Winter 2011

Potamogetons

NPDES plans in New York and New Jersey

by Glenn Sullivan, President

States have been working diligently to respond to the EPA's guidance on NPDES permits. To refresh everyone's memory, all aquatic pesticide use in the country will be subject to National Pollution Discharge Elimination System Permits (NPDES) as of April, 2011. New York, New Jersey and Pennsylvania all operate their own programs for the EPA. Given the economic climate, and the cuts most state agencies are experiencing, each state is trying to best adapt existing programs to meet the EPA requirements, rather than create an entirely new level of bureaucracy. Information on Pennsylvania's program was not available at the time of this newsletter's printing. Below are some expected program guidelines for New York and New Jersey.

New York

Coverage under the General Permit will be granted to "Operators". An Operator is defined as a decision-maker - in other words not the pesticide applicator, but the Association or Municipality, for instance. An Operator must submit a Notice of Intent (NOI) form and receive an acknowledgment letter from DEC in order to "discharge" (conduct a pesticide application) under the General Permit. Therefore, every site needs an NOI form before using pesticides this Spring. If the site is subject to an Article 15/24/25 permit (pesticide use, wetlands, etc.), you cannot submit the NOI form until you have the permit.

A Pesticide Discharge Management Plan (PDMP) and a 5 point IPM evaluation are required for those that do not have an Article 15/24/25 permit. This includes non-permitted reservoir copper sulfate applications and treatments to unmapped wetlands. The PDMP must be kept on record, but is not submitted. Ponds < 1acre with no outlet (non-permitted ponds) need to file an NOI, but are exempt from the IPM and PDMP requirements.

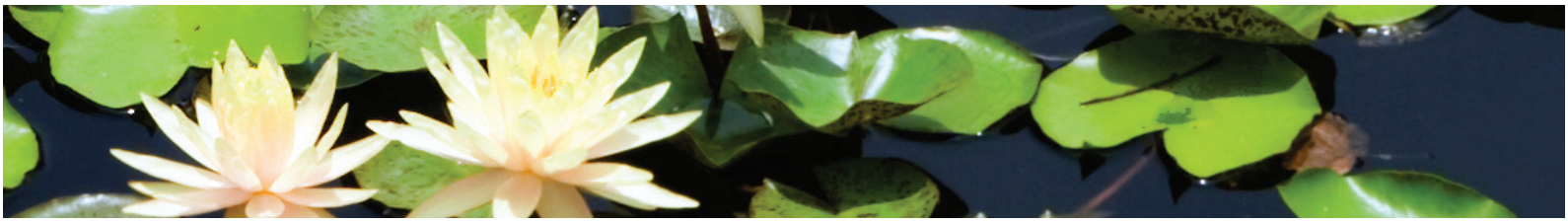
NOI forms will be received by the Division of Water, not the Division of Environmental Permits. I expect this means a fairly quick turnaround for the acknowledgment. The NOI will be good for 5 years, even if the pesticide applicator changes. The cost is not known yet, but is expected to be consistent with other permits (~$100.00?). New York plans to have their process completed by January, but much depends on when the EPA finalizes the General Permit. If requested, Allied Biological can complete the NOI forms for the client.

Continued on page 3

Inside this issue…

Allied Biological Inc.
580 Rockport Road
Hackettstown, NJ 07840
ph: (908) 850-0303
fax: (908) 850-4994

