

Glenwood Area Fisheries Newsletter

2023-2024

Signal Crayfish: First Case in Minnesota

Signal crayfish are native to the Columbia River drainage in the Pacific Northwest, with populations in Washington, Oregon, Idaho, and British Columbia. However, invasive populations have been found in California, as well as in parts of Europe. In October 2023, a commercial fisherman reported catching a signal crayfish while netting on Lake Winona, making it the first documented case of signal crayfish east of the Rocky Mountains. Over the course of that fall, the commercial fisherman reported a total of ten adult crayfish, which were captured and removed. The DNR followed up shortly after the reports with trapping on Lake Winona, as well as downstream on Agnes and Henry. However, no additional crayfish were captured.



Signal crayfish with signature white patch near the claw hinge.

A company that specializes in crayfish trapping was contracted in May 2024 to sample Lake Winona for any additional crayfish. After 21 days of extensive sampling, totaling 2,953 trap sets, no signal crayfish were sampled. Staff from the University of Minnesota currently have ongoing sampling for signal crayfish, which includes crayfish trapping and Environmental DNA (eDNA) testing. Environmental DNA is the genetic material shed by organisms in the water column such as mucus, feces, or tissue particles. By filtering water from across the lake, staff can then extract and test for minute amounts of eDNA that may be present. Due to the ongoing nature of this work, results will be forthcoming.



Signal crayfish caught in Lake Winona next to a native, virile crayfish. Notice how much larger the signal crayfish is.

It is illegal to release or dispose of unwanted aquatic plants or animals in or near public waters. Signal crayfish are an unlisted nonnative species, which means it is unlawful to release this species in Minnesota. In addition, live signal crayfish may not be imported to Minnesota without a permit. Please help us monitor this species by reporting any sightings or captures of signal crayfish to a [DNR Invasive Species Specialist](#). They can be identified by their large size, growing over seven inches long, and three-times the weight of native crayfish. The carapace and claws are smooth, other than two sharp spines behind the eyes, and are bluish-brown to reddish-brown in color. Additionally, they have a white or pale blue-green patch near the claw hinge, which is a key characteristic for identification. There are several native crayfish species that can look similar when small. To learn more, visit the DNR web page on [signal crayfish](#).

Record Fish Program: **New State Record Opportunities!**

Fish	Lbs.	Oz.	Length ¹	Girth ¹	Place caught	County	Caught
Bass, Smallmouth	8	0	Unknown	Unknown	West Battle Lake	Otter Tail	1948
Bullhead, Brown	7	1	24¾	Unknown	Shallow Lake	Itasca	5/21/1974
Carp, Common	55	5	42	31	Clearwater Lake	Wright	7/10/1952
Catfish, Channel	38	0	44	Unknown	Mississippi River	Hennepin	2/16/1975
Catfish, Flathead	70	0	Unknown	Unknown	St. Croix River	Washington	1970
Crappie, Black	5	0	21	Unknown	Vermillion River	Dakota	1940
Perch, Yellow	3	4	Unknown	Unknown	Lake Plantagenet	Hubbard	1945
Pike, Northern	45	12	Unknown	Unknown	Basswood Lake	Lake	5/16/1929
Sunfish, Bluegill	2	13	Unknown	Unknown	Alice Lake	Hubbard	1948
Trout, Lake	43	8	Unknown	Unknown	Lake Superior near Hovland	Cook	5/30/1955
Walleye ¹ Listed in inches	17	8	35¾	21¼	Seagull River at Saganaga Lake	Cook	5/13/1979

The [Minnesota record fish program](#) has undergone some changes in recent years, with some new opportunities for anglers to catch a state record fish! The program will now consist of three categories: historical weight, certified weight (documented by weighing on a state-certified scale) and catch and release records (documented by photos). The historical weight records will be a non-certified category for those established prior to 1980. Before this time, the DNR did not require fish to be weighed on a state-certified scale, and therefore they cannot be verified. This encompasses 11 species, including some of the most

Historical weight records prior to 1980, when scale certification became required.

popular in the state! Applications are now being accepted for new certified weight records to replace these, each having a minimum weight for submission (see below). You can find the complete rules and application materials by visiting the [certified weight records page](#).

