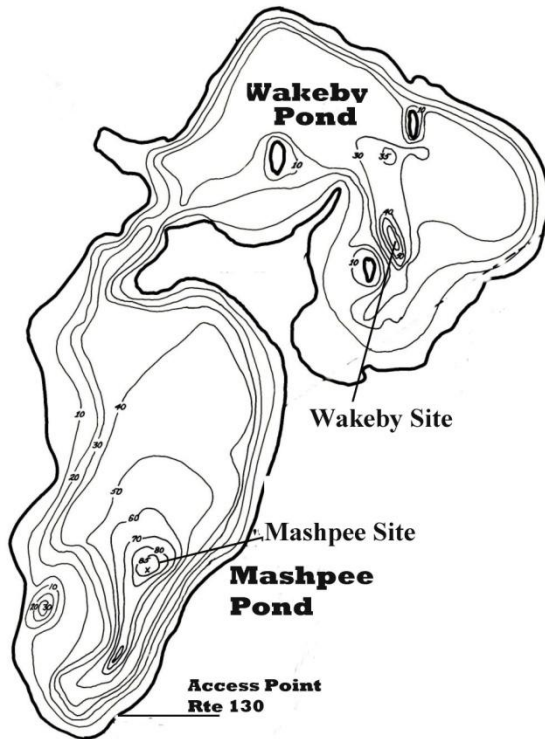


MASHPEE & WAKEBY LAKES MANAGEMENT COMMITTEE NEWSLETTER



VOL.9, Number 2, Summer 2009

If you are not currently on this Newsletter's Mailing List and wish to be added to it for future issues, please forward your request to any of the Lake Management Committee Members listed in this Newsletter.

"Peasant people ... don't have a chance to share in the riches that the planet can offer because some people are taking off so much of the pleasures of this world, and there's only so much to go around."

— **Sister Dorothy Stang**



Help the Environment and reduce costs by receiving your Newsletter on the Internet!

Request Electronic delivery of your newsletter and you will receive e-mail notification of each issue with a link included.

E-mail your name and e-mail address to mashpeewakeby@comcast.net

In these difficult, for many, economic times anything we can accomplish to reduce the costs of our activities while still achieving our end goal needs serious consideration.

Assembling the information and preparing the computer files to produce these newsletters does not represent a measurable cost as it is a volunteer effort.

However, printing and mailing costs are not insignificant and this is an area where you can help.

Please consider signing up for the on-line version. It is identical to the printed version with the notable exception being a small amount of color in clip art and some charts and photos. It is downloadable and printable.

Thanks for helping!

Zebra Mussel

Dreissena polymorpha



Zebra Mussels are fresh water mussels native to the Caspian and Black Seas. Zebra Mussels can proliferate at an alarming rate, and clog intake pipes for factories, water treatment plants, boat motors, nuclear facilities, and power plant cooling systems, causing these systems to fail and resulting in millions of dollars of damage each year. Zebra Mussels out compete native bivalves for space, food and other resources. The sharp shells can create a hazard for swimmers and beach visitors and may emit a foul odor as they decompose. Young Zebra Mussels (veligers) are free swimming microscopic larvae that can easily be transported unintentionally in cooling water, bait buckets, live well water and on other equipment that may have come in contact with infested water. Great care must be taken when leaving a lake known to be infested with Zebra Mussels. Always wash all equipment that may have come in contact with water.

Key Identifying Features

Zebra Mussels are up to 2" in length. The D-shaped shells are yellowish-brown with alternating dark and light bands. Immediately report any suspected sighting to the Department of Conservation and Recreation.

This fresh water mussel has shown up in the Western part of the State and has become a more serious threat!

What is a Secchi Disk?



A Secchi disk is an 8-inch (20 cm) disk with alternating black and white quadrants. It is lowered into the water of a lake until it can be no longer seen by the observer. This depth of disappearance, called the Secchi depth, is a measure of the **transparency** of the water.

The Secchi disk measures

the transparency of the water. Transparency can be affected by the color of the water, algae, and suspended sediments. Transparency decreases as color, suspended sediments, or algal abundance increases. Water is often stained yellow or brown by decaying plant matter. In bogs and some lakes the brown stain can make the water the color of strong tea. Algae are small, green aquatic plants whose abundance is related to the amount of plant nutrients, especially phosphorus and nitrogen. Transparency can therefore be affected by the amount of plant nutrients coming into the lake from sources such as sewage treatment plants, septic tanks, and lawn and agricultural fertilizer. Suspended sediments often come from sources such as re-suspension from the lake bottom, construction sites, agricultural fields, and urban storm runoff.

Transparency is an indicator of the impact of human activity on the land surrounding the lake. If transparency is measured through the season and from year to year, trends in transparency may be observed. Transparency can serve as an early-warning that activities on the land are having an effect on a lake.

