

# Potamogetons

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## The Management Plan - An Invaluable Tool

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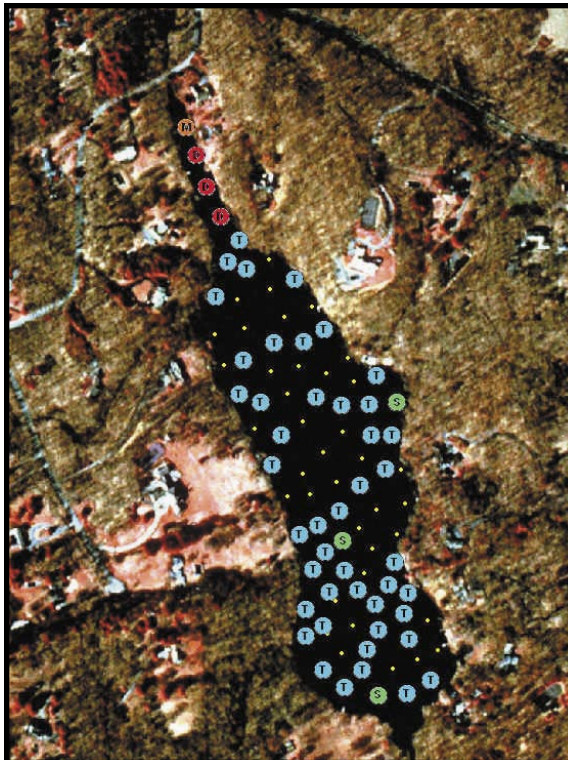
For a lake, the Management Plan, be it Aquatic Plant or Invasive Species, is a summary of what's been done in the past, what needs to be done now, and what may be needed in the future. It is founded on scientific assessment, and it provides organization, guidance and justification. And yet surprisingly, relatively few lake communities have one.

An Aquatic Plant Management Plan (PMP), or an Invasive PMP, is broken down into several sections. The plan must start with an ecological assessment of the lake (or wetland) that includes detailed identification and mapping of the vegetation. In most cases, GPS is used to develop maps with GIS programs. The vegetation database should be supplemented by information on water chemistry, topography, soils, and wildlife, particularly any rare, threatened or endangered species or habitats. Cultural characteristics of the site also need to be reviewed, such as general land use, potential sources of nutrient or sediment loading, and types of lake uses.

A thorough review of site history including data of any past management activities. herbicides have been tried in the past but didn't work, was it because an incorrect rate was used or timing was poor? If harvesting proved unsuccessful, was it because plant density was too great for the available equipment and manpower? Also critically important is public awareness and perceptions. Do people in the community perceive a problem, and are they committed to finding a solution? Once historical activities have been reviewed, the full complement of available management activities needs to be presented. The feasibility of each technique needs to be assessed from both an ecological and a financial perspective. The best, most environmentally benign technique will be of no help if its cost far exceeds available funds.

Next, a set of recommendations are selected and measured for short-term and long-term success. A management plan should be a document that lasts for several years, and be periodically updated when necessary, such as following major events. Each recommendation should address the potential effects of activities in the year of initiation, as well as the next 2-5 years following. Although recommendations are often believed to be the last part of the plan, a well-thought-out monitoring program is the final piece of the puzzle. Regular, documented monitoring will measure the success of activities, and enable the Plan to lead people in the right direction.

In 2006, the State of New York determined that a formal AVMP would be necessary for all lakes over 6.4 acres that included public or state resources, as well as those seeking public Grant funding. New Jersey and Pennsylvania have yet to enact such a formal policy, but strongly encourage lake communities to adopt management plans. The result is that a large number of lake communities and municipalities have been pressed to take a more detailed look at their lakes, and the lakes can only benefit from this attention.



