

NH Management of Perennial Pepperweed: Past, Present, Future

Aidan Barry

NHDES Coastal Program

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HSE Collaborative



New Hampshire
Department of Agriculture,
Markets & Food



Estuary Management Plan Actions

1.3.1:

Evaluate the extent and distribution of invasive species of plants, insects, and animals in the watershed towns, including but not limited to Phragmites, Pepperweed, Japanese Knotweed, Purple Loosestrife, and Japanese Shore Crab.

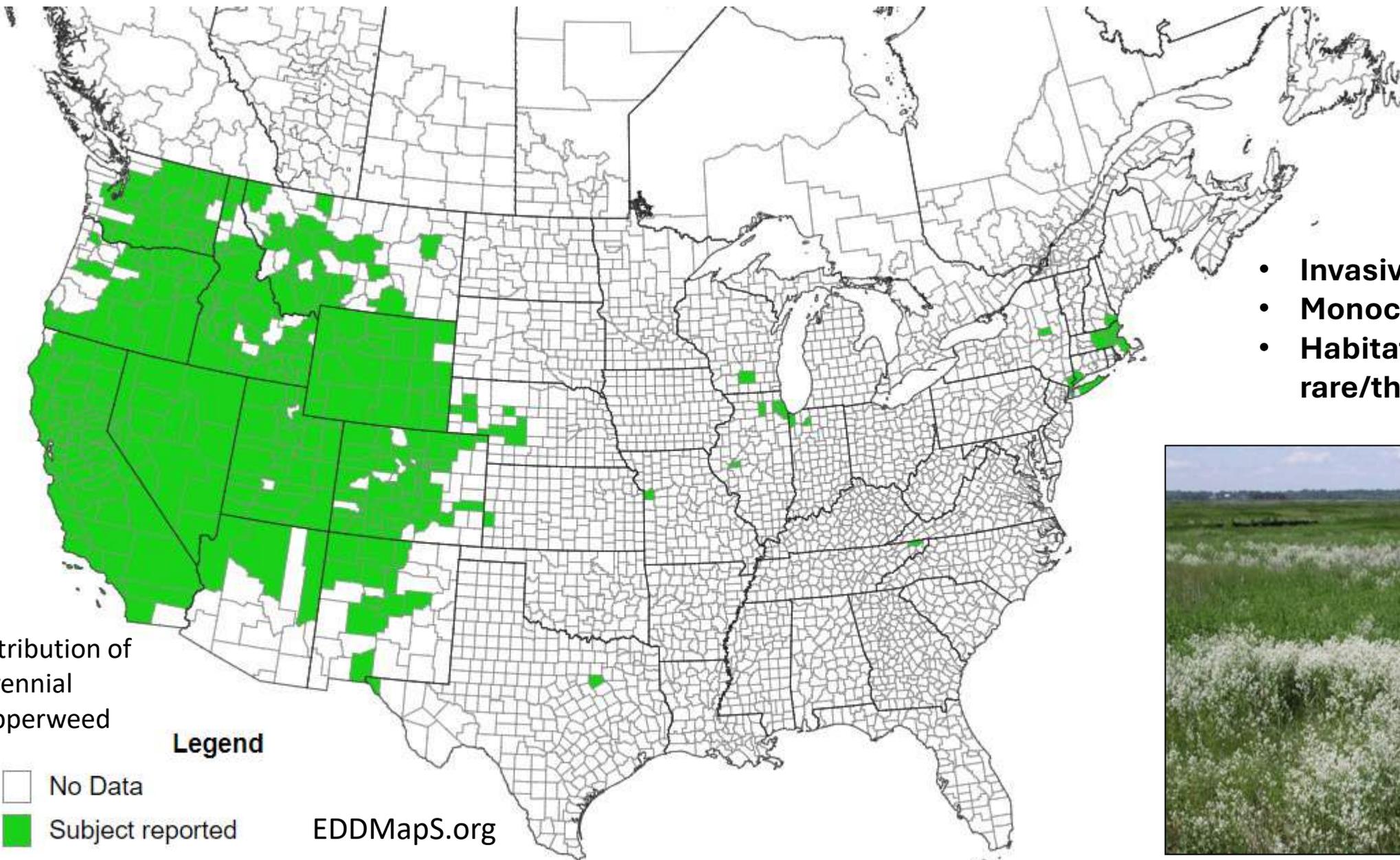
1.3-2:

Continue educational and outreach efforts to increase awareness of the negative effects of invasive species.

