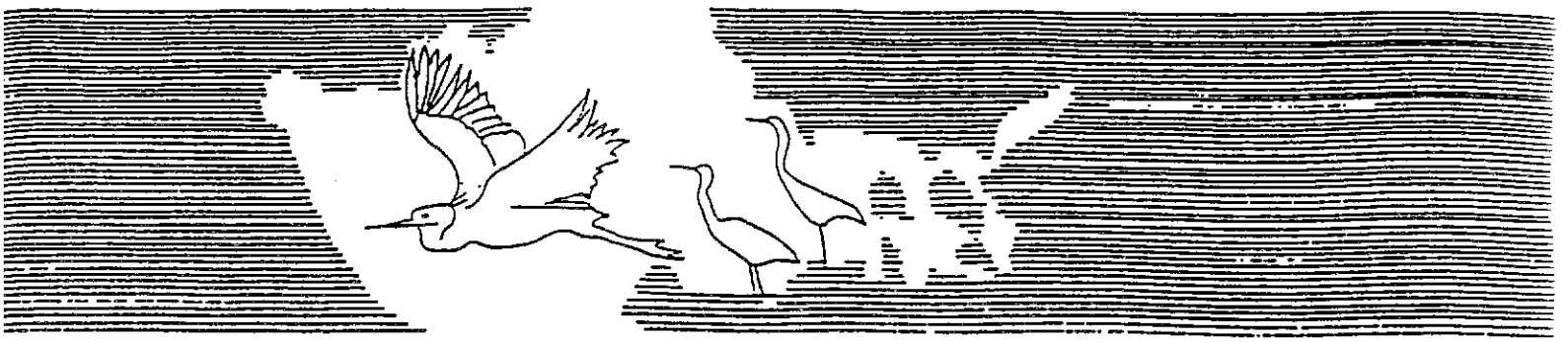
# SQUIBNOCKET POND DISTRICT ADVISORY COMMITTEE



**ANNUAL PUBLIC MEETING • AUGUST 13, 2008 • 4:00 PM • CHILMARK TOWN HALL**

## News From the Advisory Committee

The overabundance of nitrogen in Squibnocket Pond is the most pressing issue that our committee is examining. Nitrogen leaching from septic systems and runoff of pollutants from roadways and parking lots have been doing their damage for years. Acid rain remains our main source of nitrogen.

1. Do we dredge the east end of the pond to help increase water flow? This would temporarily remove the invasive species and discourage the future growth of invasive species such as purple loosestrife and phragmites. Unfortunately, there is no guarantee that the invasives would not return.
2. Do we create a cut through the dunes to the ocean thus increasing the salinity in the pond? This would also reduce the nitrogen content in the pond through tidal flushing and thus discourage the growth of purple loosestrife and phragmites. By increasing the salinity, we may risk the loss of the herring spawning grounds in the west end of Squibnocket Pond.
3. Who picks up the tab for this expensive work?

Masssachusetts Estuary Project

Scientific data is a key to solving these problems. Squibnocket Pond is one of the ponds on Martha's Vineyard that has been accepted into the Masssachusetts Estuary Project. The results of this three-year study will include recommendations that we can follow, helping us manage Squibnocket Pond. The towns of Chilmark and Aquinnah, along with private donors, will share the cost of this study. Some private individuals and the Blacksmith Valley Association have already generously donated funds to the Massachusetts Estuary Project. Your donations would be greatly appreciated. Please contact me for more information.

Water Study

In other news, the Squibnocket Pond District Advisory Committee sent out a water survey in June of 2004 to 140 households in Chilmark. We looked primarily in the Squibnocket, Stonewall and Quitsa Pond areas. We were initially concerned about water levels and water quality. After examining the results of the questionnaire, we realized that we needed more data to complete our study. We then looked at all the well reports and water tests for the same 140 households which were on file with the Chilmark Board of Health.

The results were varied. For instance, properties adjacent to each other had very different well depths. The water tested at adjacent sites had notably different levels of "sodium" or "iron". The only consistent patterns occurred in the Squibnocket Ridge area where the well depths were deeper overall than the other wells on which we had data. Also, the sodium levels in this area were higher over all, showing possible saltwater intrusion.

