Glyceria maxima in Wisconsin: Status and Control Efforts

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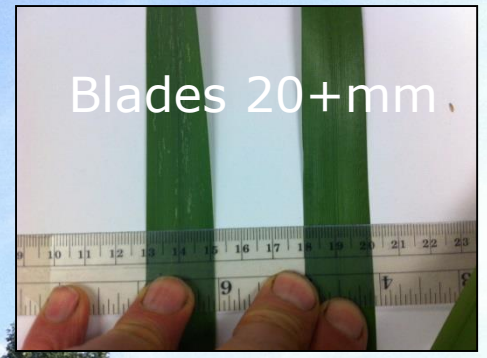
Glyceria maxima (Hartm.) Holmb. "Reed mannagrass "

- Syn: G. aquatica; G. spectabilis; Molinia maxima; Poa aquatica
- Common names: Great, Reed or Tall mannagrass, and Reed Sweet-grass
- Rhizomatous, perennial grass native to Europe and Western Siberia
- Grows in wetlands, ponds, and river banks and shallow beds

Typical water edge scene



Stiff panicle

Closed sheath

6-8 feet tall

Some sites/some years: little fruiting

Early & late green-up

Glyceria maxima: A Recent Wetland/Riparian Invader

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Glyceria maxima (Reed manna grass) is a perennial rhizomatous grass. It is known to invade wetlands, including swamps, ditches, wet pastures, and lakes, ponds, slow-moving rivers and creeks where it forms monospecific stands that are capable of crowding out native vegetation and animals.

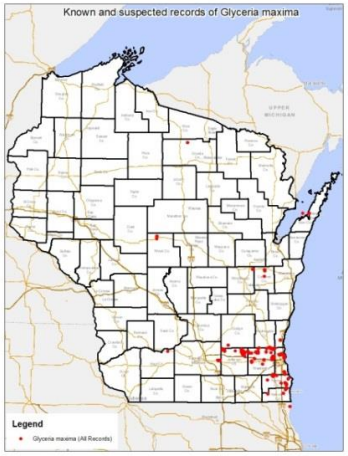
NR 40 Classification in Wisconsin

It is currently split-classified under NR40, being restricted (orange) in SE and prohibited elsewhere (red). In the Midwest, *G. maxima*'s distribution is limited to Wisconsin, Illinois and perhaps Minnesota. (Also found in four coastal states and Ontario, Canada.) Of limited spread in WI, we hope to both reduce its spread west and eliminate SE stands where possible.

WDNR Project: Identify and control populations

The Wisconsin DNR has received a grant to identify and control *G. maxima* populations and it needs your help to find them! Most populations are found in Southeast Wisconsin, between Milwaukee and Madison, with some found in Calumet, Outagamie and Oneida Counties (unverified reports elsewhere).

Outreach to resource users and initial control efforts are critical, and were begun In 2016., as were control experiments of various concentrations of imazapyr herbicide .



Glyceria Identification

The *Glyceria* genus is typically distinguished by having closed leaf sheaths, angular shiny blades, upper glumes with 1 vein and conspicuous parallel veins on lemmas.

Glyceria maxima* vs. *Glyceria grandis:

These two species are commonly confused with each other. Three characters can be used to distinguish these species.

Characteristic	*Glyceria maxima**	*Glyceria grandis*
Leaf blade width	8-22 mm	6–15 mm
Stem height & # of leaves	2-8 feet with 5-10 leaves	2-5 feet with 3-6 leaves
Upper glume length	2.5-4 mm	1.5-2.5 mm

**"maxima" refers to greatest height, leaf & glume size, etc., and its invasive sheaths also have a sticky feel,* while those of *G. grandis are* smooth.

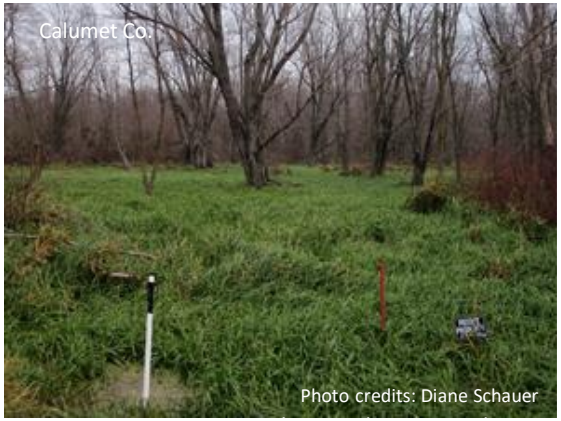
Common visual characteristics of *G. maxima*

Broad, stiff branched panicle

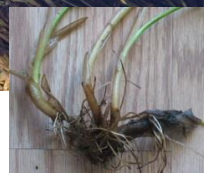
Angular bend in closed leaf sheaths

Glyceria maxima in the landscape

Glyceria maxima creates large monotypic populations in wetlands. G. maxima grows and collapses, smothering other plants.