Location and density of a specific aquatic plant species in a 25 acre lake. T=Trace, S=Sparse, M=Medium, D=Dense

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should follow, incorporating Details are important. If

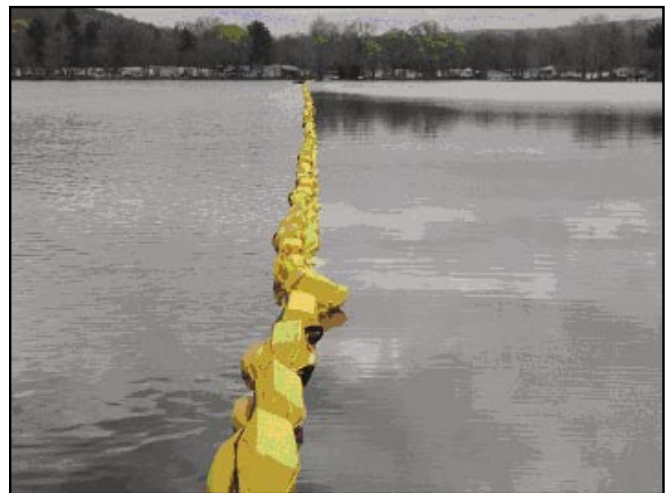
# Curtaining off a Sonar application

Last Spring Allied Biological completed a unique project on 826 acre Lamoka Lake in western New York. Prior to permitting a full-lake Sonar application to control invasive *Myriophyllum spicatum*, Eurasian Watermilfoil (milfoil), the NY State Department of Environmental Conservation required a test application in a 40-acre cove of the lake. The goal of the test project was to see if a low dose (8 ppb) of Sonar could control milfoil but not impact the native plants in the lake. The challenge was that Sonar, a highly soluble herbicide, would be difficult to retain in the open-sided cove. Allied Biological proposed closing off the treatment area by installing an impermeable curtain that would stretch across the mouth of the cove. The curtain would have to be in place at least 60 days to achieve the desired result.



Arriving at a suitable curtain design took some effort. The material had to be impermeable to the herbicide. It had to be sized to stretch across the cove and extend from the water surface to the cove bottom, and had to be strong enough to withstand high winds typical of western New York. And of course, boats needed to be able to pass over the curtain without damaging it, and without too much effort. The curtain also had to be durable enough to be submerged for up to ninety days without even minor failures. In late April, 2005, Allied Biological installed 1750 feet of containment curtain across Fleet Cove, effectively containing approximately 35 acres of the lake. The curtain measured 15 feet deep, and was held in place by more than twenty anchors. The assembly and installation took most of two days, and was followed immediately by the Sonar application.

Over the next 75 days, the Sonar concentration was monitored inside and just outside the cove, and supplemental Sonar was added on two dates. Test results showed that Sonar was retained in the cove within the target range, while just outside the cove Sonar was either undetected, or less than 1 part per billion. Initial plant response was encouraging, as milfoil showed signs of decline while other desirable species such as *Ceratophyllum demersum* (coontail) and *Potamogeton robbinsii* (Robbins Pondweed) appeared unaffected. However, following removal of the curtain in late summer, milfoil began to reappear in portions of the cove.



In review, the project demonstrated that Sonar could provide selective control of Eurasian Watermilfoil while sparing native plants, if used at low dosage rates. The reappearance of milfoil in August was attributed to two possible factors, the fluctuation of fluridone concentration (4-8 ppb) maintained over the treatment period, and/or the sudden removal of residual fluridone following removal of the containment curtain.

Allied Biological was pleased to conduct our part of this project in cooperation with the Lamoka-Waneta Lakes Association, NYSDEC, ENSR, Cornell University and Shaun Hyde of SePRO Corporation.



## Toxic Algae – what little we know

The phrase “toxic algae” usually brings to mind the infamous coastal “red tides”, vast blooms of marine dinoflagellates which close ocean beaches and destroy fish communities around the world. “Beaches on Italy’s Riviera Deserted Amid Toxic Algae Fears” reads one story from [TerraDaily](#) in July, 2005. These blooms occur on the eastern US seaboard also. The Maryland’s Chesapeake Bay region has suffered through several toxic algae blooms over the last 10 years, from brown and red tides to *Pfiesteria* outbreaks, the chilling marine dinoflagellate referred to as the “Cell from Hell”. But for all the publicity toxic marine algae gets, relatively little has been said about toxic freshwater algae, though that may be changing.

