WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Yellow Perch Assessments In Wisconsin Waters Of Lake Michigan

2023

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2023 Spawning Survey

SPRING GILL NET SURVEY DATES (MAY 15 – MAY 30, 2023)

In 2023, the Wisconsin Department of Natural Resources (DNR) conducted a yellow perch spawning survey near the Green Can Reef outside of the Milwaukee Harbor. The survey used gillnets containing one 100-foot panel of each 2.0-inch, 2.25-inch, 2.5-inch, 2.75-inch, 3.0-inch and 3.25-inch mesh.

The Green Can Reef area off the coast of Milwaukee is the established index site for our annual yellow perch spawning assessment. For 2023, the RV Sturgeon was used to set single gillnet sets. The survey began May 15, 2023 and continued through May 30, 2023. Depths from 17 to 50 feet of water were sampled. Water temperature on the bottom of the lake ranged from 46°F to 50.4°F during the survey. The total effort for the 2023 survey was 5,500 feet of gillnet set for one night.

The first nets were set on May 15 from the RV Sturgeon, capturing 82 perch. This set consisted of 1,800 feet of gill net set from 17 to 40 feet of water. The bottom temperature was 46°F.

The second nets were set on May 22, capturing 109 perch. This set consisted of 2,400 feet of gill net set from 17 to 50 feet of water. The bottom temperature was 46°F at the time nets were set.

The third and final nets were set on May 29 from the RV Sturgeon, capturing 23 perch. This set consisted of 1,800 feet of gill net set from 17 to 40 feet of water. The bottom temperature was 50.4°F at the time nets were set.

In total, 217 yellow perch were captured, including 175 ripe males, one fish of unknown sex and 41 females (Figure 1). Aging structures were collected from all individuals. Most of the perch (55) were from the 2016 cohort (7 years old). 38 fish were from the 2017 cohort (6 years old), and 33 fish were from the 2018 cohort (5 years old). The age composition of perch captured in the 2023 survey closely reflected that of the 2022 survey with one exception (Figure 2). The 2020 cohort emerged in the recent survey and appears to be relatively strong as we captured 49 perch that were 3 years old. The number of yellow perch in the 2023 spawning survey increased from prior years. The 2016 year class continues to show up and is producing some large fish, while the 2020 year class may provide a new cohort of fish recruiting to the recreational fishery. It has been many years since over 200 perch were encountered in a spawning survey. The last time that occurred was in 2011 (Figure 1).

In addition to yellow perch, round whitefish, alewife, burbot, lake trout, longnose sucker, white sucker, rock bass and round goby were also captured. Typically, the spawning survey is concluded with a dive survey searching for perch skeins. Unfortunately, no diving survey was conducted in 2023.

