

It is less clear whether respondents understand the link between water quality and the aquatic plant community. The vast majority of respondents agreed that native aquatic plants are important to maintaining a healthy lake ecosystem. However, when asked whether removal of aquatic plants improves water clarity, 25.3% of respondents strongly agreed or agreed and 23.2% of respondents were “unsure”. Just under half of respondents also indicated they thought there were too many aquatic plants in Lake Wissota.

Most respondents indicated an understanding of what aquatic invasive species are and believe that they have a negative impact on the economies of the communities surrounding the lake. Respondents also believe that aquatic invasive species have a negative impact on the aesthetics of the lake. Most respondents are concerned about Eurasian water milfoil and believe that invasive species should be controlled wherever possible. A majority of respondents indicated that they would like further information about how to control and identify invasive species.

The Clean Boats, Clean Waters program was believed by respondents to be an effective way to keep aquatic invasive species from spreading to uninfested lakes and nearly three-quarters of respondents indicated that they have received information about CBCW at Lake Wissota boat landings. Nearly three-quarters of respondents also practice Clean Boats, Clean

Waters steps by removing aquatic plants and other debris from their boat and trailer when they leave a lake.

## Management History

Historical Control Actions. Prior to 2000, Northern States Power Company (now Xcel Energy) conducted late winter drawdowns of between 4 and 15 feet in Lake Wissota for hydropower generation (Appendix C). It was found that the duration and magnitude of these drawdowns were negatively impacting the plant and animal communities within the lake (Konkel 1998, Delong and Mundahl 1994, Kurz, pers. comm. 2009).

Northern States Power Company’s hydropower license with the Federal Energy Regulatory Commission (FERC Project #2567) expired in 2000.

Efforts to renew this license began in 1997, and as part of the negotiations, the Lower Chippewa River Settlement team was formed. This team was comprised of members from: Northern States Power Company (now Xcel Energy), City of Eau Claire, Wisconsin Department of Natural Resources, U.S. Fish and

Wildlife Service, National Park Service, River Alliance of Wisconsin, Wisconsin Conservation Congress,

Chippewa Rod and Gun Club, Lake Holcombe Improvement and Protection Association, Lake Wissota Improvement and Protection Association, and Lower Chippewa Restoration Coalition, Inc. To provide information for the relicensing process, Northern States Power Company and the Wisconsin Department of Natural Resources conducted a series of studies to



**Figure 4. Eurasian water milfoil from Lake Wissota.** *Photo courtesy of Jessica Soine 2009.*

evaluate the impacts of drawdowns on water quality, aquatic plants, fish and aquatic invertebrates.

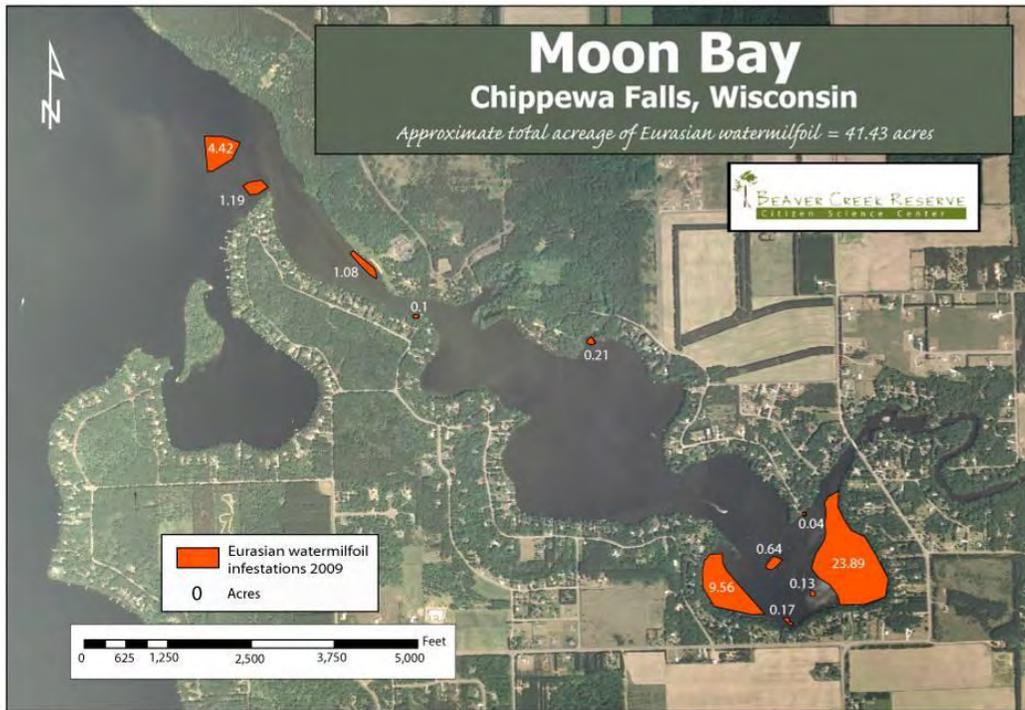
The results of these studies revealed that the late-winter drawdowns had some negative impacts, which included: fish stranding and loss of spawning and nursery habitat, mortality of benthic invertebrates and loss of habitat, and alterations of the aquatic plant community such that some drawdown sensitive species, such as lily pads, were unable to support healthy populations. These discoveries led to the reduction of the late-winter drawdown of Lake Wissota in 2001. Drawdowns are now restricted to a maximum of 3 feet for one week before spring run-off and in the event of emergencies such as flooding (Xcel Energy 2001). The reduction of the late-winter drawdown was the first major management action taken to alter the aquatic plant community in Lake Wissota. In the future, drawdowns may be a viable management tool on Lake Wissota if the timing and length of the drawdowns were altered to protect the aquatic community of the lake. Department of Natural Resource records indicate that in the 1970s, lakeshore property owners in Moon Bay obtained permits from the Department to chemically treat “nuisance” aquatic plants along their shorelines. A high abundance of Elodea appeared to have been the major complaint by these landowners (Kurz, pers. comm. 2009).