Freshwater toxic algae blooms, or what have been renamed Harmful Algae Blooms (HABs) occur primarily with cyanobacteria, commonly known as blue-green algae. These algae are capable of swift and dramatic population surges known as blooms. Cyanobacteria are widespread throughout freshwater systems, and tend to be most prevalent in eutrophic (nutrient-rich) waters during the warmest months of the year. Not all cyanobacteria are toxic. In fact, most blue-green species are not toxic, and those that are seem to be toxic in only some situations. These include some of the most common blue-green species such as *Anabaena*, *Microcystis* and *Oscillatoria*. Most accounts of HABs come from dense accumulations of algae, typically windrowed up against a shoreline. Although these incidents most often occur with dense accumulations of cells, scientists unfortunately don’t know for sure what mechanism triggers toxicity in a given species.

Freshwater HABs have recently garnered more attention in the Aquatics community. Whether this is the result of an increase in occurrence, or better identification of a historical problem seems unclear. In a recent presentation to the New York State Aquatic Managers Association, Bill Ratajczyk of Applied Biochemists noted that over 40 HABs were recorded in Nebraska from 2004-2005, and that additional outbreaks were found in Michigan, Minnesota and Wisconsin. Minnesota’s Pollution Control Agency reported that several dog deaths occurred in 2004 due to contact with blue-green algae. The State University of New York (SUNY) also reports of several dog deaths two – three summers ago due to exposure to HABs on Lake Champlain.



SUNY’s school of Environmental Science and Forestry (ESF) is taking a lead role in the study of freshwater HABs. According to the school’s News and Publications, ESF is undertaking a \$3 million, 5 year study on detection and response to HABs. The school began serious study back in 1999, testing more than 130 NY lakes, and finding that 20% of them had potentially toxic blooms. SUNY’s partner in this program is NOAA, which also joined with the Woods Hole Oceanographic Institute to produce a valuable website called the [Harmful Algae Page](#). The site can be found at [www.whoi.edu/redtide](http://www.whoi.edu/redtide).

Research is important in determining what causes HABs and how we might avoid them, but it doesn’t provide much help when you encounter a blue-green algae bloom and are not sure if its toxic. Dr. Ed Philips, a professor at the University of Florida gives the following common-sense advice:

- “If you encounter a lake with a nasty surface scum of algae you might choose not to swim in it, as it would probably not be a pleasant experience anyway.
- “Don’t drink large quantities of pond scum. (you or your pets) Trust me, it tastes and smells awful and may not be good for your health.”
- “If you become ill while recreating in a lake or river, go home, seek medical attention if serious... Remember, however, that the illness may or may not be linked to toxic algae. Such reactions can be associated with a wide range of issues, including bacterial contamination, chemical contamination, allergic reactions, pre-existing medical conditions and in some cases the over-consumption of intoxicating substances.”



# Meadowlands Commission to restore 42-acre marsh near high school

Reprinted in part from the Secaucus Reporter, by Celeste Regal, Reporter staff writer, December 11/2005

The 42 acres of marsh behind the Secaucus High School campus are scheduled to be restored to their former glory as a pristine habitat teeming with biodiversity. An invading kind of reed called *Phragmites* has overrun the marsh area, interfering with natural plant and animal life.

Once the 'Phrag' is removed and other processes performed, there will be a boardwalk put in so nearby students can learn about the environment, and the project may also help decrease the flooding on Mill Ridge Road.

## Why mitigate?

Common reed, called *Phragmites*, grows up to 15 feet tall and inhabits wetlands like brackish and fresh-water marshes, riverbanks, lakeshores, ditches and dredge spoil areas. "Phragmites is an opportunistic grass. Like crab grass growing in your lawn, it has tremendous reproductive capabilities," said Dom Smith, who retired after 26 years as a wildlife conservationist with NJMC but now works part-time keeping an eye on mitigation projects.

