

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



Presented at  
Maine Sustainability & Water  
Conference  
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by

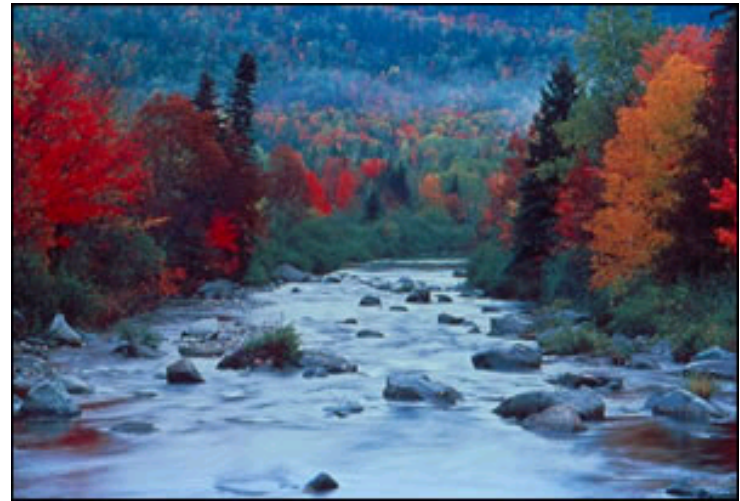
Barry Mower, PhD, Biologist III  
Division of Environmental Assessment