Visit <http://dipin.kent.edu>

Phosphorus and Lake Water Quality

Hans Fritschi

Quality lake waters provide scenic diversity, recreational opportunities, fish and wildlife habitat and other elements that contribute to our "quality of life". When we alter pristine watersheds by clearing land, building homes and other structures, increasing the number of people living there, we disrupt "Mother Nature's" purification processes. We all introduce contaminants into the watershed that are a threat to our pond's water quality. We, jointly, share a responsibility to know and take the actions that will minimize our impacts and protect the water quality of our ponds.

Phosphorus is Pond Enemy #1

The biggest culprit is phosphorus and we, with our actions, are the source. We don't have rivers bringing it to the ponds. It can over-fertilize our ponds causing excessive amounts of algae. Algae blooms color the water, reduce transparency, cause shifts in dissolved oxygen content, and can have an unpleasant odor when they decompose. Ultimately the blooms can destroy the pond's water quality and hurt property values around the pond. In addition to salt, oil, gas, and metals from roads, septic effluent, pesticides, fertilizers, agricultural run-off, and animal waste bring unwanted phosphorus to the lake or pond.

Invasive Weeds are Pond Enemy #2

Many non-native aquatic plants are capable of spreading aggressively and producing dense vegetative covers that interfere with boating, swimming, and fishing. They can prevail over native species and produce large amounts of decaying matter that are destructive to pond health.

Continued on page 8

Water samples are collected by volunteers once a year in the late August/September time frame to provide a snapshot depicting the trophic state of the pond at that time.
Laboratory analysis is provided by the School for Marine Science and Technology,
UMASS-Dartmouth

Although a once per year measure is not sufficient to precisely score a ponds trophic state,
A series of readings over time develops a reasonable general measure.

Table 1-Trophic State Classifications

Indicator	Oligo-trophic	Meso-trophic	Eu-trophic	units
Phosphorus	Less than 12	12-24	Greater than 24	µg/L
Chlorophyll a	Less than 2.6	2.6-7.2	Greater than 7.2	µg/L
Secchi	Greater than 4	2-4	Less than 2	Meters

Carlson 1977

Table 2
Snapshot 0.5-1 Meter Depth Data(in table 1 units)

Pond	Item	2001	2002	2003	2004	2005	2006	2007	2008
Mashpee	Phos	Na	35.93	9.29	8.98	9.27	12.4	11.9	9.0
	Chlor a	Na	5.22	3.75	5.01	5.43	6.34	2.15	2.26
	Secchi	Na	2.35	4.0	3.8	3.43	2.2	3.0	4.9
Wakeby	Phos	72.78	27.87	30.97	16.10	12.36	15.5	15.1	11.3
	Chlor a	6.34	6.04	5.6	7.10	5.29	3.41	4.39	4.53
	Secchi	2.74	2.87	3.8	4.1	6.0 ?	2.75	3.15	4.13

Na= not available

Phosphorus from the lake bottom

As the phosphorus containing algae concentrations decay and settle on the bottom, it becomes available for regeneration by the actions of zooplankton or detritus grazing residents. This self-contained source also eliminates the availability of some phosphorus that is buried deep enough in the sediments. The burying is Mother Nature's basic phosphorus removal technique.

Agricultural Sources

The discharge of irrigation and harvesting water from cranberry bogs has a significant potential to add phosphorus from bog fertilizers and pesticides to a lake. A Falmouth study that measured phosphorus concentrations before and after the release of bog water to a pond revealed a 4-fold increase in the pond's concentration of this nutrient following release. The pond was relatively small in comparison to the bog area. It is, however, a valid demonstration of potential agricultural impact

Run-off: a major delivery mechanism

Although groundwater can transport phosphorus to water bodies, the major problem is surface water pick-up of fertilizers, organic and inorganic materials, soil, road dust, animal waste, etc. which then flows into the lake. Preventing the contaminant availability for pick-up and transport by surface water run-off is the first line of defense. If, for example, we limit the amount of lawn fertilizer we use and make certain none slips onto the pavement to become part of run-off we are exercising a knowledge and application of pond-protective measures.

