



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2024 Lake Sturgeon Spawning and Population Assessment

The Winnebago System

Introduction And Objectives

The Wisconsin Department of Natural Resources (DNR) has closely monitored the Winnebago System lake sturgeon population through annual spawning surveys since 1975. The combination of tagging efforts during the spring spawning run and subsequent recapture of tagged fish during the spearing season are used to estimate the sturgeon population. This consistent monitoring has allowed the lake sturgeon population to increase and thrive over the decades.

During the spawning run, DNR employees and volunteers tag lake sturgeon and collect vital information to ensure the population is healthy. There are over 70 spawning sites throughout the Winnebago System. Many sites are only used by a few lake sturgeon each year, while others attract hundreds of fish. During the spawning season, the DNR's primary objectives include:

- 1) Marking fish for estimates of abundance and exploitation (harvest rates)
- 2) Monitoring size structure
- 3) Evaluating growth and mortality
- 4) Evaluating movement
- 5) Determining river and spawning site fidelity of adult lake sturgeon

LAKE STURGEON—CATCH PER SPAWNING SITE

Spawning Site	River System	Survey Dates	Female	Male	Total
Princeton	Fox River	4/16/2024	0	11	11
Princeton Dam	Fox River	4/16/2024	0	6	6
Sturgeon Trail-New London	Wolf River	4/14/2024—4/15/2024	7	100	107
Bamboo Bend—Shiocton	Wolf River	4/14/2024—4/15/2024	13	304	318
The Pines	Wolf River	4/15/2024, 4/18/2024	6	101	108
Shawano Dam	Wolf River	4/16/2024—4/18/2024	128	506	634
Spurr Road	Embarrass River	4/16/2024	0	8	8
Pella Dam	Embarrass River	4/16/2024	2	27	30
Total New Fish Tagged	Winnebago System	4/14/2024—4/18/2024	115	554	669
Total Recaptured Fish	Winnebago System	4/14/2024—4/18/2024	41	512	553

DNR Contact

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System Information

Wolf River Miles: 167 miles
 Little Wolf River Miles: 14 miles
 Embarrass River Miles: 54 miles
 Upper Fox River Miles: 41 miles

Regulations

Harvest is only permitted during the February spearing season
 Annual Bag and Size Limit:
 One lake sturgeon per season
 Minimum length: 36 inches

Survey Method

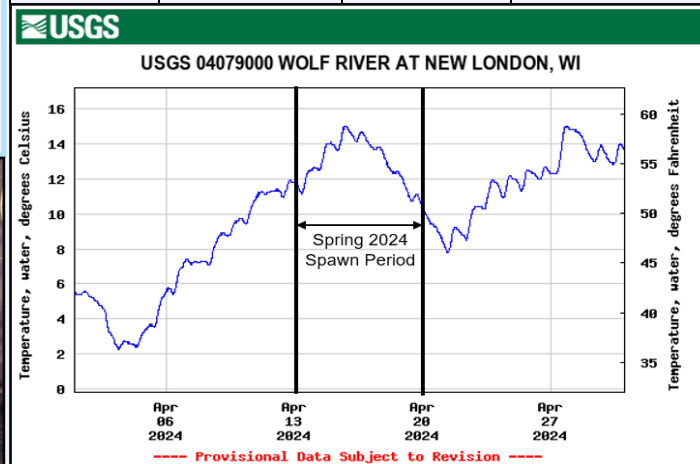
- The Upper Fox and Wolf River with all tributaries were sampled for adult spawning lake sturgeon using dip nets at spawning locations and electrofishing at other locations.
- DNR staff handle as many fish as possible during the spawning run.
- Captured fish are measured for total length to the nearest 0.1 inches. Sex (male/female) and spawning stage (green/ripe/spent) are determined.
- Fish are inspected for internal (PIT) and external (MONEL) tags. New PIT tags are inserted into any unmarked fish.

