. The information here will help land managers determine how much time they have to prevent the plants from spreading.

**Est. Number of Individual Weeds:**  1-5  6-25  26-50  
 51-150  151-500  500+

**Number of patches of weeds in the infestation:**  1  2-5  6-10  10 or more

**Estimated Size of Weed Infestation:**

**Plant Description:**  Seedling  Vegetative  Flowering  
 Seeds spreading  Unknown

---

### Local description

Name of park, neighborhood, street where the weeds are located or adjacent to. Road mile, and GPS coordinates (identify the datum used). Information provided should identify key features of the surrounding area. We need enough detail to find the infestation again. This can be very difficult, so please provide as detailed of information as possible.

**Location Description:**

**Latitude:**  Must be expressed in Decimal Degrees.

**Longitude:**  Must be expressed in Decimal Degrees.

**Datum:**

---

Done

Google Map Preview

http://www.eddmaps.org/alaska/report/popuploc.cfm

Map Satellite Hybrid

Chukchi Sea Beaufort Sea

AK YT NT

Bering Sea Gulf of Alaska

POWERED BY Google

Map data ©2009 Tele Atlas - [Terms of Use](#)

Latitude:  Longitude:

Update Report Form

Done

Google Map Preview

http://www.eddmaps.org/alaska/report/popuploc.cfm

Map Satellite Hybrid

Willow  
Wasilla  
Palmer  
Anchorage

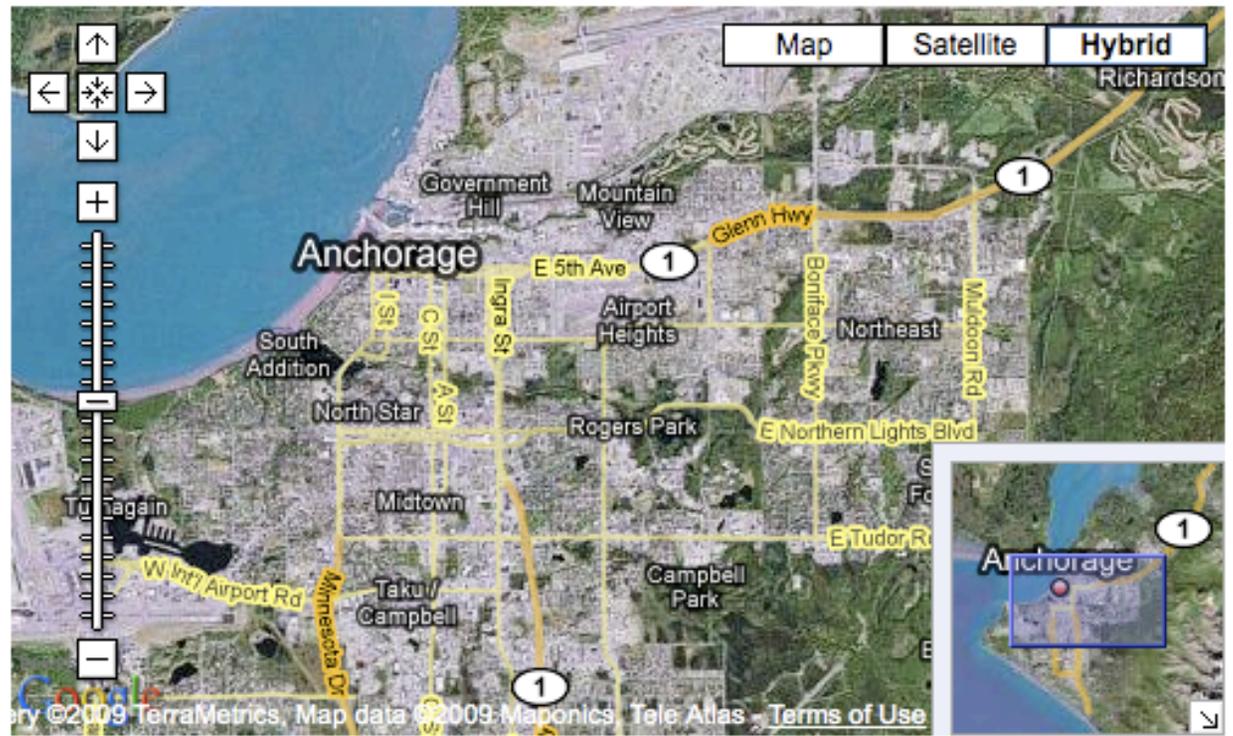
POWERED BY Google

Map data ©2009 Tele Atlas - [Terms of Use](#)