At our annual meeting on **Wednesday, August 13, 2008 at 4:00 p.m.** at the Chilmark Town Hall, there will be copies of the excel spreadsheet recording our data gathering.

I hope you are able to attend our annual meeting. If not, please feel free to contact anyone on the Committee with your questions and/or comments.

Wendy Weldon, Chair

P.S. Keep an eye out for the Chilmark Master Plan Update Questionnaire, which will arrive by mail soon. Please fill it out and send it back to the Chilmark Planning Board. Your involvement in the future planning for Chilmark is essential to the health of our town. Thank you.

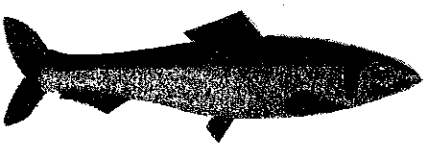
## About the Massachusetts Estuaries Project

Estuaries are special bodies of water occurring when the sea extends inland and meets the mouth of a river or streams. The estuaries of Southeastern Massachusetts - the harbors and bays of Cape Cod, Buzzards Bay and the Islands - are ecosystems that provide home and habitat for shellfish and sea grasses and breeding grounds for important commercial offshore marine fisheries. Rapid population growth over several decades has created an abundance of nutrients that have leached into the estuaries through ground and surface waters. Nutrients, such as phosphorus and nitrogen, act as a fertilizer to aquatic plants. The result: changes in water quality and the buildup of invasive weed and algal growth causing fish kills, closed beaches, destroyed productive shellfish areas and creating aesthetically displeasing waters that adversely affect the valuable tourist industry and coastal property values.

**What is the Massachusetts Estuaries Program?** The Massachusetts Estuaries Project effort will begin to fix this problem by determining all of the factors specific to each estuary that are causing the problem. Project partners will determine the geographic area contributing nutrients to a specific estuary, determine what the nutrient sources are, what the nutrient load is, and how great a nutrient load the estuaries can tolerate without dramatically changing their character and usages. In most cases, returning the estuaries to the water quality condition that support sensitive shellfish habitats and lush eel grass beds, it will be necessary to remove a significant percentage of the nutrient loadings coming from an estuary's watershed. Nutrient removal may come primarily in the form wastewater treatment and secondarily through storm water management programs including of limited use of lawn fertilizers. In some scenarios, changing the water flow within an estuary to increase flushing may compliment nutrient reduction and removal efforts.

This project will provide water quality, nutrient loading, and hydrodynamic information for 89 estuaries in Southeastern Massachusetts. This information will be combined through the use of a linked watershed/estuary model that will predict the water quality changes that will result from land use management decisions. Over the next six years a report for each of the 89 estuaries will evaluate several water quality conditions and how that relates to the health of the estuary and the land use changes necessary to bring about that improvement. This project is a collaborative effort by two state agencies, the Executive Office of Environmental Affairs (through the Department of Environmental Protection) and the University of Massachusetts's School of Marine Science and Technology and is subsidized by funding that allows communities to undertake this evaluation at approximately 40 percent of the actual cost.





## The Role of Buffer Areas Around Ponds and Wetlands

**William Wilcox, Water Resource Planner, Martha's Vineyard Commission**

A buffer is an area that separates two landscape settings-often one that is natural from one that is man-made. The buffer is typically heavily vegetated with native plants or with plants that do not require care and feeding. The importance of buffers has been recognized and protected by the State Wetlands Protection Act as well as by Town wetland bylaws and by the Coastal District and the Squibnocket Pond District. Why are they so important?

Buffers are often rich habitat areas crucial to the success of waterfowl as nesting sites, birds of prey as feeding areas, otter and muskrat for nesting and hunting and amphibians and snakes for feeding and breeding. The abundance of wildlife is directly linked to the proximity of diverse habitats that buffers provide. Native plant communities are vital to the value of buffers as habitat. In addition to this function, buffers are important sites where the water-borne pollutants of the developed landscape may be removed from runoff as it flows toward coastal ponds. The processes involved are primarily associated with filtration and infiltration of rainfall runoff.

The Role of Buffer Areas (cont.)

