New findings on new invaders
The latest on starry stonewort spread and hybrid watermilfoil behavior

Dan Larkin & Wes Glisson
September 12, 2018

Photo: Dave Hansen
Starry stonewort  
(*Nitellopsis obtusa*)

- Green macroalga
- Native to Eur. & Asia
- Rare species in native range
- First found in North America in 1974
- Minnesota in 2015

(Karol & Sleith 2017, Larkin et al. 2018)
Invasion history

Larkin et al. 2018
Our research and extension

**Spread**
*Where’s it going to end up?*

Nick Phelps
11:15: AIS risk for MN lakes

**Impacts**
*What’s it going to do when it gets there?*

Carli Wagner
Poster: Seasonal growth, impacts

**Management**
*How can we support rapid and effective responses?*

Megan Weber
1:15: AIS Detectors & Starry Trek

Rafael Contreras-Rangel
Poster: algaecide trials
Where’s it going to end up?

Where can it survive in the world?

CLIMATE

Which lakes provide suitable habitat?

WATER CHEMISTRY

Which lakes can it get to?

BOATER MOVEMENT + DESICCATION TOLERANCE
Potential distribution based on climate

Escobar et al. 2016. *Scientific Reports*
Potential distribution based on climate

Escobar et al. 2016. Scientific Reports

Nick Phelps  Luis Escobar
Potential distribution based on climate

- High potential for spread based on climate
- But need to incorporate habitat suitability
- Need lake-level predictions
Scaling down to lake level

Chemistry of SSW lakes

- High pH
- High conductivity (Ca, Mg)
- Wide trophic-state ranges (N, P)

Based on data from NY (Sleith) and Europe (Boissezon et al.)
Scaling down to lake level

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What lakes is it found in now?

What are environmental conditions of these lakes?

Which MN & WI lakes overlap with these conditions?
Regional risk map

a) Random forest

b) Boosted regression trees

Low risk

High risk
Regional risk map

b) Consensus high risk

Low risk

High risk
Overland transport

Where to?

• Boater movement
Overland transport

Can it survive?

• Desiccation tolerance

Photo: NYS DEC
Desiccation experiments

Bulbils and clumps

• Single fragments
• Small clumps
• Large clumps

Wes Glisson
(Research Fellow)
Desiccation experiments

Treatments

- Out of water for 15 mins. to 5 days
- Negative controls (wet, never dried)
- Positive controls (dried to constant mass)
Desiccation experiments

Returned to water, viability tested by:

• Sprouting (bulbils)
• Rehydration (fragments)
Desiccation experiments

- Bulbils viable for ~4 hours
Desiccation experiments

- Fragments/clumps viable for ~2 – 72 hours
- Strong size effect
Desiccation experiments

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Implications for spread

• Reasonable effort will prevent spread

Photo: CA DFW
Implications for spread

• Reasonable effort will prevent spread
• Risk is from non-compliance

Photo: NYS DEC
Implications for spread

- Reasonable effort will prevent spread
- Risk is from non-compliance
- And conditions that retain moisture

Photo: Blaine Barkley
Get involved

• Learn how to ID starry stonewort and other AIS
• Participate in Starry Trek (August)
• Enroll in AIS Detectors (spring)
Help in the field and lab
• Noah Berg
• Rafael Contreras-Rangel
• Carolyn Kalinoswki
• Ranjan Muthukrishnan
• Mike Verhoeven
• Carli Wagner

References for spread risk


