MAPPING INVASIVE AQUATIC MACROPHYTES IN THE ROSS BARNETT RESERVOIR, MISSISSIPPI. R.M. Wersal, J.D. Madsen, and M.L. Tagert; Mississippi State University, Mississippi State, MS.

ABSTRACT

Invasive aquatic macrophytes are an increasing problem in waterways within Mississippi and throughout the United States. Invasive species directly impact navigation, drainage, commercial and sport fishing, drinking water quality, fish and wildlife habitat, and the overall aesthetics of an area. Indirectly, these species can impact aquatic ecosystems through the depletion of oxygen in the water column, alteration of water nutrient cycling, changes in water pH, and reductions in light availability to native plant species. The presence of invasive species in the Ross Barnett Reservoir is a major concern because it is the largest reservoir in Mississippi and the primary source of potable water for the city of Jackson. We have initiated a five year study of the plant community by mapping the current distribution of aquatic macrophytes in the reservoir. A point intercept survey was conducted using a 300 meter grid during June 2005. A hand held computer enabled with GPS technology and Farm Site Mate® software was used to navigate to each point and log data. A total of 1423 points were sampled for the presence of aquatic macrophytes by deploying an aquatic plant rake. Environmental factors (e.g. water depth, pH, turbidity, dissolved oxygen, and percent saturation) were recorded at six locations throughout the reservoir. Light intensity profiles were also measured in 0.5 meter intervals from the water surface to the bottom sediments at the six locations. We observed 19 species of aquatic or riparian macrophytes during the survey. Of those species, 14 were strictly aquatic species and 6 were commonly considered invasive species. The invasive species, alligatorweed (a nonnative) and American lotus (a native), were located most often during the survey (10.0 and 8.2% respectively). Plant growth was primarily located in the upper reservoir, along the eastern shoreline, and in Pelahatchie Bay where water depths were shallower and light could penetrate to the bottom. Light profiles indicated that more than 80% of light is attenuated in the upper 1 meter of the water column. Rooted plant growth is subsequently restricted to those shallow water areas where light can penetrate to the bottom. The mean maximum depth of macrophyte colonization in the Ross Barnett Reservoir is approximately 1.6 ± 0.1 m, meaning that rooted macrophytes would be able to colonize 22% or 2900 ha (7,200 acres) of the Ross Barnett Reservoir. However, floating species such as water hyacinth could potentially infest a larger area if management techniques are not implemented.