

News Reel



Fall 2020

ABOVE: Fall colors at the Waterville State Fish Hatchery and Area Office.

Public input meeting

A public input meeting will be held October 8th to discuss potential Bluegill regulation changes on Lake Mazaska.

Where: South Alexander Park Picnic Shelter #2. Links to online meetings are available at <https://www.dnr.state.mn.us/regulations/fishing/index.html>

Time: 5 pm to 7 pm

Because of COVID-19 and related safety measures:

- The meeting will be open house style with no formal presentation.
- Capacity will be limited to 25 at any time to comply with Department of Health guidelines.
- DNR staff will wear face coverings and maintain proper distancing. Members of the public are encouraged to wear masks, but not required.
- Attendees can sign-up for 30-minute time slots, call (507) 497-1820 for info.
- The meeting will be outside, dress accordingly.
- The public is encouraged to comment on-line at mndnr.gov/sunfish
- On-line comments will be treated the same as in-person comments.



ABOVE: A pair of 9 inch Bluegills from Lake Mazaska.

Soup's Take

Fry or Fingerling? Part 3 of a 3 part series

In previous Newsreel issues we took up the topic of Walleye fry versus fingerling stocking. This will be the final part to this series. If you missed them part 1 and part 2 can be found at: <https://www.dnr.state.mn.us/areas/fisheries/waterville/newsletter.html>.

Previously, we considered when Walleye fry or fingerlings might be the best option for stocking. The million dollar question you might have is how does DNR decide? This is where science comes into play. But, we also make scientific decisions in a manner that considers the broader landscape of resource availability, opportunity, angler use, fiscal responsibility, and the socio-political environment. Balancing all these aspects of a 'fishery' are critically important. In regard to the science managers have some tools at their disposal that help make decisions. In this article we will explore some output from one tool referred to by DNR as WAESTOCK (WAE = 3 digit code for walleye) using the Waterville Area's German Lake as an example.

low Perch and Northern Pike. Both are important to Walleye, Yellow Perch are a primary food source while Northern Pike are a direct competitor. Therefore, we look for Northern Pike abundance to be less than 6 fish per gillnet to minimize suppression of Walleye. If Northern Pike abundance is higher than 6 fish per gillnet Walleye stockings may be unsuccessful. In such cases it would be irresponsible to stock more costly fingerlings. A goal for Yellow Perch abundance is more than 8 fish per gill net. Anything less may indicate lack of proper food for Walleye.

Number of surveys	6	Walleye stocking guidelines have been developed to help managers determine stocking strategies. These guidelines outline several factors that may result in poor stocking success, including:
Most recent survey year CPUE	2018	
NOP CPUE	14	
WAE CPUE	3.88	-Yellow Perch (YEP) less than 8 per net.
Fry attempted	1.25	-Northern Pike (NOP) more than 6 per net.
Average TL at age 3	YES	-Slow Walleye (WAE) growth rates.
Historic Growth	14.9	-Sufficient natural reproduction.
Recent length at age 3	FAST	Stocking guidelines also recommend fry stocking be attempted prior to use of fingerling stocking.
Recent Growth	17.1	
Potential Natural Contribution	FAST	Definitions:
	0%	CPUE = Catch per unit effort (fish/net)
		TL = Total Length

In the WAESTOCK table below for German Lake, both Northern Pike and Yellow Perch are within a reasonable range to consider Walleye management. Further, growth of Walleye in German Lake is fast with Walleye reaching 15 to 17 inches by age 3. In southern Minnesota Walleye typically demonstrate fast growth relative to the statewide average, which is only 12 inches at age 3.

