Treating Phragmites in High Quality Natural Communities

Phyllis Higman
Michigan Natural
Features Inventory

People protect what they know and value.

- MNFI

- Coastal zone

- Strategic action

- Pop Quiz

- Impacts

- What to do?

Michigan Natural Features Inventory

Maintain comprehensive database
on Michigan's rare elements of biodiversity

GIS based:
15,438 element occurrences (EO's)
endangered, threatened, special concern

420 plants

Endangered

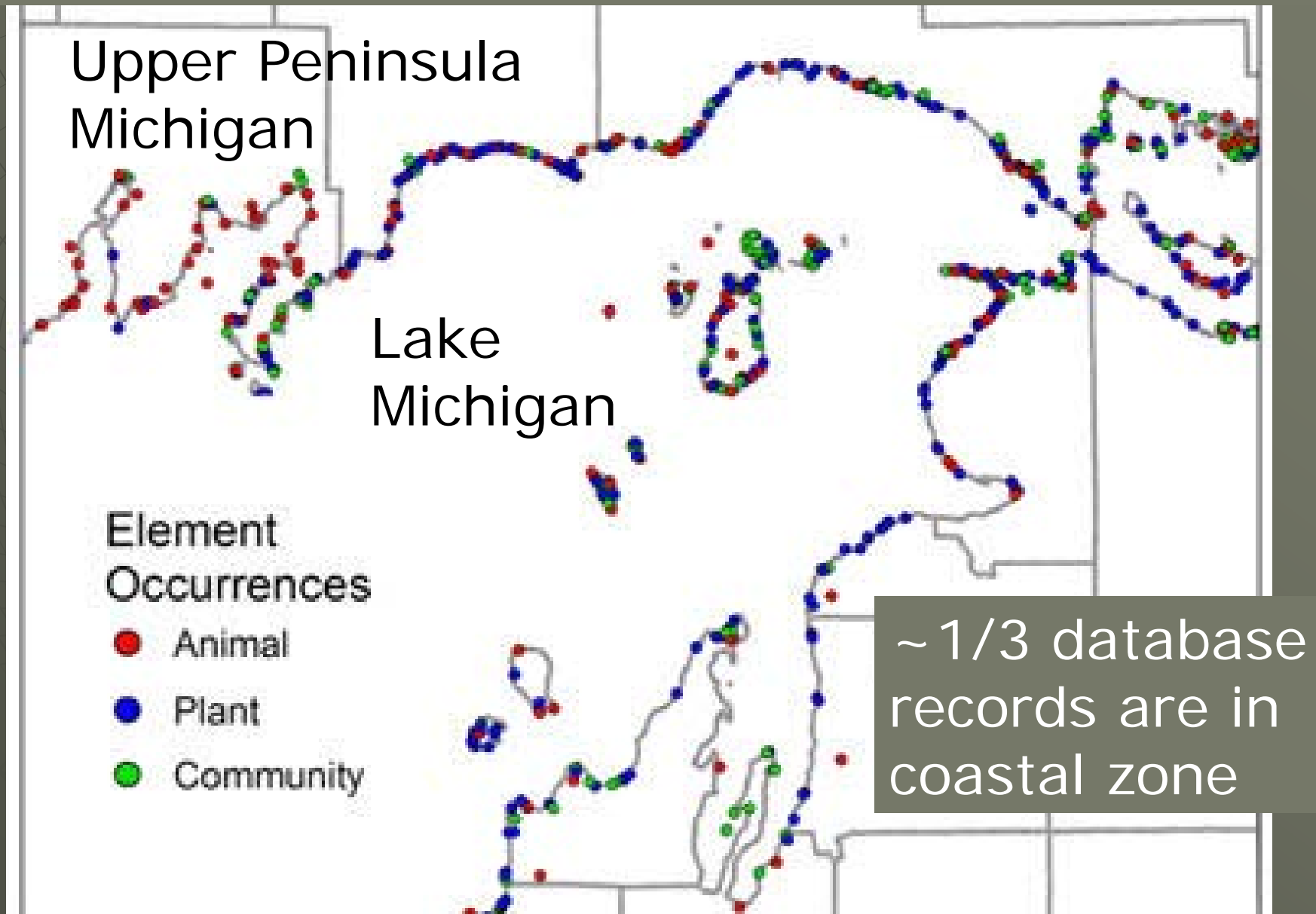302 animals

Threatened

76 natural communities

Globally imperiled

Listings and Ranks

◆ State & Federal Endangered: E   LE } legally protected

◆ State & Federal Threatened: T   LT

◆ State Special Concern: SC

◆ Global Ranks: G1…….G5

◆ State Ranks: S1…….S5

◆ Element Occurrence Ranks: A-D

} not legally protected; use to prioritize conservation

◆ NatureServe Programs collect and track data the same way – enables comparisons across jurisdictions