1.3-4:

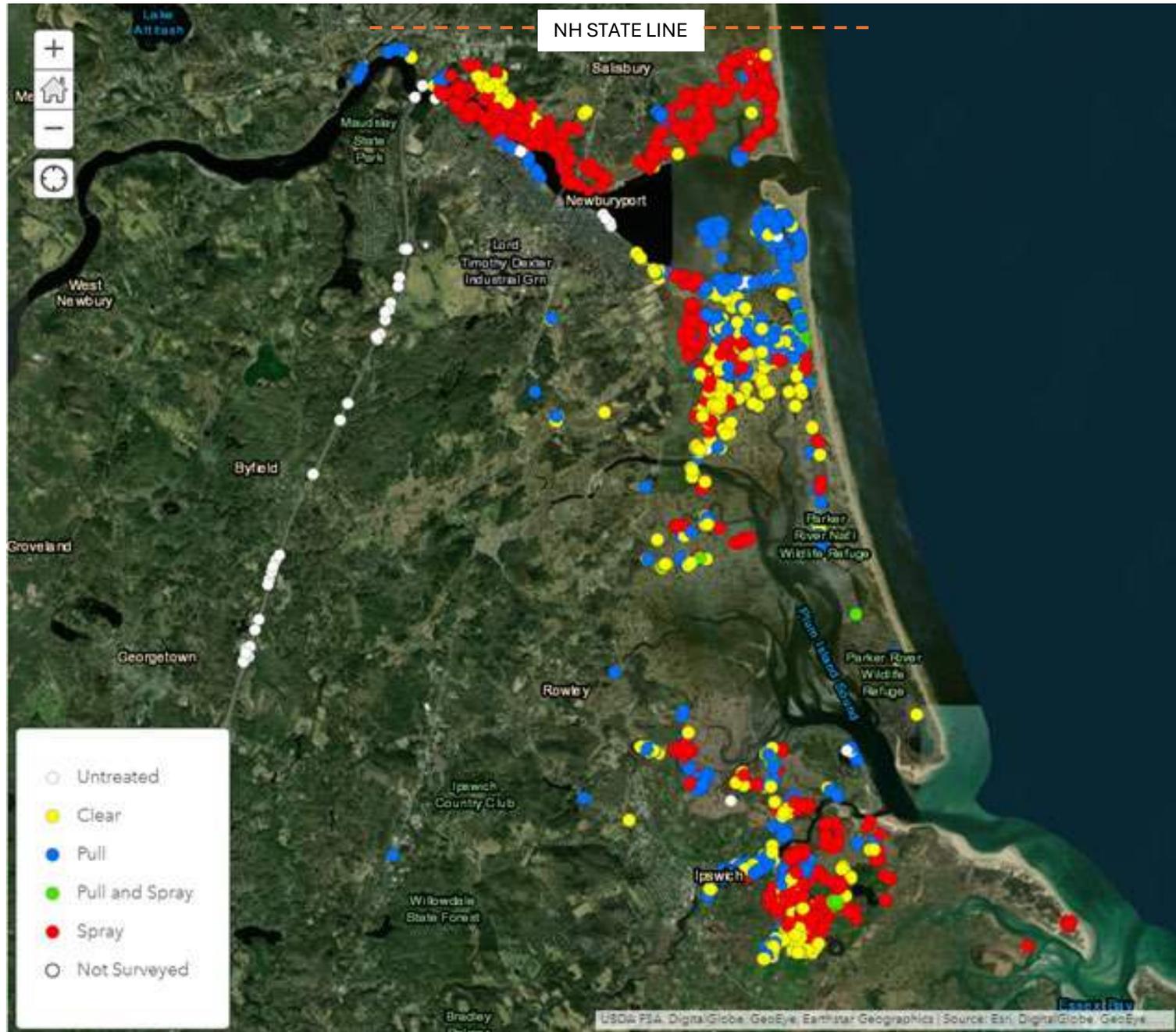
Procure permits and permissions to use herbicide treatment on two Pepperweed sites in the HSE.

Why should we care about perennial pepperweed?



- **Invasive!**
- **Monoculture**
- **Habitat similar to rare/threatened species**





Great Marsh Treatment 2019

- 16 years
- 30,000 acres have been mapped for pepperweed.
- 22,000 acres have been found clear of the plant.
- 8,000 acres are infested with pepperweed or under imminent threat from it.
 - HSE salt marsh is 4,000 acres

Perennial pepperweed (*Lepidium latifolium*)

