Effect of anadromous alewives (*Alosa pseudoharengus*) on water quality of some Maine lakes

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MAINE WATER QUALITY STANDARDS

- SUPPORT INDIGENOUS SPECIES
- SURVIVE, GROW, REPRODUCE
- SPAWNING AREAS
ALEWIVES

- DMR RE-INTRODUCTION
- WILL CAUSE SOME CHANGE
- IS IT MEASUREABLE
- WHAT EFFECTS
ISSUES

• TROPHIC DYNAMICS

• NUTRIENTS
THEORY
DEP HISTORY

• 2 INTENSIVE STUDIES
  – LITTLE POND
  – LAKE GEORGE

• EXTENSIVE DATA ON SEVERAL LAKES
  – STOCKED
  – NATURAL RUNS
LITTLE POND

- ALGAL BLOOMS & LARGE D PULEX
- ALEWIVES STOCKED AT 9/A in 1976 & 24/A in 1977
- D PULEX LESS 1976, MOST ZOOPLANKTON LOST 1977
- IMPROVED WATER QUALITY
- TP BUDGET
- LITTLE NET TP EXPORT DUE TO DROUGHT
- GULLS FROM THE DUMP
LAKE GEORGE

- DEP, DIFW, DMR
- 4 YEARS BEFORE, 3 DURING, 4 AFTER
- ALEWIVES AT 6/A
- CLADOCERA FEWER AND SPECIES SHIFT
- WQ SDT/CHL NSD DURING, BUT WORSE AFTER
- MORE RAIN/RUNOFF?
- TP LESS DURING
- NET TP EXPORT?
- YOY SMELT GR INCREASED, BUT DENSITY LOWER DURING
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Lake George
LOWER RANGE POND

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Lower Range Pond

[Bar chart showing Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) from 1980 to 2017]
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Tripp Pond
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in China Lake.
LOVEJOY POND

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Lovejoy Pond
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Pattee Pond
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Pleasant Pond
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Sabattus Pond
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Sebasticook Lake
UNITY POND

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Unity Pond
WEBBER POND

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Webber Pond
Alewife run density (#/A) and minimum Secchi disk transparency (SDT, m) in Damariscotta Lake
SEWALL POND

Alewife run density (#/A) and minimum Secchi disk transparency (SDT, m) in Sewall Pond
CONCLUSIONS

• THEORY
  – TROPHIC DYNAMICS
  – NUTRIENTS

• PRACTICE
  – EUTROPHIC PONDS
  – STOCKING RATE
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