Coastal Zone EO's

Upper Peninsula Michigan

Lake Michigan

Element Occurrences
- 🔴 Animal
- 🔵 Plant
- 🟢 Community

~1/3 database records are in coastal zone

Michigan's Coastal Heritage

Strategic Plan

**Meeting the Challenge of Invasive Plants:
A Framework for Action**

prepared for the

**Michigan Department of Natural Resources
Wildlife Division**

by:
Phyllis Higman & Suzan Campbell

Michigan Natural Features Inventory
P.O. Box 30444; Lansing, Michigan 48909-7944
Report Number 2009-11
March 9, 2009
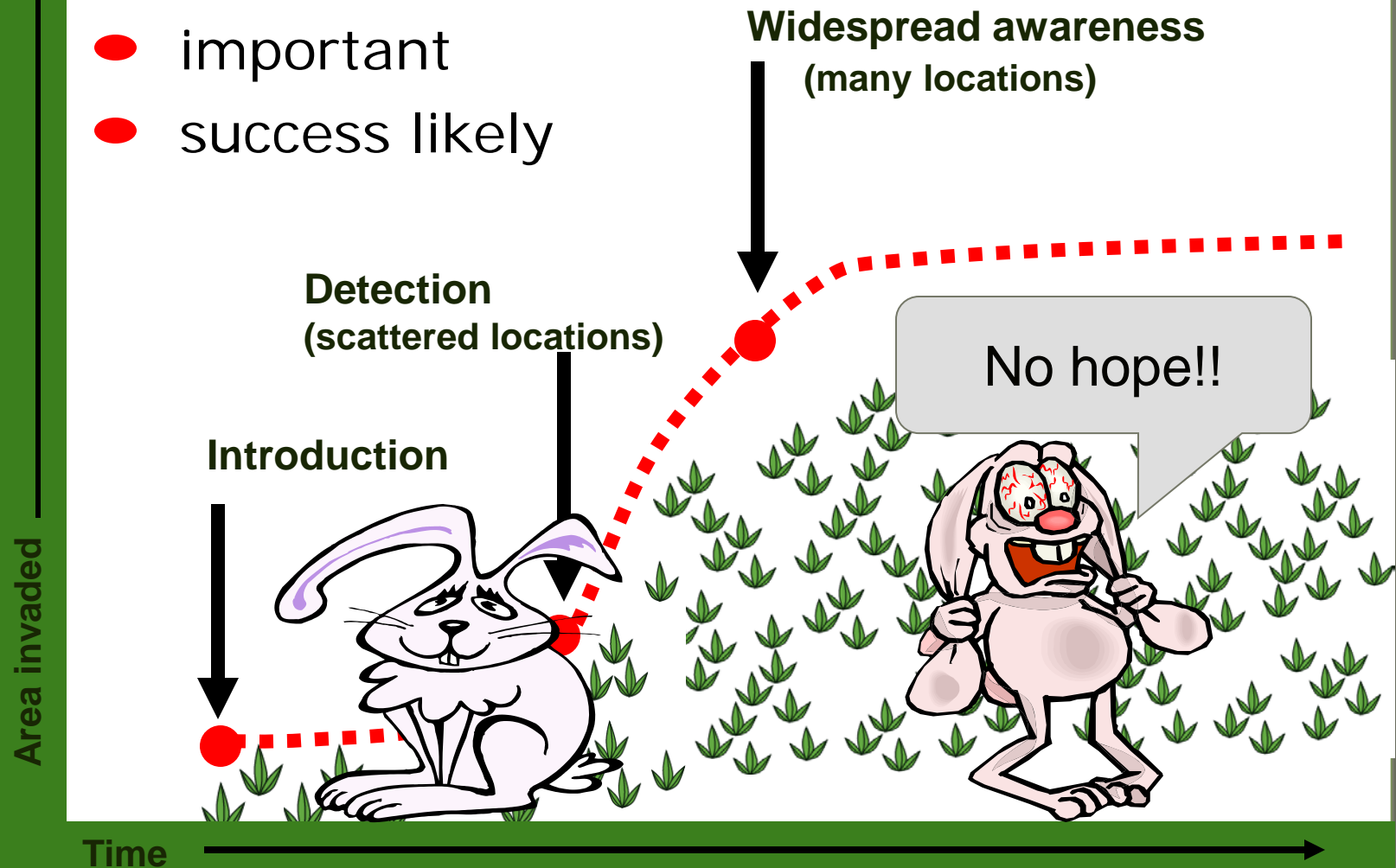
Project Coordinators
Mark Sargent & Sue Tangora
Michigan Department of Natural Resources
Wildlife Division

Early Detection & Treatment of Phragmites in Northern Michigan

◆ Regional approach:
  • high quality areas
  • Phragmites just coming in

◆ Collaboratiion:
  • Education
  • Surveys
  • Prioritizing
  • Treatment
  • Monitoring