Grows by rhizome
and from seed

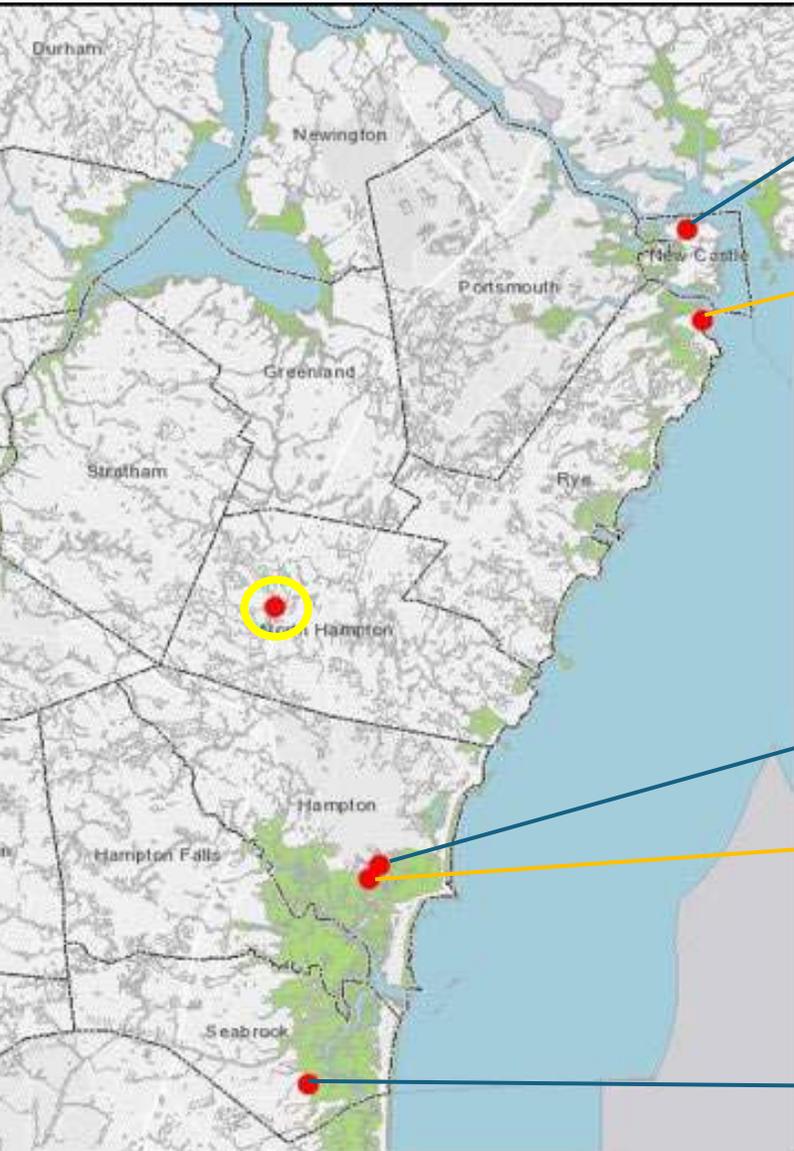
Starts as Rosette

Alternate Leaves

Blooms in July



Management 2000s-2020



Newcastle
River Road
2013



Odiorne
Cobble
Dune
2006



Hampton
WWTF
2008



Hampton
Route 101
2009



Seabrook
Lower Collins
Rd
2012

VECTORS OF DISTRIBUTION

Tidal Flow

Passenger Cars

Construction Vehicles

Dumping /Gathering



North
Hampton
I-95
2013



2010



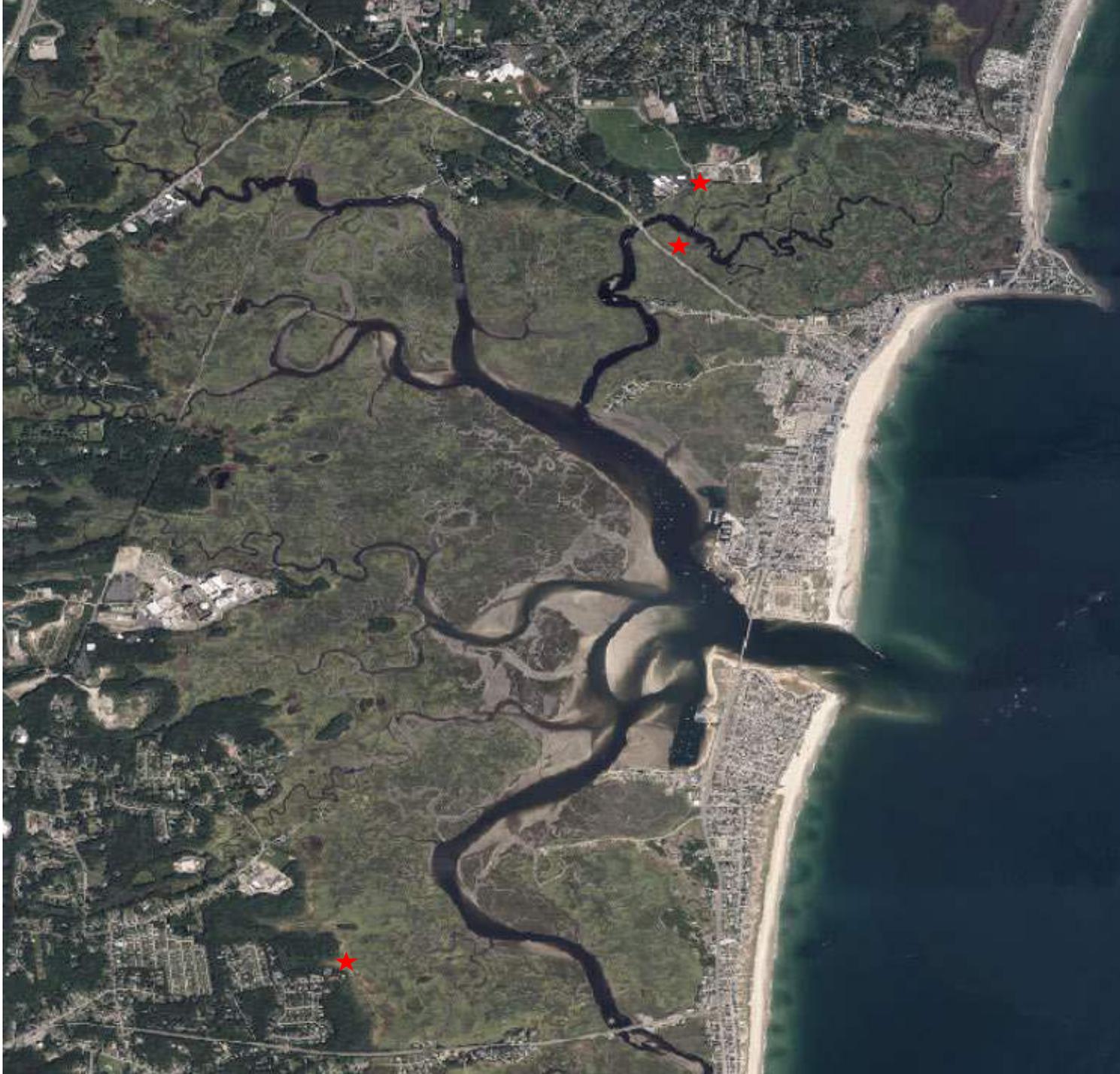
2018



NHCP handpull for seed control

2019

2008-2021



Early Detection, Rapid Response Invasives Management:
Documenting Perennial Pepperweed in New Hampshire using
EDDMapS



Final Project Report, December 2022



2021 Intern Julia Matthews pulls pepperweed in Hampton Marsh

Project Staff

- Haley Andreozi**
UNH Extension
- Malin Clyde**
UNH Extension - Project lead
- Wells Costello**
NH Sea Grant/UNH Extension
- Alyson Eberhardt**
NH Sea Grant/UNH Extension