Glyceria maxima can be found growing in/along streams, often growing bank to bank when shallow.



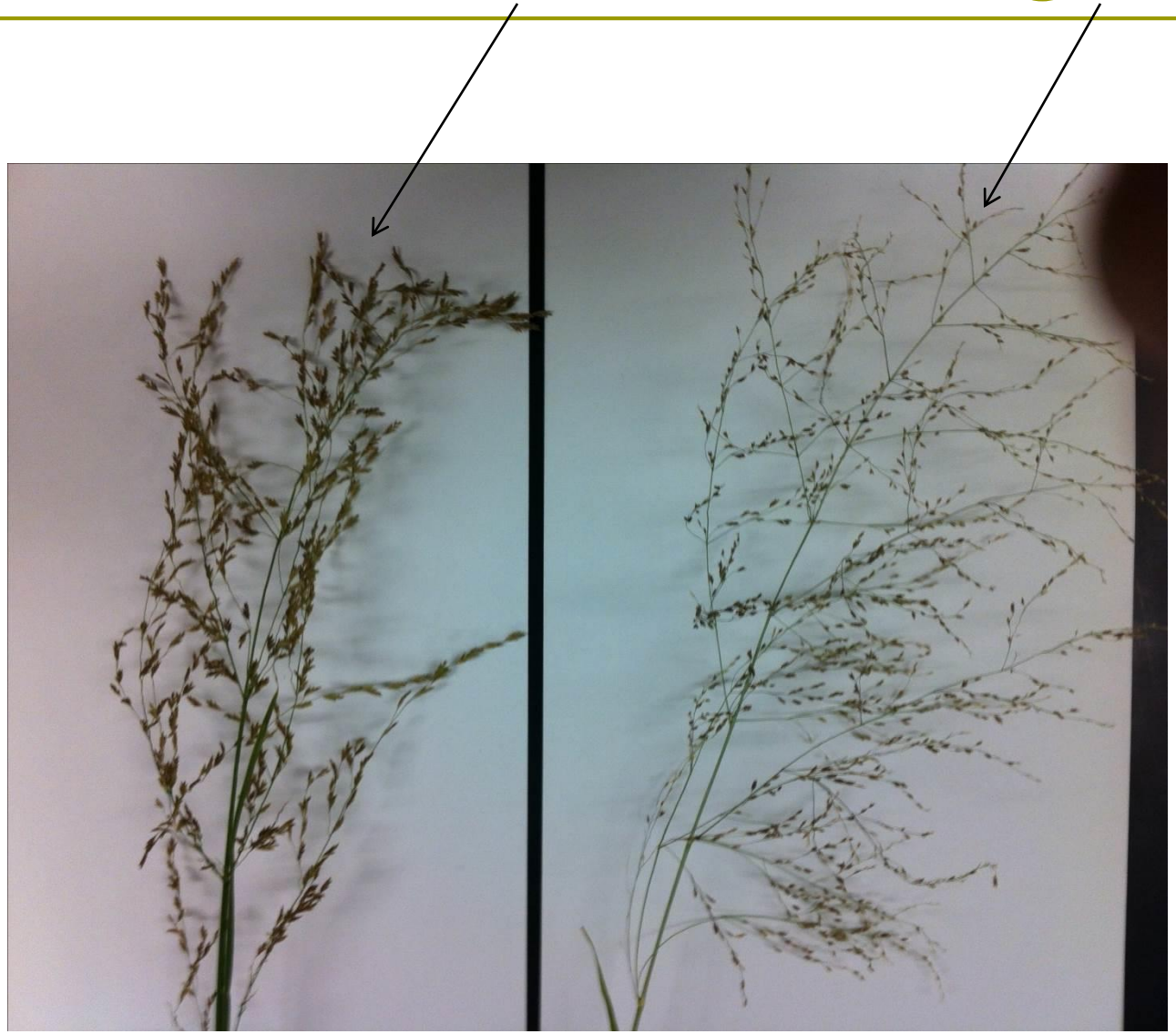
It can also detach and float downstream!

If you suspect this species, let WDNR know. Email: Jason.Granberg@Wisconsin.Gov Brock.Woods@Wisconsin.Gov; 608-266-2554

Similar to smaller, native *Glyceria grandis* (possible hybrids?)