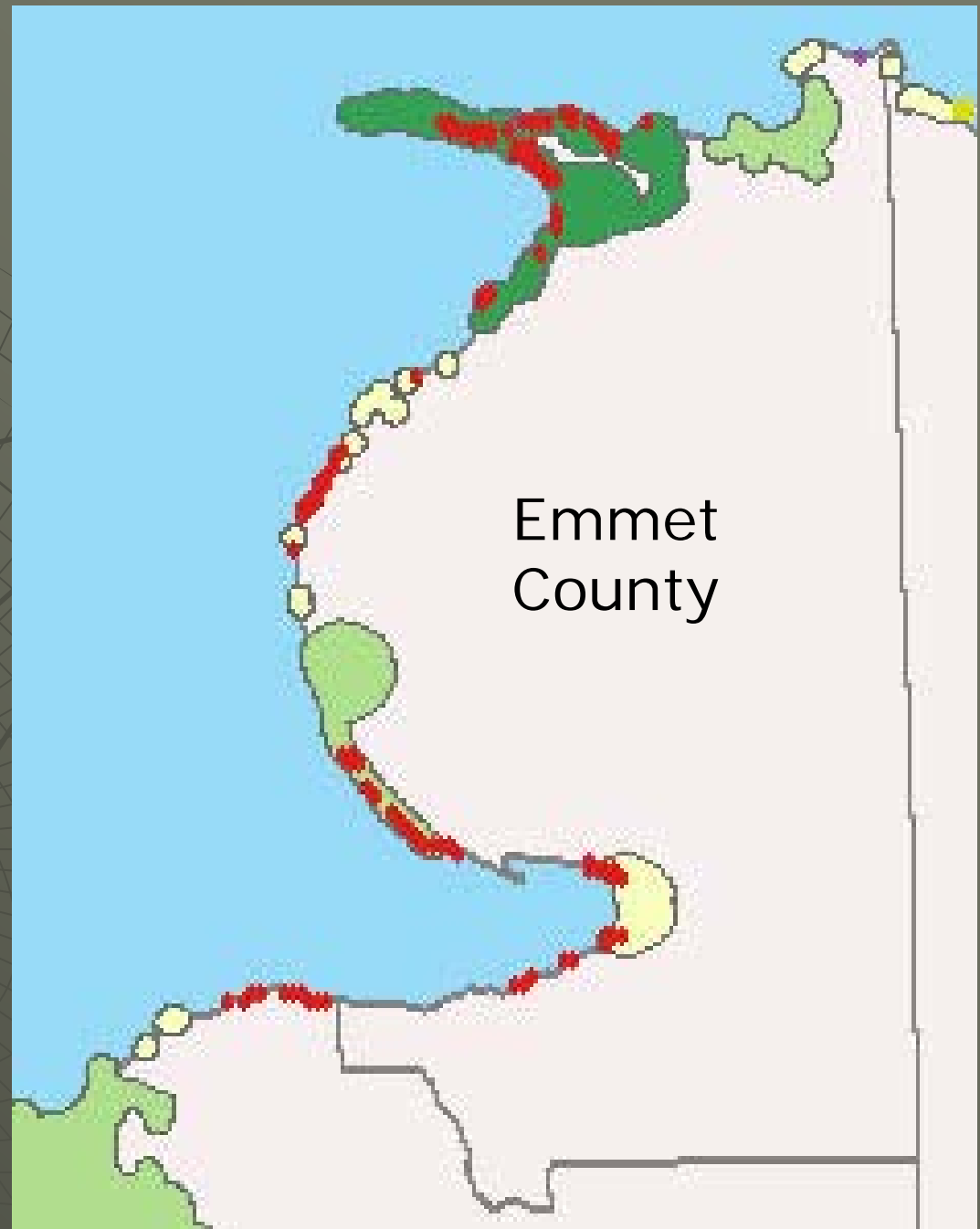| Site score	N
3 - 50	218
51 - 100	29
101 - 250	32
251 - 500	10
501 - 2972	7
Shoreline	
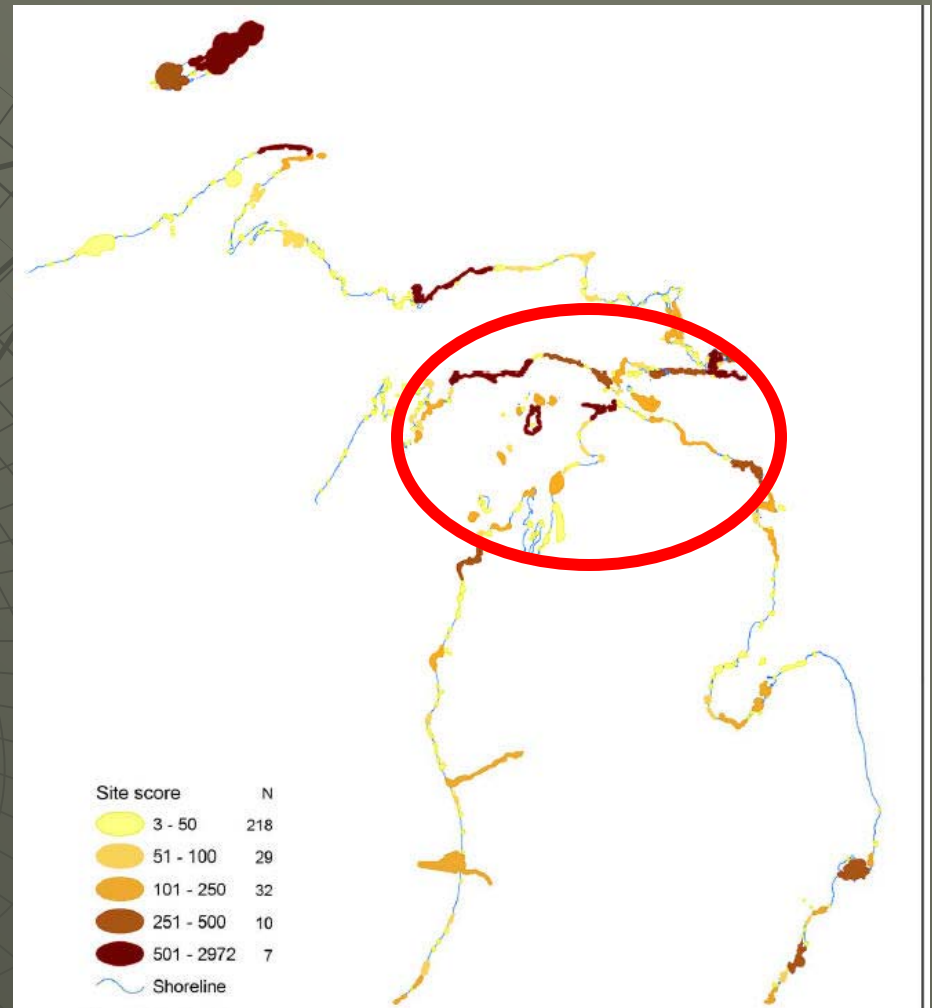
Collaboration!