Metric Descriptions

- A **population estimate** is a metric that describes population size. It is estimated using a **mark-recapture method**. Lake sturgeon captured during and before the 2023 spawning assessment were internally PIT-tagged and released. During the 2024 Winnebago spearing season, all harvested lake sturgeon were checked for PIT tags. The number of previously tagged individuals was recorded, and proportions of marked individuals to unmarked individuals were used to estimate the total abundance of the lake sturgeon population for 2024.
- **Length frequency distribution** is a graphical representation of the number or percentage of fish captured by two-inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency as they are usually not sexual mature and do not make the migration to spawn.

2024 SPAWNING SIZE STRUCTURE METRICS

Total Number	Total Number Handled	Length Range (inches)	Average Length (inches)
Males	1,063	37.1—73.5	57.1
Females	156	51.8—80.7	66.8
Total	1,222	37.1—80.7	58.3



Right: Sturgeon spawning at the Shawano Dam Photo Credit: Wisconsin DNR



Far right: Collecting eggs during the sturgeon spawn at the Shawano Dam. Photo Credit: Wisconsin DNR

Figure 1. Water temperature of the Wolf River near New London, Wisconsin, during the spring of 2024 from the USGS gauge. Vertical black lines indicate spawning periods.



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2024 Lake Sturgeon Spawning Summary

- Temperatures were warm in both the winter and spring of 2024. This, coupled with lower than average precipitation and water levels, had the lake sturgeon on the Winnebago System spawning earlier than normal. The 2024 spawn was also quick, lasting only 6-7 days. Spawning activity was first observed on April 13 and continued until April 20.
- From April 14-18, 1,358 of lake sturgeon were handled by the DNR.
- Gametes were successfully collected for the various rehabilitation programs and research projects in areas throughout the United States.
- Low water levels allowed the DNR to sample lake sturgeon for the first time at the Pella Dam on the Embarrass River. Larval lake sturgeon were captured below the Pella Dam also indicating successful spawning.
- Low water levels likely precluded sturgeon from spawning at some of their regular spawning sites such as Pfeifer Park and the Hwy 156 bridge. No eggs were found at these two sites.
- We continue to see a good range of lengths for both males and females. Males ranged from 36 to 73 inches and females ranged from 54 to 82 inches.
- The maximum length of male lake sturgeon has increased in the last few decades. Two decades ago, the maximum length of a male lake sturgeon was closer to 70 inches (70.5 in 2003 and 71.0 inches in 2004) compared to 75.4 inches last year in 2023.
- About 70% of females handled during the spawning season are new individuals requiring a tag, compared to about 50% of males during the spawning season being new individuals.

ADULT POPULATION ESTIMATES FOR 2024

	Male	Female
New Fish Marked in Spring 2023	316	76
2024 Spawning Season Total Harvest	225	135
2024 Spawning Season Recaptures	53	11
Population Estimate (95% CI)	24,482 (19,523—31,564)	15,436 (8,956—28,539)
5-year Average Population Estimate	25,049	15,935

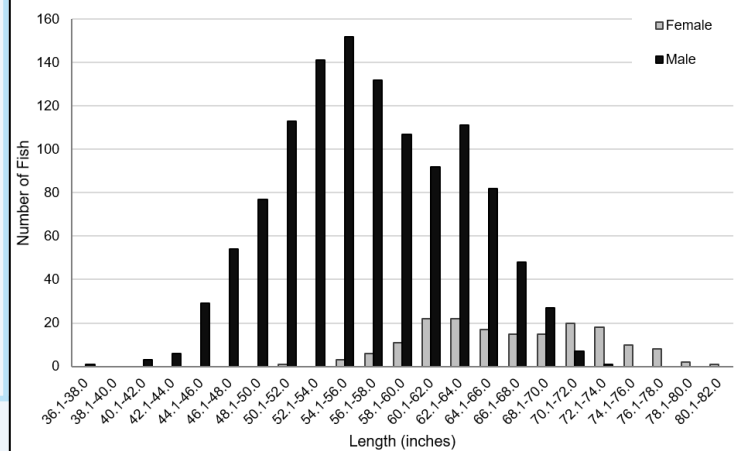


Figure 2. Length Frequency of adult female and male lake sturgeon handled during the 2024 spring spawning stock assessment conducted on the Winnebago System