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

*Protecting Maine's Air, Land and Water*

# MAINE WATER QUALITY STANDARDS

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



# ALEWIVES



**DMR RE-INTRODUCTION**



**WILL CAUSE SOME CHANGE**



**IS IT MEASUREABLE**

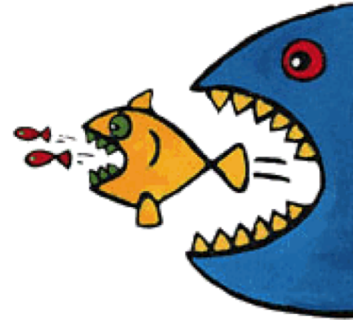


**WHAT EFFECTS**



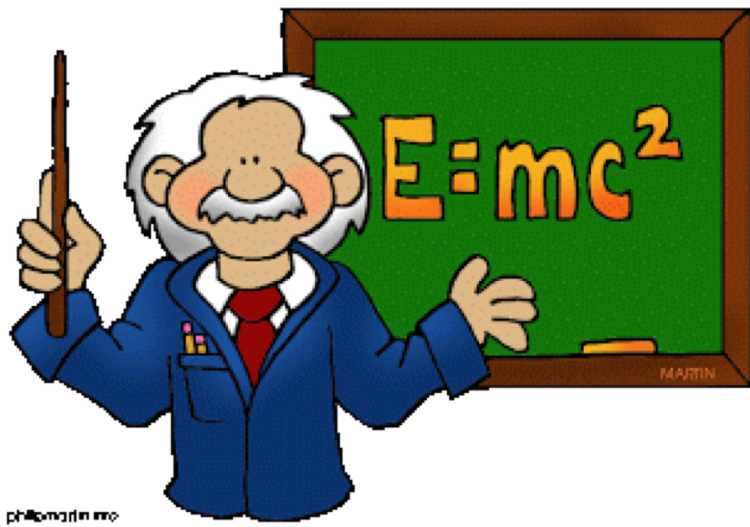
# ISSUES

- **TROPHIC DYNAMICS**



- **NUTRIENTS**

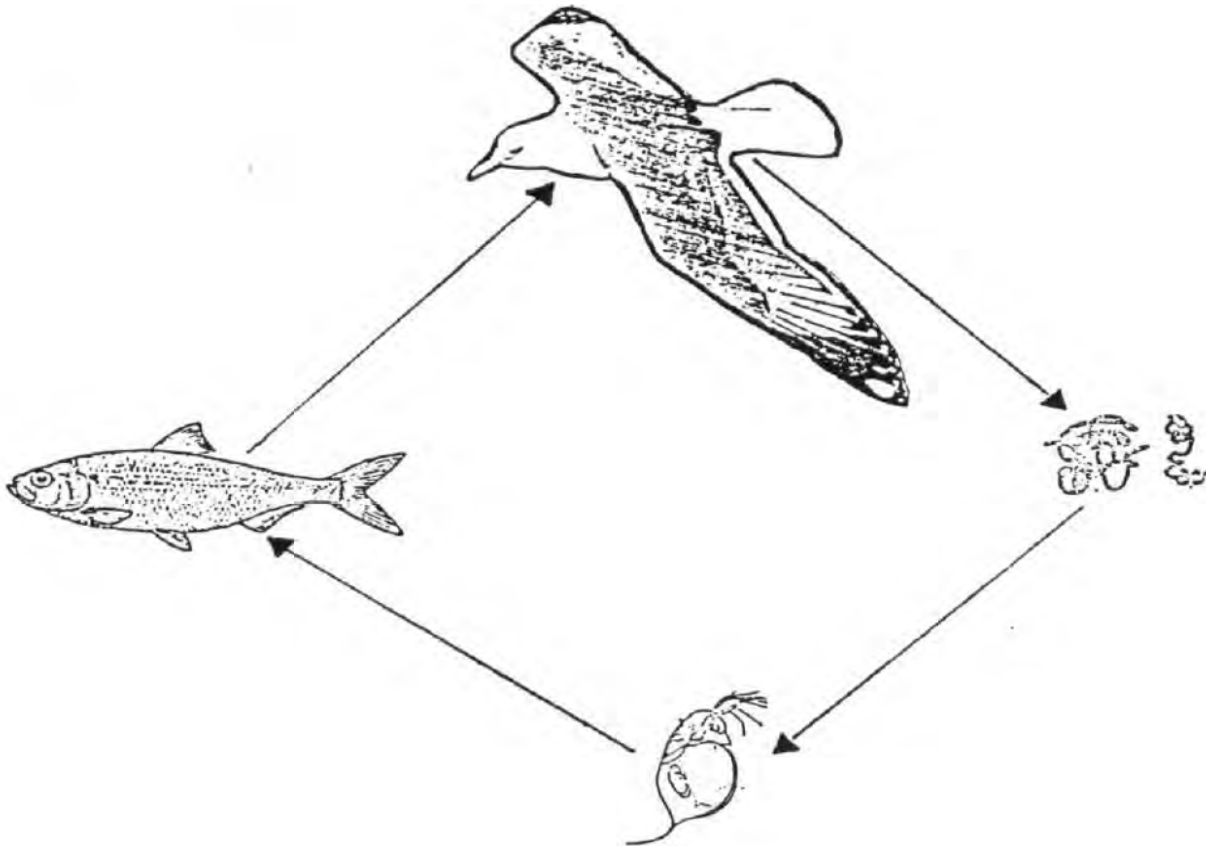




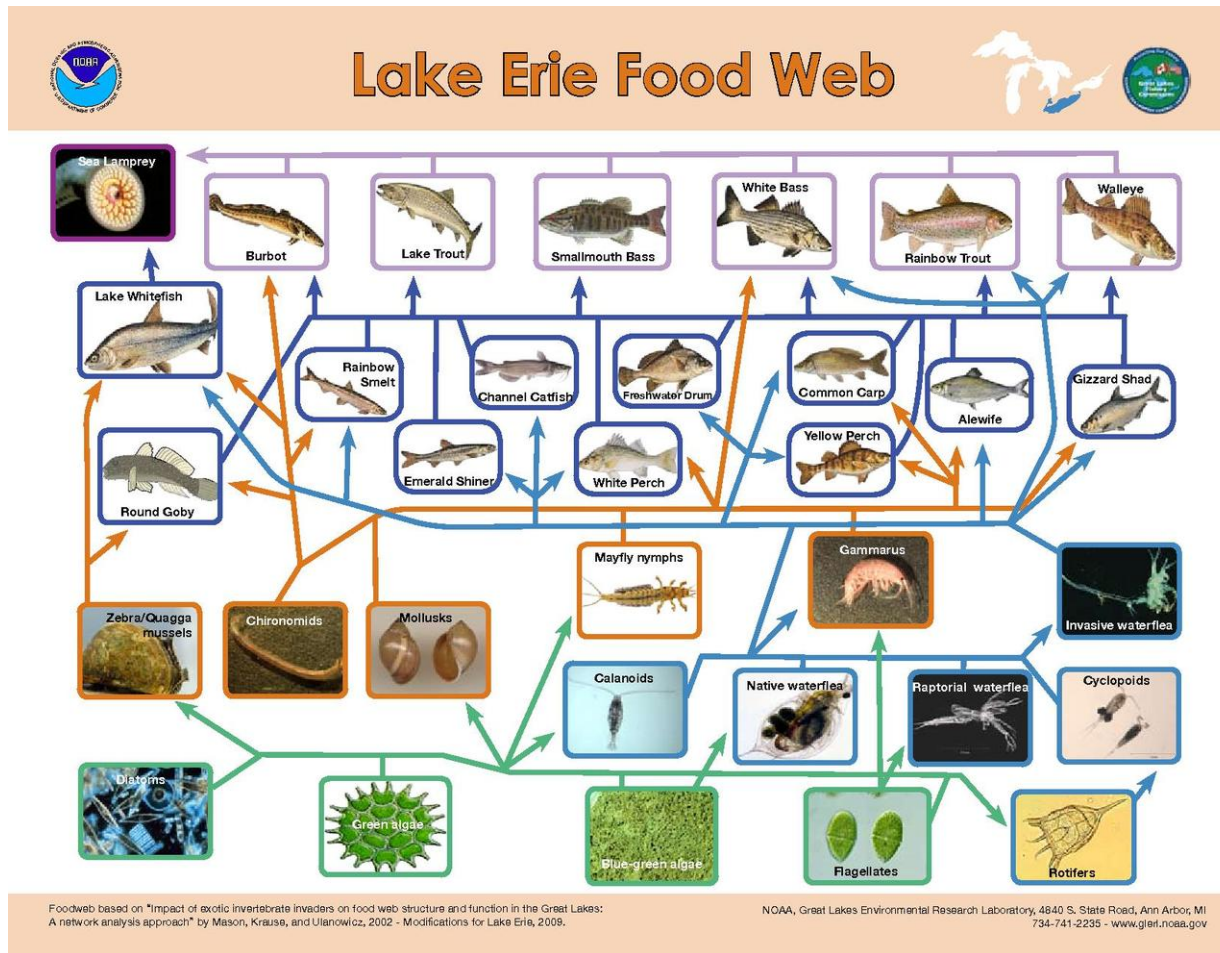
phmartin inc



# THEORY



# PRACTICE



# 