Mountain Lake: Improving Success Through Technology

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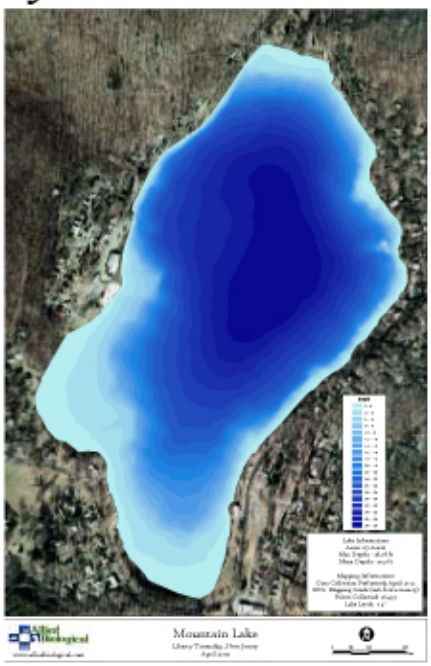

The rural hills of central Warren County, NJ paints the perfect setting for the region's largest natural glacial lake. The centerpiece of the Mountain Lake community, located in the outskirts of Belvidere, is 122 acre Mountain Lake. The lake is part of the vast watershed contributing to the Pequest River. The lake is jointly managed by Liberty Township, community residents, and the State. A public boat launch is located on the west shore, and the lake is a popular fishing hot spot, featuring a Muskellunge stocking program established by the New Jersey Division of Fish and Wildlife. The Mountain Lake Community Association and Watershed Advisory Group was created in 1967 with the purpose of protecting and preserving their recreational and aesthetic treasure. This organization has been working diligently for over forty years to achieve a sustainable healthy lake community, setting a precedent for other lake associations. Volunteer activities have included riparian buffer planting on Mountain Lake bog, securing a Clean Water Act grant to install storm drain filters and water quality monitoring. Other community actions involve using only non-phosphorous fertilizers, "no mow" riparian buffers along all waterways, tree planting and maximizing stormwater runoff hold times.

Lake management in 2009 began with Allied Biological providing an updated bathymetric map of the lake. A bathymetric map provides a topographic view of the lake bottom, and supplies data on maximum and average depths, bottom contour and lake volume. They are typically utilized by fisherman, but have become a valuable tool for lake managers and biologists in establishing lake management programs with regard to herbicide applications, dredging efforts and lake drawdowns.

Following bathymetric mapping, a vegetation survey revealed that Mountain Lake contains a diverse plant community including, Eurasian water milfoil *(Myriophyllum spicatum)*, coontail *(Ceratophyllum demersum)*, curly-leaf pondweed *(Potamogeton crispus)*, spatterdock *(Nuphar spp.)*, white water lilies *(Nymphaea spp.)*, bassweed *(Potamogeton amplifolius)*, and watershield *(Brasenia schreberi)*, as well as the branched algae, *Chara*. The focus of the 2009 aquatic plant management plan was to control the invasive Eurasian water milfoil in approximately twelve acres of shoreline area. Individual residents participated with added funds to allow for increased treatment acreage along individual properties.

Site-selective aquatic pesticides were employed during the growing season. Aquatic biologists utilized the bathymetry map to determine the most efficient management tool for each treatment area of the lake. Herbicide applications were recorded during treatment using a boat mounted GPS system. The application areas were then overlaid onto a map of the lake providing a visual document enabling the effectiveness of the application to be assessed.

The contact herbicide Reward was the primary tool for control of Eurasian watermilfoil along shoreline areas. Past management attempts experienced limited success in the beach and boat launch area due to herbicide selection and lake bottom disturbance. Here, biologists substituted a site selective herbicide that was not rendered ineffective by turbidity, resulting in successful weed control within and beyond the beach. Renovate 3, a liquid systemic herbicide, has excellent potential for Mountain Lake with its successful selective control of milfoil, and minimal to no impact on other native desirable submersed vegetation. A successful test plot conducted in 2009 laid the foundation for future management plans with this product. Water lilies, which are the greatest concern among lake residents, were managed using foliar applications of Aqua-Pro. This particular herbicide is ideal for control of both defined sections and extensive areas to minimize plant densities.

The lake management program will resume in 2010 utilizing a treatment map from the applications performed in 2009. The Lake Association and Allied Biological are optimistic about the achieved results, and anticipate continued improvement of the aquatic habitat through future management practices and better technology.