- Need outreach pub to clarify differences
- A Wisconsin taxonomist: "I think that there is a lot of work to be done to resolve the taxonomic status of populations of the European *G. maxima*, vs. the native *G. grandis* in North America. Perhaps there is hybridization occurring - We just don't know, and no one has looked in detail."
- There are several listed hybrids between other Glycerias in the East
- G. maxima & grandis have similar markers

Panicles of G. maxima & G. grandis



Highly competitive and invasive outside its native range

Open wetlands

Semi-forested wetlands

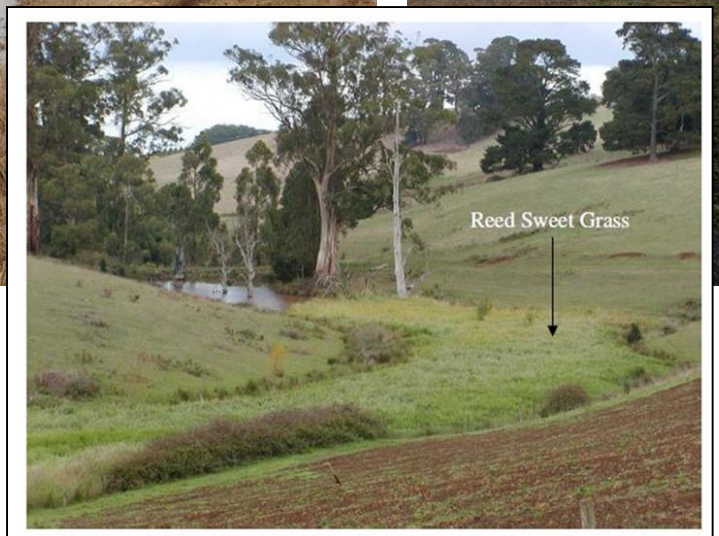
Threatens both wetlands & waters

- Reduces native diversity & alters ecological dynamics
- Reduces land values
- Poisons grazing cattle
- Impedes water flows
- Accelerates siltation
- Causes local flooding
- Encourages mosquitoes
- Reduces recreation

Shallow stream flows often reduced

Unimpeded stream

Stream flow reduced



Flow eliminated!

Particular concern for waterways

Upper watershed is colonized

Downstream sites are vulnerable

Variable dispersal mechanisms

- Water transport downstream common
- Fragments re-sprout!
- Seeds in large numbers (some years?)
- Most seeds short lived, but variable
- Mud on footwear, vehicles, animals

Forms found free-floating

A new problem for lakes?

- Susceptible shorelines…

- …and shallow lake beds

History of Reed Manna Grass

- Ontario, Canada– 1940s
- Wisconsin – 1975, Racine Co. (Calumet Co. 1940?-conf.d G. maxima in 1978)
- 3 Massachusets sites – 1990s, Connecticut -- 2004
- Washington State – 2005
- Illinois – 2006
- Minnesota – 2016 (~2000?)
- Other Canadian provinces & Alaska

Small late summer stand

Large mid winter stand

~90 sites reported in Wisconsin

-Data mining, remote sensing, partners, field monitoring (GLRI $)

~No control for 40 yr.s!

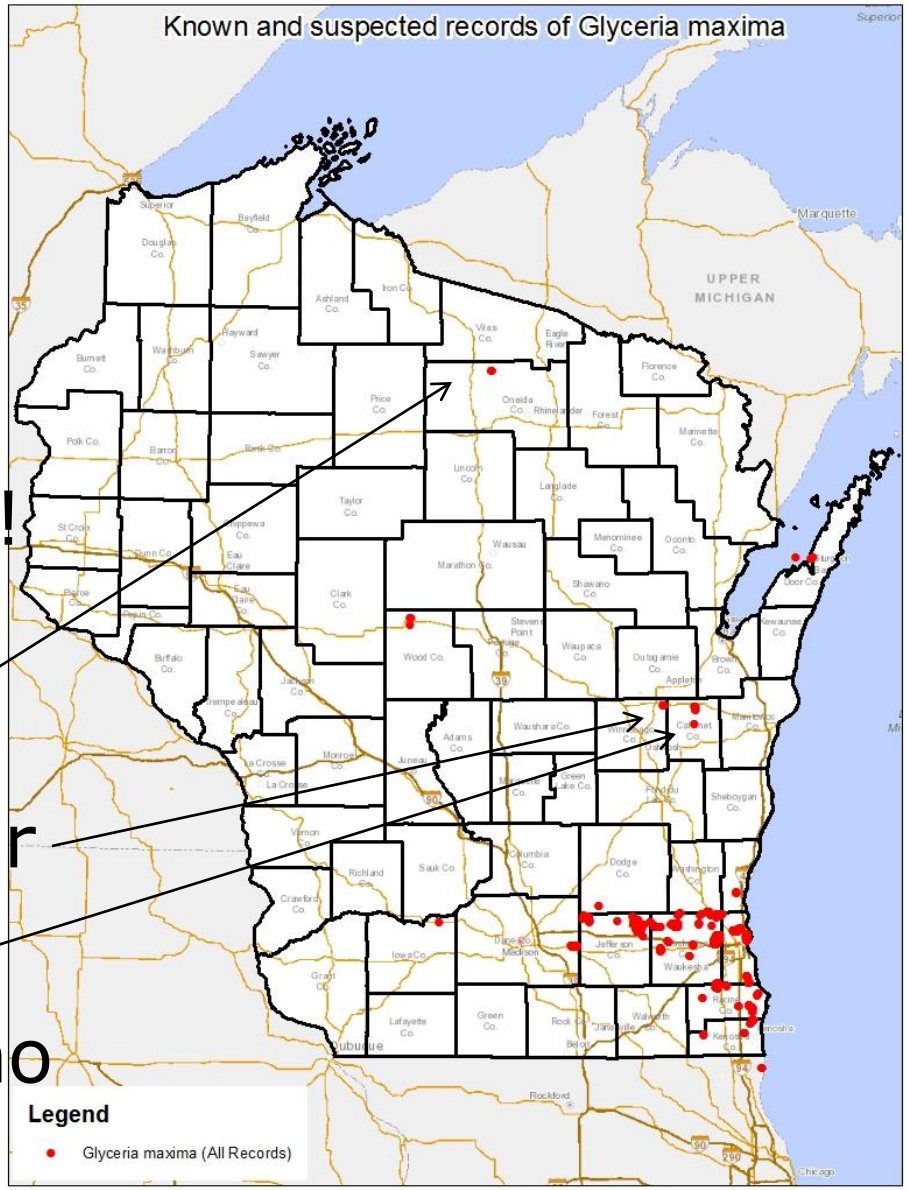
-9 SE counties!

