

Field notes

From the DNR Hinckley Area
Fisheries Office



Fisheries management news from the Chisago, Isanti, Kanabec, and Pine County area *Spring 2019*

Gearing up for sampling season

Welcome to the first issue of our newsletter! We hope this will be a way to share information and “behind the scenes” details of the work we do to provide quality fishing opportunities in east central Minnesota.

Another long winter is finally over. Our staff have kept busy during that time analyzing data collected last year, writing lake and stream survey reports, mending nets, maintaining equipment, completing annual safety training, attending meetings, and planning for survey work and fish stocking in 2019.

The month of May is a busy one for us. Each year we stock up to 10 natural rearing ponds and several lakes with walleye fry obtained from other DNR hatcheries. We also assist other Fisheries offices with Walleye egg collection efforts and research projects. Trout stocking takes place in Grindstone Lake when the lake is ice free. This year we will be stocking Lake Trout, Brown Trout, and Rainbow Trout the first week of the month. At that time we will also stock Rainbow Trout and Brown Trout in Crooked Creek east of Hinckley. May is also the time for trap netting for species such as Northern Pike and Muskellunge, and as the water warms toward the end of the month we begin electrofishing for Largemouth Bass as part of our lake surveys.

In this issue we highlight some of the special research projects we have been doing in the past year on Grindstone Lake. Every year we stock the deep, cold water lake with Rainbow Trout and Brown Trout—but where do they end up? Rainbow Smelt are not native to Grindstone Lake, but how many of them are there now? We also present results from our 2018 lake and stream surveys, and discuss Northern Pike regulations.

Our staff are as eager as everyone else to get out on open water and enjoy a day of fishing. Whether it's Walleye, bass, panfish, trout, muskie, or Lake Sturgeon (catch and release season opens 6/16), the Hinckley area offers something for everyone!



Photo: A young Lake Sturgeon is tagged with an external visible tag and an internal coded tag that can be read with a scanner. These tags help us to learn more about the sturgeon populations in the St. Croix, Snake, and Kettle Rivers.

2019 Survey Schedule

(subject to change due to weather and water levels)

April/early May: North and South Center Lakes, Chisago County: Trap netting for Northern Pike; **Cross Lake**, Pine County: Trap netting for Muskellunge; **Rock Lake**, Pine County (St. Croix State Forest): Trap netting (all species)

Late May/early June: Night electrofishing for Largemouth Bass on most lakes with a survey in 2019

Lake Surveys (gill and trap nets):

7/15: North Lindstrom, Chisago County
7/22: Island Lake, Pine County
7/29: Green Lake, Chisago County
8/5: Sturgeon Lake, Pine County
8/12: South Center Lake, Chisago County
8/26: East Rush Lake, Chisago County
9/2: Pomroy Lake, Kanabec County
9/9: Bass lake, Pine County
9/16: Knife Lake, Kanabec County

Other lake sampling (including nearshore fish sampling, shoreland habitat, and vegetation), June-August: East Rush, West Rush, South Center, North Center, Goose, North Lindstrom, Knife, Island, Sturgeon

River and stream surveys, July-September:

Kettle River, Pine County
Little Hay Creek, Pine County (trout stream)
2 unnamed St. Croix River tributaries, Chisago County (trout streams)

Studies seek secrets of salmonids and smelt in Grindstone Lake

Grindstone Lake, west of the town of Sandstone in Pine County, is one of the few lakes in central Minnesota that has the right conditions to support trout. Each spring, DNR staff stock 5000 yearling Rainbow Trout and 2500 yearling Brown Trout into Grindstone Lake. Lake Trout are stocked every other year; this is one of the southernmost lakes in Minnesota in which Lake Trout are stocked. Four thousand additional Rainbow Trout are stocked in the fall for the ice fishing season. All trout come from DNR hatcheries in southeastern Minnesota.