- Charlotte Thompson**
UNH Extension

Nature Groupie Summer Interns

- Sydney Gendreau - 2021
- Julia Matthews - 2021
- Olivia Pitta - 2021
- Malian Jennings - 2022
- Dan Persico - 2022
- Emily Wood - 2022

Resources Created

- [Perennial Pepperweed Partnership Webpage](#)
- [Perennial Pepperweed in New Hampshire and Maine ID Card](#)
- [Video: Identifying Perennial Pepperweed](#)

Project Timeline and Purpose

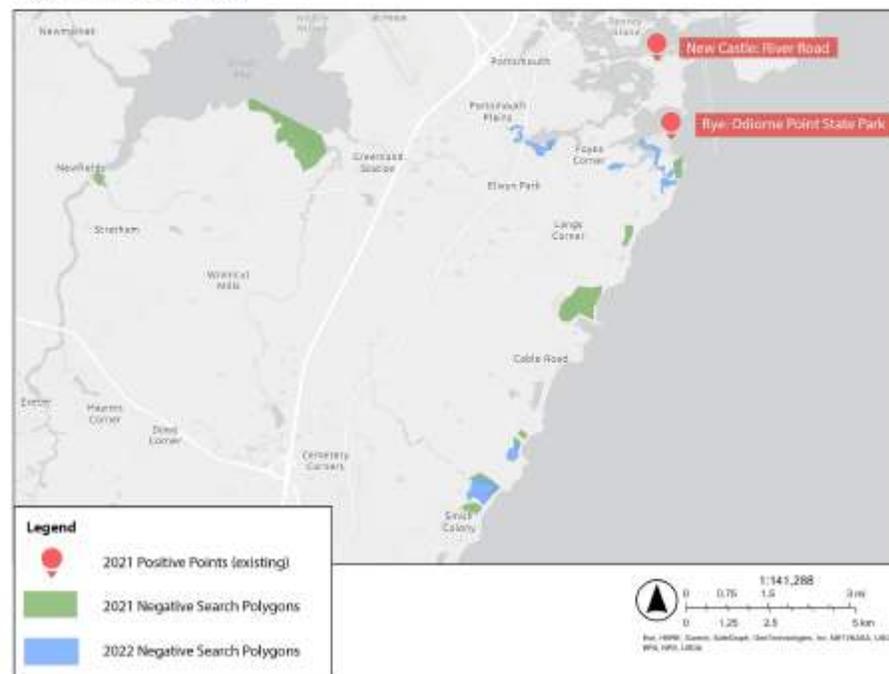
This report documents two years of work conducted by UNH Extension/ NH Sea Grant staff and UNH student interns from January 2021 – December 2022 with funding from the US Fish and Wildlife Service. Working in collaboration with a similar project in Maine, the project created and tested a new monitoring and management process for Perennial Pepperweed (PP, or *Lepidium latifolium*) in NH. An Interim Report from Year 1 of the project was also produced in fall, 2021.