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WAESTOCK

WAESTOCK is a program that takes into consideration a lake's Walleye population history including abundance, stocking and/or natural reproduction, and growth/mortality rates. WAESTOCK also considers other fish species including Yel-

-Soup's take continued from page 1

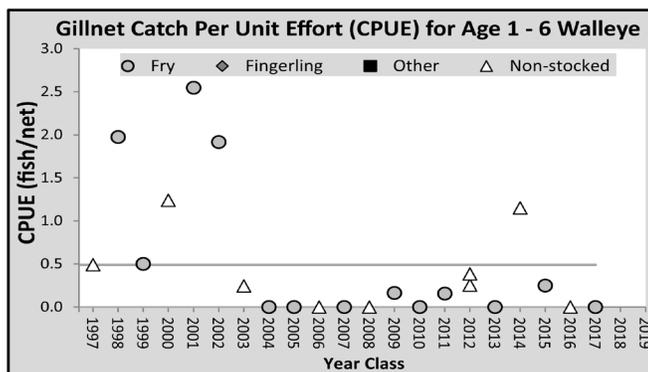
You might question the difference between historic and recent growth rates in the figure. This difference is the result of using more accurate aging methods since 2013. You will also notice Walleye fry stocking has been attempted in German Lake. Attempting fry should always be completed before considering more costly options. This is to ensure good stewardship with angler's license dollars!

Stocked or natural

The next figure in WAESTOCK we investigate year classes that recruit to the adult population. A year class that 'recruits' is simply Walleye of a specific age that survive to adulthood related to year of hatch. For example, all fish that hatch in 2019 and survive to 2020 and beyond would be recruits from the 2019 'year class'.

As you might expect, looking at specific year classes can explain past stocking results, or in assessing naturally reproduced year classes during non-stocked years. Granted, the median catch rate was only 0.2 fish/net. But, stocked years still offered stronger year classes (up to max value of 3+ fish/net) than non-stocked years (up to max value of 1.5 fish/net) in German Lake. German Lake has always maintained a low abundance of walleye with catch rates never exceeding 4.5 fish/net in the past 20 years. In fact, in recent years Walleye catch rates have hovered

In the next figure the circles represent stocked years and the triangles represent non-stocked years. In other words, triangles are year classes produced from natural reproduction. This clearly demonstrates that



in many stocked years there has been some Walleye recruitment, albeit on the low side. More importantly, natural reproduction has been consistently occurring in German Lake and at times contributes more to year classes than stocking.

Given natural reproduction in some years fish were stocked, subsequent year classes could have been created by natural reproduction rather than stocking. We don't know for sure and this is a main reason we typically use every-other-year stocking to assess natural reproduction in non-stocked years.

Good genes

Based on these results, natural reproduction in German Lake was investigated further in 2018 and 2019. Fish were collected from German Lake and genetics were analyzed. The results were interesting. Up to 75% of Walleye in German Lake were Lower Mississippi Strain (LMS). The interesting part is DNR has stocked only northern Minnesota strains for decades. Shocker! What's up here?!

The LMS is a strain of Walleye that was newly discovered and originates from

the Cannon River system. Coincidentally, German Lake is connected to the Cannon River through the outlet. The questions that arise: are Walleye immigrating into German Lake from the Cannon River and not naturally reproducing, are Walleye immigrating from the river AND naturally reproducing, is a remnant adult population of LMS Walleye

resident in the lake and naturally reproducing or, all of the above?

The bottom line in reviewing WAESTOCK data for German Lake is stocking of fry has not resulted in the Walleye population expected and abundance has been very low relative to lakes where fry stocking is successful. Based on this information the DNR has considered stocking Walleye fingerlings in German Lake. However, the natural reproduction discovered and the high percentage of the adult Walleye population in German Lake that is LMS raises other questions that must first be answered before switching to more costly fingerlings.

Based on this WAESTOCK review and with newly founded genetics information the DNR has made changes to the management plan for German Lake starting in 2020. In the next five years Walleye fry will be stocked, but instead of northern strains stocking will be made with only LMS.

