

Glyceria maxima in Wisconsin: Status and Control Efforts



Brock Woods
UWEX
& WDNR
(608)
266-2554



Brock.woods@wi.gov

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

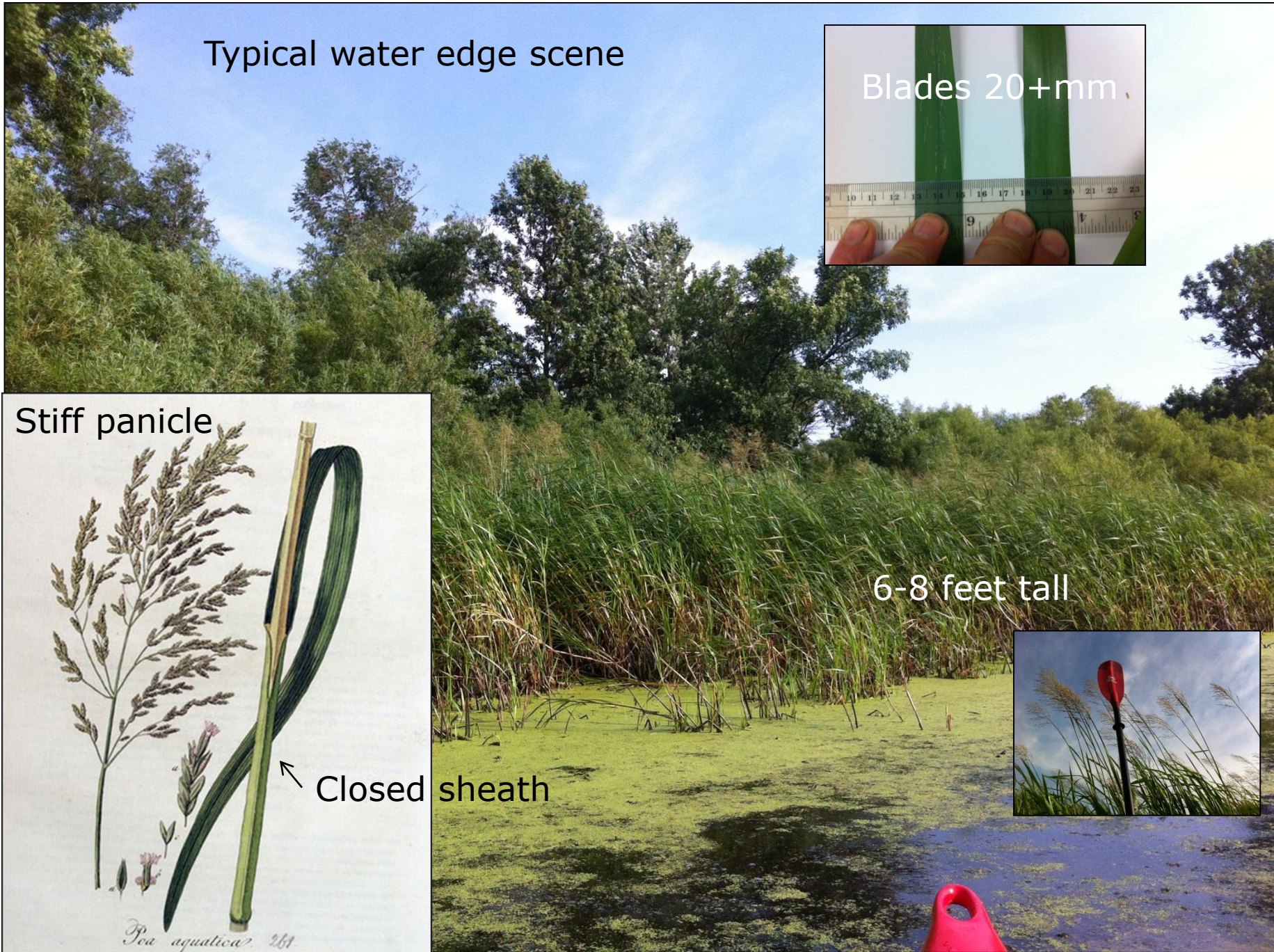
Blades 20+mm

Stiff panicle

6-8 feet tall

Closed sheath

Poa aquatica? 261



Some sites/some years: little fruiting



Early & late green-up





Glyceria maxima: A Recent Wetland/Riparian Invader

Brock Woods UWEX, Brock.Woods@Wisconsin.Gov, 608-266-2554

Jason Granberg Wisconsin DNR, Jason.Granberg@Wisconsin.Gov, 608-267-9868



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).