Buffer Zones

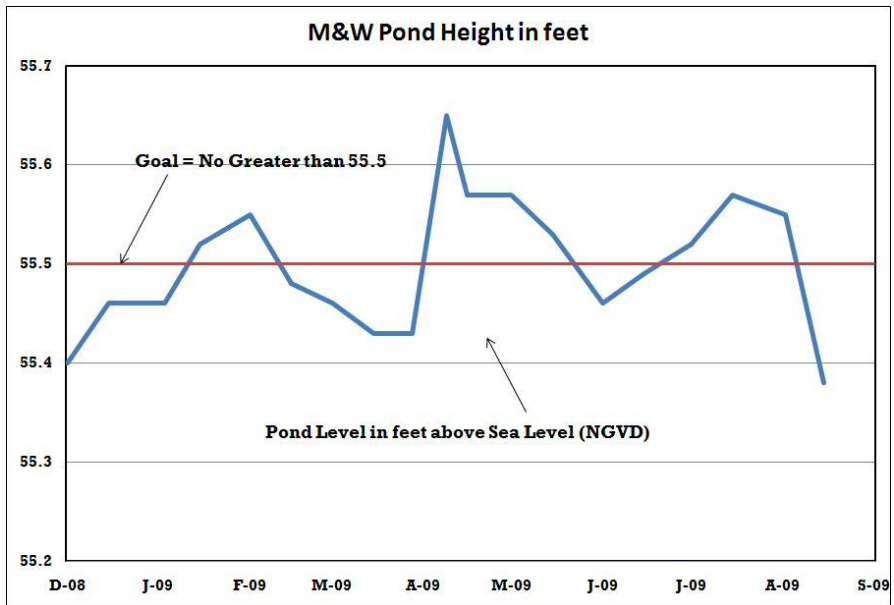
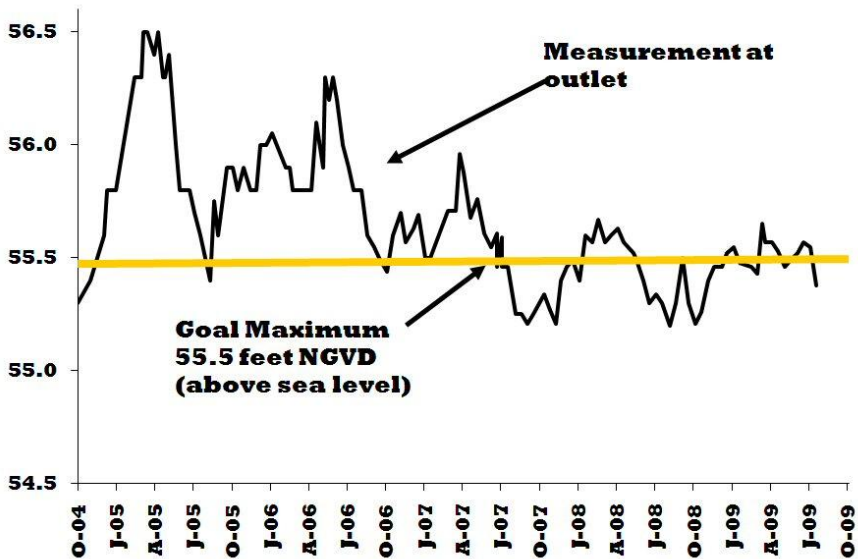
Maintaining a buffer zone along the shore of a pond cannot be overemphasized. Run-off is a major source of phosphorus contamination that can be reduced via a vegetated buffer zone. Phosphorus in surface water seeping into vegetated buffers can bind to the soil particles and be recycled by the vegetation instead of entering the pond. A wider buffer is better.

Dishwasher Detergents

Many dishwasher detergents contain from 4% to 9% phosphorus; these are relatively high levels. There are now a number of products available with zero phosphorus, such as Seventh Generation, Ecover, Trader Joe's, and others. Septic tanks and sewer systems do not remove the phosphorus in wastewater, which can then leach into the groundwater and on into a lake. New Mass Legislation reduces this problem.

Barnstable County tests Mashpee Pond weekly during swim season

Barnstable County tests area beaches for bacterial indicators weekly to assure swimmers safety. Both Attaquin Beach and Camp Farley sites are tested in Mashpee pond, and results are posted on the web at www.barnstablecountyhealth.org/bsmashpee. All samples this summer, with the exception of a July 1st. test at Camp Farley were negative, and that site was deemed safe for swimming the next day, when retested. Closed beaches will have warning signs posted in a conspicuous place to prevent public contact with potentially contaminated waters.



MASHPEE & WAKEBY LAKE MANAGEMENT COMMITTEE

MISSION STATEMENT

The Mashpee & Wakeby Lake Management Committee is comprised of five members from the Mashpee community. They are representative of groups within the Town of Mashpee who have a vested interest in maintaining the beauty and safety of the Lake for the residents' use and enjoyment. The Committee acts as a conduit for the public's interests and concerns about the Lake. It serves as liaison to the Town's governing agencies, recommending necessary actions to be taken. The Committee meets on the fourth Tuesday of each month, at 7:30 PM at the Mashpee Town Hall. The presence of Mashpee residents at these meetings is encouraged. We urge your participation in the activities of this Committee, to assist in our ongoing efforts to preserve the beauty and safety of the Lake. For more information, contact any of the Committee members listed below.

William Marsters Jr., Chairman — Lake Shore Property Owner 100 Lakewood Drive, Mashpee, MA 508-477-1750

William R. Taylor, Vice Chairman - Waterways Commission
31 Godfrey Road Mashpee, MA 508-477-6739
Email: nobsque@comcast.net

Barbara Nichols, Secretary- Lake Shore Property Owner
23 Melissa Ave, Mashpee, MA 508-539-1848
Email: barbnich@cape.com

George G. Bingham III
18 Bingham Drive Mashpee, MA 508-477-7141
Email: g.bingham3@verizon.net

Hans Fritschi — Lake Shore Property Owner
170 Pimlico Pond Road Mashpee, MA 508-539-3465
Email: hfritschi@alum.mit.edu

**Mashpee-Wakeby Lake
Management Committee
Mashpee Town Hall
Mashpee, MA 02649**