Latitude:  Longitude:

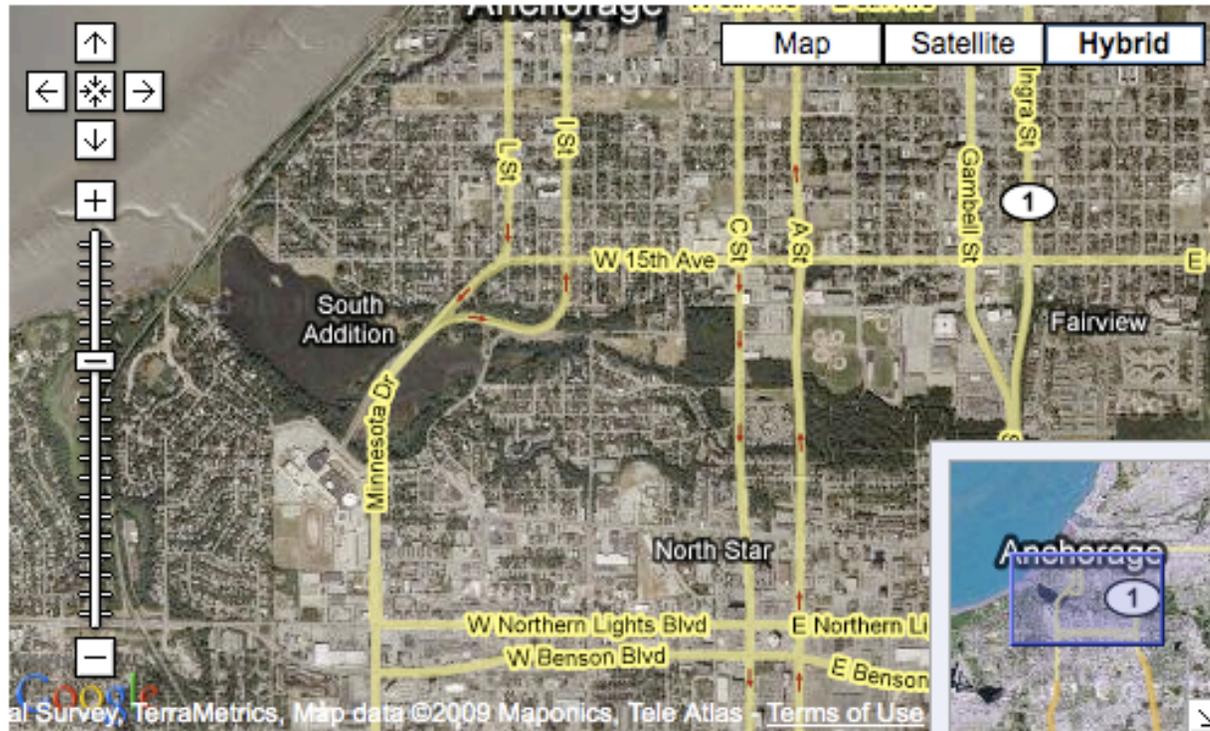
Update Report Form

Done



Latitude:

Longitude:



Latitude:

Longitude:

Done



EDDMapS Alaska - Early Detection Reporting Form

http://www.eddmaps.org/alaska/report/report.cfm

Most Visited Latest Headlines Getting Started https://webmail.asd...

AISWG homepage EDDMapS Alaska - Early Detect...

Seeds spreading  Unknown

---

**Local description**

Name of park, neighborhood, street where the weeds are located or adjacent to. Road mile, and GPS coordinates (identify the datum used). Information provided should identify key features of the surrounding area. We need enough detail to find the infestation again. This can be very difficult, so please provide as detailed of information as possible.

**Location Description:**

**Latitude:**  **Longitude:**

Must be expressed in Decimal Degrees. Must be expressed in Decimal Degrees.

