WESTERN MICHIGAN UNIVERSITY: ASYLUM LAKE PROPERTY

HISTORICAL USES AND LAND COVER, NATURAL FEATURES INVENTORY, AND HABITAT ENHANCEMENT RECOMMENDATIONS

Executive Summary

Western Michigan University's Asylum Lake property is valued by the community as a natural area with a variety of plant and animal life and scenic amenities. However, it is far from being a pristine natural area. The university was in need of a study of historical uses and land cover, a natural features inventory and habitat enhancement recommendations for use in developing a management plan for this property and contracted with the Kalamazoo Nature Center to undertake this work.

Nature Center staff searched archives and interviewed individuals with first-hand knowledge of activities and structures on the site. In addition, staff examined reports from previous studies conducted by university faculty and students. Present university personnel were interviewed about on-going programs.

The Asylum Lake area has been affected by human activities over many years, particularly since expansion of European settlement in the mid-1800s. A number of buildings and the infrastructure to serve them were built. Many have been demolished, but rubble and underground materials remain. In the mid-1800s there was a farm, including orchards, on the land. It was sold to the Kalamazoo State Hospital in 1887. The hospital built a number of buildings between then and the 1950s. All have since been demolished, most in 1965. In addition to buildings, there were a number of steam tunnels connecting them, as well as water, sewer and storm drainage lines. A small dump was located in a gully just south of the lake. An earthen dam was constructed in the 1870s between the lakes, with an elevation difference of approximately four feet.

Field personnel visited the site regularly between September 1, 1999, and November 30, 2000, noting plant and animal species and their associations. Special effort was made to search for areas critical for preservation and for habitat likely to support listed species. Observers focused on non-vascular and vascular plant species and communities, insects, particularly butterflies (Lepidoptera) and dragonflies (Odonata), amphibians, reptiles, birds and mammals. Quantitative surveys of birds, mammals and forest plant species were conducted. The forest plant inventory was carried out between September 15 and October 18, 2000, using both a belt transect and one-meter plots.

The vegetation on the site was not notably diverse. Specifically, the herbaceous and shrub layers of the flora include extensive populations of invasive species. As a result
the coefficient of conservatism is relatively low. Spring wildflower species were particularly scarce. The forest canopy is dominated by mature white oaks (*Quercus alba*) and wild black cherry (*Prunus serotina*). Glossy buckthorn (*Rhamnus frangula*), wild black cherry and red-osier dogwood (*Cornus stolonifera*) are the predominant plants in the shrub layer. Approximately 44% of the shrub layer was non-native species. There was little evidence of oak regeneration, except for red oak (*Quercus rubra*) that composed 10% of the small stems. Altogether, 30% of the woody vegetation on the property is non-native. It appears that the increase in numbers of glossy buckthorn is causing a decrease in native wildflowers and in biodiversity. The numerous white-tailed deer (*Odocoileus virginianus*) also contribute to habitat degradation. However, the long period of human use is mostly responsible for the low plant diversity and proliferation of non-native species.

Asylum Lake is critical habitat for a number of species of resident and migrating birds. Waterfowl were plentiful. Many more species than expected for a site of this size use the area for stopovers in winter and during spring and fall migrations. The presence of both waterfowl and songbirds draws both scientists and recreational birders. Current vegetation trends would likely be detrimental to breeding bird species through reduced nesting success because of increased exposure to predators. The plentiful non-native fruiting shrubs, however, provide substantial food for post-breeding and migrant bird populations.

Amphibian populations appeared relatively low, with no unusual species noted. Reptiles included black rat snake (*Elaphe obsoleta obsoleta*), Blanding’s turtle (*Emydoidea blandingii*) and Eastern box turtle (*Terrapene carolina carolina*), all species on the Michigan special concern list. Turtles and snakes in general were fairly plentiful. During the summer of 2000, sixteen species of dragonflies and approximately 30 species of butterflies were identified on the property. The fauna of the area includes a super-abundance of white-tailed deer. This deer population currently ranges from Asylum Lake and Parkview Hills to the Kleinstuck Preserve, approximately 1.5 miles east.

Final management recommendations are included.

The Colony Farm Orchard area, because of its proximity to US-131, offers potential for research on effects of heavily traveled highways on nearby plant and animal communities. Presence of bur oak (*Quercus macrocarpa*) and red oak provides the basis for using this area as a companion to the savanna plantings east of Drake Road. This could limit weed species such as spotted knapweed (*Centaurea maculosa*), non-native grasses and non-native shrubs upwind of the new plantings. Decisions about management of existing vegetation and new plantings at the Business, Technology and Research Park and the Engineering College should take into consideration effects on the Asylum Lake Preserve property. Vegetation corridors should be part of the landscape plan for the Business Technology and Research Park (BTR) to sustain wildlife.
movement between Parkview Hills property and Asylum Lake. Any management activities that affect deer habitat at Asylum Lake could have widespread effects throughout the area, at least until deer populations stabilize. Similar considerations apply to the fox (Vulpes sp.) population. Potential conflicts between wildlife, especially deer, and vehicular traffic must be mitigated as far as possible from the beginning. Currently more than a dozen deer regularly feed near US 131 in the BTR.

On the main Asylum Lake property a balance must be found between controlling invasive plant species and maintaining nesting and feeding habitat for breeding and migratory bird populations. Our research supports plans for the prairie and restoration of oak savanna using controlled burning in limited areas, while leaving a wooded buffer along the waterways.

Restoration of the spring woodland wildflowers also should receive priority. Successful restoration and management efforts for native plant species may require deer population management.