Current Control Actions. Eurasian water milfoil was discovered in Lake Wissota in 2005 (Figure 4). In cooperation with the WDNR, the Citizen Science Center, and local townships, the Lake Wissota Improvement and Protection Association (LWIPA) received four Aquatic Invasive Species (AIS) Rapid Response grants and conducted hand pulling and chemical treatments with 2,4-D of known infestations of EWM in 2006-2009. Treatments occurred

in all known areas infested with EWM each year. Nine acres of milfoil were treated in 2006, one area near the Lake Wissota State Park (LWSP) boat landing and one area in Moon Bay. Treatment success was mixed as some areas continued to see milfoil growth. After the treatment, a late-developing bed of milfoil was discovered in the Chippewa Rod and Gun Club bay. In 2007, 14 acres of milfoil were treated with 2,4-D in Moon Bay and near the LWSP boat landing. In 2008, seven acres of milfoil were treated, including smaller areas in Moon Bay, near the LWSP boat landing, and at the LWSP beach. New milfoil beds were discovered along Hwy X and at the mouth of Paint Creek in Little Lake Wissota in 2008 after the herbicide treatment had occurred. As of 2009, approximately 44 acres of milfoil were known to be present in the lake. Areas of milfoil were mapped in Moon Bay, Little Lake Wissota, Stillson Creek, and near the Rod and Gun Club bay (Figures 5-7) by Beaver Creek Reserve Citizen Science Center researchers. Most of the milfoil beds contain sparse to intermediate stands of milfoil, with the exception of some of the smaller (<0.2 acre) beds in the east end of Moon Bay.

Each year from 2005 to 2009, LWIPA also implemented CBCW programs at the three largest boat landings on the lake (Rod and Gun Club, Town of Lafayette, and Lake Wissota State Park), conducted periodic monitoring of susceptible areas, and hand-pulled pioneer infestations that were not chemically treated. In addition, LWIPA created numerous informational opportunities for lake association members, lake residents, and recreational users in 2007 and 2008, including open meetings, presentations at local community events, and a lake fair for the public.

No known control actions are being conducted for curly-leaf pondweed at this time.



**Figure 5. Known infestations of Eurasian water milfoil in Moon Bay totaling 41.43 acres, 2009.**



**Figure 6. Known infestations of Eurasian water milfoil near the Rod and Gun Club totaling 0.1 acres, 2009.**



**Figure 7. Known infestations of Eurasian water milfoil in Little Lake Wissota and Stillson Creek totaling 2.58 acres, 2009.**

## Plant Community

A healthy aquatic plant community in Lake Wissota is essential because aquatic plants (1) **improve water quality**, (2) provide wildlife habitat, (3) provide necessary habitat for fish, (4) can limit nuisance aquatic plant growth, (5) stabilize sediments, and (6) provide oxygen to aquatic organisms.

History. Whole lake plant surveys were conducted in 1989, 2005, and 2009 using the same sampling techniques for each study to allow for comparison between studies. A list of the plant species found during those studies is found in Appendix D. The species found at each transect were documented in map format as well and are included in the plant study reports from 2005 and 2009. An example of a map from the 2009 study is

included in Appendix E. The first aquatic plant survey was conducted from 1989-1990 in preparation for the Wissota dam relicensing project in 2000. The survey was designed to determine baseline data about the aquatic plant community that could be replicated in the future to determine any changes in the plant community. The species present, their distribution, and their frequency and abundance were recorded. In 1998, the Wisconsin Department of Natural Resources conducted a study of the impact of late-winter drawdowns on the aquatic plant community. In 2005, the aquatic plant survey from 1989 was repeated and the data from the 1989 and 2005 studies were compared. In 2009, the aquatic plant study was repeated again and the data compared to 2005 and 1989.