-Oneida: variegated

-Outagamie: landscaper

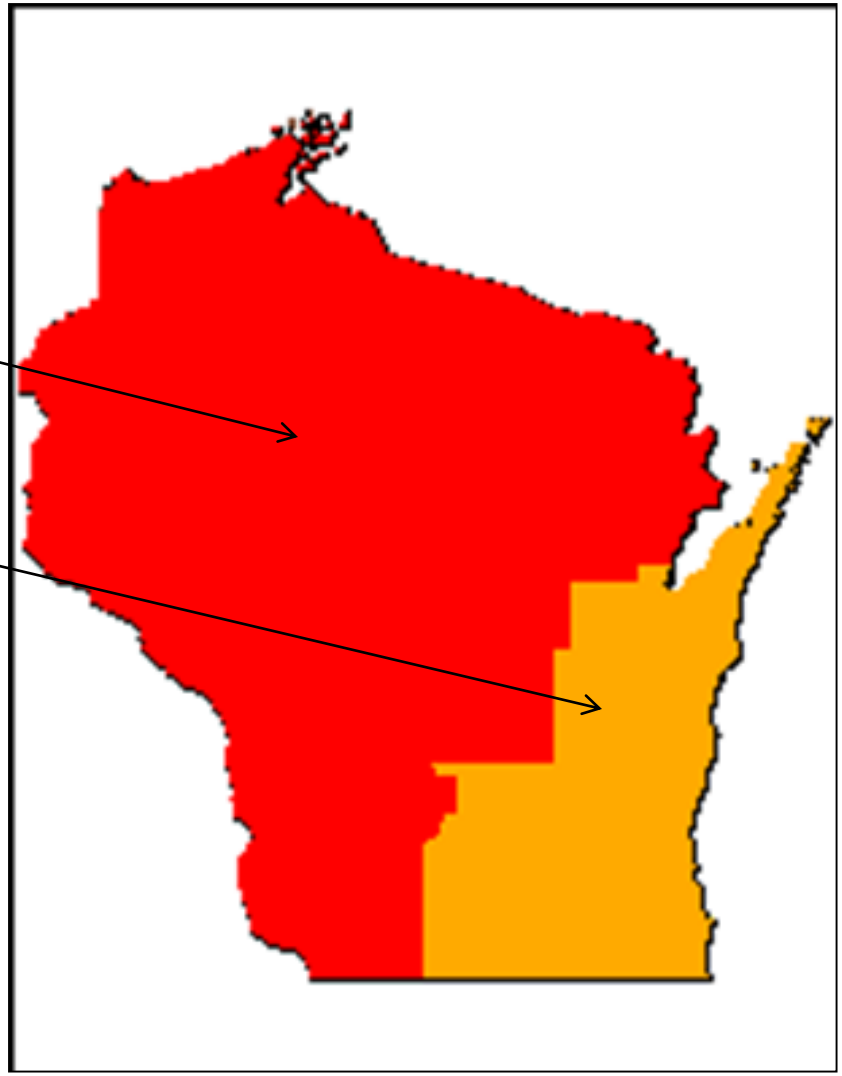
-Calumet: large sites

-Door and Wood Co.s no G. maxima!