984 County Highway 35
Maryland, NY 12116
office: 607-286-7257
fax: 607-286-7332
www.alliedbiological.com



Lake Musconetcong

Managing Invasives While Minimizing Impacts to NJ State Protected Plants

by Chris Doyle, Certified Lake Manager

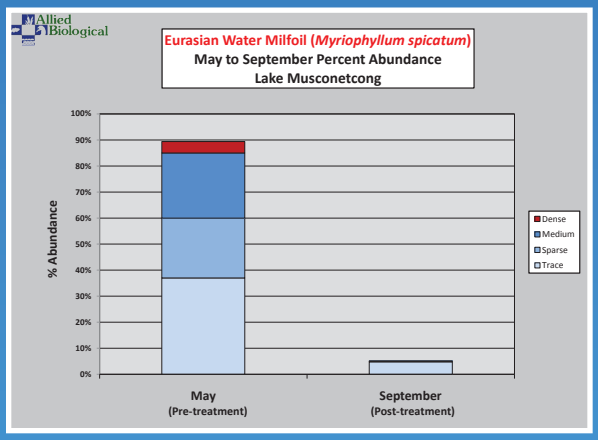
Lake Musconetcong is a 329 acre lake located in Morris County, New Jersey. Since the 1950's, Eurasian water milfoil *(Myriophyllum spicatum)* has been established throughout the lake. An extensive water chestnut *(Trapa natans)* infestation was confirmed during an aquatic plant survey (Shannon, 2008), that prompted the largest State hand removal project of aquatic plants, which occurred in 2009. The 2008 survey also identified three New Jersey Protected aquatic plants; Robbins pondweed *(Potamogeton robbinsii)*, flat-stem pondweed *(Potamogeton zosteriformis)* and tuberous white water lily *(Nymphaea odorata* ssp. *tuberosa)*. The infestation of water chestnut proved to be too extensive to hand pull (an estimated 40 acres), so lake stakeholders decided to implement a control program utilizing the herbicide Sculpin G, a recent addition to the toolbox of lake managers.

2009: Water chestnut growth in Lake Musconetcong

In 2010, Allied Biological was contracted to conduct two granular Sculpin G applications to target nuisance densities of water chestnut and Eurasian water milfoil. Both applications and treatment areas were GPS-referenced, and the herbicide was distributed via electric spreaders mounted on an airboat. The first application occurred on May 13th, targeting 29.1 acres of Eurasian water milfoil with a low dose of the product. The second application, targeting 46.3 acres of water chestnut, occurred a few weeks later on May 27th, utilizing a higher dose. A topical application of Aquapro was conducted in late summer to provide additional control of late-growing water chestnut plants (now exposed to sunlight from the removal of plants from the Sculpin G application) in one of the treatment coves.

Using the rake-toss aquatic plant survey methodology developed by Cornell University, the aquatic vegetation was surveyed at 225 GPS-referenced points evenly-spaced throughout the entire lake basin. This survey was conducted both pre-treatment (May 4 and 5, 2010) and post-treatment (September 2 and 3, 2010) to determine the efficacy of the application to the target invasive plants, and to determine the impacts on the three protected plants. Each survey took about 15 hours of on-water time to conduct with two aquatic biologists.

The results of the post-treatment survey revealed excellent control of Eurasian water milfoil throughout the lake basin, even outside of designated treatment areas. The graph below depicts the percent abundance of Eurasian water milfoil in May (pre-treatment) and in September (post-treatment). In May, Eurasian water milfoil occurred at 199 total sample sites. In other words, nearly 89% of the sites surveyed had at least trace Eurasian water milfoil, and 65 of the sites had nuisance growth (defined as medium or dense density). In September, Eurasian water milfoil abundance decreased to 12 sites (or 5% of the total sites surveyed). Eleven of these sites were considered trace density, while one site was sparse.



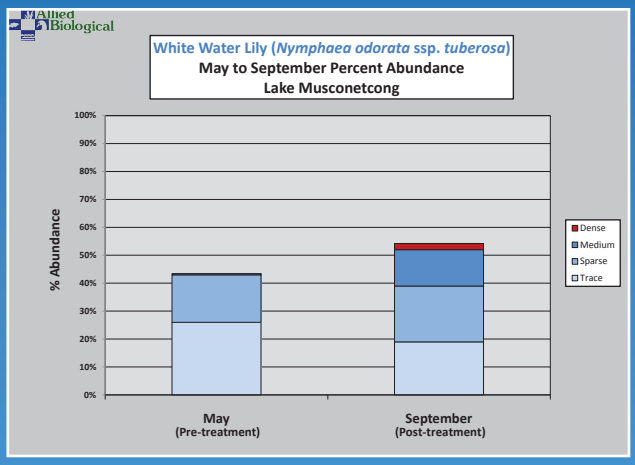
Water chestnut control was excellent as well, although the aquatic vegetation survey did not quantify these results. During the pre-treatment survey in May, the water chestnut plants collected were only a few inches long, recently sprouting from buried "nuts". In September, water chestnut occurred at one third of the total sites surveyed, but most of these sites supported only trace (1-3 rosettes) or sparse (4-8 rosettes) growth. Compared to the surface growth in 2009 (pictured in the first paragraph), the surface was largely water chestnut free at the end of 2010 (see following picture).