Overlay of phragmites on biodiversity scored sites

Darker green: higher score

Red: phragmites points

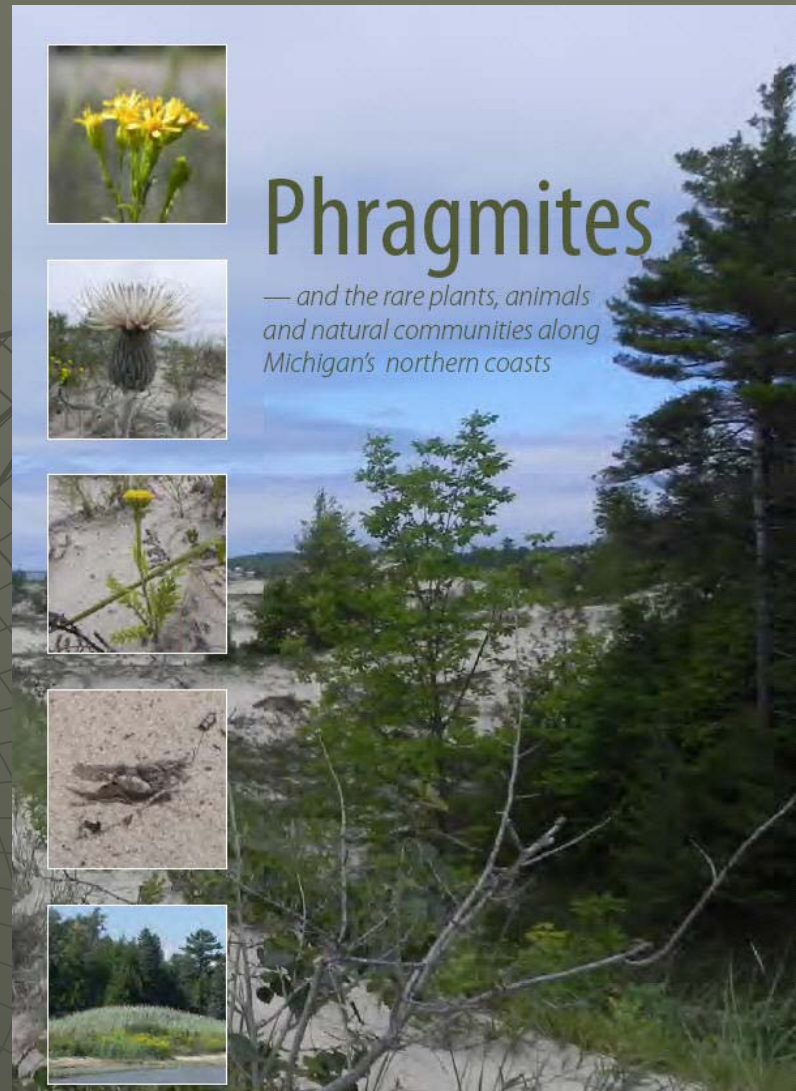Helen Enander, Kraig Korroch, Daria Hyde, Suzan Campbell, Ed Schools,

Emmet County

Outcomes!

- 12+ workshops conducted
- 275 miles surveyed
- 1 regional phrag distribution map
- 1 coastal biodiversity map
- 14+ local coordinators
- 220 acres treated
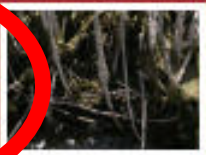- 7 invasive phragmites ordinances

Outcomes!

Thanks to Suzan Campbell, Daria Hyde

Michigan
Natural
Features
Inventory

MICHIGAN STATE
UNIVERSITY
EXTENSION

About MNFI   Contact Us   Services   Data Resources   Publications and Reports   Education   Invasive Species   Links

Phragmites

Overview   Coastal Areas   Native or Not   Map   Vectors   Presentations   Treatment   Local Groups

Early Detection and Rapid Response (EDRR) along Michigan's northern coastlines

Coastal Zone:
- ◆ 7 Federal listed species
- ◆ 40 State listed & SC species
- ◆ 15 wetland types

Inland wetlands too!

Catch them early - while you still can . . .

Widespread awareness

Detection

Introduction

| Eradication simple | Eradication feasible | Eradication difficult | Eradication impossible - only expensive local management |
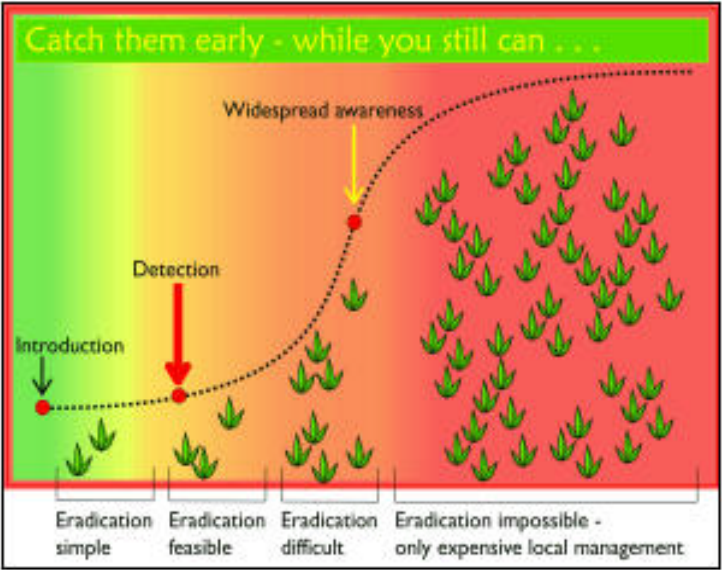
Houghton's goldenrod