The hope is LMS stocking may demonstrate higher survival and develop stronger year classes and higher abundance of Walleye. In addition, through stocking of the LMS a secondary goal is to enhance the adult LMS population to increase natural reproduction. So, before switching to more costly fingerling stockings in German Lake the DNR first will attempt to enhance the LMS population. If that proves unsuccessful over the next several years fingerlings may be attempted because fry stocking hasn't achieved management goals.

Learning process

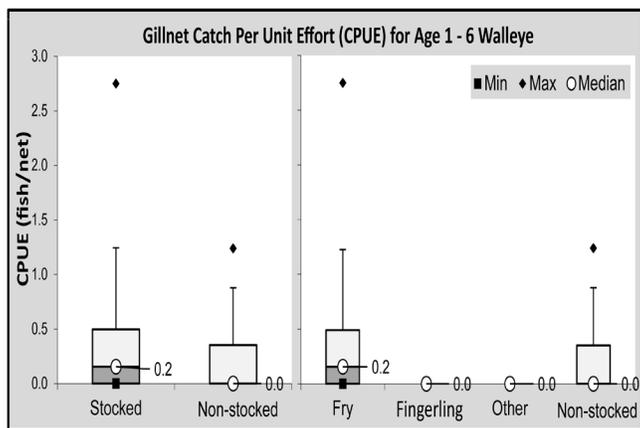
Managing Walleye fisheries is not always cut and dry and DNR is continuously learning about stocking and resulting fish populations. WAESTOCK helps tremendously in decision-making and in deciding between fry and/or fingerlings.

In most southern Minnesota lakes stocking Walleye fry is clearly the best option and that makes sense. But, there are cases to be made for stocking fingerlings where fry are not successful and environmental conditions favor Walleye management.

My hope is that you now have a better appreciation for the complexities of managing Walleye populations, and some understanding of tools the DNR uses.

If this series of articles on fry versus fingerlings has raised questions please feel free to give us a call at (507) 497-1820 to discuss.

-Craig Soupir, Area Fisheries Supervisor



closer to 1 fish/net, which is really low for Waterville Area lakes!

That said, there is some natural reproduction, which is noteworthy. You will also note fingerlings have never been attempted, so there is no way of determining contribution to year classes from fingerling stocking.

Other virus news

The cause of a 2020 carp kill on Lake Frances has been verified to be Carp Edema Virus (CEV). This is a virus that has been monitored since 2017 and found to be present in a couple dozen carp kills in Minnesota and Iowa in recent years.

A graduate student from the UMN Minnesota Aquatic Invasive Species Research Center tested and verified the cause of the kill on Lake Frances. This graduate student has been studying this virus since the large fish kill that happened on Lake Elysian just before Independence Day in 2017, which made state-wide news as the first positive case of Koi Herpes Virus (KHV) in Minnesota public waters. KHV is another virus that so far exclusively impacts common carp. His studies of Lake Elysian show the viruses continue to be present in the lake. Carp numbers are down in Lake Elysian, yet persisting.

KHV and CEV

What we have learned is that although CEV and KHV are relatively new to Minnesota in regard to positive test results, these viruses may have been around for some time given the widespread nature of positive testing, and we just were not testing for it. Historically, DNR had tested fish from carp only

kills but those kills were often attributed to Columnaris, which is a bacterial infection caused by the bacteria *Flavobacterium columnare*.

With this recent discovery of KHV and CEV and more specific testing for viruses the Columnaris diagnosis of previous carp only fish kills may have merely been a secondary infection and likely not the primary cause of the kills. Recent testing has indicated KHV and CEV, or in some cases both viruses, have been the cause of most carp only kills.



We are still learning about these viruses but the bottom line is it seems these viruses are present in many lakes in Minnesota, and have not had a negative impact on other fish species or humans. Given carp are an in-lake habitat destroying bottom feeding species some may be hoping these viruses wipe out all carp. Keep hoping. What I can tell you is that KHV and CEV caused carp only kills have not resulted in 100% carp kills, and most often 50% of carp or less

die from the disease from what we have observed. Fish that survive the viruses develop immunity, but from our understanding that immunity is not passed on to offspring, so the impacts of KHV and CEV can persist in lakes. Typically, KHV onset occurs with water temps near 70 F, which is around the first couple weeks of June in southern Minnesota. CEV onset can occur at cooler temps.