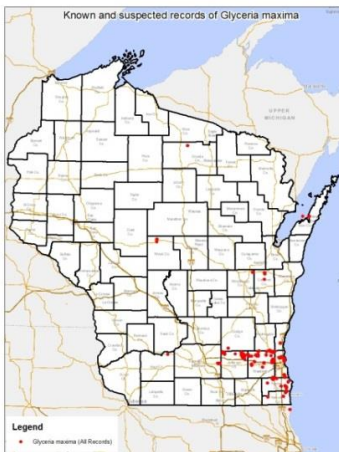
In the Midwest, *G. maxima*'s distribution is limited to Wisconsin, Illinois and perhaps Minnesota. (Also found in four coastal states and Ontario, Canada.) Of limited spread in WI, we hope to both reduce its spread west and eliminate SE stands where possible.



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	<i>Glyceria maxima</i> *	<i>Glyceria grandis</i>
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



Photo credits: Leslie J Merhoff, Bugwood.org

Angular bend in closed leaf sheaths

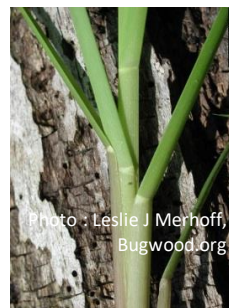


Photo: Leslie J Merhoff, Bugwood.org

Glyceria maxima in the landscape

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



Photo credits: Diane Schauer

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



Photo credits: J Granberg & B Woods

It can also detach and float downstream!