State and federal threatened

Photo: Phyllis Higman

Photo: Sue Crispen

Occurrence
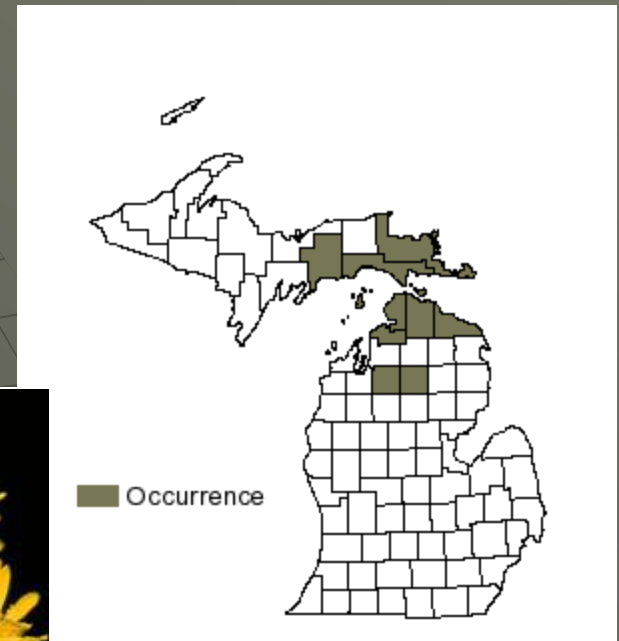
American Bittern

State special concern

Occurrence

Spotted Turtle

State threatened

Photo: Jim Harding

Occurrence
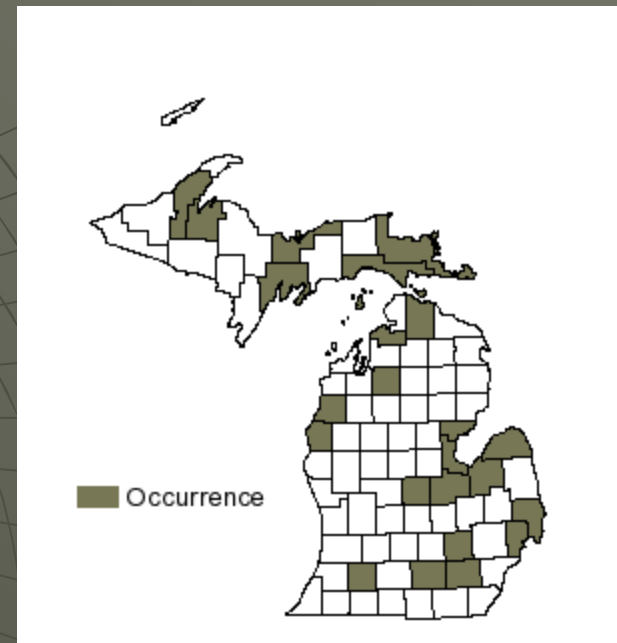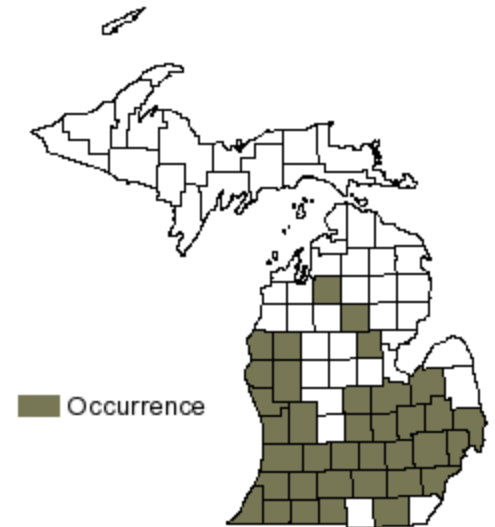
Hine's Emerald Dragonfly

State and federal endangered

Photo: William Smith

Occurrence

Native Phragmites

Photo: Suzan Campbell

What to do?

- Don't throw the baby out with the bathwater!

- Mapping distribution of phragmites and sites of concern is critical!

- Understand species life history!

- Species and communities are not static!

1. Learn what's in your area!

- Information requests
- Data contracts
- Web database access
- Web info & applications
  - ◆ Natural features abstracts
  - ◆ Rare species explorer
  - ◆ Watershed element data
  - ◆ Biorarity/probability layers
  - ◆ County Lists
- DNR: Michigan Endangered species assessments
- Surveys and workshops!

