Spiny Water Flea (SWF) Highlights

Stormy Lake, Vilas Co.

- First found in 2006
- Most abundant in late fall
- SWF populations rarely exceeded typical abundances compared to native range.
- Native zooplankton population decreased with high abundance of SWF.
- Little is known about fish population; brown trout stocked in 2008
- In 2008, Stormy Lake experienced the lowest Secchi readings (water clarity) in this 15-year recorded history.

Gile Flowage, Iron Co.

- First found in 2003
- Sampled in 2003 by CFL, sampled in 2004 by GLIFWC & WDNR
- Over five years of sampling (2004-2008), SWF populations were fairly stable this sampling was done by WDNR
- Peak densities occurred June through Sept, depending on the year. However, late fall samples were not collected (as in Stormy)
- Random mass die-off in 2004 (Roesler)
- Cladocera (large native zooplankton) were only observed when no SWF were present (Roesler).
- Exceptional bluegill fishing in 2006. Unknown if this is caused by SWF serving as a food source or another variable.
- WDNR sampling has not been done since 2008 and is not currently scheduled for 2011 field season

Lake Gogebic, Gogebic Co. MI

- Landowner found SWF in mid-late 90's contacted Michigan Dept of Natural Resources (MDNRE), never heard anything back
- Samples taken in 2003, 2004 & 2005 SWF present each time – done by Great Lakes Indian Fish and Wildlife Commission (GLIFWC) & Center for Limnology (CFL).
- Ottawa crew sampled one year using a weighted fish line and collected an abundance of SWF using this method
- Portable boat wash stations were funded through GLRI money in 2010 with paid inspectors for Lake Gogebic
    - Funding for 2011 is unknown at this point, could have volunteers be trained to staff the wash station for upcoming boating season
    - At the least will have Ottawa staff manning the wash stations during fishing tournaments

General

- Because this species can reproduce both sexually and asexually, a single female being transported to another lake can lay eggs in the new location (Mueller).
- In high densities, SWF can become a nuisance to fisherman as stick to fishing line and anchor ropes (Mueller).
- Invasion results in reduced richness and abundance of native zooplankton (Mueller, Yan/Young).
- SWF are unpalatable to fish under 10cm long due to the large spine. The spines puncture mouths and guts of small fish (Barnhisel).
- SWF may eat other zooplankton that small fish can readily feed on (Strecker/Arnott).
- Small fish reject and avoid eating SWF after several encounters (Barnhisel).
- Large cool-water fish cannot forage on SWF as often during the summer months due to intolerable water temps toward the surface of the lake (Yan/Young).
- SWF has the potential to invade many northern temperate lakes, especially those visited by humans (Strecker/Arnott).
- Evidence shows that algae increases in invaded lakes (Strecker/Arnott).
- It appears that an invasion of SWF will probably not have a large cascading effect on phytoplankton (algae) biomass in lower productivity lakes such as Stormy, despite large reductions in zooplankton biomass. However, more productive lakes may be more sensitive to invasion such as Gile Flowage (Strecker/Arnott).
- Freshwater ecosystems are especially vulnerable to invasions and native species extinctions because of their high degree of isolation and uniqueness. That is to say, many lakes in our area have unique species and unique characteristics and also do not have natural predators to combat invaders (Vander Zanden/Olden).
- Prevention is widely recognized as the cornerstone for successfully managing invasive species (Vander Zanden/Olden).
- **Humans increase potential invasions** (Vander Zanden).

Questions

- Decrease in water clarity over time?
- Decrease in fisheries?
- More ill effects on ecosystems?
- What lakes are vulnerable to invasion?

Resources

Barnhisel, D. R., & Kerfoot, W. C. (2004a). Fitting into food webs: Behavioral and functional response of young lake trout (Salvelinus namaycush) to an introduced prey, the spiny cladoceran (Bythotrephes cederstroemi). *Journal of Great Lakes Research, 30*, 300-314.

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