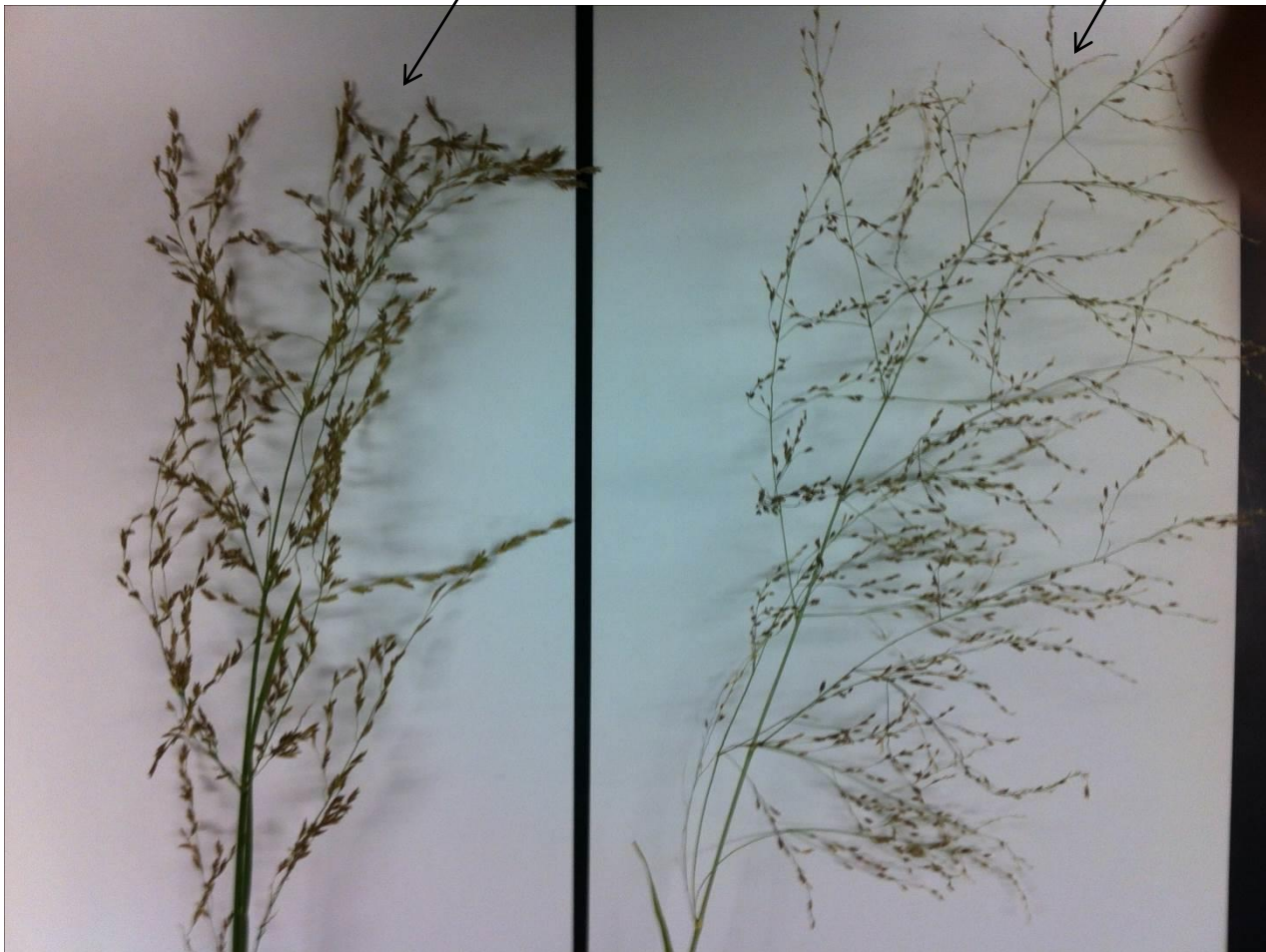


If you suspect this species, let WDNR know. Email: Jason.Granberg@Wisconsin.Gov Brock.Woods@Wisconsin.Gov; 608-266-2554

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

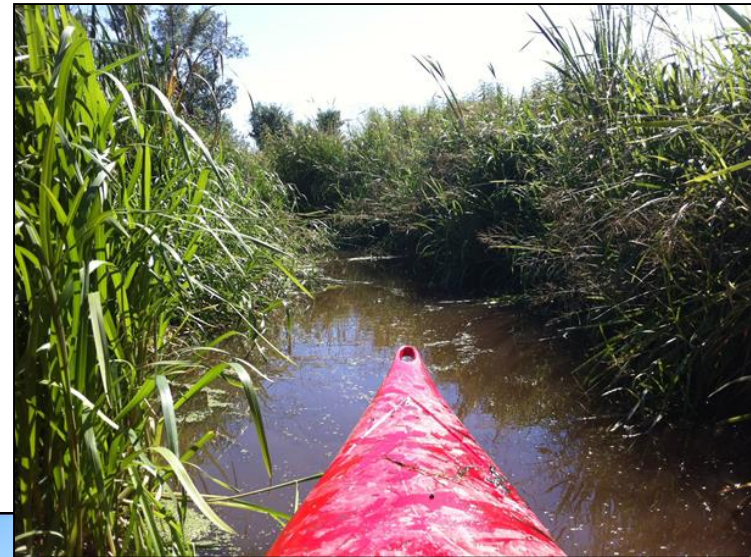


Semi-forested wetlands



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 Massachusetts sites – 1990s, Connecticut -- 2004
- ❑ Washington State – 2005
- ❑ Illinois – 2006
- ❑ Minnesota – 2016 (~2000?)
- ❑ Other Canadian provinces & Alaska