In addition to revamping the weight records, there are 22 species open for catch and release records by length, including five that currently have established records. This list will continue to grow in the future as more species are added, so be sure to keep checking to stay up to date! Species without a current record have a minimum length requirement, to prevent an abundance of record applications for commonly caught sizes (see below). Existing records must be beat by at least ¼-inch to be considered. If you catch a fish that you believe qualifies, you can find the rules and application materials on the [catch and release records page](#). Good luck to all anglers trying to set a new state record!

Catch and Release Record: Required Minimum Length

Species	Length (inches)
Bigmouth Buffalo	32
Blue Sucker	28
Bowfin	31
Brook Trout	18
Brown Trout	24
Channel Catfish	38
Freshwater Drum	31
Lake Trout	40
Largemouth Bass	22
Longnose Gar	46
Rainbow Trout	23
Sauger	22
Shortnose Gar	30
Smallmouth Bass	22
Smallmouth Buffalo	31
Tiger Muskie	44
Walleye	32

Minimum length requirements for the catch and release category.

Certified Weight Record: Required Minimum Weight

Species	Weight (lbs.)
Black Crappie	2.5
Bluegill	1.5
Brown Bullhead	3
Channel Catfish	30
Common Carp	30
Flathead Catfish	58
Lake Trout	13
Northern Pike	32
Smallmouth Bass	7
Walleye	14
Yellow Bass	1
Yellow Perch	1

Minimum weight requirements for new certified weight records.

Catch and Release: Current Record Length

Species	Length (inches)
Flathead Catfish	52½
Muskellunge	58¾
Lake Sturgeon	78
Northern Pike	46¾
Shovelnose Sturgeon	35

Current length records for the catch and release category.

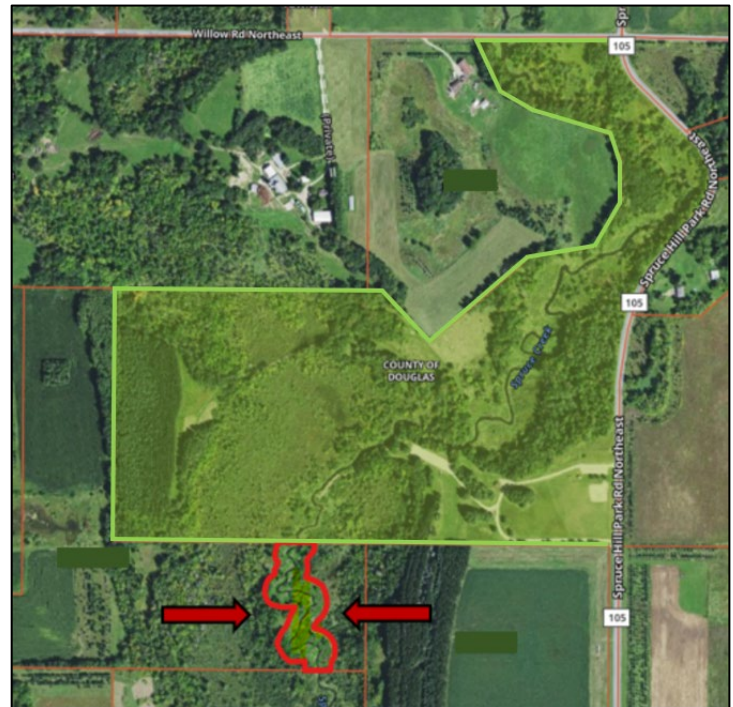
Spruce Creek: New Easement for Trout Fishing

For those not familiar, Spruce Creek is located in northeastern Douglas County, east of Miliona and is stocked annually with catchable size rainbow and brown trout. This is the only trout fishing opportunity currently in the Glenwood Fisheries Area and can be quite popular after stockings take place in spring and late summer. However, trout fishing is available all season, with brown trout surviving year-round in the stream.

