

These weevils feed on all milfoil, both native and non-native species and damage milfoil by feeding on the top portion of the stem. It is thought that the weevils do not fly or swim well and they need natural vegetation near the water's edge to overwinter (Maccoux 2007). No milfoil weevils are known to be present on Lake Wissota. Biological control with the milfoil weevils is not considered a viable option for Lake Wissota at this time.

Bottom Barriers. Bottom barriers are often sold as mats of plastic or fabric, of varying colors, that can be laid over a bed of aquatic plants to stifle their growth. These barriers are non-selective and will kill off plants, however sediment collects on top of the barriers which allows new plants to establish growth. In addition, when barriers

are removed, aquatic invasive species often re-establish in the site more readily than the natives that might have been mixed in with the invasive species previously. Bottom barriers are not considered a viable option to control Eurasian water milfoil in Lake Wissota at this time.

Dredging. Dredging of a lake is often done to remove excess sediment from the lake or restructure parts of the lake that may have altered in a negative way over time. Dredging is very expensive and takes a lot of time. It is not an effective method for removing aquatic invasive species and is not recommended for Lake Wissota at this time.

II. Lake Wissota, Yesterday and Today

Lake Description

Lake Wissota was created between 1915 and 1917 when a dam was built on the Chippewa River, which created the 4-mile long and 2-mile wide main impoundment (Borman 1991). Lake Wissota is 6,024 acres and has a maximum depth of 64 feet (Konkel 2007, Hartnett and Molnar 2005). There are two smaller embayments, Little Lake Wissota and Moon Bay. The Wissota dam impounds water up to the Jim Falls dam, 13 miles upstream. The Yellow River, Stillson Creek, Frederick Creek and Paint Creek empty into the lake and drain an area of roughly 941 square miles (Brakke 1996). Lake Wissota has a total drainage area of approximately 5,548 square miles

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(Tinker 1996). Lake Wissota is located north east of Chippewa Falls in T28-29N R7-8W, in the civil towns of Anson, Eagle Point and Lafayette, and the city of Chippewa Falls. The Waterbody Identification Code (WBIC) for Lake Wissota is 2152800. A 2005 map of Lake Wissota, Little Lake Wissota, and Moon Bay is included in Appendix B. A new map of the lake will be available in 2010.

Sociological Survey

A sociological survey entitled Lake Wissota Planning Survey (Braun, 2009) was conducted in 2008 and **was critical to the development of this Lake Wissota Aquatic Plant Management Plan.** The thoughts and ideas provided by survey respondents helped determine what management strategies

might best fulfill the needs of the lake as well as the lake users. The survey was sent to 2,170 people living within a quarter-mile of Lake Wissota. Lake Association members and Beaver Creek Reserve staff also handed out an additional 20 surveys at public boat landings on the lake in July 2008. The total number of surveys distributed was 2,190. Of the surveys distributed, 452 (21%) were returned. "It is important to note that with a usable return rate of 21%, we cannot say the results represent with statistical accuracy the target population of Lake Wissota property owners and users. The results represent the opinions and experiences of those who responded to the survey. Results, however, do provide us with a level of insight previously unknown, and will be used with discretion to help inform the Lake Wissota planning process," (Petchenik 2009, pers. comm.). Over half of the surveys returned were from people who had waterfront property on Lake Wissota (307 respondents, 67.9%), while 32.1% (145 respondents) were from people without waterfront property.

The purpose of the survey was to determine (1) citizen perceptions and opinions about the water quality of the lake, (2) opinions about and knowledge of the aquatic plant community, (3) the knowledge of and action in regards to aquatic invasive species (including the effectiveness of the Clean Boats, Clean Waters program on Lake Wissota), (4) the knowledge of the relationship between shoreline restoration and water quality, (5) opinions about recreation on the lake, and (6) overall thoughts about the value of the lake to survey participants. The survey also included one question about their opinion of the fishery in Lake Wissota. The final summary of the Lake Wissota Planning Survey Report is included here. The

Nearly three-quarters of [survey] respondents practice Clean Boats, Clean Waters steps by removing aquatic plants and other debris from their boat and trailer when they leave a lake.

complete final report from the survey can be found on the Lake Wissota Improvement and Protection Association website (www.lwipa.net).

Sociological Survey Summary.

Respondents to the Lake Wissota Planning Survey overwhelmingly indicated that Lake Wissota was valuable to them for the natural beauty and the recreational value it offers them. Fishing, swimming, boating, and spending time with family were responses repeated over and over when asked, "What does Lake Wissota mean to you?" Enjoyment and relaxing were other common responses. Responses to questions about recreation on the lake indicated that scenic viewing, motorized boating, fishing, and swimming are the types of activities most often enjoyed by lake users. Respondents are concerned about recreational safety on Lake Wissota. The availability of the recreational activities indicated by

respondents is strongly linked to water quality, which respondents considered Fair or Good. However, when asked if they had any additional concerns about Lake Wissota, 44 of the respondents that answered this question indicated they were concerned about algae and 26 respondents expressed concern about runoff, fertilizer and phosphorous. Erosion, too many boats on the lake, and water quality were also common concerns.

Most users surveyed indicated an understanding of the link between large amounts of phosphorous and poor water quality (as it relates to algae blooms). More than half of all respondents seemed to understand that shoreline restoration can prevent large amounts of nutrients from flowing into the lake, although 18.1% of respondents were "unsure".

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.*