Although the lake has plenty of available habitat for these stocked trout, we have seen very few older fish during our surveys. Of course anglers may be taking a fair number of the stocked fish, and some may fall prey to Northern Pike, but we suspect that some of these trout may be escaping via the outlet to the Grindstone River. We have sampled Brown Trout and Rainbow Trout in the river in the past. To learn more about the movement of trout between the lake and the river, we began a 2 year study in 2018. We hope to find answers to these questions:

- How many stocked fish are moving into the river?
- What times of the year are fish moving? Does the timing of our spring or fall stocking affect movement?
- Are there conditions (water temperature, weather patterns) that influence fish movement?

For this study, 300 Brown Trout and 300 Rainbow Trout were implanted with tags and stocked in early May 2019. Specialized antennas were placed on either side of the Grindstone River at the lake's outlet. These antennas are able to detect tags as implanted fish swim past them. One hundred fifty tagged Kamloops strain Rainbow Trout were stocked later in May to see if there was a difference in movement patterns with these fish. Additional tagged fish were stocked in the fall.

Tagged fish were detected by the antenna array as early as 12 hours after being stocked. Dozens of fish have been detected by the antennas so far with the majority being Brown Trout. Many fish were found to move back and forth between the lake and the river. Detections ceased as water temperatures peaked in the summer and resumed when temperatures dropped in the fall. This also coincided with the stocking of additional fish into the lake. Detections again ceased in winter when water levels dropped and ice cover made the concrete outlet control structure a likely deterrent to movement. It is also interesting to note that once the winter harvest season opened, we got quite a few reports of anglers harvesting tagged fish and even had a number of the tags returned to us.

This study will continue this year to get better estimates of the numbers of fish moving in and out of Grindstone Lake. This information may help us better understand the fate of stocked trout in the lake.

Grindstone is also one of the few lakes in Minnesota to have a population of Rainbow Smelt. When most people think of smelt, they think of the big smelt runs along the shores of Lake Superior in the 1970-80's. Rainbow Smelt were first discovered in Grindstone Lake in 1963. It is unknown how smelt were introduced, but the population has become well-established, providing a unique angling opportunity. Angling pressure for Rainbow Smelt in Grindstone Lake results from winter ice fishing and spring dip netting/seining. There is no limit on smelt in Grindstone Lake. Besides being a tasty staple of spring fish fries, smelt also provide a forage base (food) for adult game fish.

Past lake surveys have sampled small numbers of smelt in gill nets, but traditional lake survey techniques do not sample smelt effectively due to smelt's small size and pelagic (deep water) location in the water column. In order to get a good idea on smelt numbers in the lake, Hinckley DNR fisheries staff have employed non-traditional sampling gear the past two summers to effectively sample Rainbow Smelt. Hydroacoustics is water sonar that can be used to locate pelagic schools of fish. The sampling boat has a large transducer on the bow. Transects are made back and forth across the lake while the computer software collects and records the data from the transducer. The data is then analyzed back at the office to quantify fish biomass and calculate a population estimate.

Vertical gill nets were also used to help capture smelt. Unlike traditional gill nets, vertical gill nets can fish in deeper water and sample the entire water column from the lake bottom to the surface. These nets are fished for 24 hours and lifted each day. All smelt captured are counted and measured. The depth at which each smelt are caught is also recorded. Fish sampled from these vertical gill nets are used to verify fish targets from hydroacoustics when used together. Annual monitoring will give us the ability to compare biomass each year, and to begin to identify what role smelt play in the Grindstone food chain.

Smelt are also sampled by trap netting during the spring spawning run. The 2017 spring trap netting survey captured a total of 3579 smelt, or 71.6 per net lift. Male smelt had an average length of 7.0 inches while female smelt averaged 7.6 inches. Peak smelt spawning temperature during the survey was 44 °F.



Each spring, usually before the fishing opener, thousands of trout are stocked into Grindstone Lake.