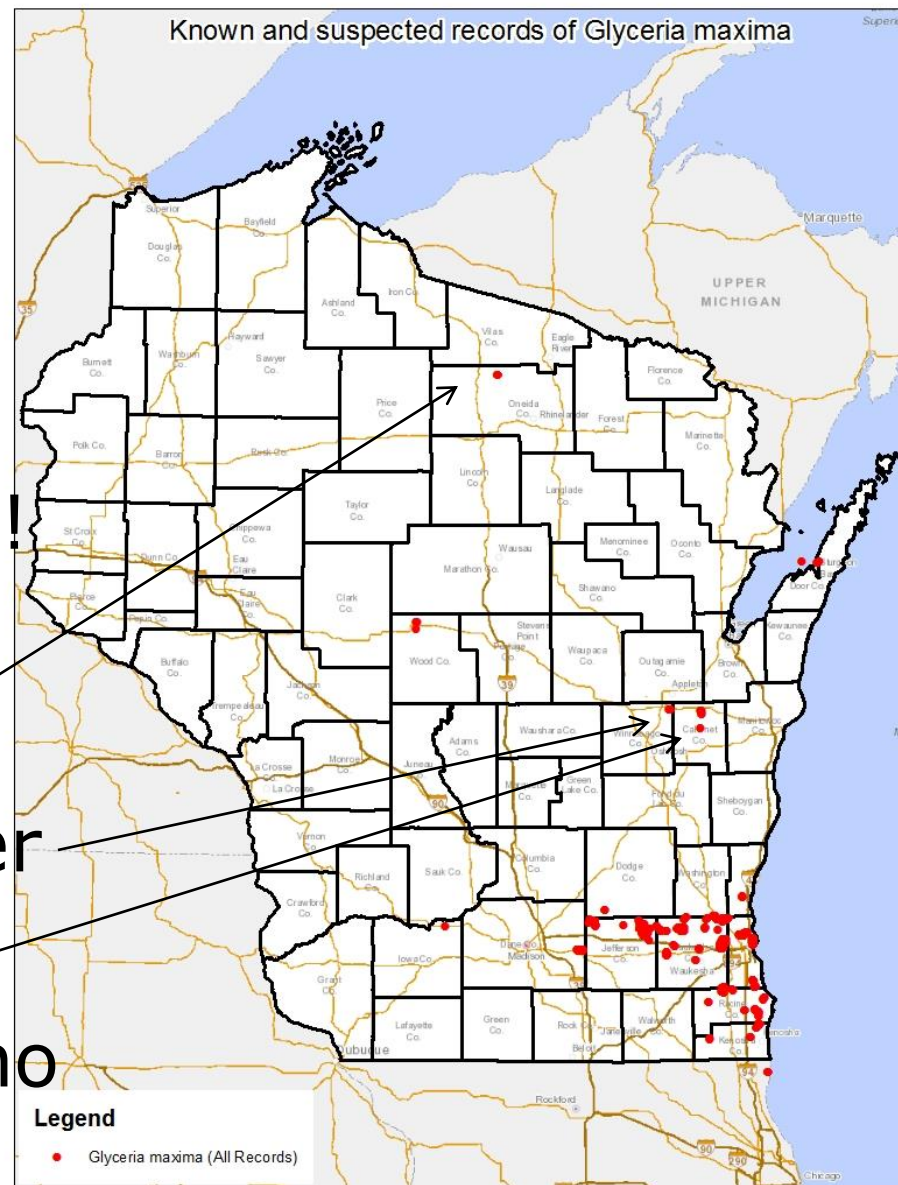
Small late
summer
stand



Large mid winter stand

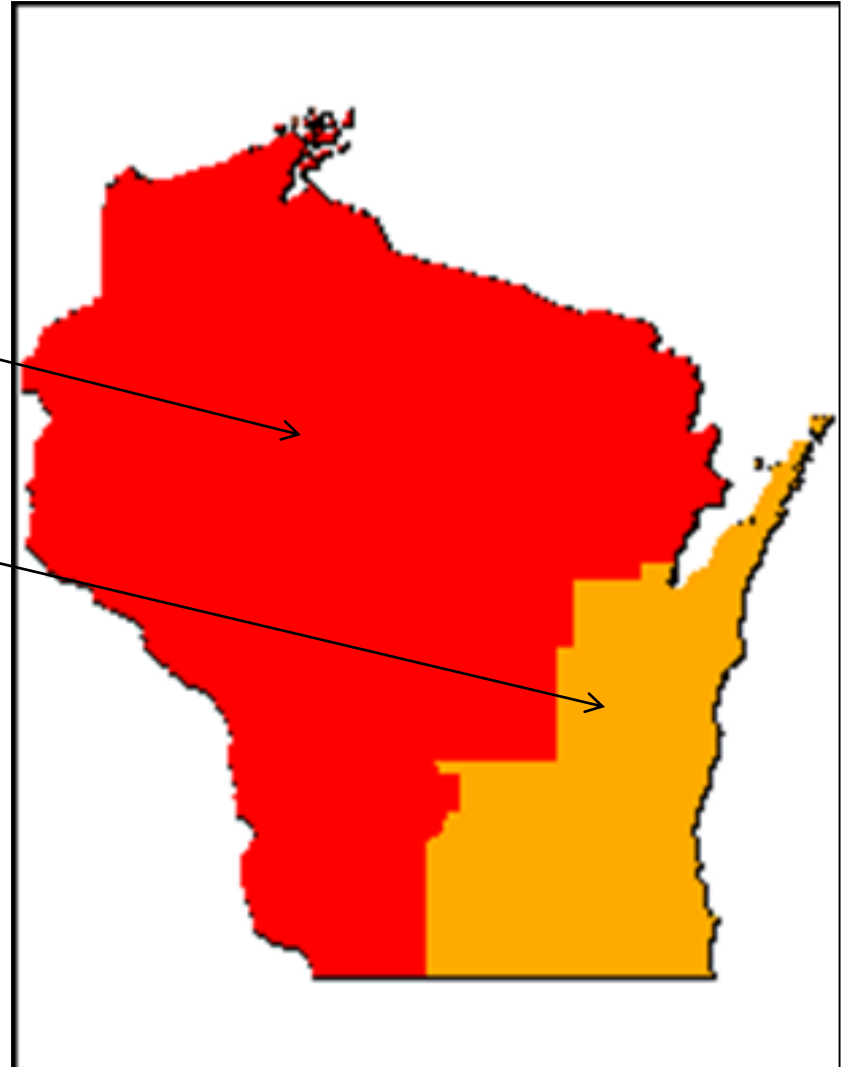
~90 sites reported in Wisconsin