He said common reed displaces native plants and forms monocultures in otherwise biologically diverse natural wetlands. It spreads by seed and strong vegetative growth and is very difficult to control once established. "When you let an area [get] colonize[d] by common reed, the plant produces litter - a biomass of leaves and stems accumulating over time," he said. "I tell people that 'Phrag' violates Sec. 404 of the Clean Water

Act [regulating the discharge of dredged and fill material into waters]."

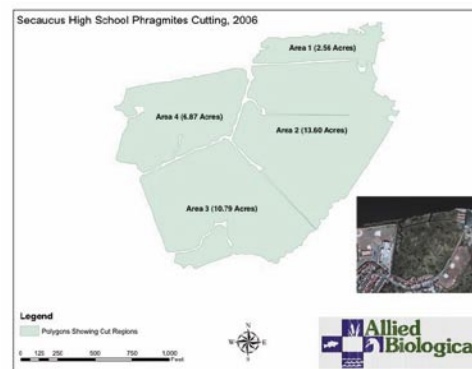
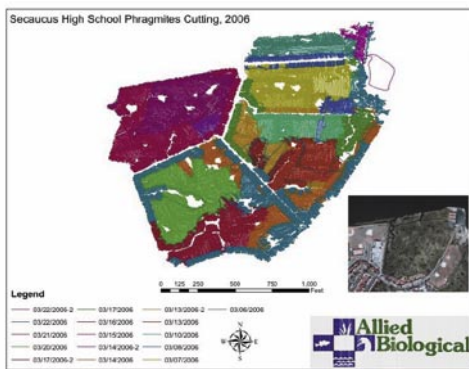
The plant inhibits tidal changes and raises the elevation of the wetlands because of its dense coverage. That destroys ..... plankton and ..... fiddler crabs. The range of fish and bird species that populate the area becomes limited.

"Because of its density, high tide is less in depth and

duration," Smith said. "The longer the tide is in contact with the wetlands and plants during daylight hours, the less photosynthesis occurs. There is no nutrient uptake and oxygen production into the water colony, and that limits the diversity of aquatic life that can exist there." Smith said species like striped bass and blue fish would not survive due to the low oxygen levels. Bird species become limited too. Shorebirds who like shallow mud flats and Herons who eat fiddler crabs would not be drawn to the site.

Smith said from 1913 to 1940, both the Bergen and Hudson counties Mosquito Commission diked off much of the Meadowlands in order to lessen the water in the area. They thought that was the way to control mosquitoes.... The *Phragmites* took over from the native cord grass, called *Spartina*, because of a "stressed situation" such as lack of tidal flow, and the mosquito population increased due to the loss of Killie Fish who eat mosquito larvae. "Remove the natural predator, and you create mosquito heaven," said Smith.

Continued on next page



## Meadowlands Cont.

“When you open up the marsh, you improve the water quality,” Smith said. “The rehabbed wetlands can then be accessed by a greater diversity of animals and the enhanced food chain will keep them there.”

### Secaucus High School Project Update

Allied Biological got to work on the first phase of the Secaucus HS project in Fall, 2005 by applying the herbicide Glypro to kill off much of the phragmites. Then this spring, ABI used its low-ground pressure tracked vehicle to mow the entire site. Mowing of the dead canes allows sunlight to reach the soil layer and encourage new plants. The next step in the phragmites control process took place in late May, when the herbicide Habitat was applied to control young phragmites re-growth. Although re-growth occurred throughout the site, the stem density of phragmites was already significantly reduced.

## How Weather Affects Herbicide Performance

Murphy’s Law guarantees that if a herbicide application is planned, the weather will be absolutely beautiful – right up until the day of the treatment. When rain follows an application, the inevitable response from lake owners is “there goes the herbicide right out the outlet”. Not necessarily.

Each aquatic herbicide behaves differently in water. When it rains during or shortly after an application, herbicide efficacy (rate aside) depends on two factors – the herbicide’s contact time, and its propensity to remain suspended or localized in the water column.