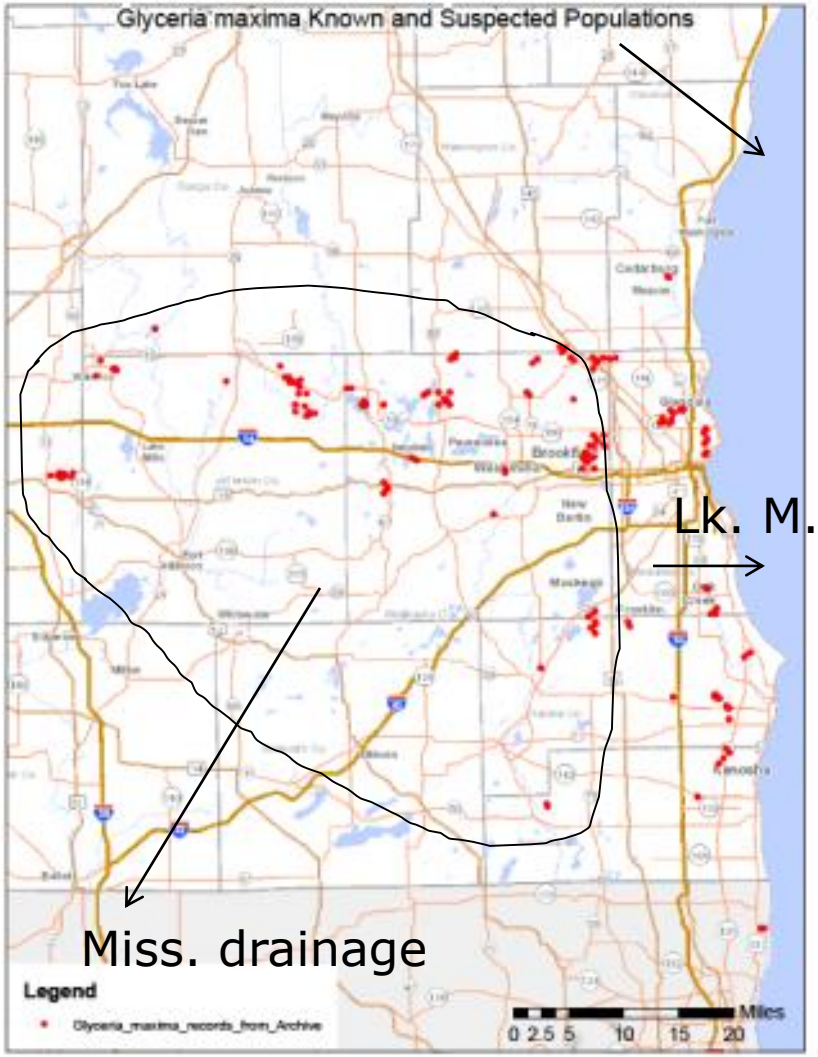
Data may change regulated status in Wisconsin:

- Currently split-listed
- Prohibited: little or none
- Restricted: too common to eliminate
- Re-evaluate listings?
- Might make control easier



How to develop a workable control strategy??

