



Genetic bio-control of sea lampreys strongly affected by underlying sex ratios

Project Lead: Michael Jones, QFC Emeritus Faculty

Contact info: jonesm30@msu.edu

Other Collaborators: Ron Thresher, Nic Bax (CSIRO)

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Caption: T Lawrence, Great Lakes Fishery Commission.

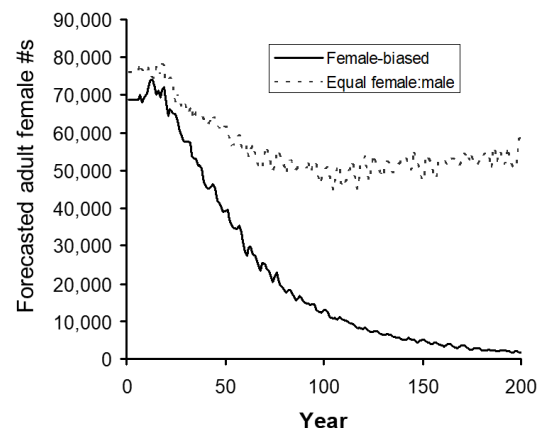
Goal: Evaluate potential performance of genetic bio-control tactics for sea lamprey control, using simulation modeling

- Objectives:**
1. Determine whether genetic bio-control tactics have potential to be valuable tools for integrated pest management of sea lampreys
 2. Assess the potential non-target risks of deploying genetic bio-control tactics

Management Implications: Genetic bio-control has strong potential to reduce sea lamprey abundance. However there we found unexpected efficacy, and associated risks to non-target populations, if sex lamprey sex ratios are unequal.

- Methods:**
- We developed mathematical and simulation models to investigate the effects of introducing genetically modified (GM) sea lamprey into a Great Lakes population
 - We focused on modifications that would bias sex ratios, specifically ones where the offspring of GM individuals would be exclusively male

- Key Findings:**
- Sea lamprey populations sometimes exhibit a sex ratio bias towards females when densities are low.
 - We found that in such instances a sex ratio distorting construct would persist in the population even after new introductions were halted



Changes in sea lamprey abundance forecasted after introduction of genetically modified larval sea lamprey. See manuscript cited in Deliverables for details.

Deliver

Jones, M.L., R.E.

QFC Supporting Partners

efficacy of sex-ratio