2018 lake survey highlights

Here are some of the notable results from electrofishing, gill netting, and trap netting surveys conducted in the summer of 2018. For more detailed information, check the LakeFinder on the [DNR Website](#) or contact our office. Surveys should appear in LakeFinder around the fishing opener (May 11, 2019).

Chisago County

Chisago and South Lindstrom Lakes: With Walleye gill net catch rates of 5.44 and 8.50 per net, these lakes continue to have above average Walleye numbers. This species is maintained by fingerling stocking on alternate years. Walleye ranged from 16-27 inches with a mean weight of nearly 2 pounds. Northern Pike catch was higher in Chisago than in South Lindstrom, and fish were larger, with pike up to 39 inches. Bluegill and Black Crappie had good numbers, with Bluegill up to 8.5 inches and some 11 inch crappies sampled. These lakes have a history of high Largemouth Bass numbers, and this year's electrofishing sample was no exception. These lakes currently have a 12 inch maximum length limit for bass, with the goal of producing more 15 inch plus fish. However, very few bass were over 15 inches, with the largest at 17 inches. We will be weighing future options for bass regulations on these lakes, and we welcome your comments.

Comfort Lake: As in past surveys, Northern Pike had good size with a mean length of 27 inches. The Largemouth Bass electrofishing catch rate showed a substantial increase, and the mean weight of bass was twice what it was in previous surveys. The largest bass was 19.5 inches. Although Comfort Lake is no longer stocked with Walleye fingerlings, a few manage to find their way into the lake from a connection to Forest Lake; a few muskie were also seen during the survey.

Spider Lake: This shallow, fertile lake had a partial winterkill in 2014, but Northern Pike and Black Crappie appear to be thriving. Although Northern Pike numbers were above average for this lake type, sizes were good with a mean length of 24 inches. Good numbers of 9-10 inch Black Crappie were present. Bluegill were mostly smaller sizes. The current lake management plan calls for stocking of Walleye fry when surplus fry are available.

2018 river and stream surveys

Rum River (Isanti County portion only): The main gamefish species in this river are Smallmouth Bass, Walleye, and Northern Pike. Our 2018 survey found downward trends in the numbers of these species, but Smallmouth Bass showed impressive size with the bulk of the adult catch 16-19 inches.

Lawrence Creek: This St. Croix tributary in the town of Franconia harbors an impressive population of wild Brook Trout, although angling access is somewhat limited. In 2018 we took samples for genetic testing. The Brook Trout in Lawrence Creek were found to be more similar to Lake Superior populations than to those found in Southeast Minnesota streams. No recorded stocking has ever take place on Lawrence Creek.

Hay Creek: Our 2018 survey showed a continued increase in the numbers of wild Brook Trout, as well as an expansion of their range in the creek. This is due to an ongoing beaver control and dam removal effort. There is angling access in St. Croix State Park and several easements.

Sand Creek: Northern Pike and Smallmouth Bass, as well as suckers and minnows, were sampled at two stations in St. Croix State Park.

Kanabec County

Quamba Lake: Good numbers of Bluegill were sampled by trap net, with 30 percent of the catch over eight inches and the largest fish measuring 9.5 inches. Black Crappie numbers were lower, but the catch included several large crappie in excess of 11 inches, the largest being 12.2 inches. A few Walleye were sampled in gill nets and by electrofishing. Walleye are stocked as fry every spring in this lake. The White Sucker catch rate was higher than most lakes in the Hinckley management area. Interestingly, one Channel Catfish was sampled.

Pine County

Cross Lake: Netting showed low numbers of Walleye, Northern Pike, and Bluegill, which is typical for this lake. Sizes of these species were good, with Northern Pike averaging 3.7 pounds and 25 inches. Bluegill averaged 7 inches, with lengths up to 9 inches. The Black Crappie catch was above average for this lake type, with good numbers of 7-8 inch fish that should provide a good catch in the next couple of years. The Snake River flows through Cross Lake, adding river species such as Lake Sturgeon and Channel Catfish to the lake's fish population.