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**



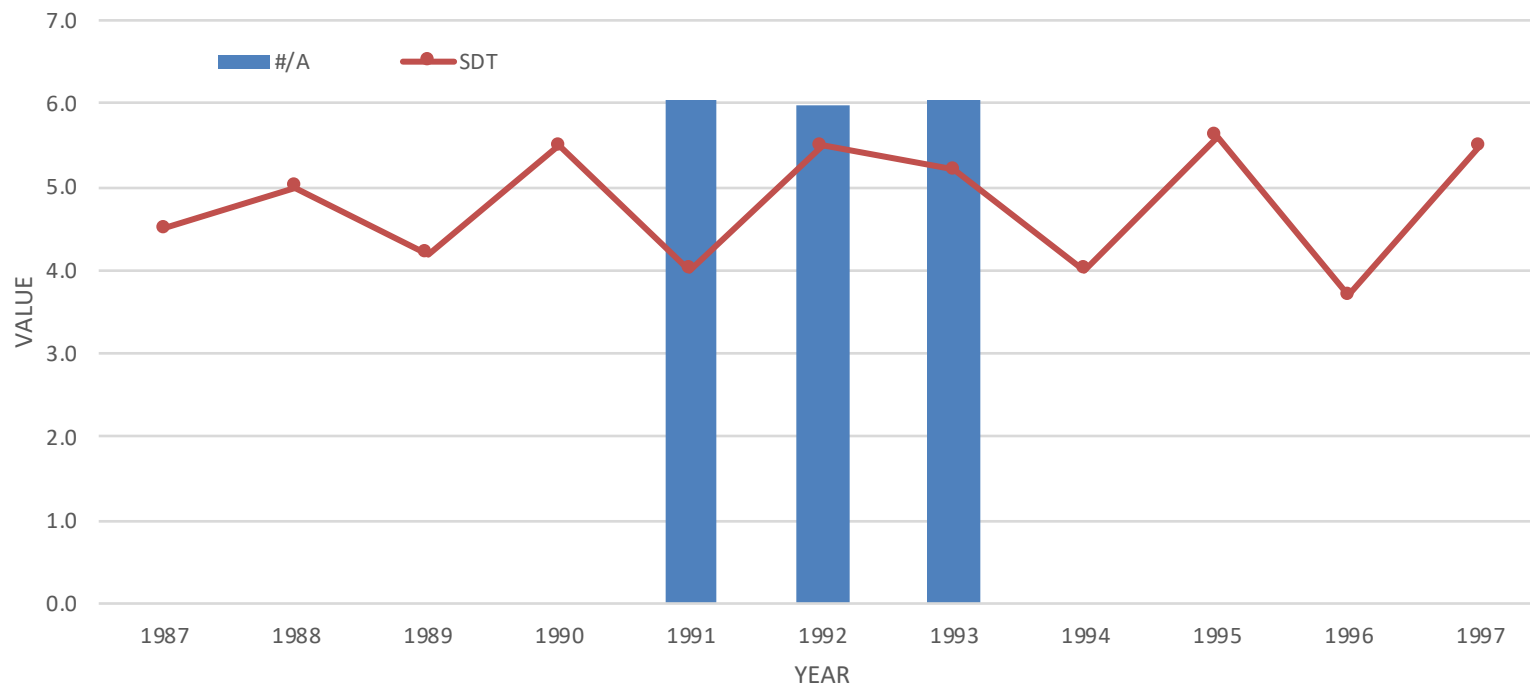
# LAKE GEORGE

- 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



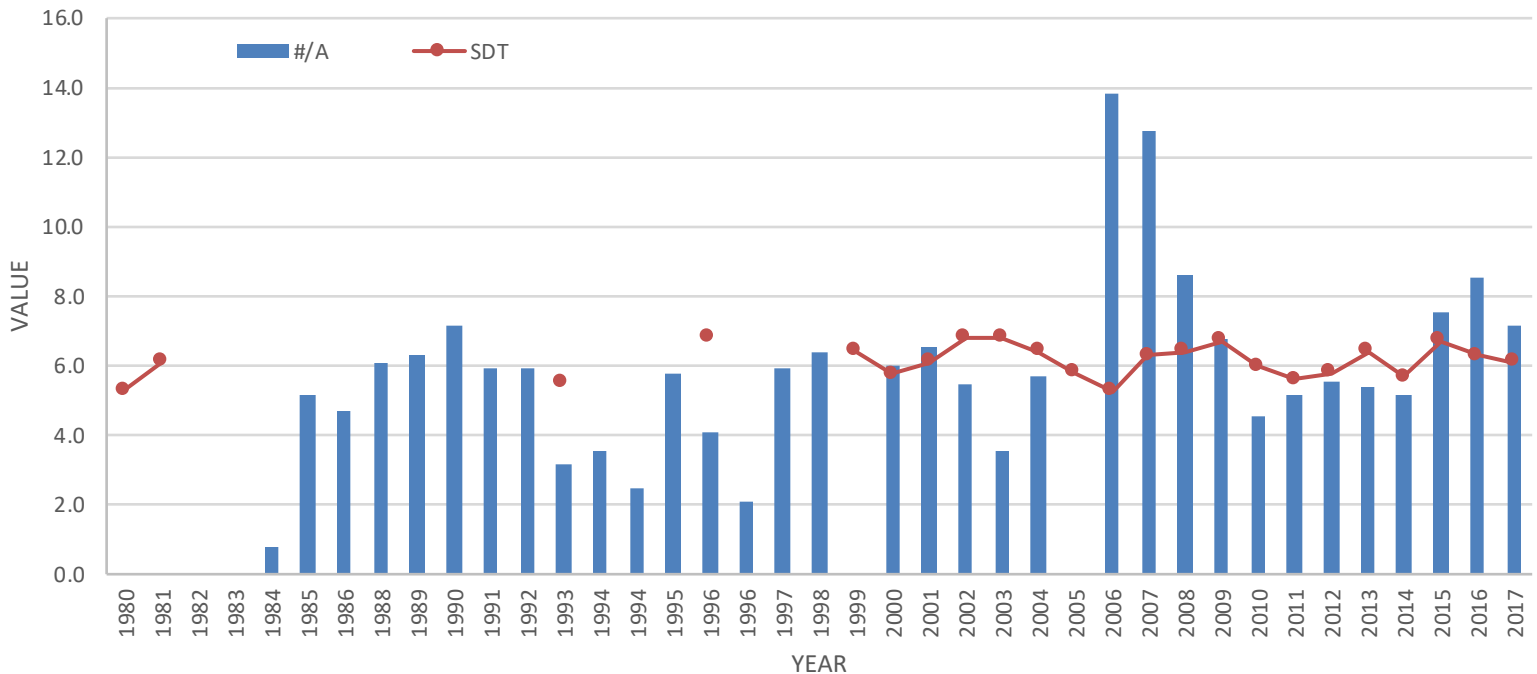
# LAKE GEORGE

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Lake George