- 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*!



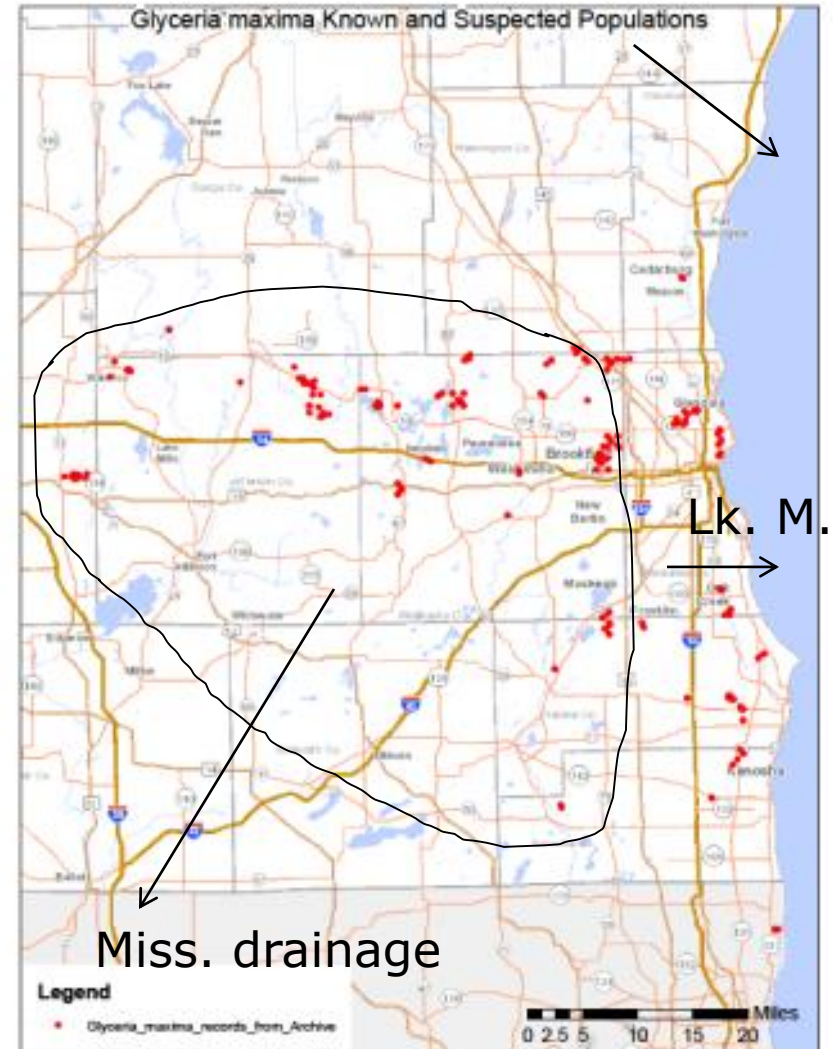
Data may change regulated status in Wisconsin:

- ❑ 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!)