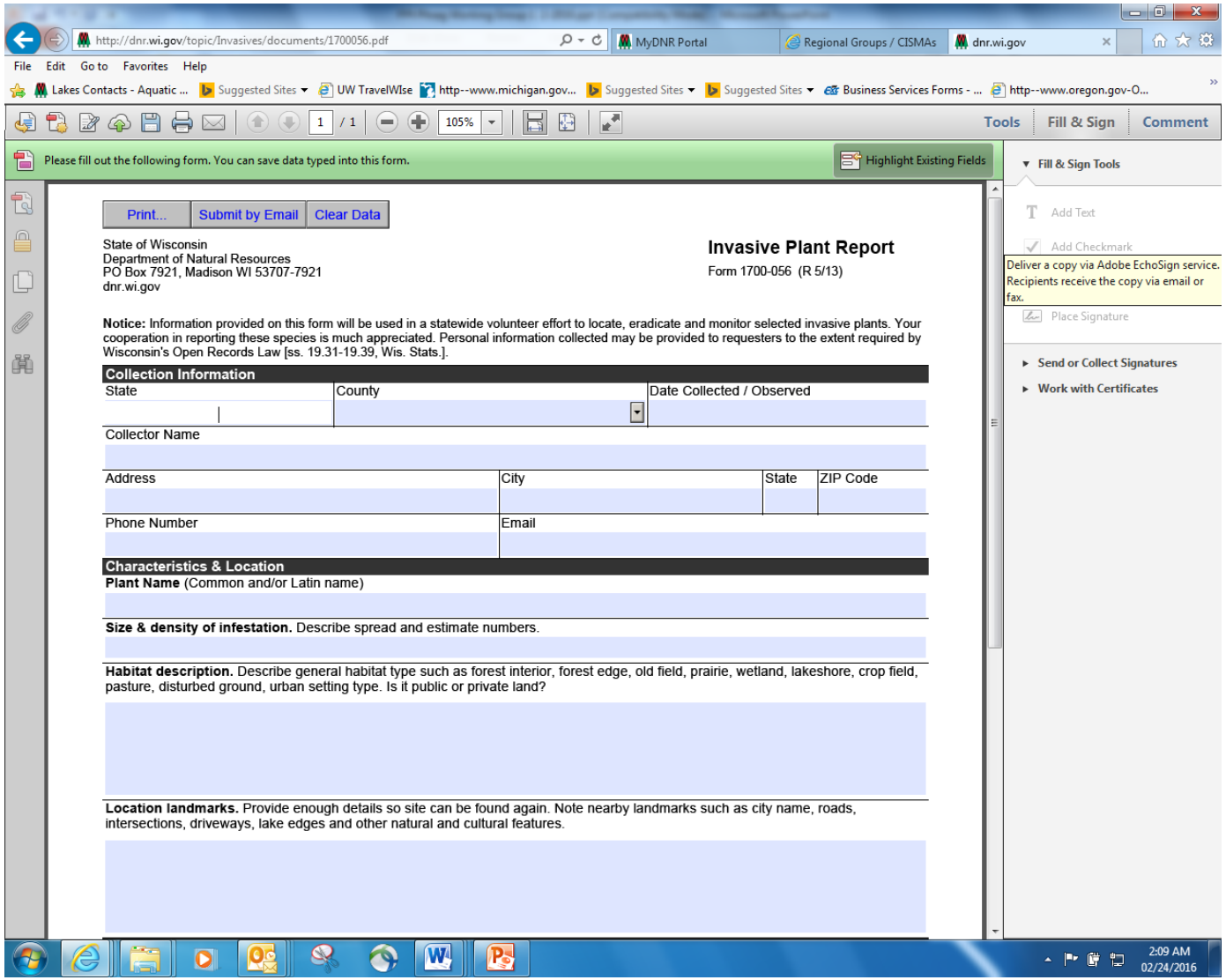
-Many established sites?
-Stream dispersal issues
-Many urban & private
-Only restricted in WI
-Recon very difficult
-Already in 2 drainages
-Funding issues: GLRI $ acquired for recon and initial control



How to form a Plan: 2015-17 GLRI funding for outreach, site ID

- Need to know the scale of problem:
- Site reconnaissance with Partner help
- Prevent further spread & encourage citizen action through outreach:
- WDNR & Partner news releases, writing articles, presentations to citizen groups & conferences, new publication, etc.
- Continue work with citizens to get reports of all new sites

WDNR's easy web report form (most web data base reports OK!)