Shore fishing has been available in Spruce Hill County Park. However, recently an easement was acquired just downstream of the park. This easement is on private land but allows anglers to access the land up to 66 feet on either side of the stream (see right), creating more shore fishing opportunity! Signs mark both the upstream and downstream boundaries of the fishing access corridor. Anglers can fish the stream outside of these areas, but must either remain in the water or have landowner permission to trespass. Please be respectful of both public and private lands while enjoying this unique opportunity!

Anglers between the ages of 18 and 64 need a Trout Stamp to harvest trout, but not for catch-and-release. The possession limit is five, with only one over 16 inches.

More information on Spruce Creek, as well as seasons and regulations can be found on [StreamFinder](#).



An easement (red outline with green diagonal lines) was acquired downstream of Spruce Hill County Park (highlighted with green outline), allowing anglers more shore access to the stream.

Minnewaska Creel Survey: Strong Walleye Bite in 2023!

I want to start by thanking everyone who was willing to be interviewed and participated in the Minnewaska creel survey! This survey began in December 2022 and concluded October 2023, nearly 11 months long. Over 1,500 anglers were interviewed during this time regarding the fish they caught and harvested, as well as fisheries management related questions. In addition, the total number of anglers across the entire lake was counted twice during each shift. These data were used to estimate a lot of useful information, such as the amount of fishing pressure, total catch and harvest of each species, evaluation of regulations and much more! For example, anglers spent an estimated 161,269 hours fishing Lake Minnewaska during that time. Support for the reduced sunfish limit was 83%. Over 80,000 largemouth bass were caught during the open water season! And walleye fishing was excellent, with anglers targeting walleye having the highest open water catch rates of any previous creel survey (previous surveys being 1988, 1995 and 1996)!

All of this information will be useful in evaluating regulations and our management strategies in the future. To the right you will find some of the largest fish of each species harvested (not released) and measured by our creel clerk on Lake Minnewaska! Larger lengths were reported for released fish of many species such as black crappie (15 inches), bluegill (11 inches) and smallmouth bass (21 inches), amongst others. Another creel survey is tentatively scheduled for Lake Reno beginning in December 2025.

Species	Length (inches)
Black Crappie	14.2
Largemouth Bass	18.6
Northern Pike	33.4
Smallmouth Bass	19.4
Sunfish	9.6
Walleye	27.8
Yellow Perch	11.5

Longest fish of selected species harvested during the Lake Minnewaska creel survey.

Employee Spotlight: Chris Smith



Chris Smith with a muskie sampled on a Glenwood area lake.

Chris Smith is a Fisheries Research Scientist stationed in Glenwood. Prior to his time in the research unit, he was a Fisheries Specialist with the Glenwood Fisheries Management Office for 10 years. Chris is originally from Iowa and received his bachelor's degree from Iowa State University. Subsequently, he attended the University of Idaho for his master's degree. Currently, Chris is working on several research projects around Glenwood and throughout Minnesota. Chris' first project seeks to better monitor and understand environmental conditions in walleye rearing ponds. These data will allow MNDNR to improve our pond management, and ultimately improve walleye rearing efficiency. Additionally, Chris and Jeff Reed, a fellow Fisheries Research Scientist, have initiated a multiyear study exploring relationships between female walleye characteristics, environmental variables, and egg quality. However, Chris' primary research project will focus on Minnesota's black crappie populations.

