North Temperate Lakes

ROLE OF RESOURCES AND/OR TROPHIC INTERACTIONS IN STRUCTURING POPULATIONS, COMMUNITIES, ECOSYSTEMS, AND/OR RESPONSES TO ENVIRONMENTAL CHANGE

A BRIEF TALE OF NUTRIENTS AND INVADERS IN LAKE MENDOTA
Resources and/or trophic structure

Resources: phosphorus as a fundamental driver of lake trophic state (ecosystem S/F)
• P is why the lake is green, but green-ness can be reduced by grazers

Now add an invasive species that modifies food web relationships
• Spiny water flea (*Bythotrephes longimanus*)
  o Reduced grazer populations →
  o Declines in water clarity
  o Without grazers, more P reduction is required to maintain (some) water clarity
Emergence from LT data and understanding

Context: LT studies/data of phosphorus, food web influences on water quality

- Food web biomanipulation - stocking of top predators
  - Trophic cascade to manage algal populations, improve water quality (1990s)
  - Collecting appropriate data before, during SWF invasion
    - (being in the right place all the time)
Follow-on work

Invasive species management: Prevention → eradication or containment when population is small

SWF weren’t detected until population was fairly large

Detecting invaders (or any rare species) at low densities
- Theory development
- Evaluating efficacy of eDNA