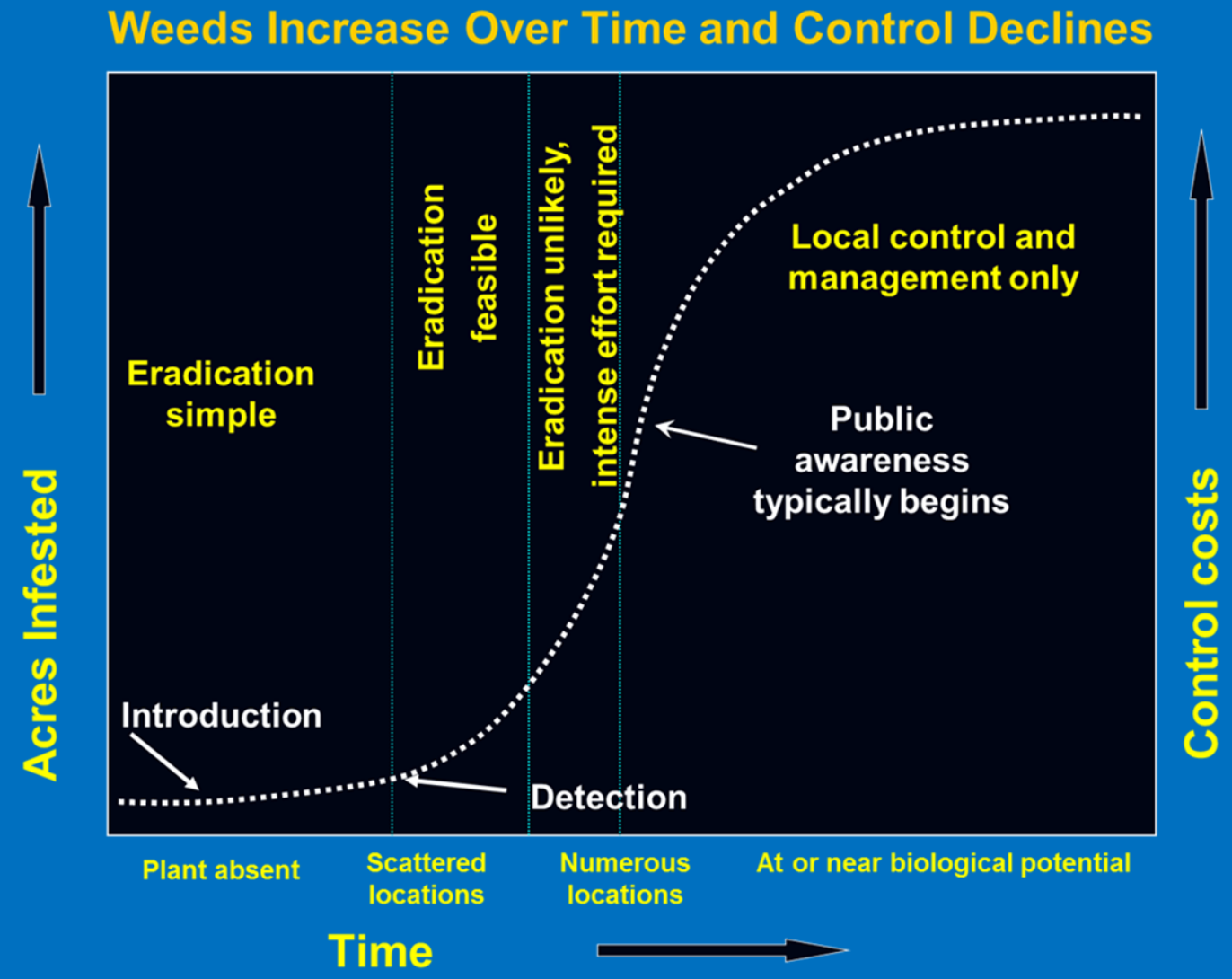


To citizens: please report your sightings wherever easiest, including whatever data base is easiest for YOU!
(We now monitor them all!)

Beginning control work: 2016-2018 GLRI funding for initial efforts

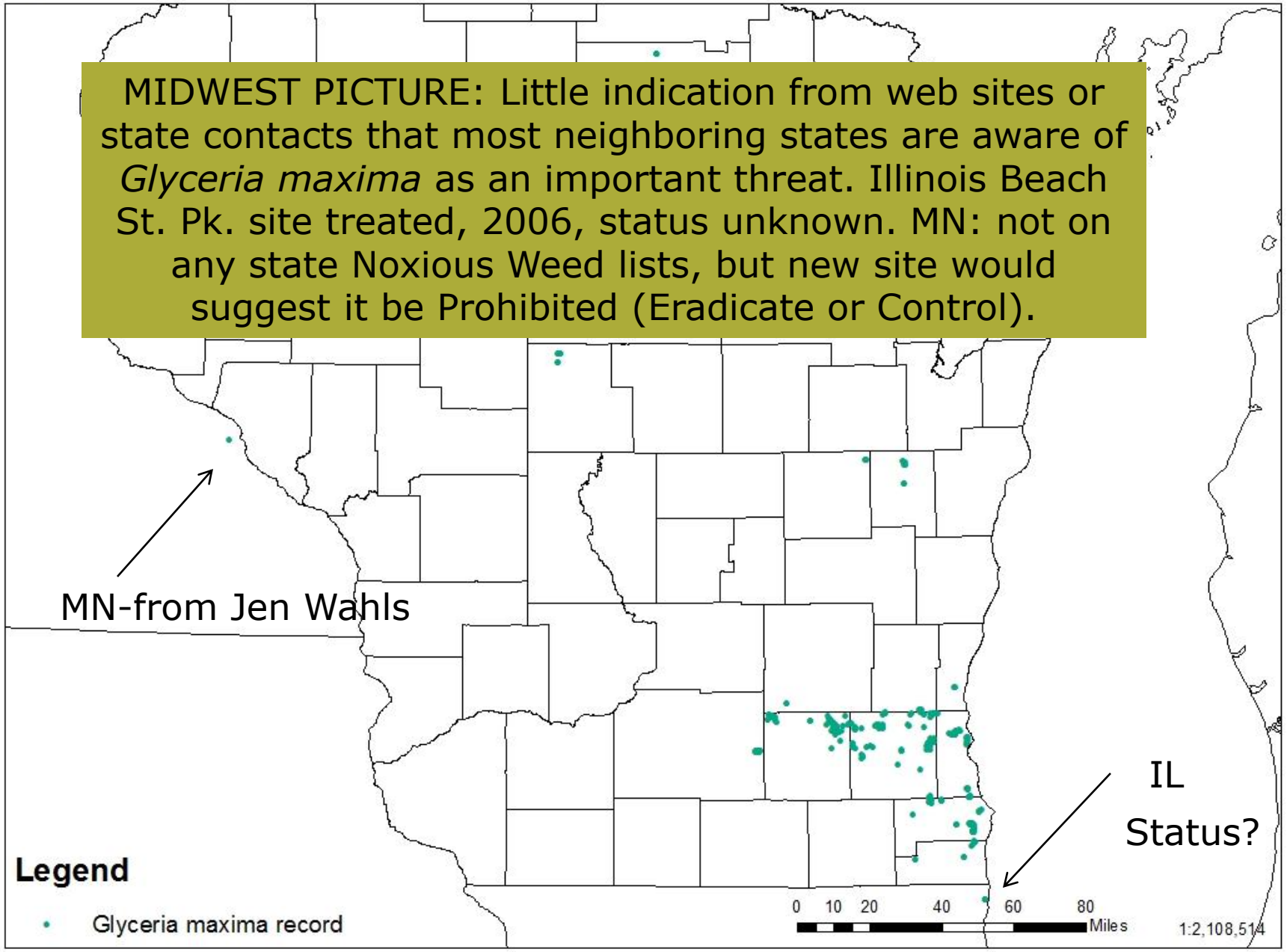
- Partners helping control on small satellites
- Experiment for best control methods - testing imazapyr concentrations
- Begin control at large satellite sites
- Control periphery sites of 9 county area
- Control at tops of infested watershed streams
- Control where high value sites threatened, especially by the small, easiest infestations
- All in consultation with GLRI supporters