Danger to humans?

Some have questioned if humans should eat fish from a lake where a carp only kill has occurred. From what we know these viruses do not impact humans or other fish species so you should be fine eating fish captured from Lake Frances or any other lake that has tested positive for KHV or CEV or that is experiencing a carp only fish kill. Use your normal protocol for preparing fish, hand washing, etc. Dead fish that wash up on shore should be composted or disposed of properly.

If you observe fish kills please contact the Minnesota Duty Officer at (800) 422-0789 to report the kill so the proper agencies can be notified.

- Craig Soupir, Area Supervisor

Carp barrier update

Invaders

Eighteen invasive carp were removed this summer from waters behind an electric fish barrier in Jackson County. The barrier was constructed to prevent migration of the invasive fish from the Missouri River and streams in northwest Iowa.

Waterville barriers

Two barriers, similar to the Jackson County barrier, were constructed in the Waterville area in 2018. The barriers, located downstream of Madison Lake and Lake Elysian are designed to prevent invasive carp from entering Madison Lake from the Minnesota River.

No invasive carp have been documented at the barriers, however Common Carp are frequently observed below the barriers.

Invasive carp are filter feeders and likely compete with native fish for food. The fish are also a danger for boaters and other recreation due to their tendency to leap from the water when disturbed.



Above: Common Carp congregate below an electric field produced by a DNR barrier below Lake Elysian.

License sales up

Did it feel like there was more traffic on your favorite lake this summer? Odds are, that's because there was. Sales of outdoor goods from boats to fishing licenses skyrocketed this spring due to stay at home orders. For example:

- Fishing license sales up 100K as of Labor Day.
- Individual license sales up 70K as of Labor Day.
- Youth license sales up 8k as of Labor Day.
- Trout stamp sales up 20K as of Labor Day.
- Boat sales in May were highest in 12 years

Regulation refresher

Fisheries managers use a variety of tools to improve angling. Among these tools are regulations focused on the number or size of fish harvested. Regulations can be confusing. Knowing the terminology and reasons for regulations can help avoid confusion.

Daily creel limits are the most common regulation used by managers. Most daily limits are based on a what anglers think is "fair". However, many new Special or Experimental daily limit regulations are science based and have specific goals. Reduced daily limits are intended to protect big fish, spread harvest to more anglers, or protect fish from overharvest.

Another tool managers use is minimum length limits. Minimum length limits are usually used to prevent fish from being harvested before reaching their full growth potential, to estab-

lish trophy fisheries, or to allow a population to become established in a new lake.

Slot limits tend to be the most confusing type of regulation and many anglers refer to any length regulation as "slots". There are two types of slot limits, a harvest slot and a protected slot. A harvest slot means fish in a certain length range are allowed to be harvested because they are surplus fish, or to control harvest with a tight length range. A protected slot is used to protect a size range of fish - usually so they can grow to spawning size. The protected slot protects fish while still allowing harvest of small, surplus fish or large fish that have been allowed to spawn.

Another length limit commonly used in Minnesota is a "1 over" limit. The 1 over regulation allows the harvest of one fish greater

than a certain length. For example, taking one Walleye over 28" or one catfish over 24". In Minnesota we have a 1 over 20" Walleye regulation used statewide to limit harvest of spawning size Walleye.

There are currently two special regulations in the Waterville area: Clear Lake (Waseca) is catch and release only for Largemouth Bass and St. Olaf Lake has a 30 inch minimum size limit for Northern Pike.

The most important thing for anglers to remember is regulations are put in place to improve or protect angling. Regulations are for the benefit of the fish **and** the angler.