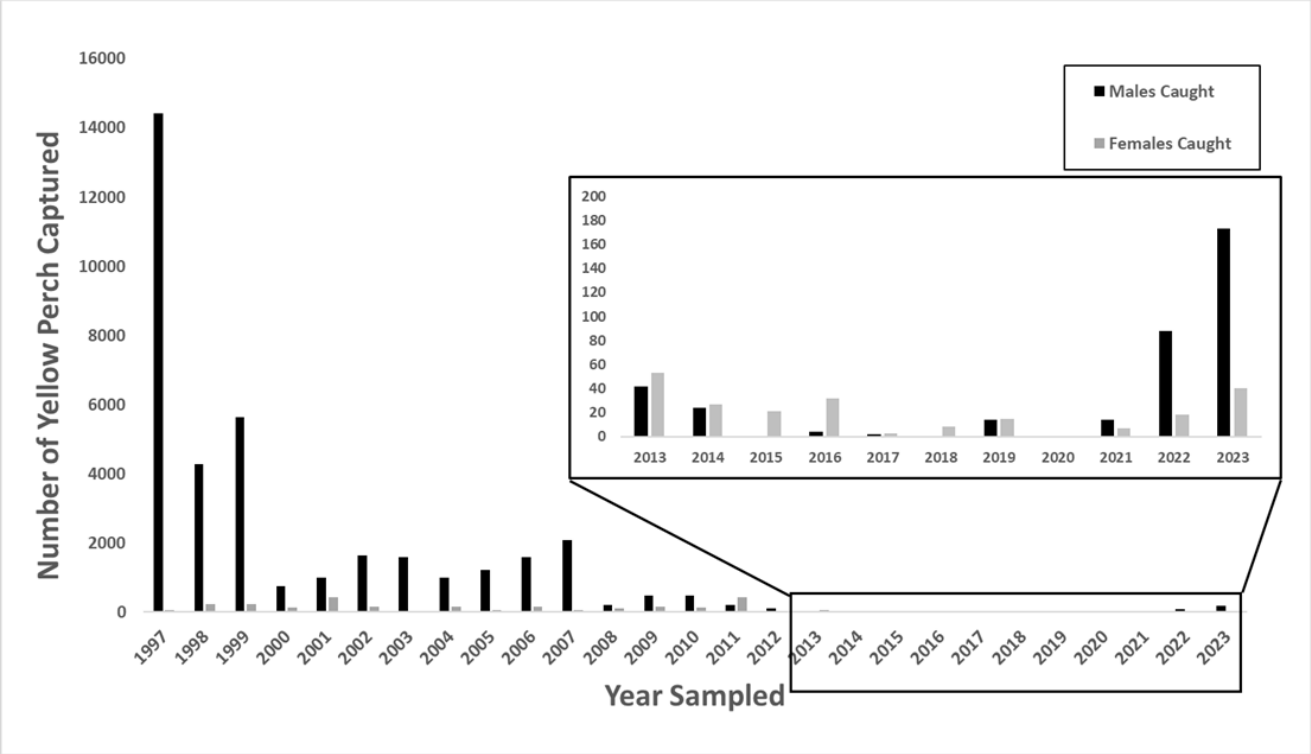

Figure 1. Yellow perch spawning assessment at the Green Can Reef, Lake Michigan, Milwaukee, DNR 1997-2023.
**No spawning survey was conducted in 2020.*

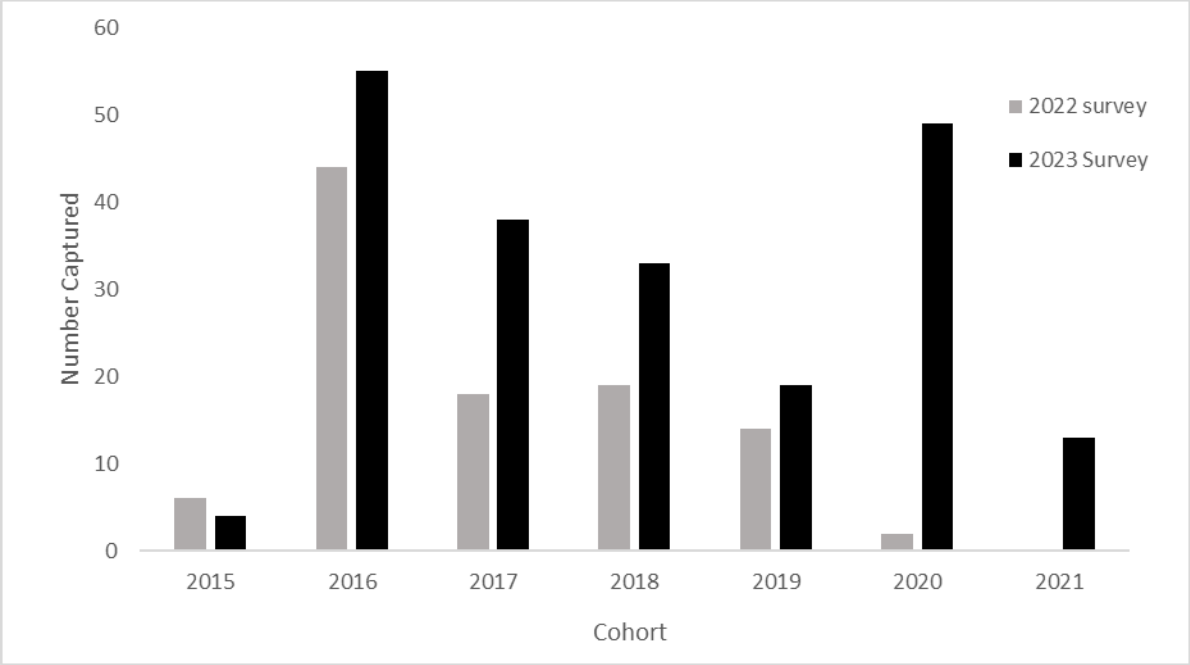

Figure 2. Cohorts of yellow perch captured during annual spawning assessments on Green Can Reef, Lake Michigan, Milwaukee, DNR 2023.