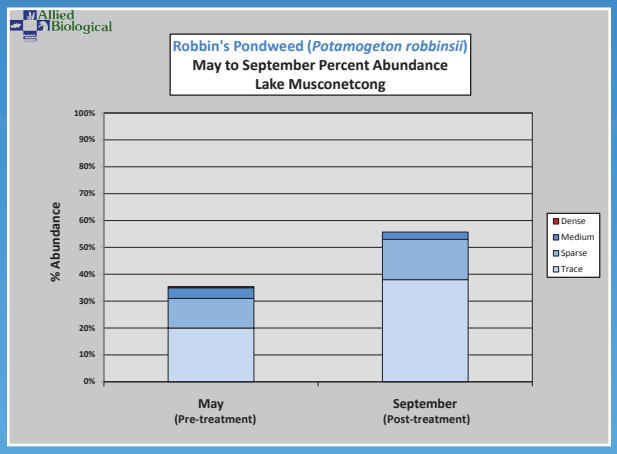
Lake Musconetcong cont'd

2010: Lake Musconetcong free of water chestnut
Insert: Sample of sprouting "nut"

But what about the desirable native New Jersey protected species? Robbins pondweed was collected at 78 sites in May, which represents 34% of the total sites surveyed. In September, Robbins pondweed increased to 125 sites, or 57% of the total sites surveyed. Although the majority of the sites were at trace density, 33 sites were considered sparse density, and another six sites were medium density. The survey results are summarized in the graph below.

Meanwhile, white water lily was observed at 96 sites (or 43% of the total sites surveyed) in May. In September, white water lily abundance increased to 122 sites, representing 56% of the total sites surveyed. In September, white water lily density was fairly evenly distributed between trace, sparse and medium sites, plus a few dense locations were observed as well. The white water lily percent abundance data for 2010 is summarized in the following graph. As for flat-stem pondweed, no sites were collected during the May pre-treatment survey. However, three trace sites were identified during the September post-treatment survey. According to the 2008 survey, flat-stem pondweed was only found in one location of the lake, therefore only collecting three trace patches during the post-treatment survey is consistent with the historical abundance of this plant in the lake.





The results of the 2010 Lake Musconetcong Aquatic Plant Management Program can be considered an overwhelming success. The target invasive species were controlled, yet pre- and post-surveys demonstrated that the native species of concern were not impacted, and two of them even increased in abundance and distribution. The project also demonstrates the usefulness of using rake-toss surveys to determine the efficacy of herbicide applications on both target and non-target plants.

NPDES plans cont'd

New Jersey

NJDEP expects to have the NPDES review processed by the Division of Water Quality, Bureau of Surface Water, not the Pesticide Control Program. Many requirements of the NPDES permit will stipulate compliance with the state's aquatic pesticide permit in order to minimize redundancy and staff review time. The Pesticide Control Program is expected to handle the NPDES enforcement duties.

NJDEP has decided that coverage under the SPDES permit will require a Request For Authorization (RFA). Pesticide applicators will be able to file a RFA for multiple sites. Since the NPDES is a five-year permit, there will be a procedure to revise the RFA each year should clients change.

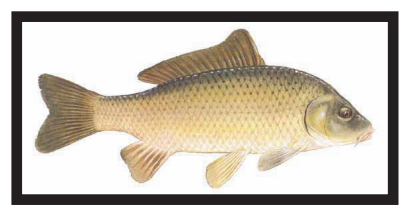
A Pesticide Discharge Management Plan (PDMP) will also be required for RFA- eligible parties. The scope of this document is fairly broad, and must include an IPM assessment, various application and monitoring procedures, control method assessments and site descriptions. The PDMP does not need to be submitted, but must be completed prior to submitting the RFA.

At this time, the state's fee for the RFA is expected to be $100.00 or less, and Allied Biological expects to charge $525.00 to prepare a PDMP. Keep in mind, a PDMP needs only to be written every five years. The state's projected timeline calls for a draft permit ready for review in January, with a Stakeholders meeting scheduled shortly thereafter. NJDEP hopes to finalize a permit in February, but PDMP preparation should begin as soon as possible to minimize any delays in this season's permitting.