The project's long term goal is eradication of PP in NH and Maine within five (5) years. Another goal was to establish a method for surveillance and mapping PP in New Hampshire using readily available tools which would result in transparent data easily shared among partners and the public. The invasive species database used by the state of New Hampshire is EDDMapS.org. However, prior to 2021, established populations of PP in NH were maintained in several locations, including the US Fish & Wildlife Service office in Parker River (MA) and the Department of Environmental Services Coastal Program, and only sporadically recorded through EDDMapS. A key advance of this project was to update EDDMapS to include all historical records of PP control (previously maintained by Kevin Lucey with the NH Dept. of Environmental Services Coastal Program) and all monitoring and management records produced during the 2021 and 2022 field seasons.

Table 1: NH PP Sites Surveyed, Managed & Discovered (2021 - 2022)

Year	# of polygons surveyed/searched	# of sites managed JULY	# of NEW PP sites discovered	# of sites managed in SEPT
2021	29	5	0	4
2022	23	10	5	4

Figure 2: North Coast

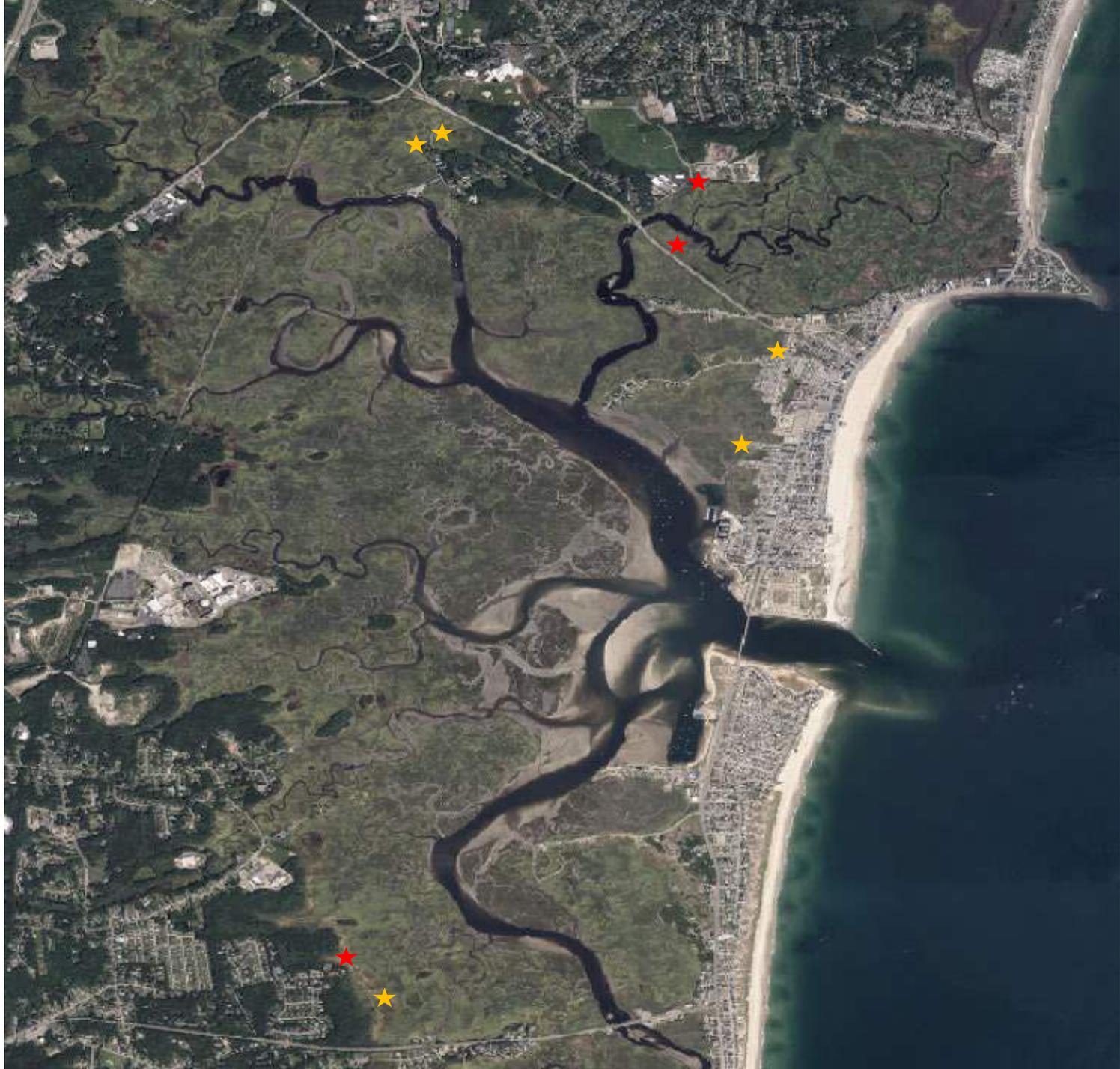


Began counting stems during survey/ handpull

2008-2021

2022

One site in
2022 had over
10,000 stems!