**Filtration:** This is perhaps the most important function that buffer areas perform. When rain falls at a rapid enough rate that seepage into the soil cannot keep pace, the excess builds up at the surface of the soil and begins to flow down hill. This is called runoff. Runoff can carry large amounts of fine material such as soil particles, fertilizer granules and grass clippings as well as soluble chemicals from lawn fertilizers and pesticides. Developed areas release far more runoff than native areas because there are more impermeable surfaces such as roads and roofs and because the vegetation has often been replaced or modified so that it cannot absorb the rainfall as well. Runoff from non-vegetated areas like dirt or paved roads is much greater than from lawns or native areas. The amount of debris that can be carried by runoff varies with the rate of flow which is determined by the amount of rain that is falling, the permeability of the soil and the steepness of the slope down which the runoff flows.

When runoff hits a heavily vegetated buffer, the soil particles it carries are gradually filtered from the water and are not replaced by other soil particles because the soil is held in place by a dense root system. The stem density of plants in the buffer alone slows the rate of flow allowing some of the runoff to seep into the soil. If the slope decreases, the rate of flow of the runoff also decreases allowing even more of the runoff to seep into the soil. Seepage removes any suspended material and also allows the dissolved nutrients from fertilizers to be absorbed by the roots of the buffer plants or bound to clay particles by a process known as cation adsorption. Adsorption is an important mechanism of removal of phosphorus and ammonium, commonly found in turf and landscape fertilizers as well as certain pesticides and many of the metals that come from paved roads and parking areas.

If the buffer includes some wetland areas, other nutrients such as nitrate which do not bind to clay particles may be removed by soil bacteria conversion to nitrogen gas.

From this description of how a buffer functions, you might conclude that a lawn is a pretty good buffer. In terms of the filtration function of buffer areas, this is true, particularly if the lawn is made up of low maintenance grasses such as red fescue, hard fescue or sheep fescue. These grasses will get by without the application of fertilizers and pesticides. It is the loss of these chemicals from a lawn to the nearby pond that would impact the pond if there were no buffer.

It appears that all of our activities have some effect on the natural environment. One way to reduce the negative effects is to shelter surface waters from our no-longer native landscape through retention of a native buffer. The absolute minimum buffer for sediment and bacteria removal from runoff is believed to be 100 feet. For other functions, such as habitat and removal of dissolved nutrients a greater distance of up to 300 feet is thought to be more appropriate. Short of regulating this much upland area, every shorefront homeowner can take steps to reduce their impact by reducing or eliminating the use of lawn care products in this area and by encouraging the growth of native plant communities.

If you are interested in knowing more about invasive species and what you can replace them with, check out the links below.

List of invasives: http://216.227.222.169/~mnlacom/images/stories/invasiveplantspdf/mipag_final_050325_rev.pdf

Alternative plants replacing invasives:
http://216.227.222.169/~mnlacom/images/stories/invasiveplantspdf/invasive_alternatives.pdf

## NATIVE PLANTS FOR USE IN BUFFER STRIPS OR RESIDENTIAL LOW MAINTENANCE LANDSCAPES

**These species are suited to planting above the shoreline to provide a runoff absorbing buffer strip. Leave existing vegetation if any or establish a continuous bed of the species listed. Heights given allow selection of plant material to preserve views.** ***B.Engley & W. Wilcox 1989.***

