PRIOR LAKE - SPRING LAKE
WATERSHED DISTRICT

2017 Carp Tour

What's the Problem with Carp?

Intentionally introduced into our lakes from Europe and Asia in the 1880s as a game fish, common carp have quickly outcompeted our native fish and muddied our waters with their bottom feeding habits which uproot native plants game fish depend upon. By stirring up the bottom of our lakes, the carp release phosphorus back into the water, also feeding the algae which can cloud the water and increase the potential for algae blooms.

The simple solution? Remove the carp from our lakes. The problem? Finding the fish when they're schooling. Between Spring, Upper Prior and Lower Prior Lakes, there are over three square miles of lake bottom where the carp can hide, not to mention the many upstream lakes and wetlands the carp have access to.

Putting Solutions to Work!

In order to solve this problem, the Prior Lake-Spring Lake Watershed District has successfully implemented several different carp management strategies, attacking carp from all angles. Some of these strategies include:

Radio-tags & PIT Tags
The District has inserted many carp on Spring & Prior Lakes with both radio-tags and PIT tags. These tags allow the District to track the carp across the different waterbodies, helping to identify potential spawning areas and carp congregations to complete successful seines (removal events).

Carp Barriers
Different carp barriers are being implemented across the watershed. These barriers block carp from their spawning areas which reduces the amount of carp that successfully reproduce each year and reduces their populations over time.

Population Estimates
By knowing how many carp are in the lakes, the District is better able to assess how many more need to be removed to get the lakes to a manageable level. This can include gill netting and electrofishing surveys to determine population.

Seine Events
The District works quickly to remove carp at opportune times when the fish congregate together.

Many of the innovative approaches to carp management were developed by the District's carp consultant, WSB.

WSB

Funding for the 2015-2018 Carp Management Project was partially provided by the Minnesota Pollution Control Agency through a Grant from the State's Clean Water Partnership Grant Fund.

CLEAN WATER LAND & LEGACY AMENDMENT

Prior Lake-Spring Lake Watershed District

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Current Carp Management Projects

UMN Carp/Bluegill Study

The University of Minnesota is conducting studies on the relationship between bluegill and carp in hopes of determining appropriate bluegill stocking levels as a potential carp management tool. Native micropredators, like the bluegill, control carp populations by consuming eggs and larvae of carp, and limit survival of offspring.

The District and the City of Prior Lake have allowed the UMN to use one of their wetland restoration ponds as a study location. This will help advance the research on this potential carp management tool.

Controlling carp helps protect the water quality of our lakes, preserving them for future generations to enjoy.

2015—2018 Carp Management Project

In 2015, the District successfully acquired a grant funded by the State's Clean Water Partnership Grant Fund through the Minnesota Pollution Control Agency to use an innovative method to locate and remove a significant portion of the carp in Spring and Prior Lakes.

The District has captured carp in Spring and Upper Prior Lakes and surgically implanted them with radio tags before releasing them back into the waters. The carp then act as unsuspecting spies, as the radio tags sent signals out to a receiver device, tracking the movement of the fish throughout the three lakes and connecting channels. The District has been following them and documenting their favorite hangouts during ideal seining (removal) seasons.

During opportune moments when carp congregate in accessible areas, the District moved quickly to catch and remove the carp from the lakes. So far, the District has had one very successful seine on Spring Lake where roughly 70% of the population was removed (14 TONS), and the first ever documented carp seine on Upper Prior Lake.

The radio telemetry information also helped the District locate the areas the carp are using to spawn in the spring. Fish barriers have been installed to block the carp from entering these spawning areas, which will ultimately reduce their overall population growth. Additional barriers will be installed next spring as the project wraps up.

2016-2017 PIT Tagging Project

Passive Integrate Transponder (PIT) tagging is a passive monitoring technique that can be used to track carp movement with stationary receivers. At a fraction of the cost of radio tags, PIT tags allow the District to track carp movement at all times of day and varying size/age of fish as they travel into or out of a specific area where moveable receivers have been placed.

Small, coded wire tags have been implanted into approximately 150 carp which were then released back into the water. 150 more will be tagged later this year. When a tagged fish travels through one of the District's antennae loops, a unique identification number is recorded along with the time and date. These receiver loops have been strategically placed at the Spring Lake outlet and the desilt pond to track carp movements 24 hours a day.

2017 Spring Lake Project: Drum Barrier

Tracking information from the 2015-2018 Carp Management Project revealed that carp have been moving upstream from Spring Lake to the Desilt Pond site during their spawning period. PLSLWD successfully acquired a grant through the Conservation Legacy Partners (CPL) program to support the installation of a low maintenance drum-style barrier at this site to protect Spring Lake proper from a rebound in carp abundance after a significant portion of the adult population was removed during the 2017 winter seine. This project also included the purchase of a PIT tag receiver device to check the effectiveness of the drum-style barrier at this location. The project complements the District's overall Integrated Pest Management efforts for carp in the watershed.