Young of Year Survey

SURVEY DATES (AUG. 16, AND 29, 2023)

An annual survey of young-of-the-year (YOY) yellow perch along the Lake Michigan shoreline typically consists of both seining and micromesh gill netting efforts encompassing sampling sites from Sheboygan to Kenosha. In 2023, no micromesh survey was conducted due to weather and staff constraints, but a seining survey was completed.

The seining survey was carried out on Aug. 16 and then again on Aug. 29, 2023. A standard 25-foot beach seine was pulled by two persons in shallow nearshore waters of Lake Michigan. Each pull consisted of a 100-foot sweep either parallel to the beach, perpendicular to the beach or along piers and jetties depending on the depth and feasibility of seining. At each station, depending on conditions, two 100-foot pulls were attempted unless algal blooms limited our ability to effectively pull the net, especially when sampling around jetties and windward shores.

A total of fifteen stations were sampled from Sheboygan to Kenosha (Sheboygan, 3; Ozaukee, 3; Milwaukee, 5; Racine, 2; Kenosha, 2). Most sites were sampled twice: once during the first portion of the survey in mid-August and again at the end of August. Seining conditions during the sampling period varied at different sites and on different days depending on wind direction. Some sites were difficult or impossible

to seine due to abundant cladophora, while others were clear and easy to sample. In general, seining conditions this year were favorable for this assessment. A total of 42 seine hauls were usable from the fifteen sites for a total of 4,200 feet of seine haul. The water temperature during the survey ranged from 67-77° F during the August sampling.

Three perch were captured during the entirety of this survey. In other terms, it took an average of 14 seine hauls to capture one YOY yellow perch in our 2023 seining survey (Figure 3). Researchers in the UW-Milwaukee School of Freshwater Sciences predicted a quality yellow perch recruitment for 2023 based on the timing and abundance of diatoms in the nearshore area throughout the summer. It has been theorized that food availability is a bottleneck for young yellow perch since the water has cleared up due to invasive mussels. Unfortunately, we did not detect a significant year class with the seining survey in 2023. It is always possible that the perch did recruit but were not utilizing nearshore habitat at the time of the survey due to weather or water conditions. If that is the case, we should see the 2023 cohort show up in the winter graded mesh surveys or the spawning surveys of 2026 and beyond.

Other species captured included alewife, spottail shiner, round goby, Johnny darter, longnose dace and bloater chub. YOY alewife dominated the catch, which is encouraging after a lack of recruitment in 2022. Young alewives are a preferred prey species for yellow perch large enough to catch and consume them. The presence of YOY alewives often results in faster growth rates in yellow perch.

