

## MEMORANDUM

**TO:** MCWD Board of Managers  
**FROM:** Eric Fieldseth, AIS Specialist  
**DATE:** October 23, 2014 Board Meeting  
**SUBJECT:** Six-Mile Creek Carp Assessment Update

The Six-Mile Creek Carp Assessment got underway on June 9<sup>th</sup>, 2014. The purpose of the study is to determine the abundance, seasonal movements, and recruitment patterns of common carp in the Six Mile Creek Sub-Watershed to enable development of carp control strategies for restoration of the sub-watershed. This will involve several survey tools including: electrofishing to estimate adult carp abundance, trap-net surveys to sample juvenile carp and identify carp nurseries, radio-tracking of tagged carp to track movement in the system, and aging studies to examine historical trends in recruitment.

### **Adult Carp Abundance**

During the months of June and July, the U of MN completed several electrofishing surveys on assessment lakes, which will give an estimate for adult common carp abundance. Overall, adult carp abundance varies across the sub-watershed but in general is high. Preliminary estimates are indicating most lakes likely have a summer time carp density well in excess of the 100 kg/ha threshold previously identified as damaging in shallow lakes (Bajer et al. 2009). Halsted's Bay seems to be significantly high. Another round of electrofishing was completed in September as the researchers were radio-tagging carp, and those numbers are similar to the summertime numbers.

### **Identification of sources of juvenile carp**

Trap-net surveys were done from August to mid-September to sample juvenile carp in the system as well as native fish such as sunfish. This info will help identify possible carp nurseries in the sub-watershed. Juvenile carp have only been found in a handful of locations so far, with Big SOB Lake, which is on the Tom Redmond property near Parley Lake, having the highest number as well as a pond near Crown College; both feed into Parley Lake. Researchers also found one juvenile in Mud Lake, and some in a pond in between Sunny and Auburn Lakes. Surprisingly, no juvenile carp were found in Marsh Lake, which is between Piersons and Wassermann Lakes, but they did find a substantial number of sunfish, which act as predators on carp eggs. It's possible that Marsh Lake only winterkills occasionally, and when it does those could be the times where carp are successful in spawning and those fish eventually could re-populate Piersons and other lakes. MCWD staff will start monitoring dissolved oxygen levels in Marsh Lake this winter, as well as some other lakes in the subwatershed, to determine possible winterkill conditions in lakes of interest.

MCWD staff along with U of MN researchers met with the property owner and managers of Big SOB Lake to discuss the findings as they are very concerned of carp in their lake and want to manage for a healthy fishery. Several things were discussed, including aeration and permanent barriers between their lake and Parley Lake. The property owner seemed very eager to implement anything that needed to be done. Improvements made in this lake will help address what appears to be a carp nursery in the sub-watershed.

### **Seasonal distribution and movement patterns of adult carp**

By mid-September, researchers started to implant radio tags in carp throughout the system. Due to the complexity of the system, especially around the Mud and Parley Lake area, as well as the significantly high adult carp population in Halsted's Bay, they wanted to implant more tags in these lakes. The larger number of tags in this area will help us better understand the movement patterns of carp between these lakes and the surrounding wetlands, as well as where the carp in Halsted's Bay go (they may utilize the Six-Mile Creek lakes or some may go into other bays of Lake Minnetonka). Due to the increase number of tags in this area, the MCWD agreed to purchase an additional 20 tags for a cost of \$3,460 to allow a more representative number of carp in all major lakes in the sub-watershed to be radio-tagged. Tracking these radio-tagged carp will be ongoing throughout the fall and winter, and will provide valuable movement data of carp in the system and may lead to new areas that need to be examined, as well as provide possible key areas where removal can be focused in future years.

### **Historical patterns of carp recruitment via ageing analysis**

The approved scope of work allows two ageing studies to be done in two of the proposed carp management units. In 2014, that study will be completed on carp from Parley, Mud and Halsted's. This work will be done over the winter months. In 2015, the ageing study will likely be completed on carp from Piersons, Wassermann and Marsh Lake.

### **Progress & Concerns**

Overall, things are on track and there have been no major issues. There are still some small ponds that the researchers would like to access, but access has been difficult due to low water levels or no accessible areas for a boat. Higher water in the spring may allow for access to some of these waterbodies, so further attempts will be made in the spring of 2015.