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Rare Species Explorer

New Search

Species Search

Criteria

Scientific or Common Name

[   ]

Taxonomic Group

All
All Animals
All Plants
Amphibians
Birds
Fish

Habitat / Community Type

All
Palustrine
Marsh
Interdunal wetland
Intermittent wetland
Submergent marsh

Results

Column Name	Display	Sort By
Scientific Name	☑	⦿
Common Name	☑	○
Taxonomic Group	☑	○
State Status	☐	○
US Status	☐	○
State Rank	☐	○
Global Rank	☐	○
Habitat / Community Type	☐	
Survey	☐	

2. Map Important places! = values
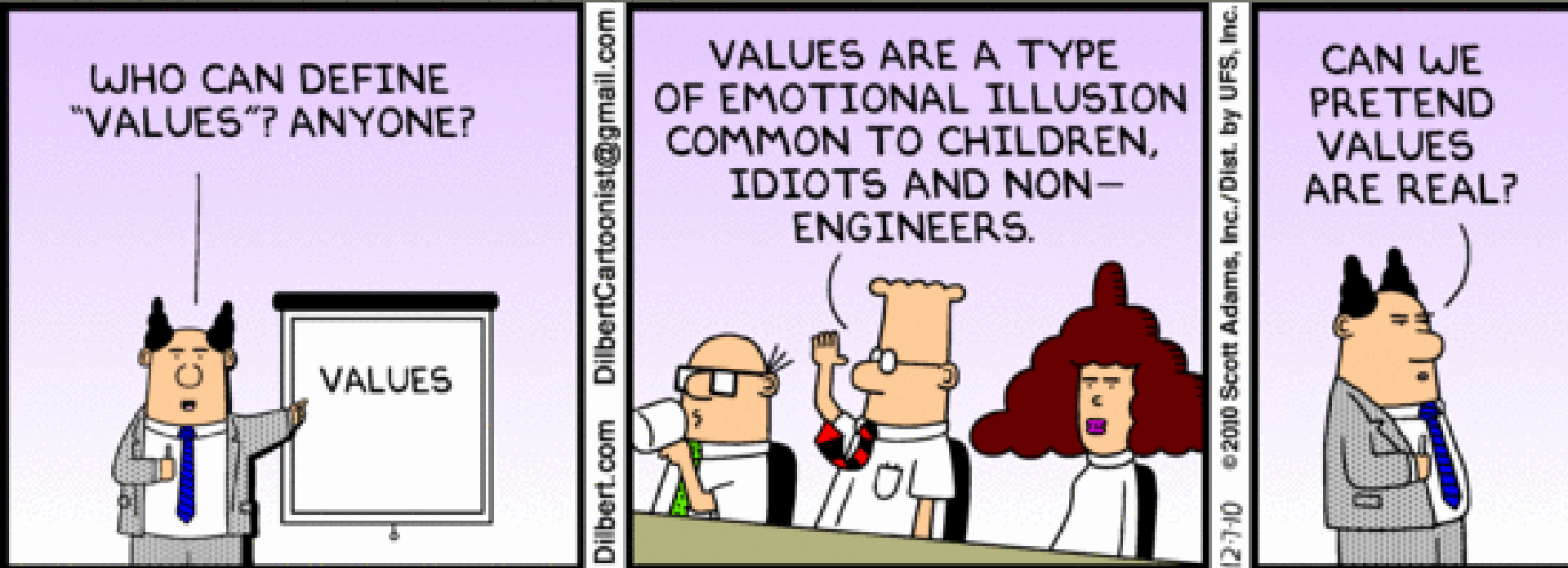
If you don't know what and where they are, how can you strategize to protect them?