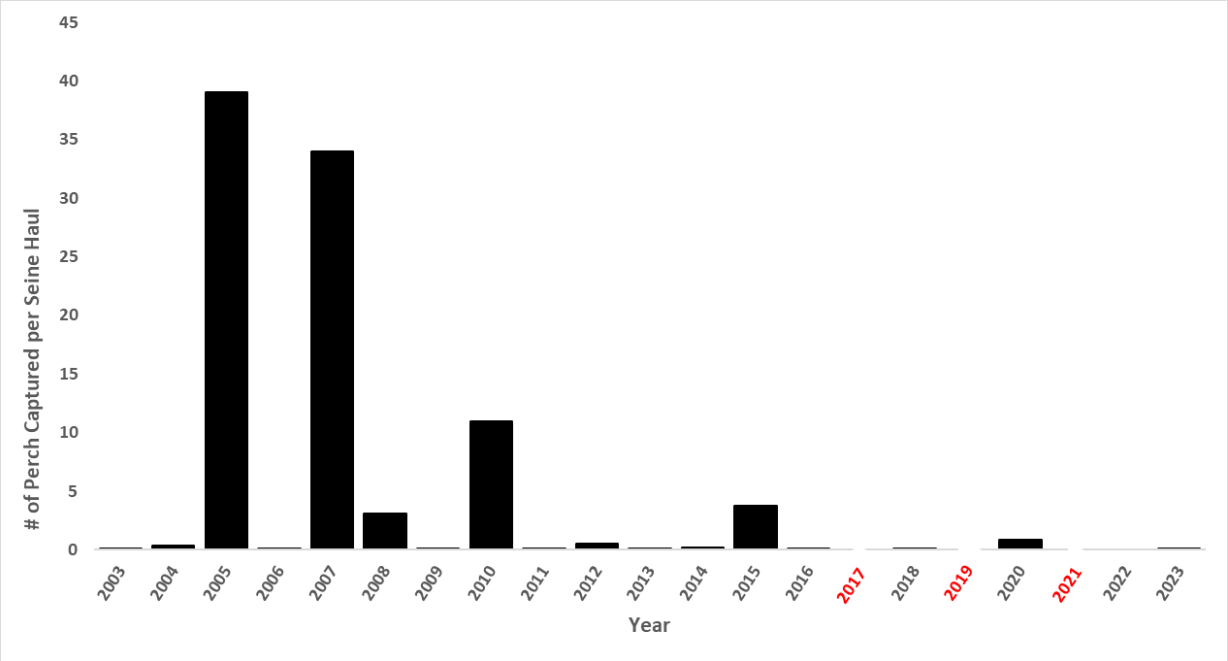

*Figure 3. Number of yellow perch captured per seine haul in annual beach seining surveys at index sites from Kenosha to Sheboygan on Lake Michigan from 2003-2023. *Surveys were not conducted in 2017, 2019 or 2021.*

Winter Graded Mesh Assessment

NOT CONDUCTED FOR 2024

Our annual winter graded mesh assessment of the yellow perch population in Lake Michigan is typically conducted in early December and is an index of the age structure of the yellow perch population. The survey was not conducted in December of 2023. This survey will resume in the future and will continue to monitor for significant cohorts recruiting to the fishery. The figures below are results from the 2023 survey, conducted in December of 2022, indicating low catch rates and only a few cohorts represented in the population. With the recent increased catch rate in the spawning survey, the age structure of the perch population may be better informed by those estimates. Sampling locations and effort have changed in recent years to increase catch in the winter graded mesh survey with minimal results. It is possible that the perch are no longer using historical wintering grounds. Improvements to this survey are being considered to better sample yellow perch in winter months.

