

The Ecology of Straits Pond

A System Out of Balance

Goal: To develop a working consensus among the Straits Pond community regarding a management plan for Straits Pond

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Objectives:

- To inform the public on issues and management alternatives regarding Straits Pond
- To solicit sufficient community input to develop a working consensus on a Management Plan
- To present results to the appropriate officials in Cohasset and Hull by December 2003

Cable Rebroadcast

Thursday 7:30 PM

Wrap-up/Feedback:

Monday 7-9 PM

November 10, 2003

Selectmen's Room - Hull

Video Tapes

4 Educational forums:

Available in the
Cohasset and Hull
Libraries starting
next week.

FORUM TOPICS

Forum 1:

Part A - History

Part B “Silver Bullet Solutions and Why the Trigger Hasn’t Been Pulled”

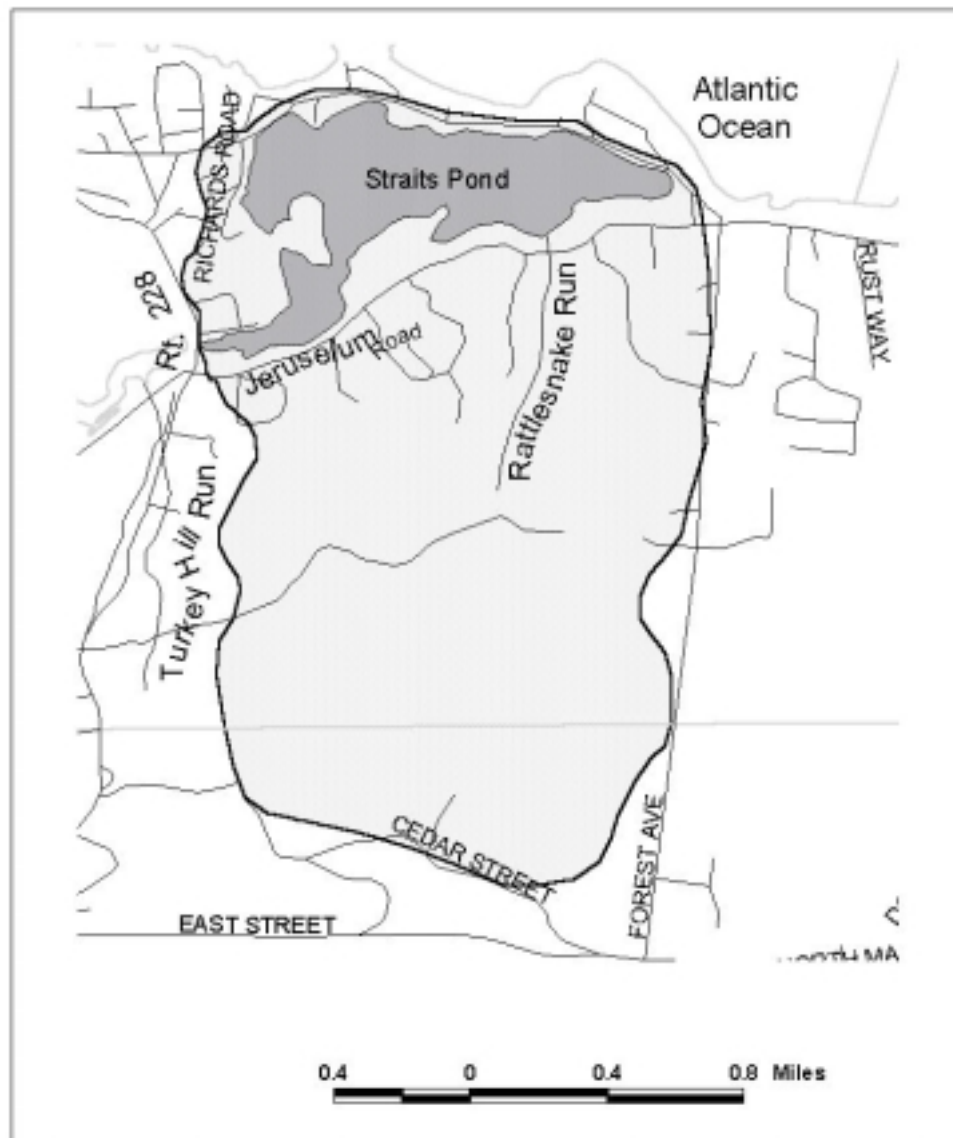


Figure 2-1:
Site Map of Straits Pond
and Straits Pond Watershed Boundary

FORUM TOPICS

Forum 2:

Part A - What is causing the problems?