Carp Barriers: Blocking Recruitment

Arctic Lake Barrier

The District has been working with the Shakopee Mdewakanton Sioux Community (SMSC) to improve the water quality of Arctic Lake. With help from a grant from the MN Board of Soil and Water Resources (BWSR), the District was able to design and install a carp barrier in 2016 at the culvert under Fremont Avenue, blocking carp from Prior Lake from entering Arctic Lake to spawn. This barrier is kept open during other times of the year to allow for native fish passage. Since the barrier has been installed, residents and staff have seen carp "stacked up" by the barrier during their spawning season, proving that the barrier has well served its purpose.

Drum-style Barrier

The District installed a seasonal, low-maintenance carp barrier in the open channel between Spring Lake and the Desilt Pond. This is an innovative, drum-style, rotating barrier that moves as flowing water passes, cleaning itself as it turns. The barrier has been mounted in the stream channel in such a way that it can be removed when it has been determined the threat of carp spawning/recruitment is past as determined by radio-telemetry and PIT tag information. The waterway will remain un-barricaded during other times to allow passage of gamefish and forage fish species to limit any unintentional, adverse effects on native populations.

Spring Lake Outlet Barrier

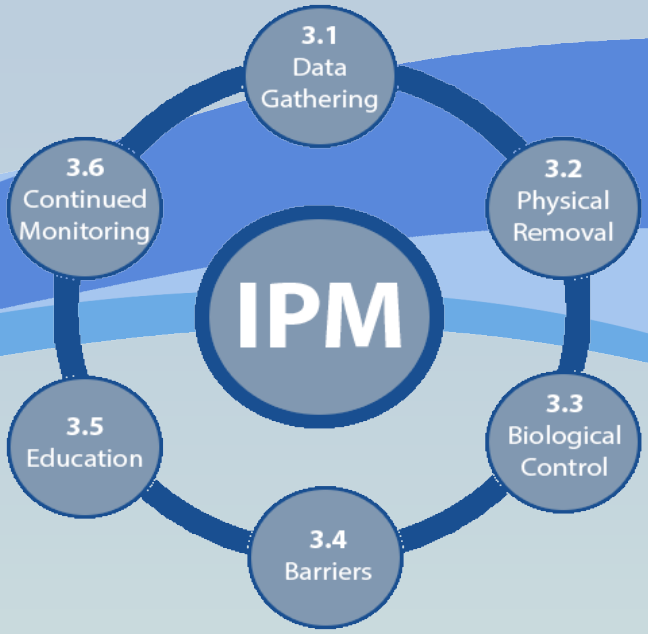
Anecdotal evidence suggests that carp are migrating in large numbers upstream from Upper Prior Lake to Spring Lake during spawning season. Since common carp are known to exploit seasonally unstable aquatic environments to recruit young to the system, limiting access to these environments can be critical to controlling carp abundance and promote the longevity of adult carp management techniques.

As part of the 2015-2018 Carp Management Project, a temporary barrier was placed in the Spring Lake Outlet Channel. Comprised of wood, metal stakes and PVC pipe, this barrier can be quickly and cost-effectively installed in a channel system prior to carp spawning periods.

Next Steps

Integrated Pest Management (IPM) Plan

Adopted by the District in 2017, this plan is intended to be a living document and will use adaptive management tools that incorporates new management strategies and plan goals more information arises. The plan includes seven components *(as shown in the graphic to right)* which will be implemented throughout the watershed, as highlighted in the upcoming projects below.



Upper Prior Lake Seine

The District anticipates that it will have one or two seine events in Upper Prior Lake over the next year in an effort to remove a significant portion of the population. This will help accomplish one of the major deliverables in the current MPCA Carp Management Grant and will help provide some significant water quality improvements in Upper Prior Lake.

LCCMR Grant Proposal

With help from WSB, the District applied for a grant through the Legislative-Citizen Commission on Minnesota Resources. This ambitious grant proposal includes expanding the District's carp management efforts to include other water bodies such as Pike Lake, Fish Lake, and Jeffers Pond. The proposal includes the implementation of new innovative carp management techniques and tracking carp throughout the entire watershed, treating the system as a whole. The District will find out in September if the proposal will move on to the next step in the grant selection process. If successful, this project would fund carp management efforts from 2018-2021.

Geis Pond Carp Removals

District staff have observed carp recruitment in the wetland pond located next to the FeCl building, also known as the Geis Pond. Water quality monitoring data shows that the water going into this water body is cleaner than the water going out during carp spawning season. This evidence together strongly suggests that carp management is necessary at this upstream pond site. In 2018, the District plans to complete a rough CPUE population count of carp in this pond in order to get some information on abundance, as well as to remove a portion of the carp from the site.

PIT Tagging & Tracking

The District will finish up the PIT tagging project in 2018, and will continue to track and observe migration of carp through the stationary receiver devices. As more information is learned about migration routes and more questions arise, the District can move the receiver devices throughout the watershed, gathering more and more information as time goes on.