The chart below states the contact time range required for each herbicide to affect plant growth, and categorizes each product based on how well it remains in the application area. Keep in mind two things: Herbicide performance is often improved by adding surfactants that help penetrate plant tissue, and/or adhere to the plant. This can shorten the necessary contact time. Also, all herbicide efficacy is ultimately determined by application rate. Some plants are more tolerant, or more susceptible than others.



<b>Herbicide</b>	<b>Contact Time</b>	<b>Application Site Containment</b>
Sonar, Avast!	30-120 days	Poor, highly soluble
Reward	12-36 hours	Very good
Aquathol K	12-48 hours	Good (granular – Very good)
Copper sulfate	24 hours	Very good
Citrine	3 hours	Very good
Komeen, Captain	12-36 hours	Very good
Glyphosate (emergents only)	Rainfast in 2-4 hours	na
Habitat (emergents only)	Rainfast in 1 hour	na
Aquakleen, Navigate	18-72 hours	Very good
Renovate	12-60 hours	Good

Herbicide applications are always planned with consideration of the day’s weather forecast, and rain, especially heavy rain, generally means an application will be rescheduled. Of course, the typical daily forecast in summer calls for a chance of thunderstorms in the afternoon, so occasionally applications need to be repeated or touched-up when late afternoon rains might influence results. This is most common on waterlily applications when the herbicide is sprayed directly on the leaf surface and needs a few hours to dry. Bad weather can also influence the efficacy of algacide applications, since cloud cover slows activity of the algae.



## PLANT INVADER?

**Cattail** (*Typha* sp.) Invasive, or just Aggressive Native?

Depending on who you ask, the answer may be different. Some folks, such as the Army Corps of Engineers generally see the cattail as an invasive plant. Sure, it's a native, but it tends to crowd out other plants. Other agencies, like the NY City Department of Parks like it just fine. Cattails are good wildlife food, and do a great job of removing pollutants from water.

Cattails have pale green sword-like leaves that can reach lengths in excess of one meter long. The leaves are sheathed around each other near the base emerging from a spreading rhizome. Most people are familiar with the flowers, which appear to be a hot dog on a stick. This "cattail" is produced by midsummer, and contains both male flowers (on top) and female flowers (below). Geminated nutlets are windborne and disperse in the fall, while others (still clinging to the stalk) are dispersed the following spring.

Cattails are found in marshes, along lakeshores, river edges, and roadside ditches. It's habitat extends from moist soil to water up to one meter deep. Although native to most of the U.S., cattails aggressive spreading can crowd out other more desirable vegetation. A single seed can produce a diverse network of one hundred rhizomes in a single growing season. They provide nesting habitat for waterfowl and spawning habitat and shelter for numerous fish species. Both the shoots and rhizomes are consumed by muskrats and geese. In addition to dining on the protein and carbohydrate-packed rhizomes and shoots, muskrats also use the leaves to fashion one or two room huts. Without a stable muskrat population nearby, a stand of cattails can quickly dominate local wetland areas or small ponds.

Local folklore also claims that burning the "cattail" makes an excellent mosquito repellent. The cattails should be harvested and dried in the sun for 2-3 days, and then burned slowly with a glowing red ember at the tip. Narrow-leaf cattails tend to burn better than their Broad-leaf cousin.



## Employee Profile

### Deborah Mills

#### Behind Every Successful Business is a Good Office Manager



I was asked to write a short introductory bio for the newsletter. I thought this should be easy, but after several false starts that sounded too conceited or too biased, I decided to keep it simple. I'm Deborah (Deb) Mills, Office Manager, for Allied Biological. I have been here for 11 years, still love my job, enjoy all my co-workers, have spoken with probably all of our clients at one time or another, know much more about lake management and wetland mitigation than I did before and I am a first-rate Office Manager.

I am happily married, have a wonderful family, a beautiful 2-year old granddaughter and consider each day that I am here, a blessing. I am in a good mood more often than not, have an optimistic outlook, enjoy an occasional brewski, can cuss with the best of them, have a weakness for chocolate and I enjoy casinos.