| 3 feet or less | 6 - 9 feet | 10 - 15 feet | Groundcovers |
|---|---|---|---|
| ***Kalmia angustifolia*** Sheep laurel | ***Aronia arbutifolia*** Red Chokeberry | ***Hamamelis virginiana*** Witch hazel | ***Arctostaphylos Uva-ursi*** Bearberry |
| ***Rhus aromatica*** Fragrant Sumac | ***Clethra alnifolia*** Sweet Pepperbush | ***Lindera benzoin*** Spice Bush | ***Gaultheria procumbens*** Checkerberry |
| ***Rosa carolina*** Carolina Rose | ***Baccharis halmifolia*** Groundsel Bush | ***Vaccinium corymbosum*** Highbush Blueberry | ***Gaylussacia brachycera*** Box Huckleberry |
| ***Salix tristis*** Dwarf Grey Willow | ***Ilex verticillata*** Winterberry | ***Rhus copallina*** Shining Sumac | **Grasses (unmowed meadow)** ***Andropogon scoparius*** Little Bluestem |
| ***Vaccinium angustifolium*** Low Bush Blueberry | ***Lyonia mariana*** maleberry | ***Rhus typhina*** Staghorn Sumac | ***Festuca varieties*** Hard, Sheep & Creeping red Fescues |
| ***Ilex glabra compacta*** Compact Inkberry | ***Malus sargenti**** Sargent Crab | ***Amelanchier canadensis*** Shadblow | ***Panicum virgatum*** Switchgrass |
| ***Comptonia peregrina*** Sweet Fern | ***Myrica pennsylvanica*** Bayberry | ***Amelanchier laevis*** Allegany Shadbush | ***Ammophila breviligulata*** American Beachgrass (sand/dunes only) |
| ***Gaylussacia baccata*** Black Huckleberry | ***Prunus maritima*** Beach Plum | ***Ilex glabra*** Inkberry | **Grasses: Mowed Lawn** Creeping red fescue |
| ***Amelanchier stolonifera*** Creeping Shadbush | ***Rosa virginiana*** Virginia Rose | **Over 15 Feet** ***Acer rubrum***(red maple) | **Invasive Pests (do not plant)** ***Eleagnus umbellata***(Autumn olive) |
| ***Aronia melanocarpa*** Black Chokeberry | | ***Ilex opaca*** (holly) | ***Rosa multiflora*** (Japanese rose) Various spreading **Bamboo Species** |
| ***Rosa rugosa**** (Beach Rose: Best on the shore) | | | ***Phragmites maxima*** (Common reed) |

**As a general rule, do not transplant from existing natural settings. Native plants are increasingly available in nurseries.**

* Non-native but worthy plant material.

# 5-Year Management Plan for Squibnocket Pond

**Squibnocket Pond District Advisory Committee - February 2008**

*Common Milkweed*

The primary goal is to manage Squibnocket Pond and its watershed as a brackish pond for the purpose of supporting an estuarine ecosystem, with a key element being the management of sustainable habitat suitable for oysters and spawning alewives (herring). The health of the pond is necessary to protect the recreational activities and opportunities for livelihood that Chilmark residents have enjoyed in the past.

What local residents and visitors appreciate about Menemsha and its surrounding waters is in large part dependent upon Squibnocket Pond. Without the alewives (herring) and other baitfish that spawn in the slightly brackish waters of Squibnocket Pond, our fishing industry would be greatly reduced.

Another key element is determining how to reduce adverse impacts to the Pond's ecosystem and watershed. Water column chemistry data indicate that Pond water quality is impaired by excess nitrogen primarily from acid rain, natural background sources in streams and groundwater and from man-made sources.

## Important Priorities

1. **Continue the involvement in the Massachusetts Estuary Project (MEP).** This project began three years ago. Data has been collected over the past three years including core samples and tide data. The study will result in recommendations from the MEP as to how various pond and watershed management alternatives would affect water quality in the pond. The cost for the project is approximately $82,000 ($41,000 Aquinnah + $41,000 Chilmark). Chilmark will pay its share of the funds for the project through a warrant article at the Special Town Meeting in 2009. (2-3 year goal)

2. **Reduce cormorant predation on the finfish populations in the Pond.** A study should be undertaken to determine the impacts of cormorant predation on the alewife, perch and eel populations. If severe impacts are documented, permission to control the population should be sought. (2-3 year goal)

3. **Develop a management plan for the sustainable harvest of the Pond's resources.** When they are abundant, oysters are an important means to maintain water quality. By filtering microscopic algae from the water column for food and depositing organic matter to bottom sediments, oysters improve water clarity and remove available nitrogen. Also, a viable oyster fishery can provide a mechanism for additional removal of nitrogen from the Pond's ecosystem through the harvest of oysters. With proper management the substantial population of oysters in the Pond can provide employment opportunities for local fishers. The development of the oyster fishery is hampered by fecal coliform contamination and low salinity. These constraints can be addressed as follows:

   - **Investigate the sources of fecal coliform contamination in the Pond.** Areas of the Pond are closed to the harvest of oysters due to elevated levels of fecal coliform. A study should be undertaken to determine the sources of contamination and provide strategies for reduction. (2-3 year goal).
   - **Develop a management plan that provides for the transplant of oysters to higher salinity beds in Quitsa/Menemsha.** Providing a mechanism to increase the salt content of the Pond's oysters will improve their market value and stimulate harvest. (2-3 year goal).
   - **Improve habitat for the oyster and alewife (herring) resources.** Identify and map existing oyster reefs and areas of suitable hard bottom appropriate for future expansion of this resource. Identify critical spawning areas for herring and other suitable areas not in use.