**Datum:**

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**Image 1:**

**Image 2:**

**Image 3:**

**Image 4:**

**Image 5:**

Developed by the University of Georgia, Center for Invasive Species and Ecosystem Health  
Last updated on Monday, May 26, 2008 at 07:02 PM  
Questions and/or comments to the Bugwood Webmaster

Done



# What to do if we find it

- Delimit infested area
- At minimum remove inflorescence
- Very small infestations may be dug
- Most infestations will require pesticide treatment or covering
- Need DEC and/or NEPA permits to use pesticides



Control with Habitat (a.i. Imazapyr) and covering

# Coordination – the real challenge

- Inter-department MOU to support plan
- Identify lead agency
- List *Spartina* sp. as noxious
- Emergency fund
- Develop permits
- Participate in regional strategies
- Determine readiness for rapid response



# The question is when?

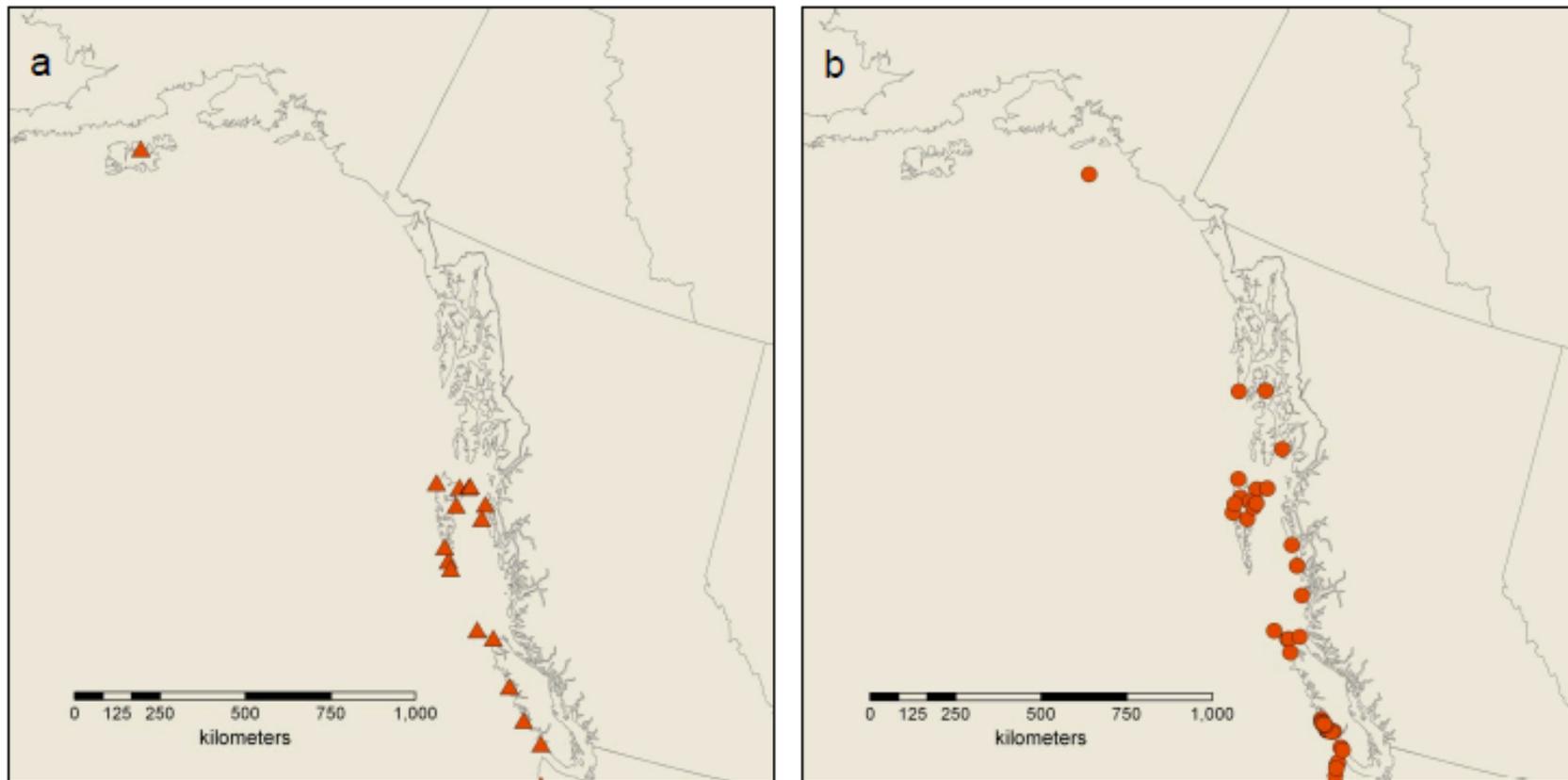


Figure 9. Northern most recoveries of drift cards from the *Spartina* Dispersal Study, including: a) recovery locations from releases at Humboldt Bay, California, and from b) Willapa Bay, Washington. The northern-most recovery point from Willapa Bay was found on Middleton Island, south of Cordova, Alaska. (V. Howard Morgan, unpublished data).