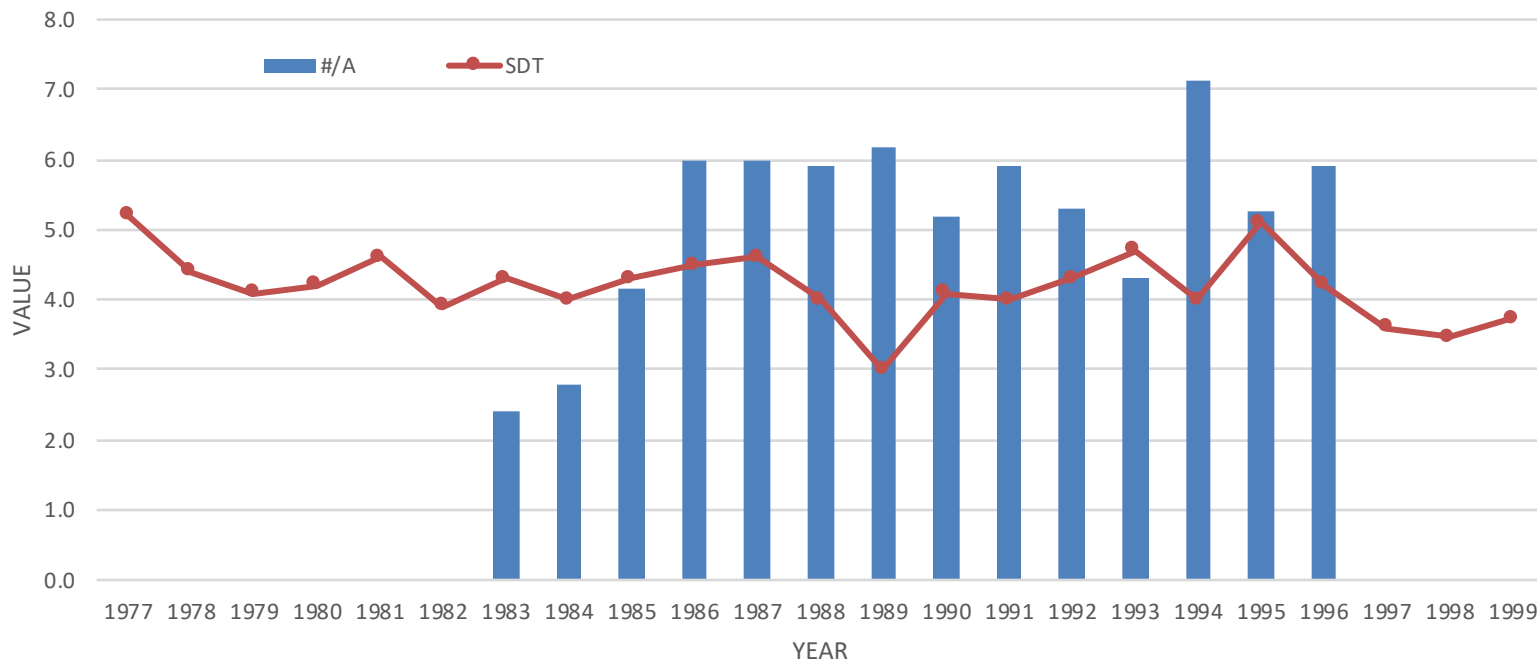
# LOWER RANGE POND

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



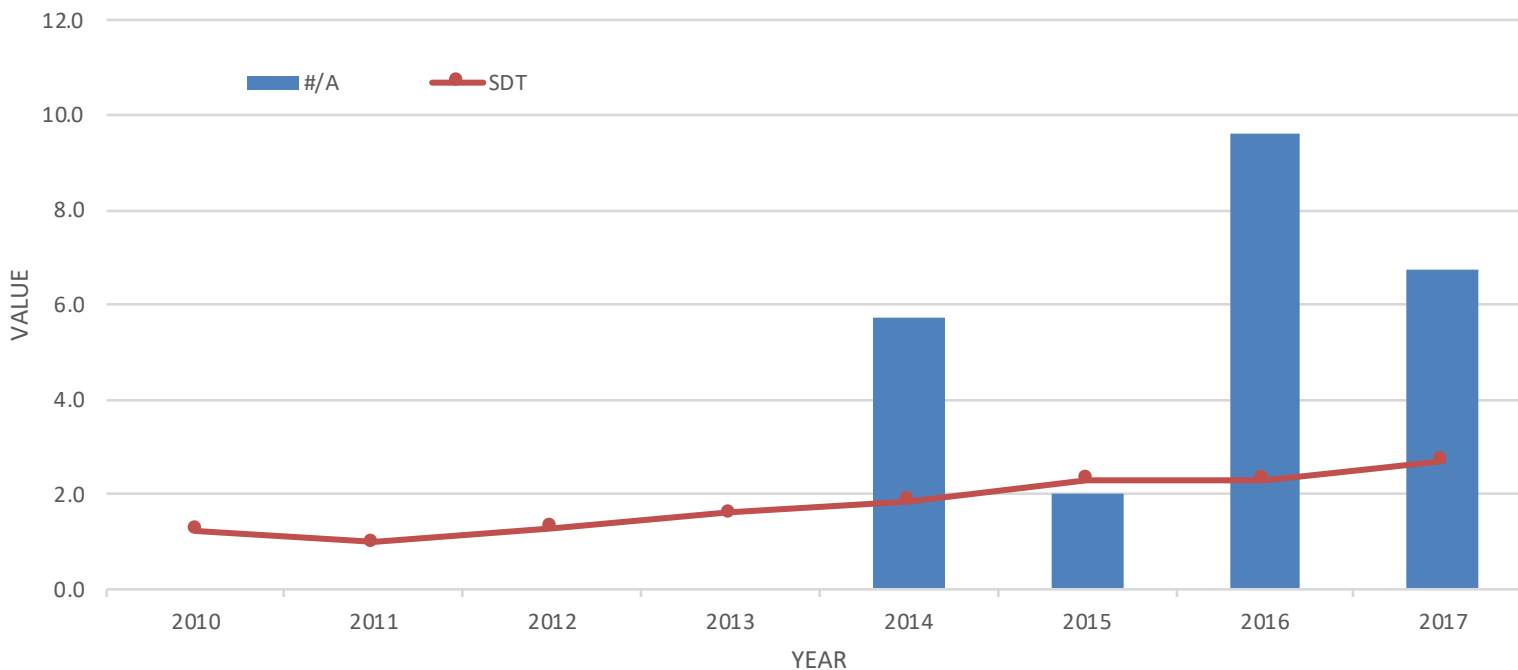
# TRIPP POND

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



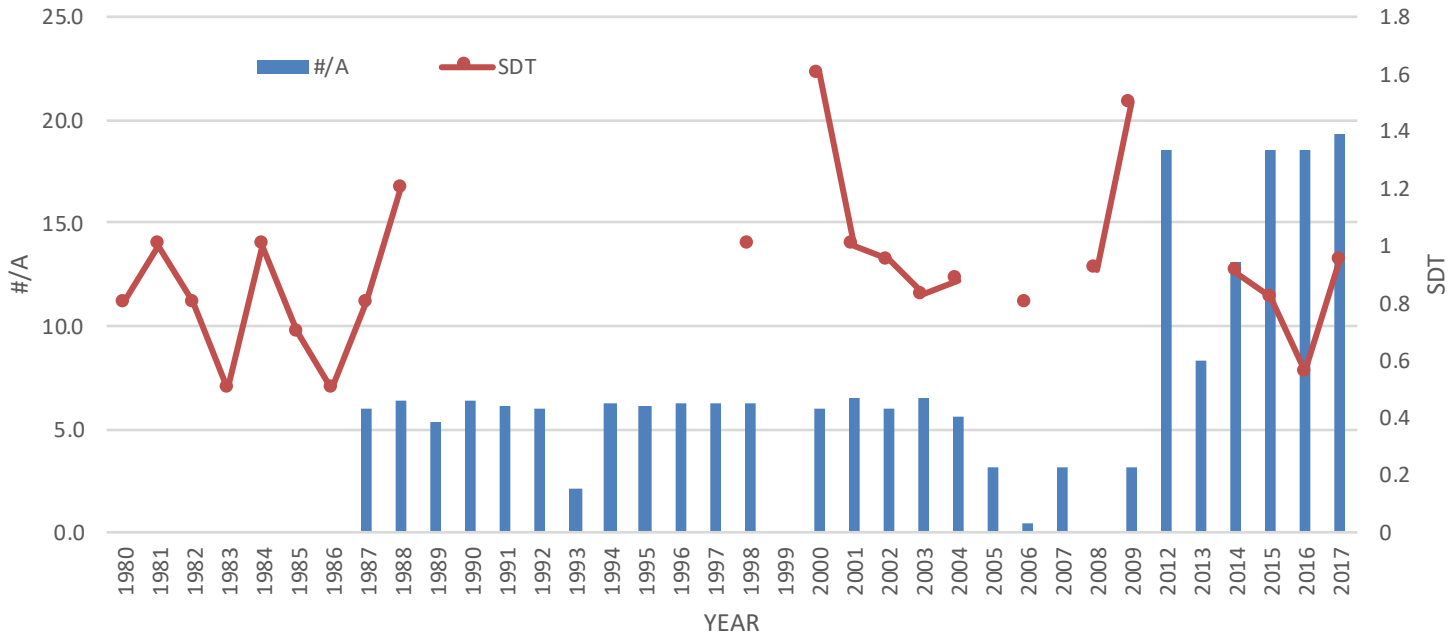