Part B - Ways to improve the situation

Potential Management Options

- Reduce inputs of pollutants to the Pond through installation and maintenance of high-efficiency stormwater mitigation structures
- Reduce inputs of pollutants to the Pond through the plantings of vegetative buffers, Greenscaping, and through more efficient “housekeeping” practices
- Improve tidal flushing (volume and frequency) to the pond via an enlarged tide gate structure that incorporates some type of closure mechanism such as a self-regulating tide gate

FORUM TOPICS

Forum 3:

Part A - “Things that Swarm
and Things that Smell”

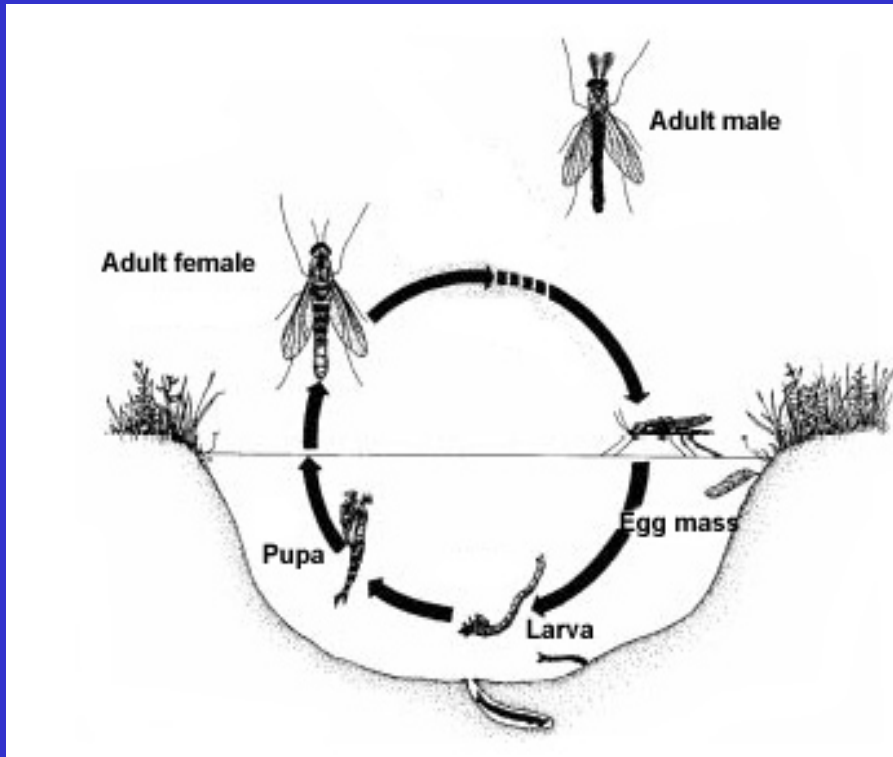
Part B - What can we do to make it better.

MIDGES



- Abundant and ubiquitous
 - Inhabit all aquatic habitats
- Adults do not bite
- Significant food source for many other species
- Pollution-tolerant

Chironomus life cycle



- Eggs hatch within 3 days
- Larvae live 5 - 50 days
 - Temperature
 - Food availability
- Depth preferences
- Overwinter in bottom sediments in mid-larval stages

Factors contributing to problem populations:

- Stagnation
 - Warmer temperatures
 - Lower Dissolved Oxygen concentration
- Nutrient loading
 - Septic systems and fertilizers
 - Decayed algae and plants

Midge Predators

- Fish
 - Feed on aquatic stages
 - Most effective predators
- Waterfowl
 - Feed on aquatic stages

Looking ahead ...