One Fish, Two Fish…

by Chris Doyle, Certified Lake Manager

Most lake users are well-educated regarding the benefits of a healthy native fish population in their favorite lake. Besides providing ample recreational value, diverse native fish populations facilitate efficient transfer of energy from lower trophic levels (phytoplankton and zooplankton) to higher trophic levels (game fish). A balanced lake ecology is generally more stable and of higher quality. But often fish populations are unbalanced, typically from the introduction of non-native species, or the overpopulation of nuisance native species. Below are descriptions of three fish species (one of them is native!) common in the Northeast, whose presence generate negative impacts on lakes.



Common carp *(Cyprinus carpio)* were introduced to the United States in the 1830's from Eurasia. Since then, they have spread to each of the lower 48 states, Hawaii and southern Canada. They are large members of the minnow family and sizes of two feet long and 15 pounds are typical, even in small one acre ponds. However, common carp can live for over 20 years, and reach lengths of four feet, exceeding 40 pounds! Common carp are herbivores, and therefore eat massive quantities of leafy submersed plants. Although selective grazers, they are highly efficient and if overpopulated in a lake, will eventually remove all of the submersed plant community, usually starting with the highly desirable native leafy plants. The action of uprooting plants (even undesirable ones) coupled with the removal of the standing crop causes numerous negative impacts to a lake. These include bottom destabilization, increased turbidity, and the destruction of native fish habitat. These beds of vegetation are utilized by game fish as nurseries, providing juveniles important structure in which to hide from predators. Common carp feeding action and the associated increased turbidity also limits the re-establishment of native plants back into a lake, impacts the aesthetics, re-suspends nutrients back into the water column and increases water temperature. The last two impacts encourage phytoplankton production, which magnifies the above-stated negative impacts creating a cycle which could push a plant-dominated lake into a "brown water" phytoplankton-dominated system.

White perch *(Morone americana)* are actually members of the bass family, and are native to the Northeast and along the mid-Atlantic coastal region. White perch typically range in size from six to 10 inches, although they can reach 15 inches long. An estuarine species, many white perch were introduced to landlocked lakes in the early 1900's, but now tend to overpopulate these systems with stunted populations. The feeding habits of over-abundant white perch tend to out-compete native fish for shared food resources. White perch alter their feeding habits based on prey availability throughout the year. In late spring, they feed almost exclusively on fish eggs, severely limiting the recruitment of desirable native fish and highly-sought game fish. Juvenile white perch are benthic grazers, feeding on invertebrates and zooplankton. Similar to common carp, the action of benthic grazing re-suspends bottom sediments, creating the negative impacts discussed above. This past summer, Allied Biological fisheries biologists examined stomach contents from white perch captured in a Northern New Jersey Lake. Several white perch stomachs contained an estimated 800 to 1,200 Daphnia, large-bodied zooplankton classified as an efficient phytoplankton grazer. Larger white perch target crayfish, larger insects and small fishes. Although white perch are considered a desirable sport fish and an excellent food source, they are underutilized by most anglers, and typically a nuisance in lakes.

Rudd *(Scardinius erythrophthalmus)* are stocky, deep-bodied fish with distinctive red fins and conspicuous, shiny scales. They typically reach lengths of eight to 10 inches, but can reach 18 inches long. They appear similar to (and are sometimes mistaken for) golden shiners, a native baitfish very common in the Northeast. Rudd are native to Eurasia, introduced to the Northeast likely in the mid-1980's. Reproducing populations occur in the Hudson River Valley of New York and in Maine, but its range extends to 14 other states as well. Also a popular baitfish, its introduction is assumed to be from bait-bucket emptying. Juveniles voraciously consume zooplankton, including many of the larger-bodied species that graze on phytoplankton. Adults consume aquatic vegetation, degrading native fish habitat, and disturbing bottom sediments. Although efficient at herbivory, they are inefficient at processing large amounts of vegetation. These activities result in nutrient release into the water column favoring nuisance phytoplankton production.