# CHINA LAKE

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in China Lake



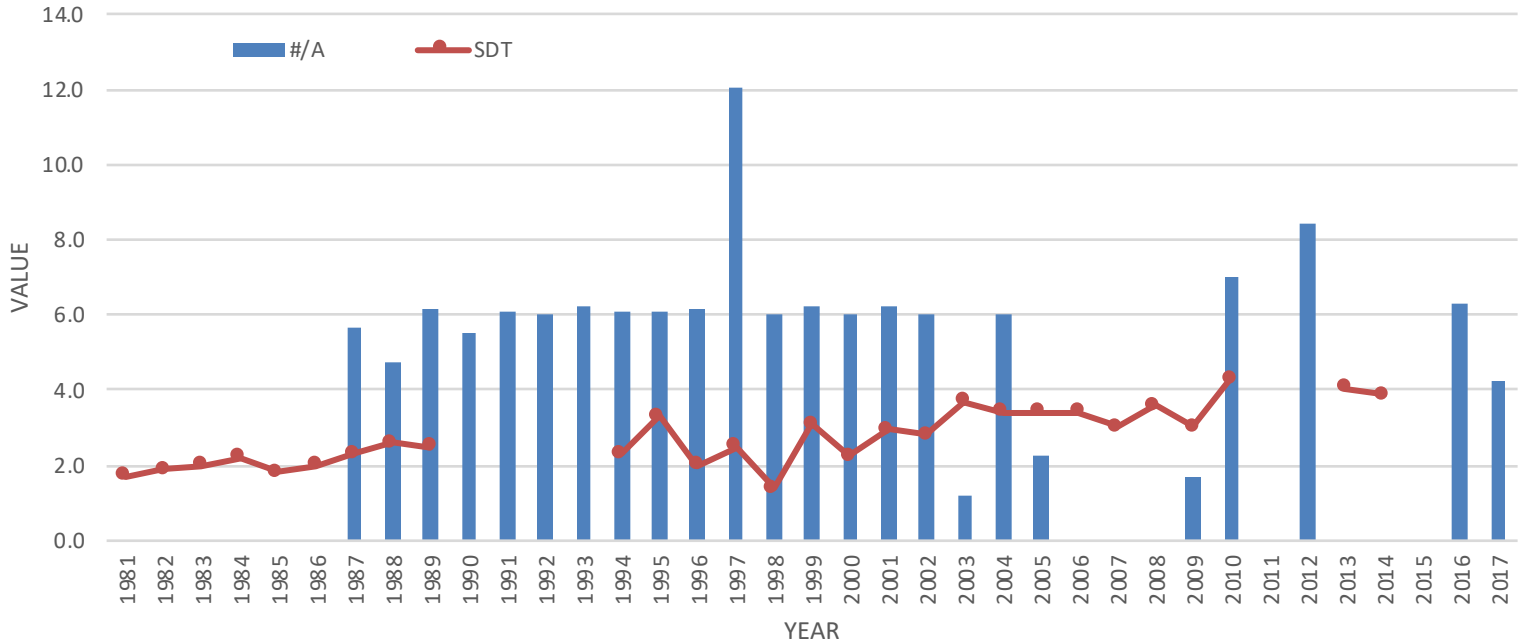
# LOVEJOY POND

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



# PATTEE POND

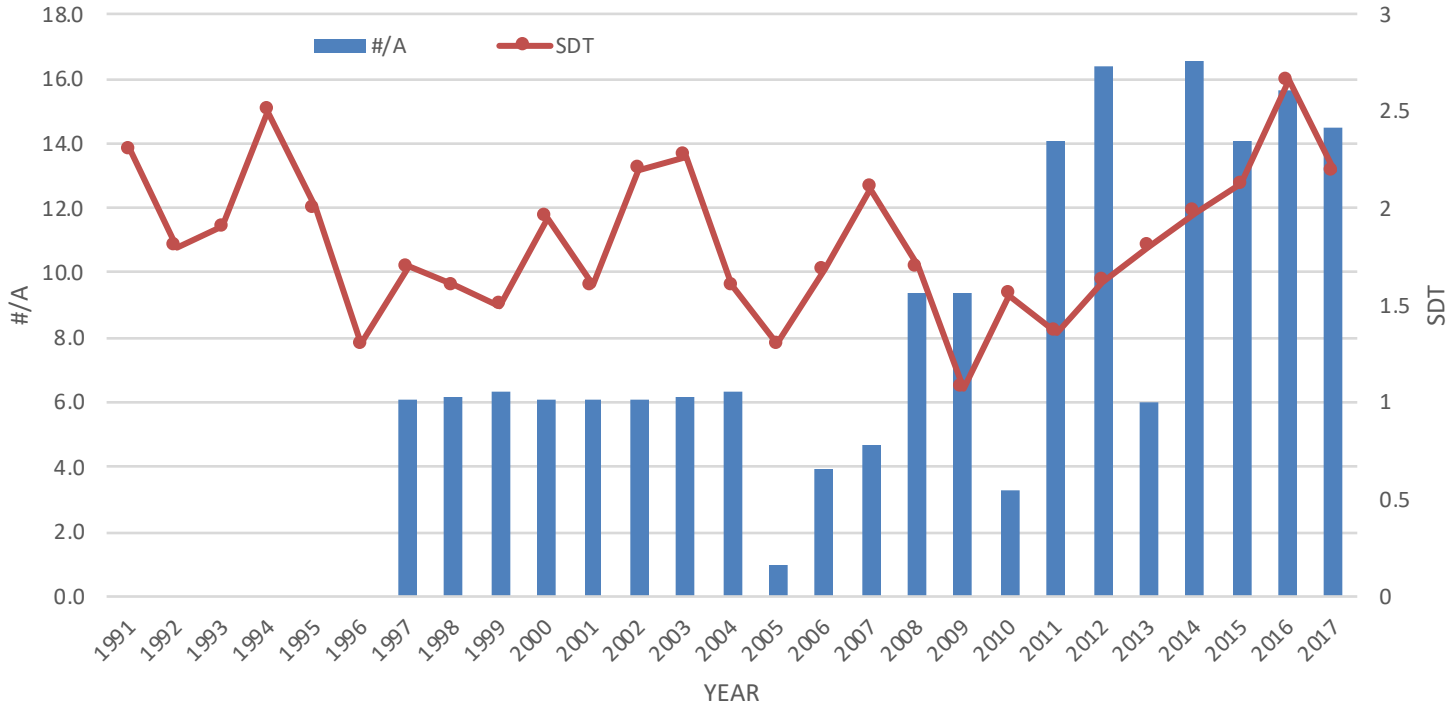
Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Pattee Pond