Chris' Research: Better Understanding Crappie Populations

Black crappie are one of the most popular sport fish species in Minnesota. Unfortunately, despite long-term datasets, many questions remain. Previous monitoring efforts relied heavily on standard summer surveys. However, black crappie tend to move offshore and are generally not sampled effectively during the summer months with standard techniques. Additionally, previous work relied on scale aging structures (see Aging Fish: A Look into the Past in the [2021-2022 Newsletter](#)). Unfortunately, these structures tend to underestimate ages and can be unreliable.

Chris' current project will improve our understanding of crappie populations by focusing the sampling effort in the early spring when crappie populations can be sampled more effectively. In addition, high-quality aging structures (otoliths) will be collected to better understand age and growth patterns. Information will be collected from roughly 100 lakes throughout Minnesota in the next couple of years. These data should shed some light on population characteristics of Minnesota's crappies (i.e., how fast individuals grow, which lakes tend to have the fastest growth, how long they live). An improved understanding of these populations will allow MNDNR to improve our management of the species. For example, MNDNR would be able to compare growth rates across populations and describe lake conditions that support high-quality crappie populations. Conversely, it might be possible to identify lake types where black crappie tend to grow slowly and would not achieve desirable sizes – these lakes would likely not be good candidates for special regulations, as reduced harvest would be unlikely to improve the average length of the population. Finally, high-quality data from this project will be used to explore the effects of various harvest regulations, determining if reduced bag limits may improve average size of crappies and if so, what types of lakes may be best suited to see improvements. Collectively, this project hopes to dramatically improve our understanding and subsequent management of crappie populations in Minnesota.



A 15.75-inch crappie caught by an angler in the Glenwood Fisheries area.

Walleye Stocking and Fall Assessments

In 2023, the Glenwood Fisheries was able to get all of the walleye eggs needed to reach our quota in a short amount of time, and our hatchery had excellent hatch rates, allowing us to produce 46.7 million fry. Over 20 million of those fry were stocked directly into area lakes and rivers, while the remaining fry were shipped to other DNR fisheries areas or stocked into rearing ponds. These natural ponds are used to raise walleye to around 5 to 8 inches in the fall before they are netted out and stocked into lakes. We rely on winterkill to clean out our rearing ponds of other fish, reducing competition and predation. For more information about how we choose what to stock read the articles titled ‘Walleye Stocking: Fry or Fingerling?’ in the [2019-2020](#) and [2021-2022](#) Newsletters.

Fisheries staff also conduct fall electrofishing on nine lakes each fall before any fingerling stocking takes place to evaluate fry stocking and natural reproduction. We do this to determine how well walleye fry that hatched in spring have survived to fall, what we call young-of-year (YOY) fish. We use this as an index to estimate how many walleye should be recruiting to harvestable size fish in the coming years. These surveys have occurred on most of these nine lakes since the early 1990s, so we have many years of data. Some notable walleye catch rates were observed in 2023. A record catch rate (276 YOY walleye per hour) was observed on Pelican Lake in Grant County! In addition, after a strong year class in 2022, Lake Reno had another very high catch rate in 2023 (196 YOY walleye per hour). This was the highest catch rate since 1995 for Lake Reno, beating out the 2022 year class for the spot!

Lake	Number
Andrew	161,500
Ann	185,000
Barrett	422,000
Charlotte	425,000
Chippewa River	1,200,000
Emily	1,155,500
Freeborn	86,000
Gilbert	190,000
Hattie	459,000
Ida	875,500
Jessie	69,000
Johanna	700,000
Latoka	538,000
Lightning	541,000
Long (Douglas)	100,500
Long (Stevens)	310,000
Long Prairie River	1,000,000
Lower Elk	131,000
Malmedal	199,000
Miltona	2,759,000
Minnewaska	3,291,000
Moses	393,000
Osakis	3,389,000
Page	130,000
Pelican	1,521,500
Perkins	517,000
Pomme de Terre	1,613,000
Pomme de Terre River	1,000,000
Reno	2,029,000
Smith	182,000
Thompson	74,000
Westport	203,000
Winona	213,000
Total	26,062,500

Number of walleye fry stocked in 2023.