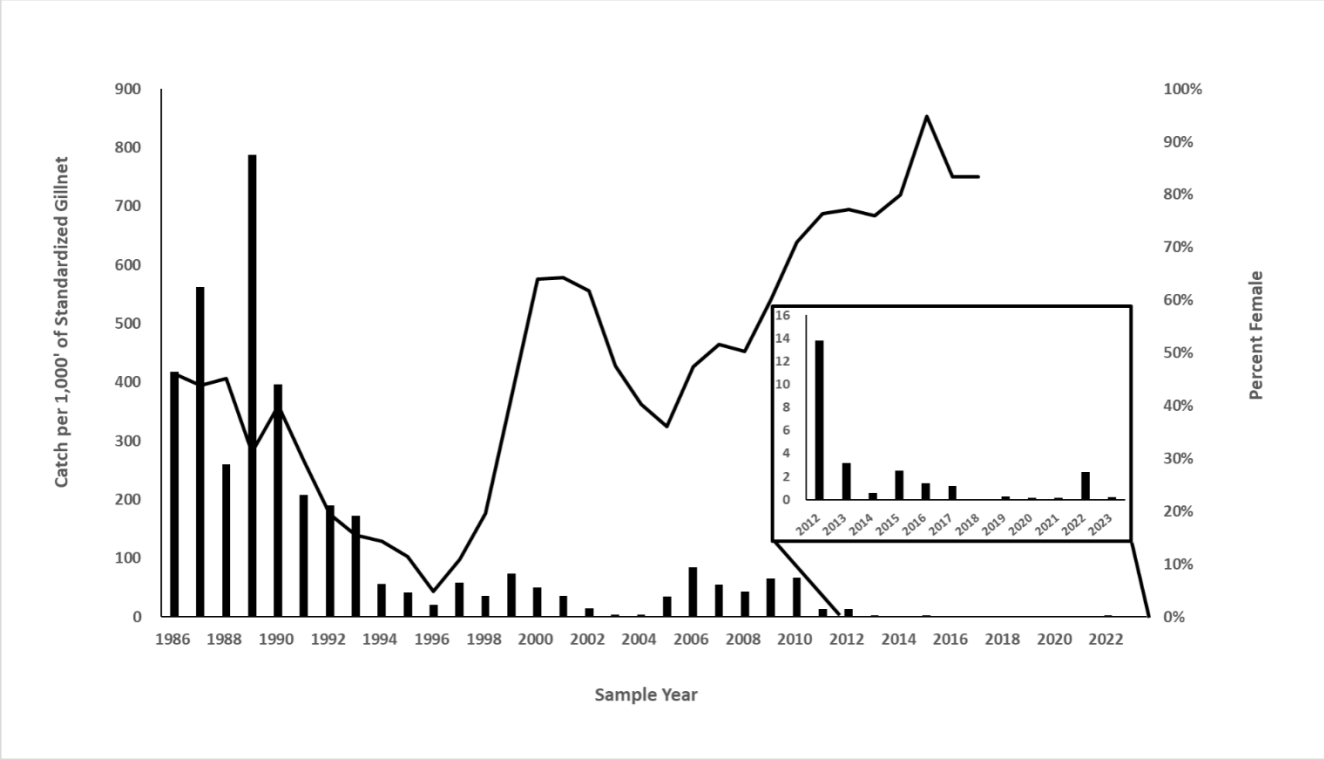

Figure 4. Adult yellow perch standardized catch per unit of effort (CPUE; bars) and percent female (line) in the Wisconsin waters of Lake Michigan winter gill net assessment, Milwaukee, WI, 1986-2023. Percent female calculation ends in 2018 due to insufficient sample size.
**Mesh size and effort has changed over time. This figure standardizes both effort and mesh size to compare recent catches with historical catches using similar gear.*

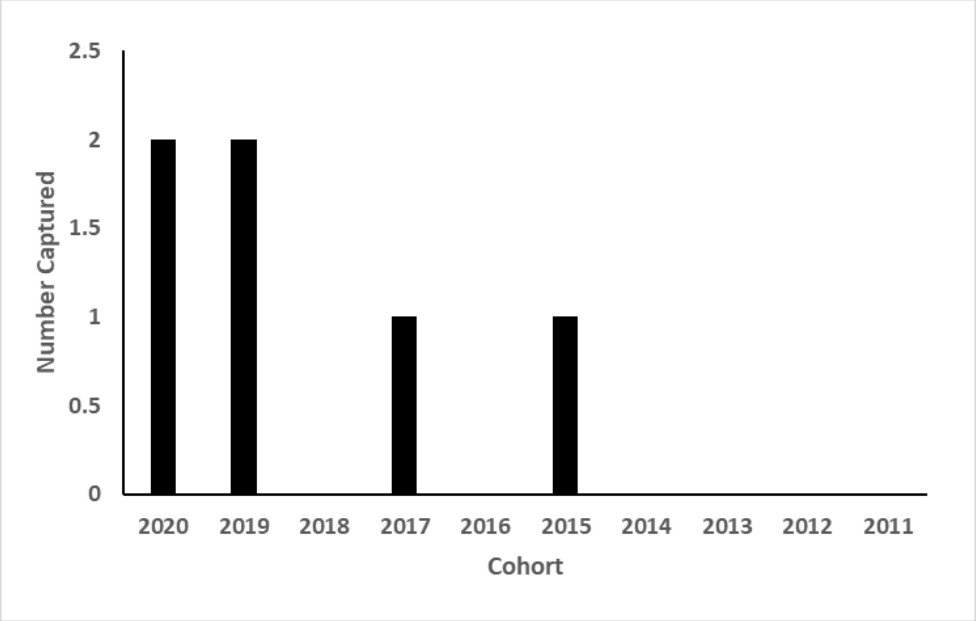

Figure 5. Cohorts of yellow perch captured during annual graded mesh assessment in Milwaukee, WI, December 2023.

2023 Survey Year Summary

Yellow perch populations remain historically low and struggle to consistantly produce significant year classes. Yellow perch from the 2016 cohort continue to produce the majority of the large fish. Theremaybe an up-and-coming class of fish from the 2020 cohort that should start to show up in the fishery in 2024 if they haven't been encountered already. The spawning stock biomass is increasing with the addition of the 2020 year class. Our YOY surveys in recent years have been limited, but the data from the other surveys can help fill in data gaps. Overall, the catch of yellow perch is increasing but the population is relying heavily on one or two years of successful recruitment. Hopefully, an increase in spawner biomass and some favorable weather trends will result in an increase of yellow perch in the Milwaukee area.