Pokegama Lake: Also connected to the Snake River, this lake had its highest recorded catch of Channel Catfish in 2018, with many good sized individuals present. Fall electrofishing for Walleye found evidence of some natural reproduction, although this species is maintained in the lake by alternate year fingerling stocking. There was a significant kill of Freshwater Drum following ice out in 2018, but this was not reflected in the trap net catch of 7.9/net, well above average for this lake type. The catch of Common Carp was higher than in recent surveys, but within historical range for this lake.

Isanti County

South Stanchfield Lake: This shallow, fertile lake has a history of partial winterkills due to low oxygen levels. We set trap nets in late May to see if the lake had a kill in the previous winter. That appears to be the case, as few species were sampled and abundance of all species was low. Some small adult Bluegill and Black Crappie were found. The lake's connection with the Rum River system provides a source of fish following a winterkill.

Did you know? There are 3 native species of lamprey in the St. Croix, Kettle, and Snake river systems. These are smaller than invasive Sea Lampreys and have co-existed with other fish for thousands of years. They do not cause widespread damage to fish populations.



Chestnut lamprey

Northern Pike special regulation repealed on Sturgeon Lake; pike regulations reviewed on several other area lakes

Test netting conducted by Area staff over the last few years on Sturgeon Lake suggested that the Northern Pike special regulation (24-36" protected slot, 3 fish bag, 1 over 36") that was in place since 2008 was ineffective. Data showed that there were proportionally more small Northern Pike than before special regulations went into place. No pike longer than 24 inches were observed during the 2018 netting effort and fish under 20 inches made up 95% of the catch. Therefore, after a public meeting and comment period where no opposition was met, we decided to drop the special regulation.

Beginning in 2019 regulations on Sturgeon Lake will be consistent with the north central Minnesota zone regulation implemented in 2018 (22-26 inch protected slot with a 10 fish bag limit, only 2 over 26 inches). This regulation is a good fit for lakes like Sturgeon that have high density populations of small sized pike. When too many of these smaller fish are present, perch numbers can be reduced to unhealthy levels, stocked Walleye fingerlings are more susceptible to predation, and panfish average sizes may decrease.

Anglers on Sturgeon Lake are encouraged to keep more small northern pike. Many anglers don't like the extra steps it takes to remove the "Y" bones from the fillets; however, there are many resources online, including step-by-step videos, to learn the technique. Pickling is another option that does not require removal of the Y bones.

There are 24-36 inch protected slot regulations for Northern Pike on 3 other lakes managed by Hinckley Area Fisheries: Knife (Kanabec County), and North and South Center (Chisago

County). These regulations went into effect in 2003. Over this past winter, Area staff reviewed available data—regular lake survey netting and spring trap netting—to see if there were any notable trends in Northern Pike populations in these lakes.

All three lakes showed increases in mean lengths of sampled Northern Pike relative to pre regulation data. A greater proportion of fish were found within the protected slot in recent surveys on all of the lakes. The regulation did not appear to increase the percentage of Northern Pike over 36 inches in any lake, but legal harvest of these fish may keep numbers of large pike low. With these favorable results, we will keep the 24-36 inch protected slot on Knife, North Center, and South Center lakes unless trends change in the future. The bag limit for these lakes remains at 3, with only 1 over 36 inches.

What makes Northern Pike populations in these lakes so different from that of Sturgeon Lake? It's complicated. Physical features, fertility, and the food web of each lake differ, and it is hard to determine how much each of these affects the pike population. What's also missing is data about angler harvest of Northern Pike on these lakes since the regulations went into effect.



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Got questions? The DNR Information Center can help you:

- Get in touch with a Conservation Officer
- Learn what to do about injured or nuisance wildlife
- Learn to manage your shoreline for water quality

And more! If you're not sure who in the DNR you need to contact, they can help. Call **888-646-6367** (888-MINNDNR) or email info.dnr@state.mn.us

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