

9-16-20 / Mi Inland Lakes Conference.  
"The Best Conservation Tools"

Lake Stewardship

- plant in front of seawall to "soften" seawall plants. USDA.gov

Facebook/Instagram ⇒ other social media options.

Support rental property owners. on BMP's  
change culture ⇒ inundate c photos.

501c3 ⇒ ideas.  
⇒ Purchase 'Shoreline Steward' signs for those who participate  
- packet to new owners.

→ County Conservation <sup>districts</sup> and CISMAs ⇒ contact to offer shoreline plants.

Mark Teicher → attorney

- hold a regional conference

- ordinance for lake carrying capacity  
⇒ size & number of watercrafts/residence

- report WQ & CLMP data to townships

Mi Waters

9-16-20

↳ notify

↳ public permit searches (Public Notice Search)

↳ can make public comments → stop permit issuance or prompt inspection.

⇒ (do weekly assignment)

\*

\*

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Procellacor ⇒ PLM + Progressive AE Management.  
Jason Broekstra Rick Buteyn  
~~Beck~~

Invasive Species Management

combine Procellacor + diquat (Tribune)

↳ not effective against starry stonewort  
Sea Clear for SSW

Water Quality + Local Governments.  
Property + Place

Mary Kelley is in Manistee

13% ↓ property values in WL Lakes c EWM

MGLP Conservation Planner.  
↳ can look @ individ. lakes.

midwestglaciallakes.org/  
resources/conservation planner

25% shoreline development for sustaining natural condition of lake

contact EGLE for comprehensive assessment (non-point staff)

Septic @ county level health code

↳ time of sale inspection ordinance. (county + township levels)

9-17-20

Mid Inland Lakes Convention

Invasive Plants

publications:  
Chorak

Ryan Thurn - Montana State University

genetics used to detm herbicide response.

IR Mapper (Insecticide Resistance)

fluorone slide  $y = \text{biomass}$   $x = \text{concn fluorone}$   
showed same strain from diff lakes

Strain Prioritization:

⊙ ↑ widespread strains

→ Parks et al (2016) Lake + Reservoir Management.

- Trad. quant. surveys

- point intercept
- AVAS.

most common  
to have only one  
strain/lake

- Rake toss

- plant tip sent for analysis.

→ Thurn (2020)  
Invasive Plant Science  
& Management.  
13: 59-67

Fri 1:45 talks.  
2:15

Focus on lakes & single strain

Focus on whole-lake tx

"effective" defined by management goals of stakeholder.

- correlation of prev. herbicide<sup>tx</sup> to # strains not known
- ProcellaCOR effectiveness not tested by Thurn.

European Frog-bit found in Oceana County.



Michelle Nault

WI DNR

9-17-20

Starry Stonewort.

- endangered in UK + Japan!

- macroalgae - not vascular plant.

- 4-7 ft tall

- found in water ~~1.5-23 ft deep~~ 1.5 - 23 ft deep.

- spread by fragmentation and/or bulbrils.

- primarily spread by boats, trailers + anchors

- reprod. thru clonal mechanism  $\Rightarrow$  only male plants in N. America  
 $\hookrightarrow$  so not spread thru wildlife because no zygotes.

- prioritize survey if lots of native chara

## SSW Control Efforts

A Chemical tx

B <sup>winter</sup> draw down

C DASA

D hand pulling

E dredging

F no management

DNR website contains data.

[dnr.wisconsin.gov/topic/invasives/fact/starry\\_stonewort](http://dnr.wisconsin.gov/topic/invasives/fact/starry_stonewort)

A. no good control  $\bar{c}$  chem tx + limno-barrier. (1 acre)  
Copper + <sup>essential</sup> ~~essential~~ (Cut line + hydrothol)

no good control  $\bar{c}$  chem tx alone. (50 acre)

B. draw down initially very effective, but actually increased after water added back.  $\Rightarrow$  effective against EWR

C. + E. effectively dec SSW over time.

F. SSW appears at steady state.

9-18-20 Wesley Glisson UMN

MN, IN, WI

# Tx Outcomes for SSW Management

DNR (1)

Invasive Species

## Attempts to control:

- Algaecide
  - Cu-based
- Physical
  - hand pulled
  - mechanical

20 tons  
↑ Cu used

Tx data: 90% algaecide → 88% are Cu-based

↳ hand pull, VASA, mechanical harvest

## Top 3 Products

1. Cutrine Ultra + hydrothol 191
2. Cutrine Plus
3. Clipper

## Whole-lake response:

35 lakes, 10 yrs (2010-19)

data collected: freq of occurrence (0-1), lake density (t-3)  
% of littoral zone covered

- SSW inc over time even  $\bar{c}$  continuous tx
- sig more freq of occurrence  $\bar{c}$  treatment (vs non-tx)
- before vs after tx ⇒ sig greater freq occur after tx  
⇒ " " abundance after tx

} whole lake response

## Survey on portion of lake (targeted analysis)

before + after tx ⇒ non-sig difference freq occur.  
no difference. lake density

untreated control lakes/areas needed.



- Case studies.