5-Year Management Plan (cont.)

4. **Determine solutions to problems of circulation, elevated nitrogen, invasive species, and public access, dependent upon the recommendations of the MEP.** (2-3 year goal)
   - The Massachusetts Estuary Project will address the questions of whether dredging or controlled breaching is advisable to remediate low circulation and high nitrogen levels. The pond nitrogen levels are dangerously high and we are looking at possibly dredging the pond and/or opening the pond to the ocean on a controlled basis. It has been noted that the balance of Squibnocket Pond directly effects/impacts the ecological balance of Menemsha Pond not only from the discharge of Squibnocket water into Menemsha but also by the production of anadromous fishes. Sometimes in the past 20 years, Squibnocket Pond naturally breached, but has not done so in recent years. It would be helpful to conduct an historical study regarding past openings of Squibnocket Pond to the Atlantic. We can then identify potential dredge sites to improve internal circulation including the entrance to Herring Creek and the access to the southeast coves.
   - There are two apparent options to enhance circulation in the Pond: increased flow through Herring Creek and opening the system directly to the Atlantic. The MEP circulation model will be able to predict what changes to tidal flushing and water quality would result from both approaches. If a man-made opening is planned, the management plan will need to address permits and easements, timing, responsible parties, funding and other issues.
   - The east end area of the pond needs attention for public access for kayaks. A plan for access should be developed to minimize impacts from foot and boat traffic, assure public safety and to identify appropriate steps to facilitate launching and passage through the shoals.
   - Address invasive and non-native vegetation. Map phragmites areas to evaluate options to limit its spread or to devise removal plans. Alert riparian landowners about other invasive plants that should be removed such as purple loosestrife.
   - Implement recommendations of MEP study.

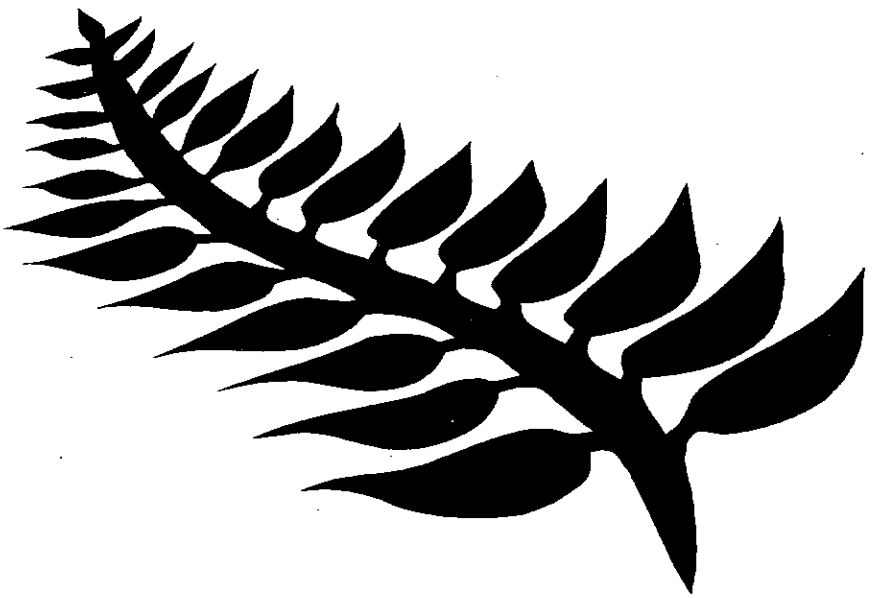
5. **Examine the water quality of the aquifers and the water usage in homes in the pond's watershed.** (1-3 year goal)
   Inform Squibnocket Pond District residents of the following:
   - The residents in the watershed should have their water tested for potability at least once a year. Sodium and contaminant levels can vary seasonally as well as from house to house. The time to test the drinking water is in the spring or when residents arrive back on the Vineyard for their summer stay, when the water table is usually higher.
   - The Wampanoag Environmental Laboratory in Aquinnah can perform a basic water quality test. The Wampanoag Environmental Laboratory will perform tests for the standard potability sequence which includes the following: Total Coliform and E coli Bacteria, pH, Conductivity, Total Dissolved Solids, Chloride, Nitrite, Nitrate, Phosphate and Sulfate.
   - The Laboratory has the ability to perform the following additional analyses as well: Ammonium, Potassium, Sodium, Calcium, Magnesium as well as a variety of total metals such as Arsenic, Copper, Iron, Nickel, Lead, Chromium, Cadmium, Zinc and Mercury for additional cost. Please call the Laboratory to discuss the charges and the procedure for these tests 508-645-2903.