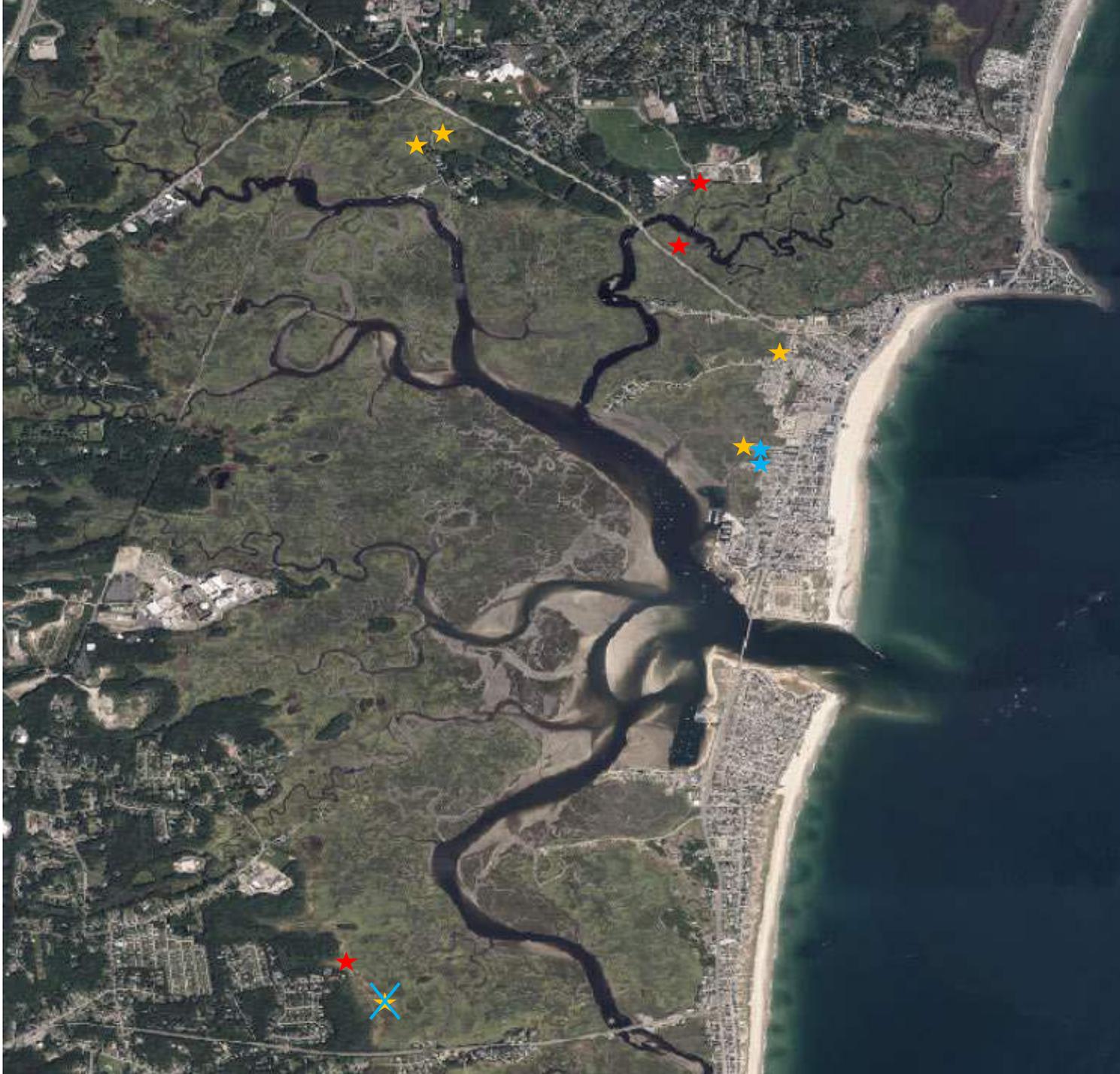


Expand Surveys

2008-2021

2022

2023

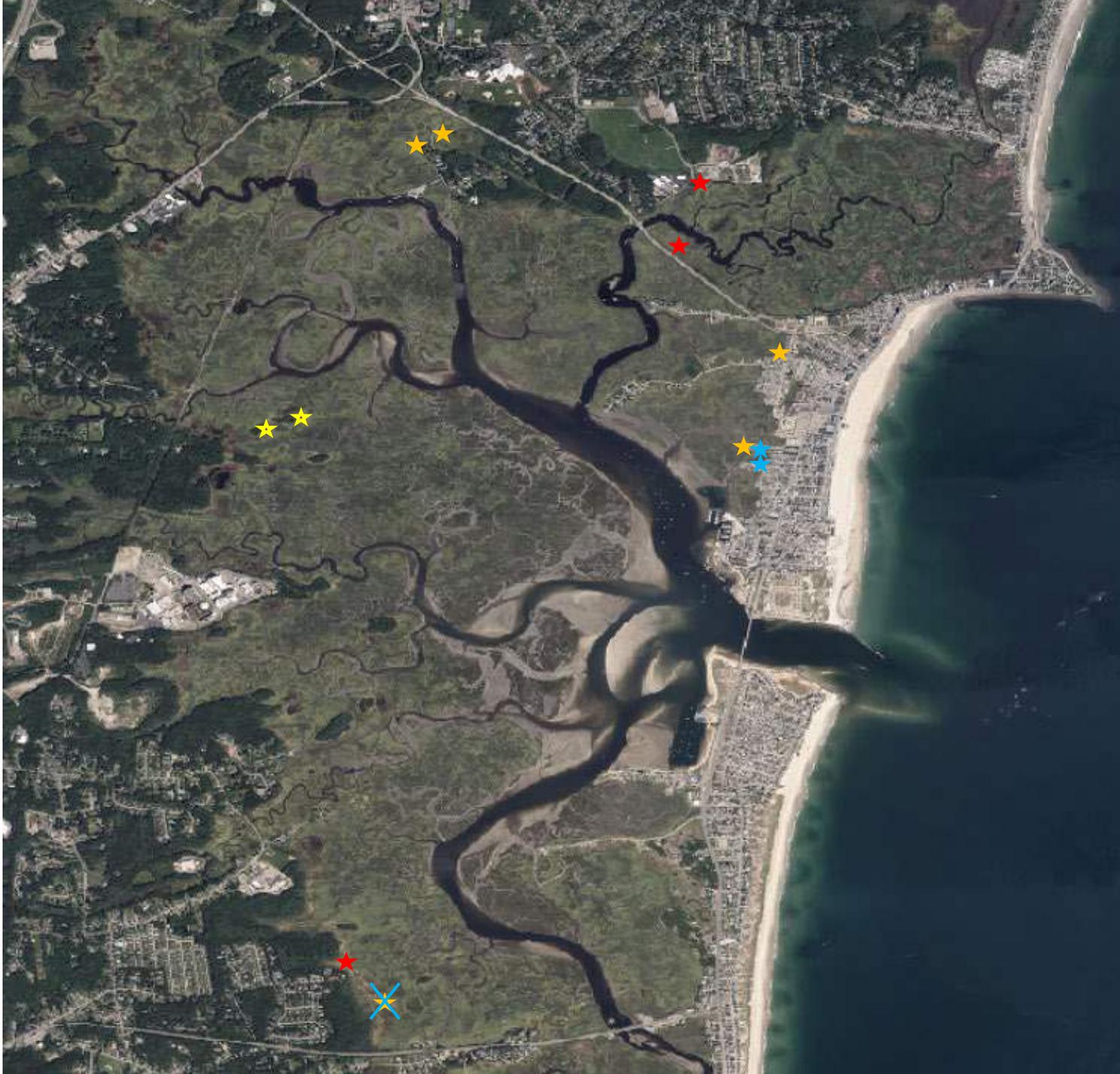


2008-2021

2022

2023

2024



Partner Collaboration



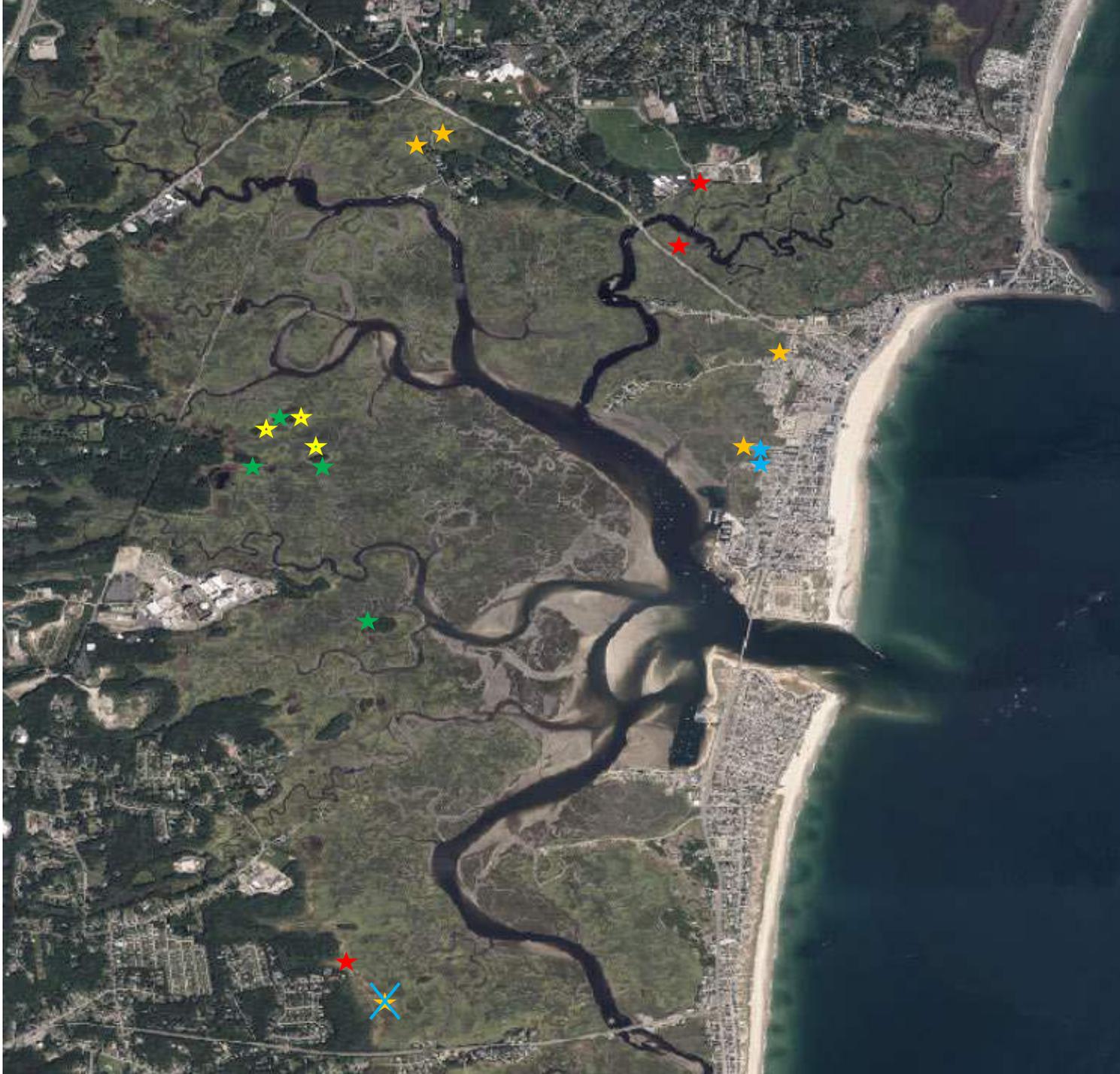
2008-2021

2022

2023

2024

2025



Discovery of Another Large Site



Management Strategies & Benefits

Hand Pulling

Remove stems/rhizomes prior to seed dispersal

Reduces chance for new sites

Labor intensive

Does not eradicate existing populations

May cause energy reallocation

- Rather than taller and fewer plants, sites tend to rebound with more, smaller plants



Management Strategies & Benefits

Hand Pulling	Herbicide
Remove stems/rhizomes prior to seed dispersal	Applied to stems prior to seed dispersal
Reduces chance for new sites	Reduces chance for new sites
Labor intensive	Less labor intensive
Does not eradicate existing populations	Opportunity to eradicate existing populations
May cause energy reallocation - Rather than taller and fewer plants, sites tend to rebound with more, smaller plants	No energy reallocation



Adjust Management Strategies



Future Management

- Continue Monitoring
- Expand Survey Footprint
- Continue Tracking # of Stems
- Outreach:
 - Education with municipalities
 - Permissions with landowners
 - Discussions with other organizations