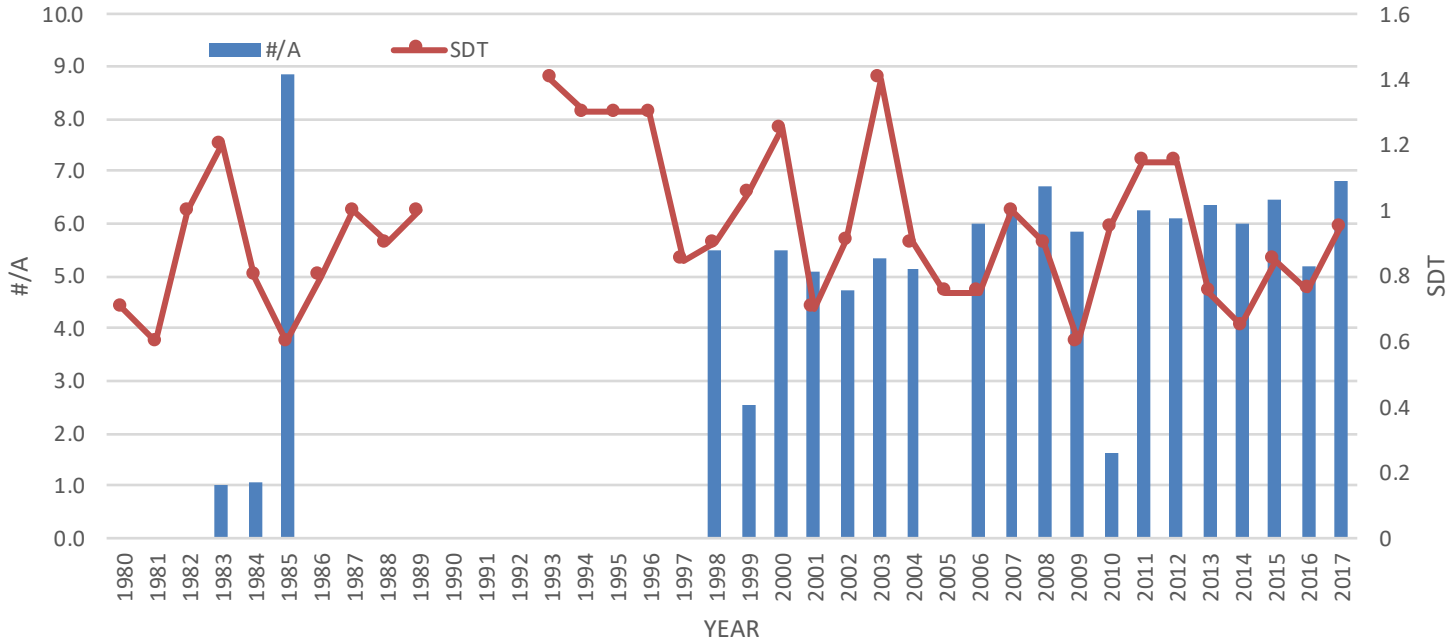
# PLEASANT POND

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



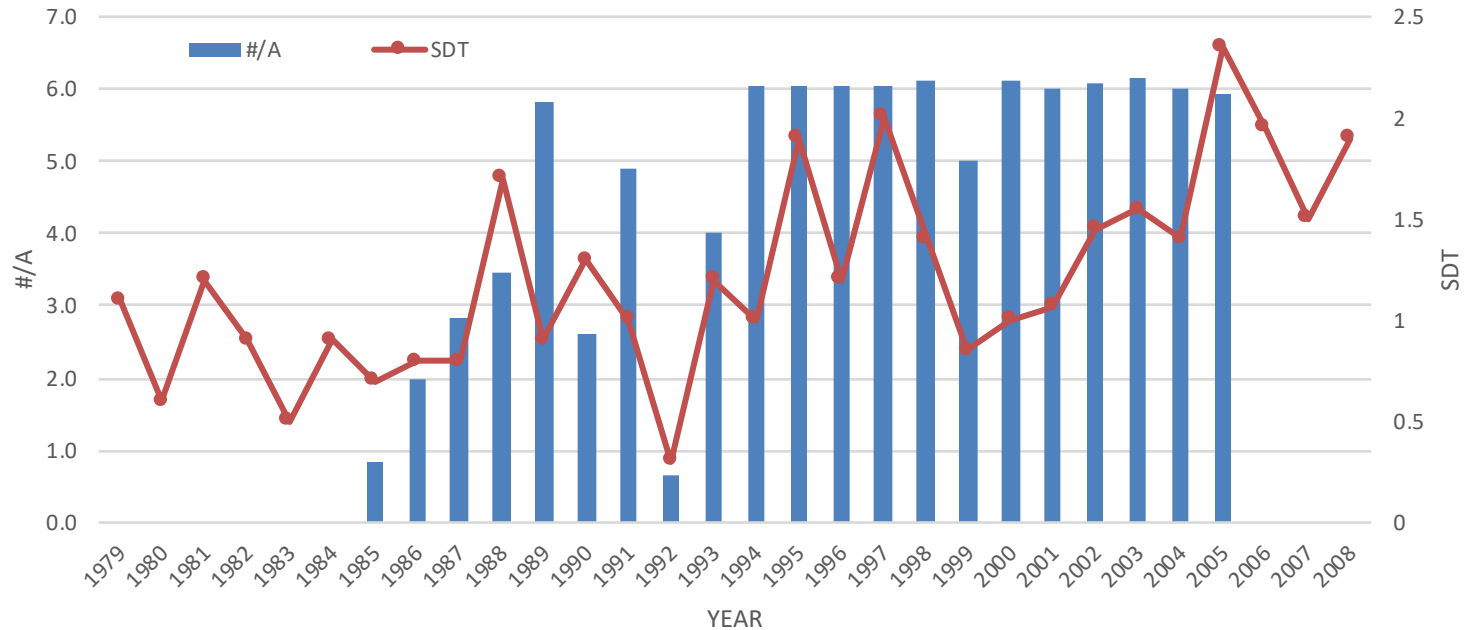
# SABATTUS POND

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



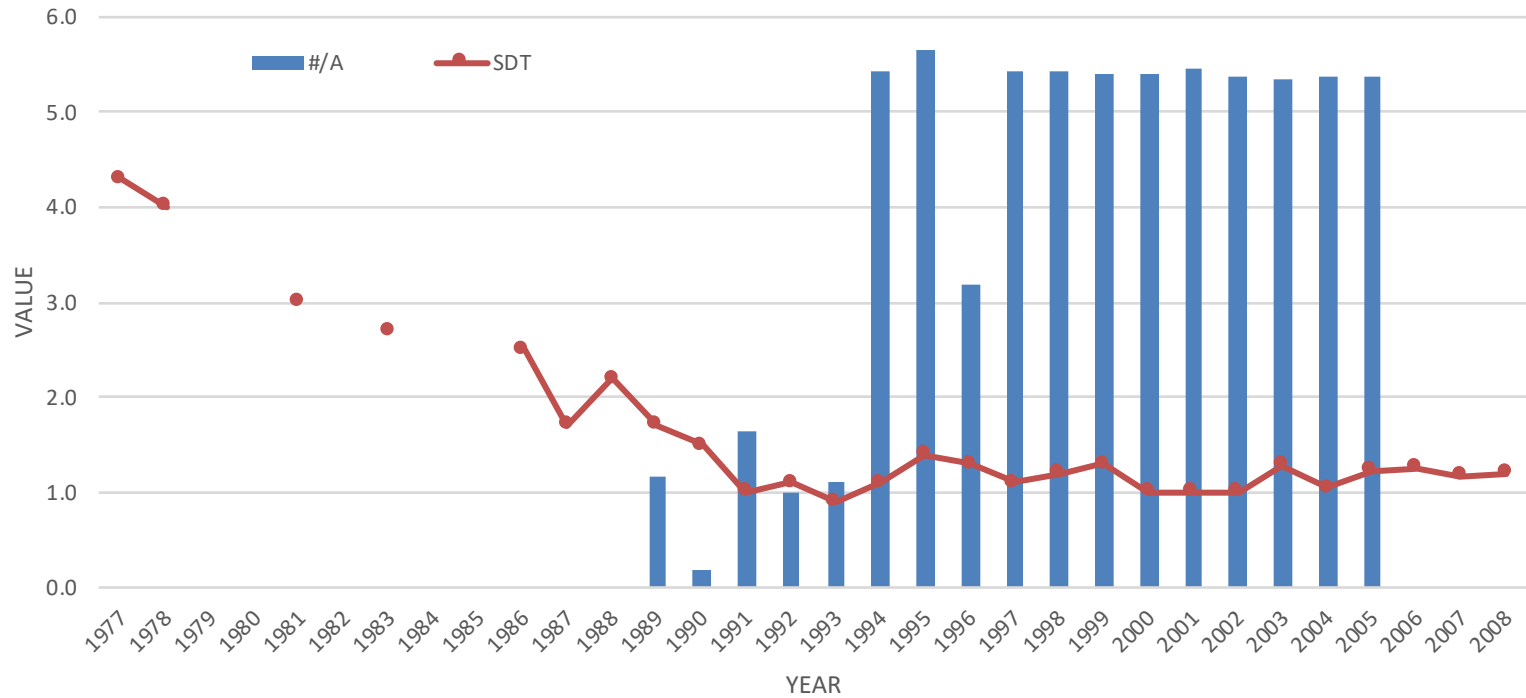
# SEBASTICOOK LAKE

Alewife stocking density (#/A) and minimum Secchi disk transparency (SDT, m) in Sebasticook Lake