I work hard, I'm good at my job and it's hard to write about oneself without sounding egotistical. But, if you have any questions about your lake or need assistance with a contract, please feel free to contact me. It's what I do best.



# News Briefs

Over the last 18 months, the price of **copper** has more than doubled, leading to substantial increases in the cost of copper-based algaecides, particularly **copper sulfate**. According to newspaper USA TODAY, increases are being fueled by tight demand, especially from China. The aquatics industry has been especially hard hit as Phelps Dodge, the country's largest supplier of copper sulfate has ceased its US production. The price of copper is expected to continue rising for the next 2-3 years. This may cause a shift in use from copper sulfate to chelated copper algaecides (i.e. Cutrine Ultra, Captain), which contain significantly less copper but provide more effective algae control.

An April, 2006 article from Scientific American suggests that **returning big fish helps keep fisheries healthy**. The article by Sarah Simpson discusses research at Stony Brook University, which found that harvesting the largest fish from a population drives successive generations to be smaller. The research also found that subsequent smaller generations produced smaller and fewer eggs, among other deficiencies. The results are contradictory to the common practice of throwing small fish back to let them grow into larger fish.

**Glenn Sullivan**, Allied Biological's President, was elected to the position of President-elect of the **Northeast Aquatic Plant Management Society (NEAPMS)** at the Annual Meeting this past January. Glenn has previously served as Treasurer, and as a Director-at-Large since the organizations start in 1999. NEAPMS next annual meeting will be held on January 15-17<sup>th</sup>, 2007 at the Grand Summit Hotel at Mount Snow, Vermont.

The NYS Department of Environmental Conservation made some revisions to the **Aquatic Pesticide Permit** process that was adopted last year. Instead of all lakes over 6.4 acres requiring the Enhanced Review Process, only those listed in a new database will be subject to this review by the Division of Environmental Permits. As a condition of management with herbicides in 2006 and after, these lakes will require **detailed vegetation mapping** and **Aquatic Plant Management Plans**. Allied Biological

has already completed several such plans for lake communities throughout New York and New Jersey.

The Minnesota Department of Natural Resources has published an excellent book titled "**Lakescaping For Wildlife and Water Quality**". The book was published by the Nongame Wildlife Program, and covers everything from basic lake ecology to recommended plant species for specific site types. The book can be ordered directly from Minnesota DNR by calling 1-800-657-3757.

For those of you who caught the **Lake Wanda** story on CBS-TV news last month, we're happy to report that the residents of that lake community have made last-minute arrangements to purchase the lake, with the help of NJDEP and the Township of Vernon. Lake Wanda was in the process of being emptied, with Allied Biological prepared with electroshocking equipment to **relocate the fish** to nearby Lake Wawayanda, when the news media focused attention on the story. The residents will still have to satisfy dam improvement requirements, but for now, the water and the fish are staying put.

For teachers and people with young students, the 16-page **APMS educational lesson plan** titled **Understanding Aquatic Invasive Weeds** is still available. The booklet is targeted to fifth graders, but has been well received by schools and camps for a range of children from 4<sup>th</sup> through 7<sup>th</sup> grade. Copies can be ordered directly through Allied Biological, Inc. at 908-850-0303 or [abi@alliedbiological.com](mailto:abi@alliedbiological.com). Each box contains 120 booklets.

Allied Biological welcomes **two new staff members** this Spring. **Joseph Carabillo** is a biology graduate of Seton Hall University and comes to us from the Passaic Valley Water Commission. Joe will be handling much of the water quality program field duties. **Stephen Wilson** is a graduate of Tennessee Technological University in Wildlife and Fisheries Science. Steve will be part of the field management team and assist in most of our fisheries studies and relocations. We're thrilled to have both Joe and Steve join our team this year.



# Hydro-rake Fall schedule filling up.

The Hydro-rake operates into late November each year. Fall is a great time for removing leaf accumulations and waterlily root systems.

Please call now to reserve time this Fall