Wetland Habitat Restoration in Buffalo, NY

Various management techniques utilized to control invasive species

by Stephen Wilson, Northern New York Manager

Common reed *(Phragmites australis)* and Japanese knotweed (*Polygonum cupsidatum* Sieb. & Zucc.) are invasive wetland plants that are found throughout much of the Northeast. The shores of Lake Erie and Buffalo, NY are no exception, and likely support some of the older common reed infestations due to the impacts of international shipping. These two invasive plants have encroached on several key ecological preserves in the area including Tifft Nature Preserve, Beaver Island State Park, Motor Island and Buckhorn Island State Park. All four sites play a unique environmental role in providing important wetland habitat in a well-developed landscape. Tifft Nature Preserve is a nesting area for two state threatened species of birds, the Least Bittern *(Ixobrychus exilis)* and the Pied-billed Grebe *(Podilymbus podiceps)*, while Buckhorn Island State Park also supports the Least Bittern, it is the location of a state endangered plant species, Southern blue flag iris *(Iris virginica)*. Common reed began its encroachment on these wetland habitats many years ago and has been expanding in all four locations. Tifft Nature Preserve has an especially well established infestation, but each of the sites still support native vegetation. To date, Japanese knotweed, a newer invasive, has only been found in two locations, Motor Island and the western boundary of Buckhorn Island State Park.

As a part of federal relicensing of its Niagara Power Project, the New York Power Authority has taken the initiative to improve the habitat in the area by controlling the two invasive plants in these ecologically important wetland areas, with the cooperation from the New York State Department of Environmental Conservation, New York State Office of Parks, Restoration and Historic Preservation, New York Thruway Authority, and the Buffalo Museum of Science. With the help of consultants Kleinschmidt Associates and Gomez and Sullivan Engineers, a program to eradicate both invasive plant species was developed. The approach for the 2010 season consisted of cutting the common reed in July, then coming back in September to apply herbicide using three methods (backpack sprayer, wand wiping, and tracked vehicle with sprayer) to the areas that had been previously cut. This would allow for optimal coverage of the herbicide to the plants. Beginning in mid to late July, Allied Biological cut a total of 62 sites across the four locations, using mostly handheld weed cutters. The two sites that contained the Japanese knotweed entailed a slightly different approach, which was to cut and bag the material while leaving approximately 2' of stem remaining. The remaining portion of stem was then treated with a specialized pesticide injector to deliver the herbicide into the plant. This application method allowed the treatment team to target the Japanese knotweed without impacting surrounding vegetation.

Southern Blue Flag Iris *(Iris virginica)*

During the month of September, Allied Biological returned to apply herbicide to all previously cut sites, and three additional sites that were left standing. The three additional sites were treated to provide a comparison of herbicide efficacy of the cut and uncut plants. Backpack sprayers were used to apply herbicide to most of these sites. Overall, 67 sites were treated during the 2010 management program.

This was the first season of invasive plant management at these sites. Degree of control will be limited in the first year due to the plants having been well established. In 2011, the plan is to re-treat the areas that were managed in 2010, while treating additional stands in 2011. The goal in the next few years is to have the invasive plants eradicated or reduced to a level that is manageable using less invasive approaches. This will allow the native plant communities to re-establish themselves back into these unique and important ecological habitats.

Our Thoughts on Your FAQs

by Deborah Mills, Office Manager

Q: My dog went for a swim after the lake was treated and drank some water. Will this make him sick?

A: Aquatic herbicides rarely result in concerns when used and applied according to label directions. Herbicides are mixed with water prior to application and become dispersed and diluted into the waterbody. Water use restrictions for swimming vary from none to 24 hours. Some products have restrictions on livestock watering, but this applies to situations where the treated water is the animal's primary water source. If you want to be extra cautious, you may want to follow these restrictions even if they don't actually apply to your situation. Of potentially greater concern for dogs and other animals are blue-green algae blooms which, if left untreated, can accumulate on the water surface giving the appearance of pea soup. Dogs that swim and ingest water that contain certain blue-green algae are at potential risk for minor to acute distress.

Q: Can grass carp be stocked to eat the plants instead of using chemicals in the lake?

A: New Jersey, New York and Pennsylvania all allow the stocking of grass carp with some limitations. Considering the potential to severely alter aquatic habitats, all three states require permits and the stocking of only infertile fish. In most cases, a desirable level of plant control occurs after a period of approximately two years. Triploid grass carp can grow up to 3-4 feet in length.