4. Implement Early Detection Monitoring

- important places

- likely entry points

5. Map phragmites distribution!

Photo: Suzan Campbell

Photo by Suzan Campbell

Houghton's goldenrod

Lake Huron tansy

6. Prioritize treatment!

- Important places

- Success likely

- Outliers

- Sources

- Pathways

Green: higher score

Red: phrag
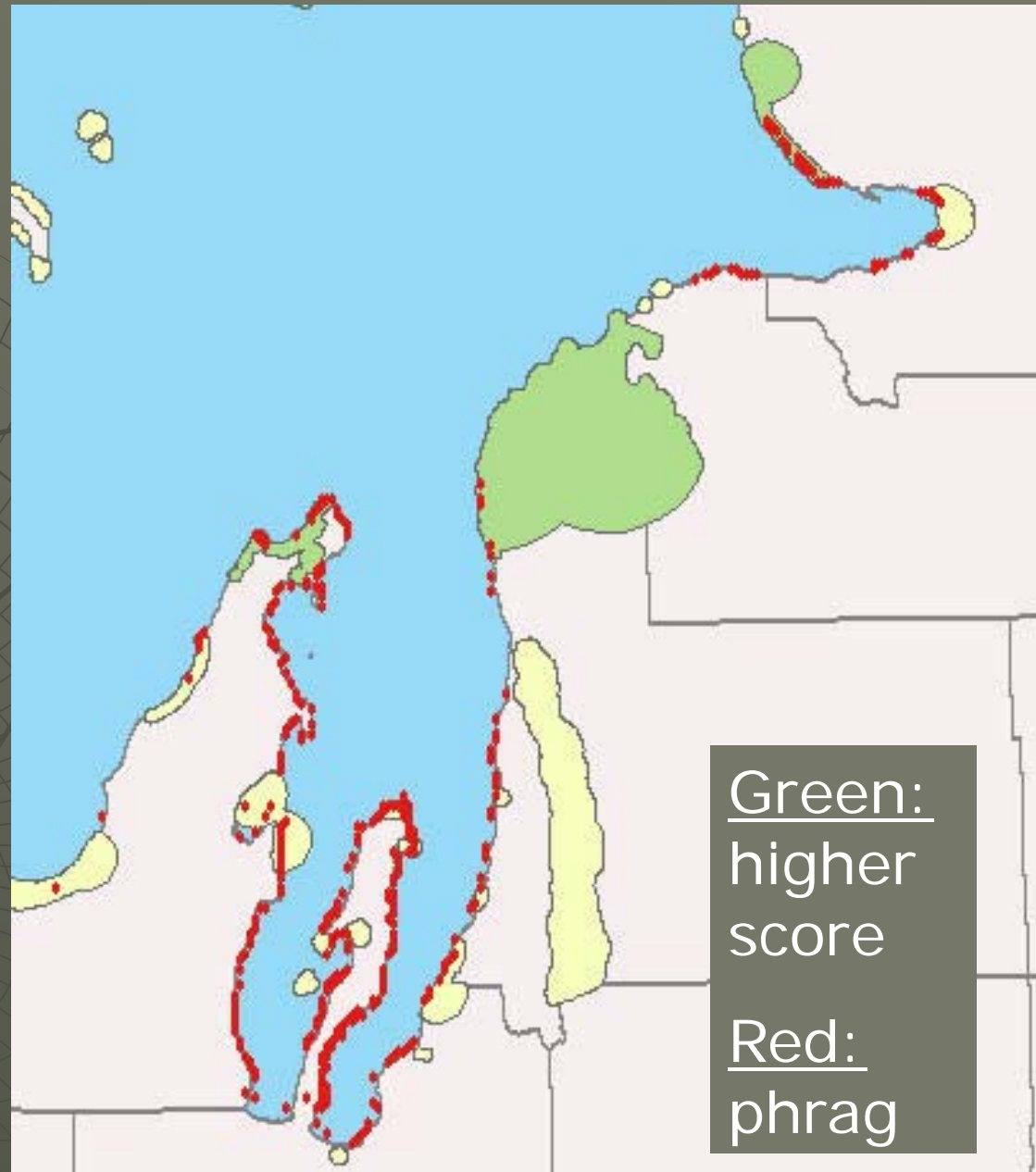
7. Understand potential impacts

Techniques:
- Herbicides*
- Mowing/cutting
- Fire
- Flooding
- Grazing

* approved aquatic formulation!
approved aquatic surfactants!

Impacts:
- Toxic kill
- Physical kill
- Displacement
- Disrupted food webs
- Disrupted nesting
- Disrupted eggs
- Disrupted hibernacula
- Altered biotic conditions

8. Consider timing of techniques

Glyphosate	August – September
Imazapyr	June – September
Cutting Mowing	2 wks after herbicide; late summer, fall, winter
Burning	1 yr after herbicide application late summer, fall, winter before green-up
Flooding	mid-August – July after drawdown
Grazing	???

Birds

| JAN | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |

A: Pre-nesting

N: Nesting

Y: Nesting young

P: Post-nesting

Red: Highly vulnerable

Tan: Potentially vulnerable

Blue: Not vulnerable

Mike Monfils, Daria Hyde

Best guesses; lack rigorous studies!

Amphibians & Reptiles

JAN							MAR				APR				MAY				JUNE			JULY			AUG			SEPT		
HT	HT	HT	HT	HT	HT	HT	A	A	A	A	A	A	A	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/M	A/M	A/M	A/M	A/M	A	A	A
HA	HA	HA	HA	HA	HA	HA	HA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/NT	A/NT	A/NT	A/NT	A/NT	A/E	A/E	A/E	A/E	A/E	A/E	E/M	E/M	E/M	A/M	A/M	A/M
HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	A/BT	A/BT	A/BT	A/BT	A/BT	A/BT	A/NT	A/NT	A/NT	A/NT	A/NT	A/NT	A/E	A/E	A/E	A/E	A/E	A/E	BT/M	BT/M	BT/M	BT/M
HA	HA	HA	HA	HA	HA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/BA	A/NT	A/NT	A/NT	N/E	E	E	E	E	E/M	E/M	E/M	E/M	A/M	A/M	A/M	A/M
HT	HT	HT	HT	HT	HT	HT	HT	HT	A	A	A	A	A	A	A/B	A/B	A/B	A/B	A/NT	A/NT	A/NT	A/NT	A	A	A/M	A/M	A/M	A/M	A/M	A/M	A/M
HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	A/B	A/B	A/B	A/B	A	A	A	A	A	A	A	A	A/M	A/M	A/M	A/M	A/M	A/M	A	A	
HT	HT	HT	HT	HT	HT	HT	HT	A	A	A	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	NT/B	NT/B	NT/B	NT/B	NT/B	NT/B	A/B	A/B	A/B	

A: Active adults

B: Breeding

N: Nesting, eggs, young

M: Metamorphosis, hatchling, emigration, emergence

E: Aestivation

H: Hibernation

A - Aquatic
T - Terrestrial

Red: Highly vulnerable

Tan: Potentially vulnerable

Blue: Not vulnerable

Yu Man Lee, Daria Hyde
Best guesses, lack studies...