The screenshot shows a web browser window displaying the WDNR Invasive Plant Report form. The browser's address bar shows the URL <http://dnr.wi.gov/topic/Invasives/documents/1700056.pdf>. The page has a green header with the text "Please fill out the following form. You can save data typed into this form." and a "Highlight Existing Fields" button. The form itself is titled "Invasive Plant Report" and "Form 1700-056 (R 5/13)". It includes a "Print..." button, a "Submit by Email" button, and a "Clear Data" button. The form is divided into several sections: "Collection Information" with fields for State, County, Date Collected / Observed, Collector Name, Address, City, State, ZIP Code, Phone Number, and Email; "Characteristics & Location" with a "Plant Name" field; "Size & density of infestation" with a text area; "Habitat description" with a text area; and "Location landmarks" with a text area. A sidebar on the right contains "Fill & Sign Tools" including "Add Text", "Add Checkmark", "Place Signature", "Send or Collect Signatures", and "Work with Certificates". The bottom of the browser window shows the Windows taskbar with various application icons and the system clock indicating 2:09 AM on 02/24/2016.

Print... Submit by Email Clear Data

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Invasive Plant Report
Form 1700-056 (R 5/13)

Notice: Information provided on this form will be used in a statewide volunteer effort to locate, eradicate and monitor selected invasive plants. Your cooperation in reporting these species is much appreciated. Personal information collected may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

Collection Information

State	County	Date Collected / Observed

Collector Name

Address

City

State

ZIP Code

Phone Number

Email

Characteristics & Location

Plant Name (Common and/or Latin name)

Size & density of infestation. Describe spread and estimate numbers.

Habitat description. Describe general habitat type such as forest interior, forest edge, old field, prairie, wetland, lakeshore, crop field, pasture, disturbed ground, urban setting type. Is it public or private land?

Location landmarks. Provide enough details so site can be found again. Note nearby landmarks such as city name, roads, intersections, driveways, lake edges and other natural and cultural features.

Fill & Sign Tools

- Add Text
- Add Checkmark
- Place Signature
- Send or Collect Signatures
- Work with Certificates