Consult the regulations handbook for regulations before fishing <https://www.dnr.state.mn.us/regulations/fishing/index.html>

Long term lake monitoring

Sentinel Lakes

The Sentinel Lakes Program is an intensive, long-term lake monitoring program created to detect and understand the physical, chemical and biological changes occurring in Minnesota's lakes. Along with our partners, we monitor the water quality, aquatic plants, phytoplankton, zooplankton and several aspects of the fisheries community. The data gathered from monitoring are used to help us understand and develop management approaches that can mitigate or minimize impacts caused by large-scale stressors such as climate change, land use patterns, and invasive species.

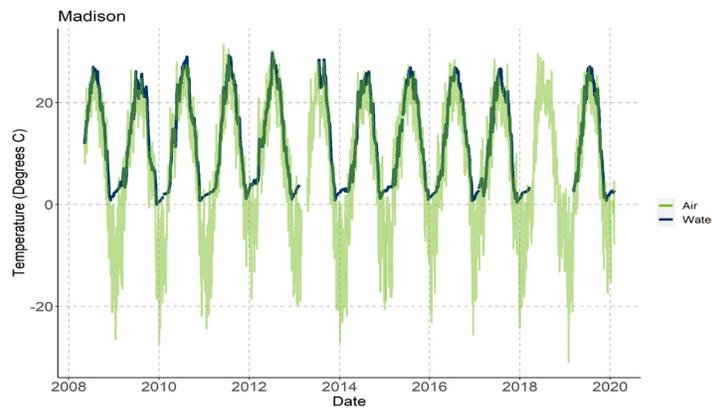
The 25 Sentinel Lakes were strategically selected to represent the wide spectrum of Minnesota lakes spanning from productive nutrient rich lakes in the south to nutri-

ent poor Canadian Shield lakes of the north and everything in-between. The Waterville Area Fisheries Office has two Sentinel Lakes, Madison Lake and St. Olaf Lake, both productive lakes in the Plains ecoregion. Because Minnesota has so many lakes, intensively studying these 25 lakes gives us insight into changes occurring in all lakes across the state.

Monitoring

Water temperature is one of the primary

factors we monitor. Water temperature data are collected through the partnership with the Waterville Area Fisheries using a chain of temperature sensors in both of these lakes (see picture). Water temperature naturally fluctuates among years, and these annual differences can influence a wide variety of environmental processes, including how



fast fish grow. This figure shows how water temperatures (dark line) seasonally fluctuate and shows the lake is warmer in some years than others. When compared with air temperatures (light line) we can see how the air temperature influences the water temperature. These data help us understand how both air and water temperatures are changing over time.

Zooplankton (tiny animals in the water such as water fleas) are another important envi-

ronmental factor we monitor. Many young fish eat zooplankton before their mouths grow large enough to allow them to eat larger prey such as macroinvertebrates (aquatic bugs) and other fish. According to these data Madison Lake has a healthy composition of zooplankton types and a good number of large Daphnia, a preferred food for many young sportfish.

You can help

Want to become involved? We are currently in need of a citizen volunteer to monitor ice on in the fall and ice off in the spring on St. Olaf Lake. If you are interested please contact Peter Boulay at the MN Climatology Office

peter.boulay@state.mn.us These data are combined with other lakes across the state and would appear on the web site [https://www.dnr.state.mn.us/ice_out/](https://www.dnr.state.mn.us/ice_out/index.html)

[index.html](https://www.dnr.state.mn.us/ice_out/index.html)

We are also in need of a citizen volunteer on Madison Lake to host a staff gauge which we use to monitor lake level on Madison Lake. If you are interested please contact Sandy Fetch who coordinates the lake level monitoring and staff gauges at sandy.fetch@state.mn.us

- Casey Shoenebeck, SLICE coordinator
<https://www.dnr.state.mn.us/fisheries/slice/index.html>