Butterflies and Moths

JAN		MAR		APR		MAY		JUNE		JULY		AUG		SEPT

P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	A	A	A	A	A	A	A	A	A	A/E	A/E	E/L
L	L	L	L	L	L	L	L	L	L	P	P	P	A	A	A	E	L	L	L	L	L	L	L	L	L	L	L	L	L
P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	A	A	A	A	A	A	A	E	L	L	L	L	P
E	E	E	E	E	E	E	E	E	E	E	E	E	L	L	L	L	L	L	L	P	P	P	A	A	A	A	E	E	E
P	P	P	P	P	P	P	P	P	P	P	A	A	A	A	A	A	A	A	A	E	E	L	L	L	L	L	L	P
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	A	A	A	A	A	A	A	A	A	A	A	N
N	N	N	N	N	N	N	N	N	N	N	N	N	A	A	A	A	A	A	N	N	N	N	N	N	N	N	N
E	E	E	E	E	E	E	E	E	E	E	N	N	N	N	N	N	N	N	A	A	A	A	A	A	A	A	A
N	N	N	N	N	N	N	N	N	N	N	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E

A: Pre-nesting

L/N: Larvae, Nymphs

P: Pupae

E: Eggs

Red: Highly vulnerable

Tan: Potentially vulnerable

Blue: Not vulnerable

Dave Cuthrell, Daria Hyde
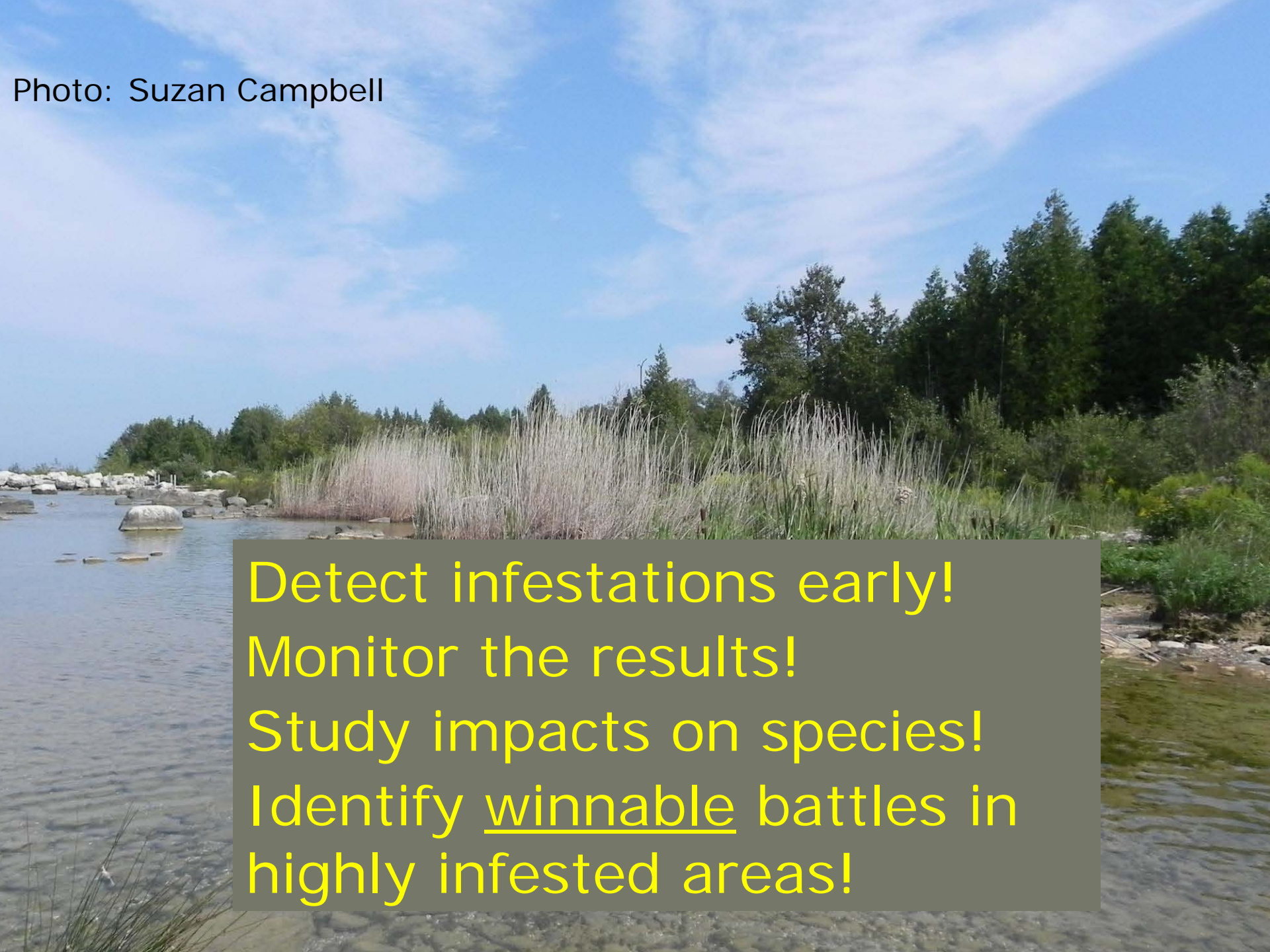Best guesses; lack rigorous studies!

Recommendations

- ◆ Detect phragmites early!
- ◆ Field survey to assess what you have
  - Hand swiping, spot treat vs. broadcast
  - Burn early spring* prior to animal emergence OR late summer
  - Search and temporary relocate
  - Flush nests and critters
  - Work an inside out pattern

*will stimulate stems that weren't killed

Photo: Suzan Campbell

Detect infestations early!
Monitor the results!
Study impacts on species!
Identify <u>winnable</u> battles in highly infested areas!

Photo by Leslie Kuhn