Grass carp can provide a relatively low cost method of plant control for a lake, but as with any plant management method, there are pros and cons to stocking grass carp. There are a number of factors that affect the rate and amount of vegetation consumed by grass carp including water temperature, water quality, fish size and species of vegetation available. Grass carp will preferentially feed on submersed vegetation and may not be most effective on many weeds of concern, including Eurasian water milfoil. Grass carp also like to burrow into the bottom sediment, which can cause a perpetual state of turbidity or an increase in algae production. A biologist should decide if stocking is appropriate for a lake, and if so, select a stocking rate that is designed to reduce the vegetative coverage to an ecologically acceptable level without completely denuding the lake.

Q: Will installation of a submersed aeration system maintain low fecal coliform numbers?

A: Fecal coliform in aquatic environments may indicate that the water has been contaminated with the fecal material of humans or animals. Fecal coliform bacteria can enter waterbodies through direct discharge from mammals (pets, especially dogs) and birds (geese, swan, ducks, seagulls), agricultural and storm runoff, and human sewage (faulty septic systems).

Submersed aeration systems will not control the growth of fecal coliform, but can assist in the distribution and circulation of water, and are particularly helpful when placed around swim areas. Other coliform management strategies include cleaning up after pets, implementing a goose control program and maintaining septic systems.

Q: I'm moving and can't take the fish tank. Can I dump the plants and fish into the lake?

A: It is very important NOT to introduce any aquarium organisms into waterbodies to avoid the introduction of invasive species. There are several fish disposal options available on the internet (the old standby of flushing them down the toilet is illegal in some states). It is recommended that plants be removed from the tank, put in a freezer for 24 hours and placed in the trash for disposal in a landfill. Under no circumstances should any aquarium plants or animals be released into the wild.

Grass Carp photo courtesy of US Fish & Wildlife Service

Employee Profile

Wayne Horn

Certified Pesticide Applicator & Hydro-Rake Operator

Wayne Horn was hired by Allied Biological in 1994. As a well qualified commercial pesticide applicator, he holds his CPA licenses in Aquatics, Ornamentals & Turf and Forest Pest Control for NJ, NY, PA, CT and VT. He maintains annual OSHA and HazMat certification. Wayne is also the on-site supervisor and lead operator of Allied Biological hydro-raking projects.

Wayne is a long time resident of Mt. Bethel, Pennsylvania and in his down time enjoys hiking, camping, and fishing in the Blue Mountains.

News Briefs

Allied Biological is proud to sponsor **Ms. Emily Mayer**, a senior attending Hackettstown High school, for her Senior Project. Her project, designed and mentored by Senior Aquatic Biologist Chris Doyle, involves **zooplankton population assessments** of several New Jersey Lakes. With special permission from high school officials, Ms. Mayer field collected zooplankton samples from 12 lakes this summer under the guidance of Allied Biological. Over the winter months, she will microscopically examine all the samples and compile the data for her Senior Project Presentation in June 2011. At that time, Allied Biological will share the data with its clients.

Does your NYSDEC Region 3 lake use copper products to control nuisance algae? In the near future, **sediment analysis for copper** will likely become a component of the NYSDEC Aquatic Pesticide Use Permit process. Allied Biological, working under the guidance of the NYSDEC, has developed an approved three-phase protocol for the collection and analysis of lake sediment samples to satisfy this new permit requirement. With trained field biologists at the ready, Allied Biological will be able to collect and process these samples for analysis, avoiding delays in permit issuance.

This past Spring, NJDEP released new guidelines for **Water Lowering Permits (drawdowns)**. According to the new guidelines, "all waters in New Jersey located north of Route 195 must be drawn down to their full permitted extent by November 1, and all waters located south of Route 195 by November 15, in order to protect hibernating aquatic biota." This also means all fish relocations must be completed by these end dates. Several other guidelines apply to lake drawdowns. These can be found in N.J.A.C. 7:25-6.25, or by calling the Division of Fish and Wildlife at 609-292-9410.