Lake	Number	LBS
Aaron	11,692	467
Aaron*	2,375	95
Burgen*	250	50
Carlos	14,656	600
Carlos*	3,750	250
Cottonwood	3,692	243
Cowdry*	2,000	100
Darling	9,837	554
Devils*	4,920	164
Freeborn*	2,400	120
Geneva	8,560	295
Geneva*	3,375	225
Grove	3,974	236
Ida	12,277	876
Ida*	22,500	750
Irene	8,360	480
Irene*	3,000	120
Le Homme Dieu	13,791	880
Le Homme Dieu*	3,000	100
Little Chippewa*	4,440	148
Lobster	19,082	1,554
Mary*	12,000	600
Miltona*	45,000	1,500
Minnewaska*	40,000	2,000
Moses*	4,500	180
Osakis*	12,060	900
Pelican (Grant)*	2,916	243
Pelican (Pope)	7,284	844
Rachel	11,242	338
Red Rock	11,702	520
Scandinavian	4,729	230
Signalness (Mountain)	858	39
Stowe*	11,670	389
Turtle	4,728	192
Union	660	30
Vermont*	1,296	120
Victoria	4,958	134
Victoria*	1,965	131
Whiskey*	2,970	99
Total	338,469	16,796

*Number of walleye fingerlings stocked in 2023.
Indicates fish purchased and stocked by private citizens or sporting groups.

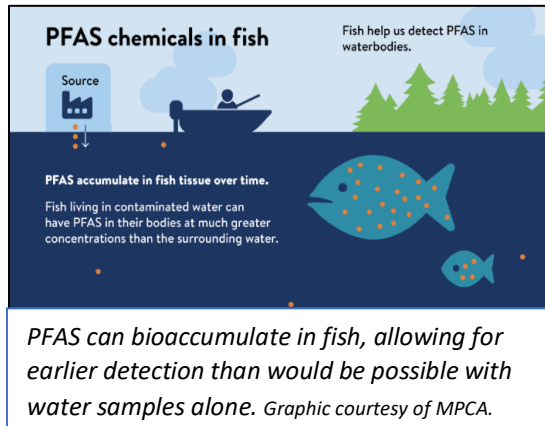
Lightning Lake Outlet: Fish Passage

The DNR has been working with the Bois De Sioux Watershed District to replace a degraded outlet structure on Lightning Lake. The project was completed in fall of 2023 with a rock arch rapids, also known as a rock riffle. A series of boulders stretches across the water in descending rows, with pools of water in between, that act like a ladder for fish attempting to swim upstream. The height and placement of each boulder is carefully selected to regulate water levels, while also providing fish passage. Fish can ascend each layer of the rapids in stages, taking a break before attempting the next. Many fish species use faster moving water and rocky rapids to spawn, and improving connectivity will be to the benefit of many native species.



A: Construction nearing completion of the rock arch rapids. B: Final outlet structure design, showing the series of rapids acting as a 'fish ladder'.

Contaminant Testing: PFAS



In recent years there has been a lot of news about per- and polyfluoroalkyl substances, commonly known as PFAS. These “forever chemicals” are called such because they do not break down and can bioaccumulate in both humans and other living organisms. PFAS are used in thousands of products, such as non-stick cookware, cleaning products and certain firefighting foams. These chemicals can enter surface water and bioaccumulate in fish. According to the Minnesota Pollution Control Agency’s (MPCA’s) [PFAS in Fish](#), testing to date has shown that PFAS are quite prevalent in the environment, with approximately 85% of waters tested since 2017 having fish that contained PFAS. Perfluorooctane sulfonate (PFOS) is one of the oldest and most common types of PFAS found in fish, but many other types of PFAS, including those recently created, are also detected.