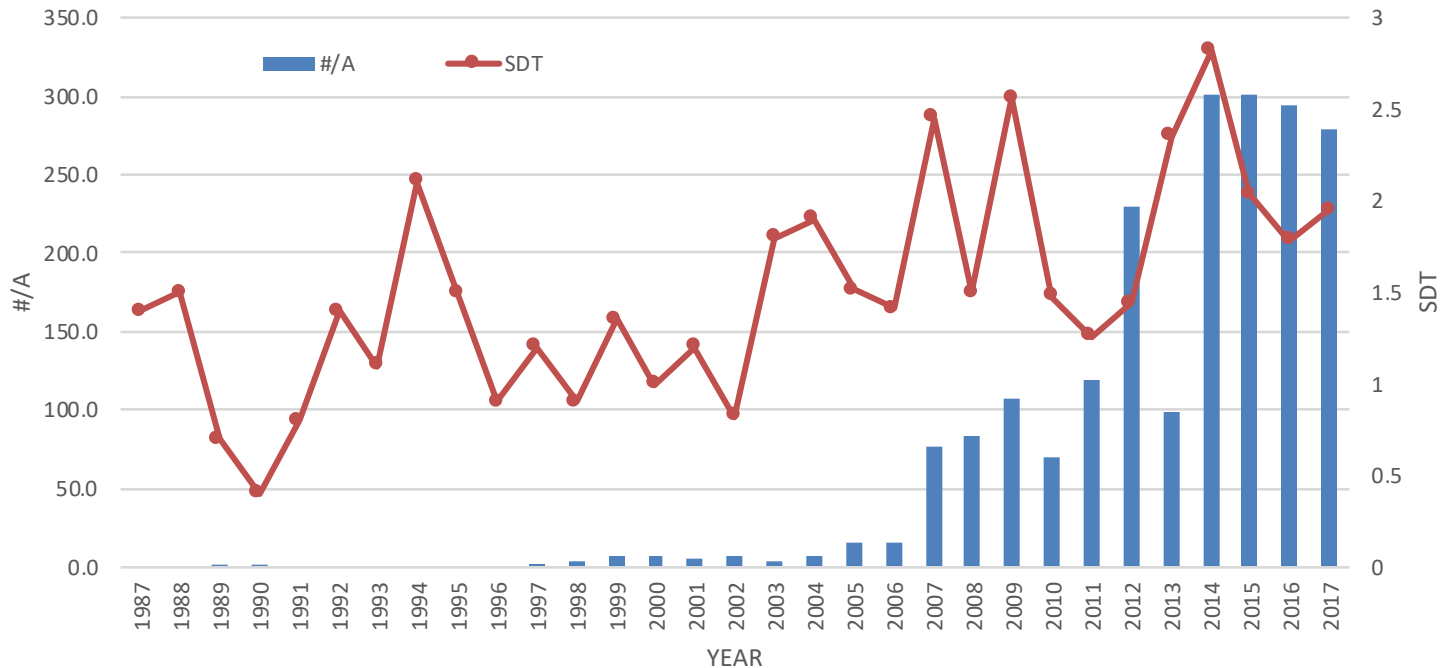
# UNITY POND

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



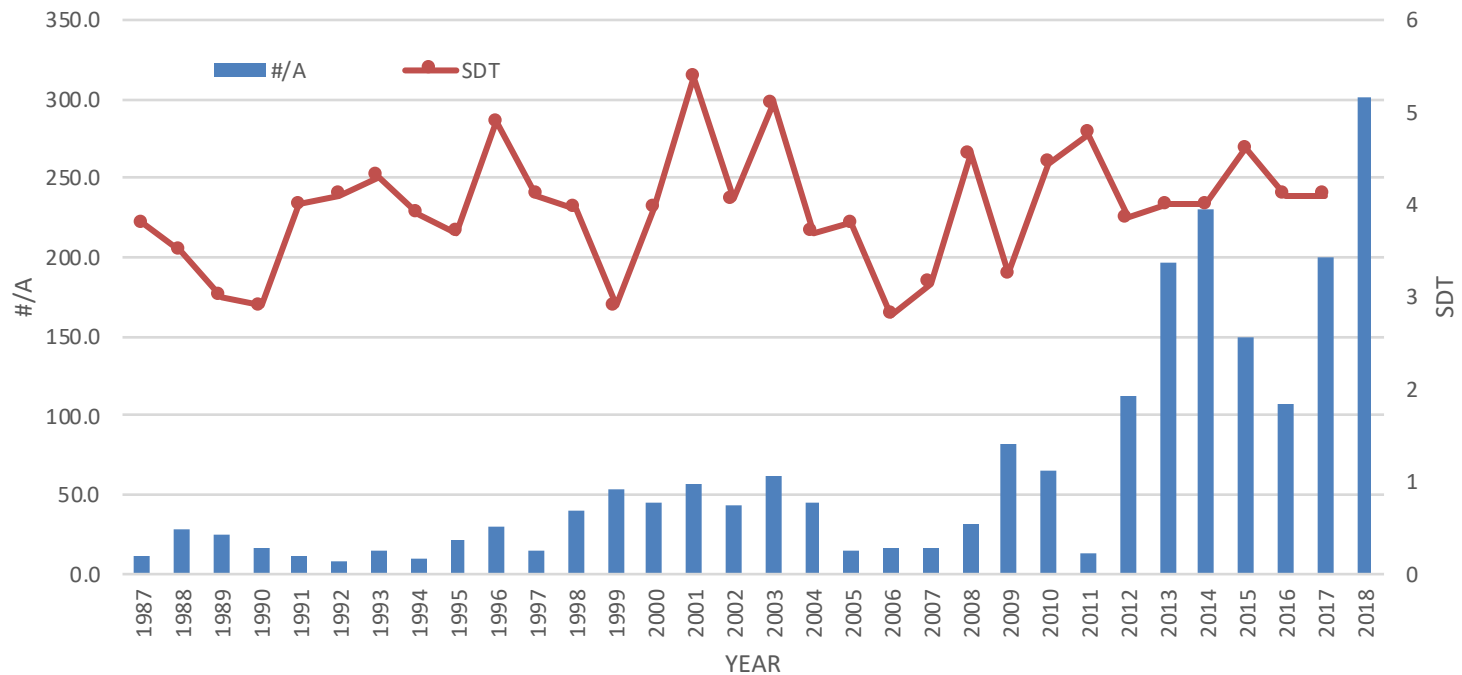
# WEBBER POND

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



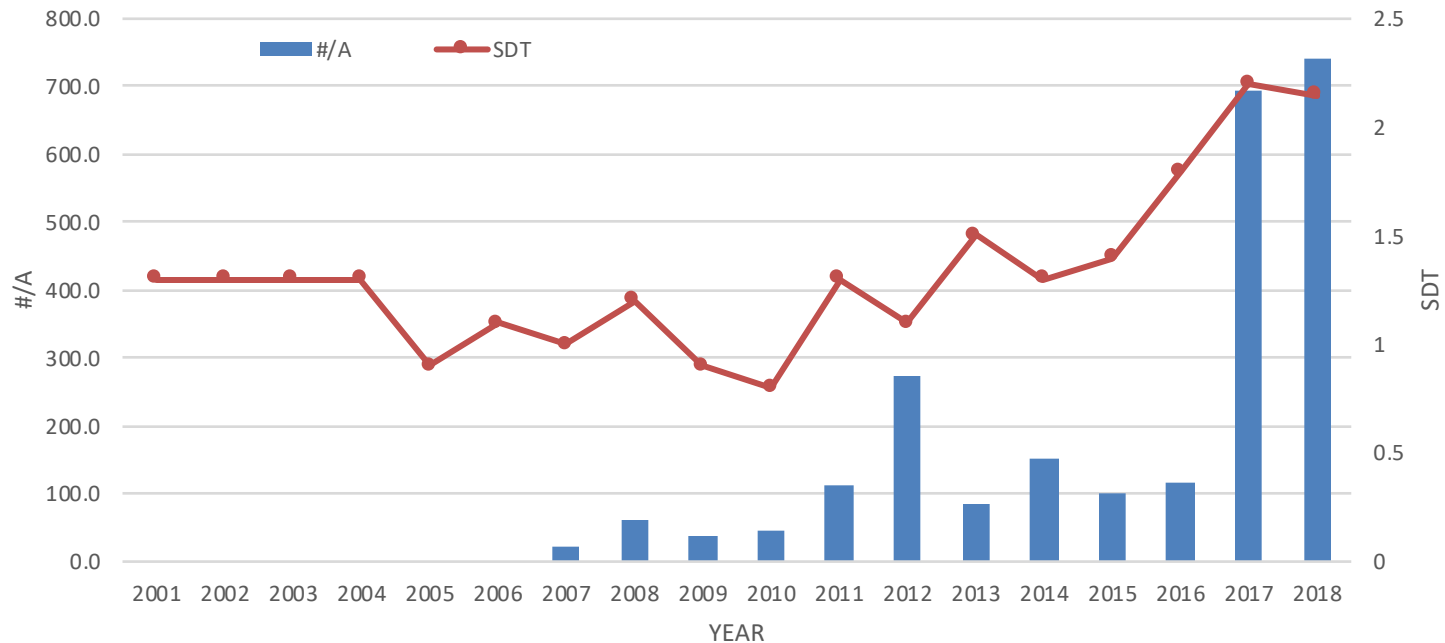
# DAMARISCOTTA LAKE

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







Barry Mower

[barry.f.mower@maine.gov](mailto:barry.f.mower@maine.gov)

207-215-0291

[www.maine.gov/dep](http://www.maine.gov/dep)