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

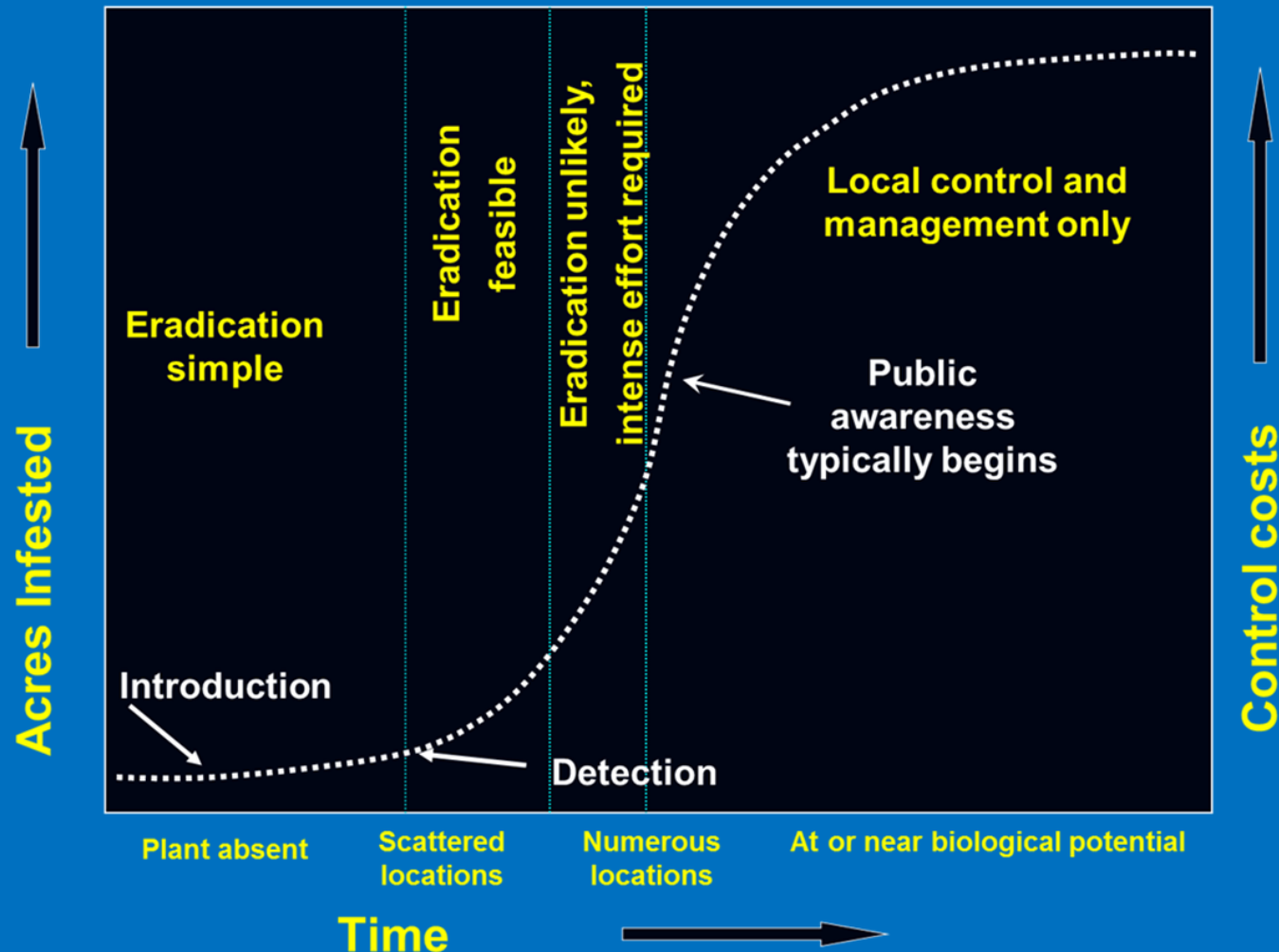
Beginning control work: 2016-2018

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!