- As the water table levels in adjacent lots vary considerably, residents need to be watchful of their water usage. The aquifer that supplies irrigation for a large lawn may be the same one that supplies vital drinking water to a neighbor. Lawns take an enormous amount of water to stay green during the time of year when the water table is lowest and there is very little recharge to the water table as the sod absorbs most of the water. Maintained lawns should be kept to the minimum. The remainder of a former lawn can be converted to native grasses. Choosing native plants for landscaping will reduce the water usage, as they need less water to thrive. Overhead irrigation will add to water evaporation; standard ground irrigation will help conserve water. Residents should consider using a manual rather than automatic control to prevent irrigating during rainy periods when it is unnecessary and wasteful of water and electricity. There are many other ways to reduce water usage.
- It is highly recommended that residents consult the ***Island Blue Pages for*** an extensive guide to water conservation. Copies can be found at the Chilmark Library and at the Chilmark Town Hall.
- Remind the residents in Squibnocket Pond's watershed that the use of nitrogen fertilizers is not recommended and if nitrogen must be used then use slow release, organic forms of nitrogen. Inform them that **the use of chemical fertilizers, herbicides, fungicides, pesticides and chemical septic system cleaners in the Squibnocket Pond Overly District is prohibited.**

6. **Educate residents about nitrogen in water**. Create an informational pamphlet with the assistance of the Chilmark Board of Health. Inform the residents of options, such as composting toilets and nitrogen reducing septic systems. ( 2-4 year goal)

7. **Suggest alternative energy recommendations for homes over a certain number of square feet**. The SPDAC would work with the Chilmark Planning Board on this possibility. (3-5 year goal)

8. **Explore locations of** invasive and non-native vegetation. Map phragmites areas to evaluate options to limit its spread or to devise removal plans. Alert riparian landowners about other invasive plants that should be removed such as purple loosestrife. (2-4 year goal)



## The Squibnocket Pond District Advisory Committee

**Voting Members**

| | |
|---|---|
| Chilmark Planning Board | Rich Osnoss,richozz@comcast.net |
| Chilmark Board of Health | Liz Gude |
| Chilmark Conservation Commission | Rusty Walton, 508 645-2149, rwalton@ci.chilmark.ma.us |
| Chilmark Historical Commission | John Flender |
| Chilmark Board of Selectman | Riggs Parker, jbrparker@gmail.com |
| Martha's Vineyard Garden Club | Wendy Weldon, 508 645-3199, wendyweldon@earthlink.net |
| Resident (North Side of Pond) | Leanne Cowley, galantecowley@comcast.net |
| Resident (South Side of Pond) | Michelle Lasser, Michellelasser@aol.com |

**Advisory Members**

| | |
|---|---|
| Martha's Vineyard Commission | Bill Wilcox, 508 693-3453 x 17, wilcox@mvcommission.org<br>Joanne Taylor, 508 693-3453 x19, taylor@mvcommission.org |
| Martha's Vineyard Shellfish Group | Rick Karney, 508 693-0391, mvsg@comcast.net |
| Natural Resources Dept, Wampanoag Tribe | Bret Stearns, 508 645-9265 x 170, bstearns@wampanoagtribe.net |
| Wampanoag Environmental Laboratory | Kendra Read, 508 645-2903, wtghalaboratory@comcast.net |
| Division of Marine Fisheries | Greg Skomal |

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