To stop G. maxima spread, young small sites allow easiest elimination!



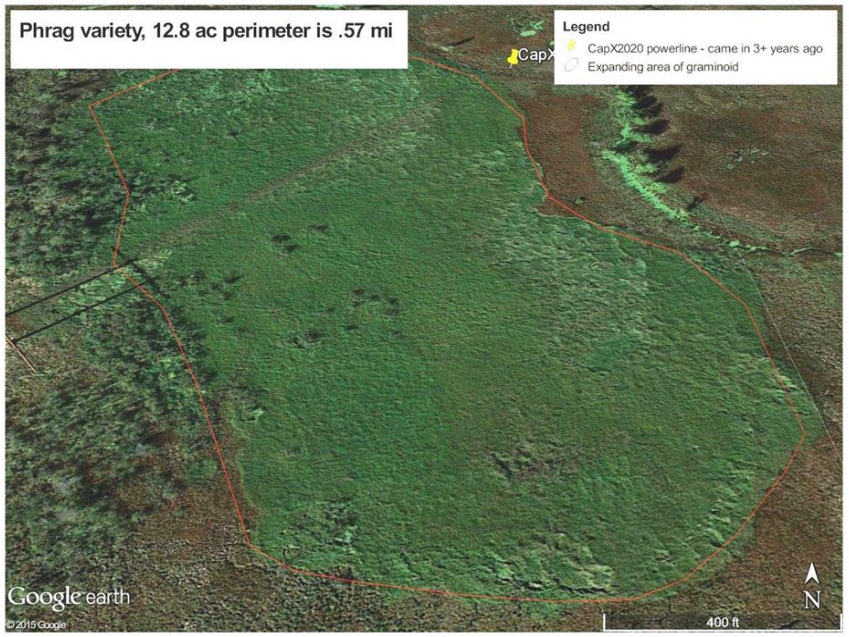
Prevention is easiest!

Glyceria maxima reports near and within Wisconsin



Minnesota site

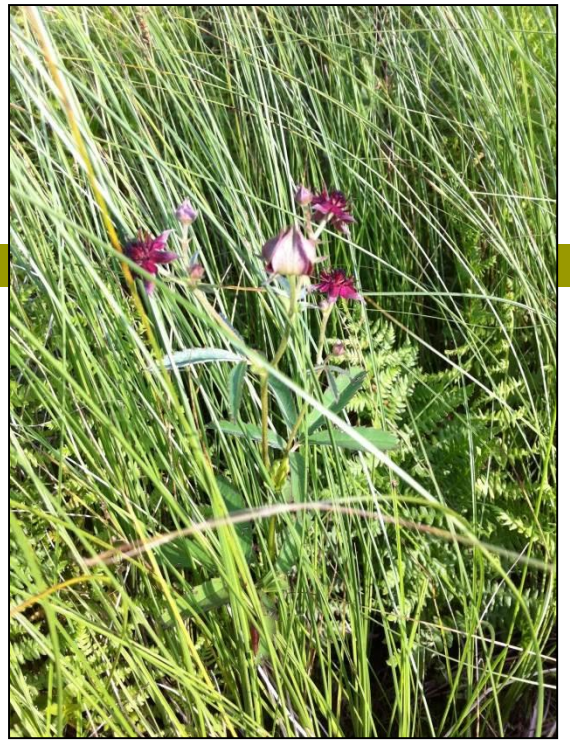
- McCarthy WMA (S.E. of Kellogg, MN)
- First Glyceria rep't ~2000– G. maxima?
- Expanded rapidly in 3 years after
- Monotypic stand ~12 acres with characters ~G. maxima size (genetic tests)
- Control too late??



Wisconsin will do all it can to control & prevent spread, but other states must be on guard…

(…and support biocontrol research!)

Glyceria maxima in Wisconsin



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