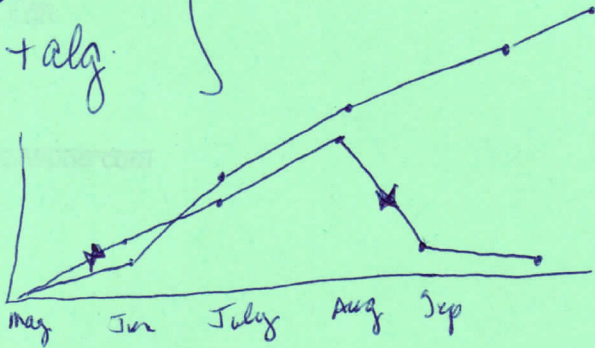
Lake Koronis, MN. 2014

2

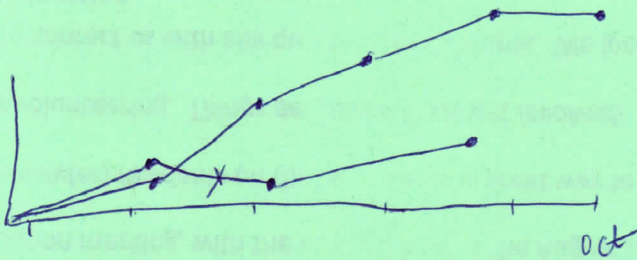
Tx vs untx overtime

reference (un tx)  
mechanical  
algaeicide  
mech + alg.

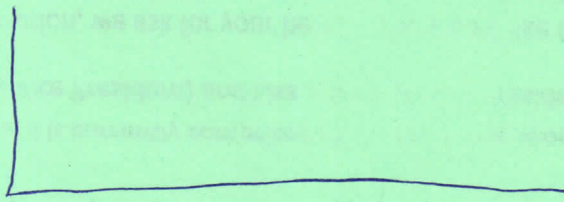
measured biomass (g/m<sup>2</sup>)



algaeicide



mech harvest



mech + alg.

Recommendation

- PREVENT infest + spread.
- hand-pulling good strategy if found early + isolated
- alg effective = targeted tx

Key Findings:

- Whole lake response
  - SSW extent ↑ overtime
  - current tx do not ↓ freq of occur or abundance
- Sub-PI survey (targeted area)
  - no Δ freq or abundance
- Case studies.
  - tx can be effective at ↓ biomass (timing important)
  - physical removal can be effective, esp small areas.

9-18-20

# Lightning Talks

- McNALMS.org (Erick Elgin President)
- Mi Natural Shoreline Partnership
  - ↳ Homeowners training available\*  
(do this!)
- extension.MSU.edu
  - ↳ Lake & Streams Leaders Institute  
(sign up for this!)
- Kevin Walters ⇒ signage & educational handouts
- \*\* contact Paige Filice \*\*
  - ↳ Clean, Drain, Dry
  - ↳ mini-grants
- MWA - has 2 lobbyists.



9-18-20

People + Invasive Species

Comparison of Watercraft decontam methods.

Maria Blutz

mariahlutz@outlook.com

CTD3 @ Higgins Lake

- decontam effectiveness
- outreach effectiveness
- cost effectiveness
- other factors

water @ 140°F

need to contact local EGLE rep prior to installation

BaugherL@michigan.gov

↳ put in touch w local DNR for installation

no matter what kind of station, won't prevent transport of AIS

information will be published in Riparian magazine

work @ EGLE/DNR area

Incorp Citizen Science in study of EWM.

- clip meristem
- label envelope
- put in ziploc bag + desiccant
- snip

- "Volunteers" were identified + recruited
- worked w consultants, vendors, USFS also

study is winding down.

post ongoing research

↳ MiClean Water Corp - subscribe to email list.



9-18-20

James Mc Nair

Grand Valley State

Lake Management

(and Ryan Thum) Thoom

→ captured all slides →

Excellent Talk.

adaptive management principles

GIS system that transmits GPS pts to hand-held device.

block design not good for lake

↳ #1 and #3 best for me.

linear ↑ plot/single plant

point intercept.

quantitative abundance estimates ⇒ biomass weight.

don't use Chi-squared.

\* use McNemar's for presence/absence data \*

point-intercept in patches

↳ spatial autocorrelation

sample same pts. before & after

9-18-20

Regina Young EGE ← excellent resource

Sewage Systems

captured all slides

septic tank

hi water table can cause issues.

couple you tube videos

LHD = local health dept.

nitrates can pollute drinking water.

~~collection system into local sewer.~~

\* Neighborhood Clustered Systems \*

Pump & Haul → sealed tank that can be emptied.  
seepage tanks not allowed!!!!

Grenetta Thomassey

captured all slides.

when septic tank pumped, only empty tank inspection looks at whole system.

collected info from 35 states.

Harry Stevens. Stephen's. Moreline Septic System Impacts.  
captured all slides.

Soil composition → permeability vs nutrient removal.

on-lot soln → sand mound system.

⇒ new kind of drain field components.

⇒ diff. filter types. → instead of using soil.

off-lot soln → cluster system.

\* 7-8K → \* 20-30K

- local health dept
- hire consultant
- need to talk to township and/or county

cluster system needs to have land in near vicinity.

↳ mix 2 or-lot option (?)

lengthy process → 4-5 yrs.