Minnesota has an interagency Fish Contaminant Monitoring Program. Fish from Minnesota’s lakes, rivers, and streams are collected for PFAS testing when DNR takes routine contaminant samples and funds permit PFAS analysis. Other times, fish are tested based on suspected PFAS pollution in the area in studies led by MPCA. The Minnesota Department of Health (MDH) uses this data to provide [Fish Consumption Guidance](#) for both statewide and waterbody-specific safe-eating guidelines. The statewide guidelines provide information for people to eat fish to gain the most health benefits, while keeping exposure to PFOS, mercury, and polychlorinated biphenyls (PCBs) low. Most waterbodies fit these guidelines. When one or more species of fish has elevated concentrations for one of these contaminant types, waterbody-specific guidelines are listed. Fish Consumption Guidelines can be found on [LakeFinder](#), as well as the [MDH’s Fish Consumption Guidance](#) page. In 2023, Minnesota’s state legislature and Gov. Walz made an investment to expand the fish monitoring program with \$910,000 from the Clean Water Fund and Legacy Amendment.

Recently, Glenwood Area Fisheries collected fish for PFAS testing from lakes Winona (2022), Agnes (2023), Henry (2023) and Ida (2023). We have not received results yet, but results from previous sampling are available [here](#). If a body of water is absent from the list, that means fish from that body of water have not been tested for PFAS since 2017, or that PFAS were not detected in fish from that body of water that were tested. In our area, results are available from prior testing on Lake Winona, in which PFAS were detected, and MDH recommends waterbody-specific guidelines for sunfish due to PFOS. PFAS were also detected in Lake Carlos and the Pomme de Terre River in Grant County, but at levels low enough that people can follow MDH’s statewide guidelines. No PFAS were detected in Lake Mina. In 2024, samples will be collected from lakes Victoria, Darling, Carlos, Geneva and Le Homme Dieu. You can learn more about PFAS in Minnesota by visiting [MPCA](#).

Aquatic Invasive Species

Aquatic invasive species (AIS) continue to be a problem statewide. Approximately 70% of our publicly accessible waters within the Glenwood Fish Management Area contain at least one AIS. Aquatic invasive species are moved from infested to non-infested waters by anglers, boaters, and lake shore owners and can adversely affect lakes and fish populations.



Zebra mussels attached to a boat lift.

To avoid spreading AIS, lake users are required to remove all aquatic plants and animals from their watercraft and drain all water from their boat and motor before leaving the access. If you suspect an infestation of an invasive species in a lake, save a specimen and report it to a local natural resource office.

In 2023, three new lakes in the Glenwood Area were confirmed to contain zebra mussels: Scandinavian Lake in Pope County, and Moon and Long lakes in Douglas County. For a full list of lakes see the [infested waters list](#). Additional information on AIS can be found on the DNR website (<https://www.dnr.state.mn.us/invasives/ais/index.html>).

Lake Surveys

Lake surveys are the primary tool for guiding fish management. Our standard lake survey consists of trap nets, gill nets and electrofishing. Electrofishing is conducted in the spring to target bass, while gill nets sample offshore fish (e.g., walleye, northern pike and yellow perch) and trap nets sample near shore panfish (e.g., bluegill and black crappie). Nets are checked and moved daily for about a week on each lake. Nets are placed in the same locations within a lake each survey, and surveying over many years allows us to track trends in fish populations. Survey information can be accessed by going to <https://www.dnr.state.mn.us/lakefind/index.html> and typing in the lake of interest.

Standard Lake Surveys 2023

The following lakes were sampled in 2023:

Agnes	Barrett	Gilchrist
Grove	Henry	Ida
Linka	Louise	Miltona
Moon	Page	Perkins
Pomme de Terre		

Standard Lake Surveys 2024

The following lakes will be sampled in 2024:

Andrew	Carlos	Cottonwood
Darling	Geneva	Mill
Rachel	Smith	Victoria
Scandinavian	Le Homme Dieu	

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