- Monitor beneficial organisms
 - Vertebrates
 - Invertebrates
- Promote scientific research
 - Local schools
 - UMass Boston (Biology, ECOS)?
- Adapt

Pesticides

- Pesticides used to address the midge problem in Straits Pond are not a long term solution. They are a “band aid” approach and will not resolve the problem other than for short term, “quick” relief. Without significant, major “permanent” improvements in the overall ecological condition of Straits Pond the midge problem will continue. In that case, pesticides may be the only remedy available. Multiple applications may be needed each season, not just one at the start of the season.
- There is no longer any Abate products available for use in Straits Pond.
- Pesticides used in Straits Pond must be registered for use in Massachusetts.

Pesticides

- The pesticides must be applied by an appropriately licensed or certified applicator.
- The label must have the site on the label. It also needs to have the pest listed. Although a pesticide may legally be used if only the site is on the label, and not the pest, without the pest listed there are no instructions available regarding the appropriate rates and methods of application. Therefore, both the site and the pest need to be on the label.

It appears that there are only two pesticides currently labeled for both the site and the pest registered for use in Massachusetts: Strike, (A.I. Methoprene) and Vectobac 12 AS (A.I. *Bacillus thuringiensis* subspecies *israelensis*)

Pesticides

- Due to the heavily polluted nature of Straits Pond, high organic and nitrogen content it is likely that the highest allowed application rates should be used.
- In some aquatic pest problems, the pesticide can be applied only to the shallow shore areas for about 10 to 15 feet out from the shore all around the body of water. The deeper areas may not need to have an application to it. Straits Pond is essentially all shallow pond, so all of the 93 acres should be treated.
- Strike has a time release formulation that allows for gradual effective levels of the IGR to be released for up to 30 days. However, due to the condition of the pond, the 30 days may not actually be valid, it may be significantly shorter.
- The Vectobac 12 AS effectiveness may also be lessened by the pond condition.

ESS - Primary Factors Affecting Midge Populations

- Excess nutrient loads promote aquatic algal growth
- Aquatic algae (and plants) respire, die, decay and use up DO, creating conditions favorable to midges
- Inconsistent salinity can reduce midge predator populations (they are less tolerant of this than midges)
- Many midge species are capable of more than one generation per season (multivoltine life cycle), consequently, treating with Abate once per season may not be sufficient.
- Abate is a non-specific pesticide (kills midges and midge predators)

ESS - Results Summary

- More flow-restricted coves tended to have higher midge counts and algae coverage
- Year-to-year variation may be related to coldness of preceding winter and management changes (e.g., modified tide gate operation)
- Often midge counts up post-Abate application
- Difficult to say whether counts would have been higher if Abate not used because the study did not have a control site/pond
- Several studies in the published scientific literature discuss the diminishment of Abate effectiveness on midges with repeated use
- At best, Abate is a short-term management method

ESS - Management Recommendations

- Increase tidal flushing (bigger opening, more frequent exchange)
- Increase circulation (remove island causeway, limited dredging)
- Construct stormwater BMPs (constructed wetlands, specialized catch basins)
- Continue sewer connection process
- Reduce lawn fertilizer use
- Other:
 - Promote proper pet waste management through education
 - Allow goose and swan hunting?

ESS - Program Funding Options

- Increase tidal flushing (bigger opening, more frequent exchange)
 - Mass Highway Reconstruction of Route 228 Bridge at West Cove
- Increase circulation (remove island causeway, limited dredging)
 - Army Corps Section 206 Ecosystem Restoration Funding
 - Use Mass Highway Bridge Replacement as Partial Matching Funds
 - NOAA Coastal Habitat Restoration Grants
- Construct stormwater BMPs (constructed wetlands, specialized catch basins)
 - MCZM-CPR Grant to Complete Design, Permitting, Construction

NOTE: Integrated Planning of these projects will leverage the most state and federal funds and minimize town funding requirements.

Forum Four

Management Plan Options: Treating the problem; not the symptoms’

- Katie Lund – ACEC Stewardship Coordinator
 - Considerations for Developing Management Plans and Recommendations
- Tim Smith – Massachusetts Wetland Restoration Program
 - Pilgrim Lake Project
- Eric Hutchins – National Marine Fisheries Service
 - North Shore Salt Marsh Restoration Project
- Jason Burtner – CZM South Shore Regional Coordinator
 - Straits Pond Flushing Overview