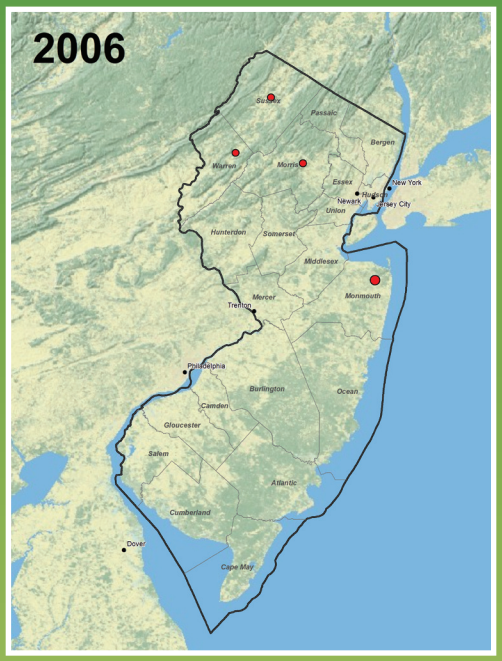
Under New York's pesticide laws, the state's **public drinking water** reservoirs using copper sulfate do not require a pesticide permit.

However, under the anticipated SPDES guidelines, these facilities will be required to produce and maintain a **Pesticide Discharge Management Plan (PDMP)** and an IPM assessment. Allied Biological sees the PDMP as an abbreviated Aquatic Plant Management Plan, which has been written for many lake association clients, and hopes to work with potable water reservoirs to meet this requirement without impacting the reservoir's day-to-day operations.

Allied Biological has confirmed the presence of hydrilla ***(Hydrilla verticillata)* in two New Jersey lakes in 2010**. Hydrilla is an exotic invasive submersed plant introduced to the United States from Asia in the late 1970's that appears similar to common waterweed *(Elodea canadensis)*. There are two bio-types of hydrilla; the hardy overwintering dioecious form (common in the south), and the less hardy monoecious form (common in the north), which typically does not overwinter. It is actively managed in most southern states, where it out-competes Eurasian water milfoil! Lake managers often believed that hydrilla could only become a nuisance in southern states, however preliminary data presented at the 30th Annual North American Lake Management Society Symposium in early November suggests that dioecious hydrilla is on the move north.

Spread of an Invasive – Water Chestnut *(Trapa natans)*

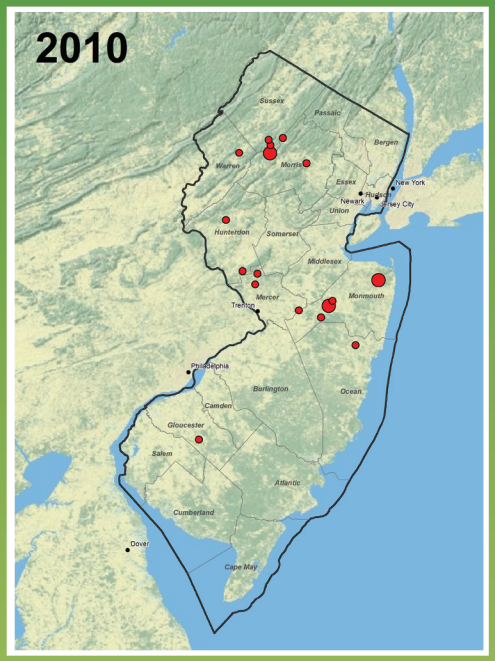
Allied Biological Observations of Water Chestnut in New Jersey 2006 vs 2010



Ten years ago water chestnut distribution maps didn't list New Jersey in its range. Recent discoveries confirm that it's here and spreading rapidly.

Locations of waterbodies containing water chestnut. (Larger circles indicate denser populations)

* Locations selected from ABI field observations and documented occurrences.



Allied Biological
580 Rockport Road, Hackettstown, NJ 07840

Water Quality • Fisheries Surveys • Lake Mapping
Aquatic & Wetland Vegetation Control
Hydro-Raking • Aeration

It was a sizzling summer, but how hot was it really?

Hot enough to fry an egg on the sidewalk? No, but it sure felt like it! In some areas of NJ, there were four times the number of days between 90-100 degrees this year as compared to last. Couple this with what was an unseasonably dry summer and the weather posed challenges for everyone, including lake managers. In the field, we found lakes well below full capacity and denser plant growth than has been seen in years. Further investigation led us to the following charts developed by the Office of the New Jersey State Climatologist, Rutgers University, which show some interesting facts about this year's area weather.

By the way, an egg starts cooking at 158 degrees. That's one hot sidewalk!