Weeds Increase Over Time and Control Declines

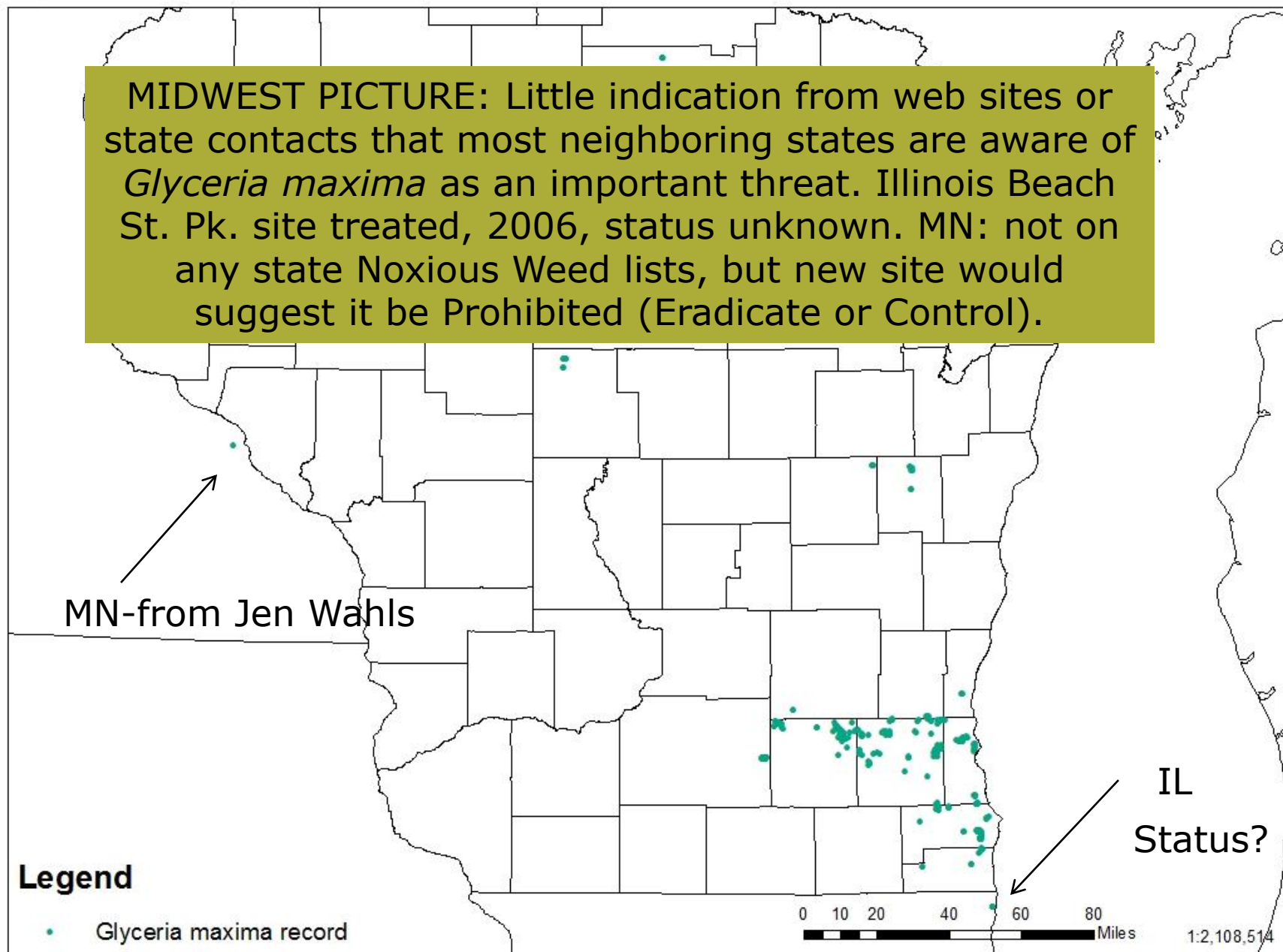


Prevention is easiest!



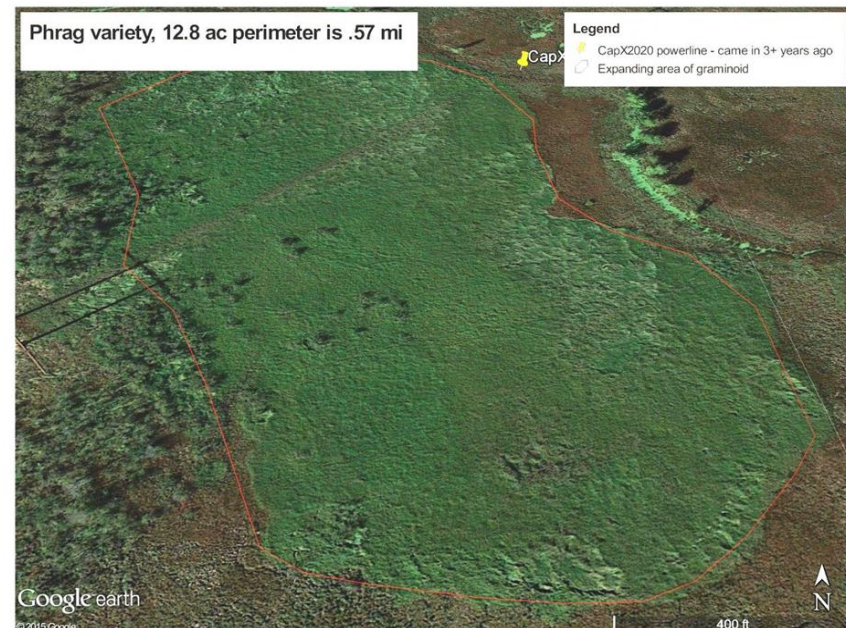
Glyceria maxima reports near and within Wisconsin

MIDWEST PICTURE: Little indication from web sites or state contacts that most neighboring states are aware of *Glyceria maxima* as an important threat. Illinois Beach St. Pk. site treated, 2006, status unknown. MN: not on any state Noxious Weed lists, but new site would suggest it be Prohibited (Eradicate or Control).



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!)



To preserve healthy, native wetlands!

Glyceria maxima in Wisconsin



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