2024 Lake Sturgeon Population Estimates

- The adult male lake sturgeon population is stable at an estimated 25,000 individuals in the Winnebago System. In 2024, the adult male population is estimated to be 24,482. The 5-year average for adult males is 25,049 fish (Figure 3).
- The adult female population was estimated to be 15,436 fish in 2024 (Figure 4), which is close to the 5-year average of 15,935 individuals. Over the last five years, the population of adult female lake sturgeon in the Winnebago system has varied from 12,304 to 18,841 individuals.
- The overall Winnebago System lake sturgeon population continues to have good numbers of individuals with a healthy sustainable population.
- The low amount of harvest in 2024 did not have large effects on the population estimate, but does affect the confidence intervals surrounding the population estimate. The proportion of tagged lake sturgeon to untagged lake sturgeon harvested during the 2024 spawning season was consistent with the last three years, about 20% of tagged.

Adult Male Lake Sturgeon Population Estimates (1978-2024)

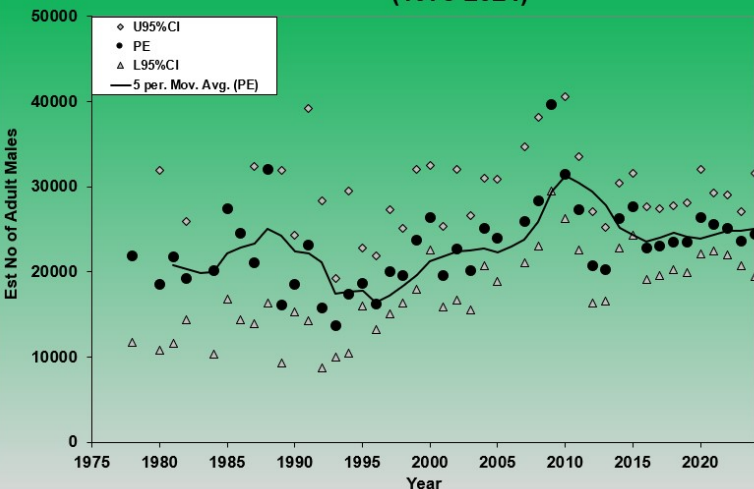


Figure 3. The population estimate of adult male lake sturgeon (black dots). The solid line indicates the 5-year average of the population estimate.

Adult Female Lake Sturgeon Population Estimates (1982-2024)

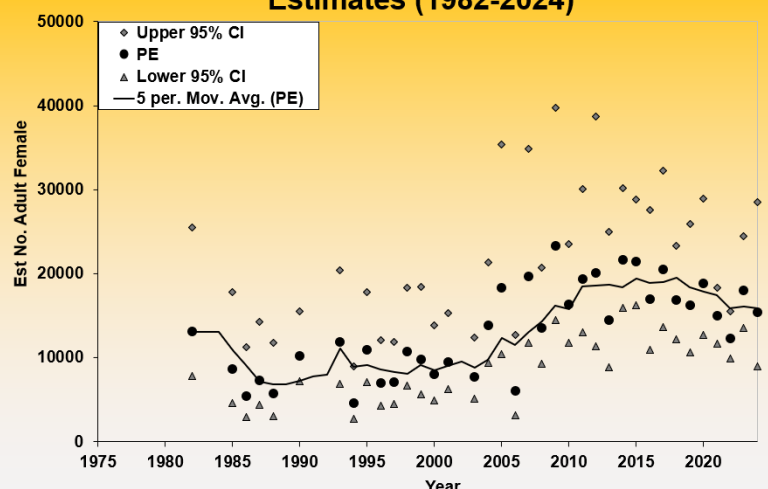


Figure 4. The population estimate of adult female lake sturgeon (black dots). The solid line indicates the 5-year average of the population estimate.