

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Yellow Perch Assessments in Wisconsin Waters of Lake Michigan

2021



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2021 Spawning Survey

Survey Dates (May 26, 2021 – June 11, 2021)

The Wisconsin Department of Natural Resources (DNR)'s 2021 yellow perch spawning survey was conducted near the Green Can Reef outside of the Milwaukee harbor using gillnets containing one 100-foot panel of each 2.0 inch, 2.5 inch, 2.75 inch, 3.0 inch and 3.25 inch mesh.

The Green Can Reef area off Milwaukee is the established index site for our annual yellow perch spawning assessment. Protocols for this survey are more clearly defined in the Standard Operating Procedures for the Southern Lake Michigan Fisheries Work Unit (LMWU) (DNR 2014). Two gillnets tied together create one 1,000-foot long gang. Two gangs were set on three different days from May 26, 2021 to June 11, 2021 at depths of 26 to 54 feet of water. Water temperature on the bottom of the lake ranged from 46 °F to 51 °F during the survey. Total effort for the 2021 survey was 6,000 feet of gillnet set for one night. All nets were set and lifted from the LMWU 20-foot Lake Sturgeon work boat.

In total, 21 yellow perch were captured, 14 of which were ripe males and the remaining seven were females. Aging structures were collected from all individuals. Eighteen of the perch were from the 2016 cohort (5-years-old), one fish was from the 2017 cohort (4-years-old) and two fish were from the 2018 cohort (3-years-old). The number of yellow perch captured remained extremely low, however, the 2016 year-class was dominant in the 2021 spawning survey.

In addition to yellow perch we also captured round whitefish, alewife, burbot, lake trout, longnose sucker, a rock bass and a round goby.

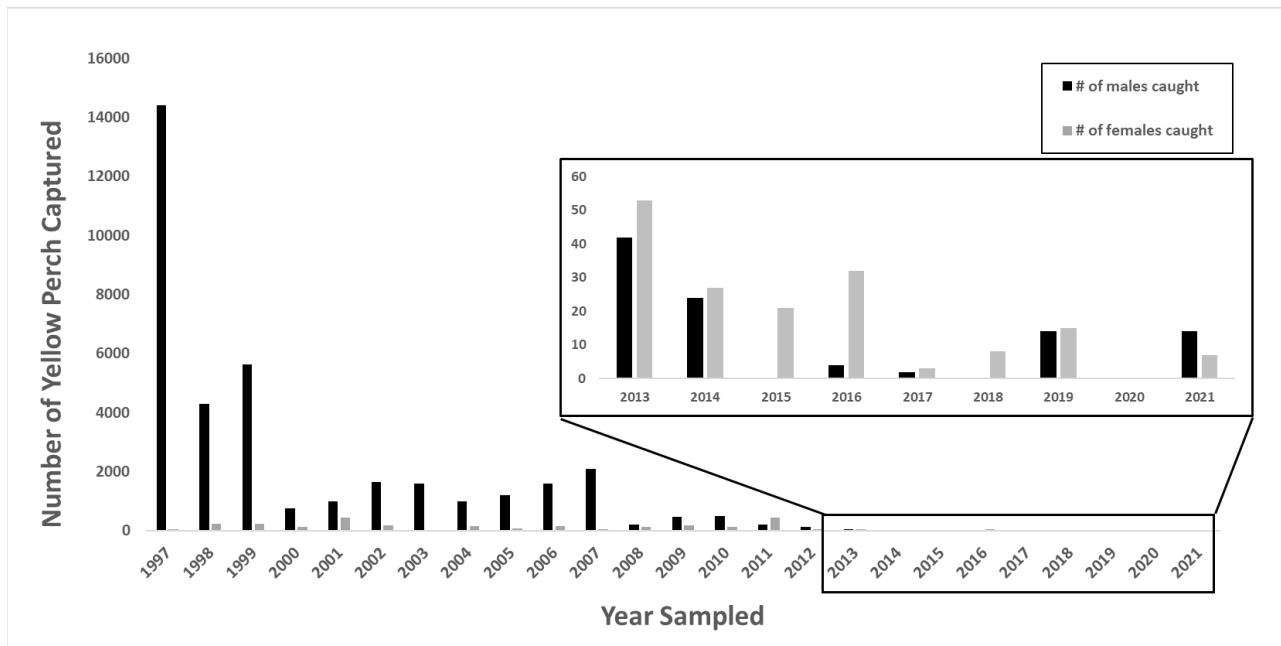


Figure 1. Yellow Perch Spawning Assessment Green Can Reef, Lake Michigan, Milwaukee, DNR 1997-2021. *No spawning survey was conducted in 2020*

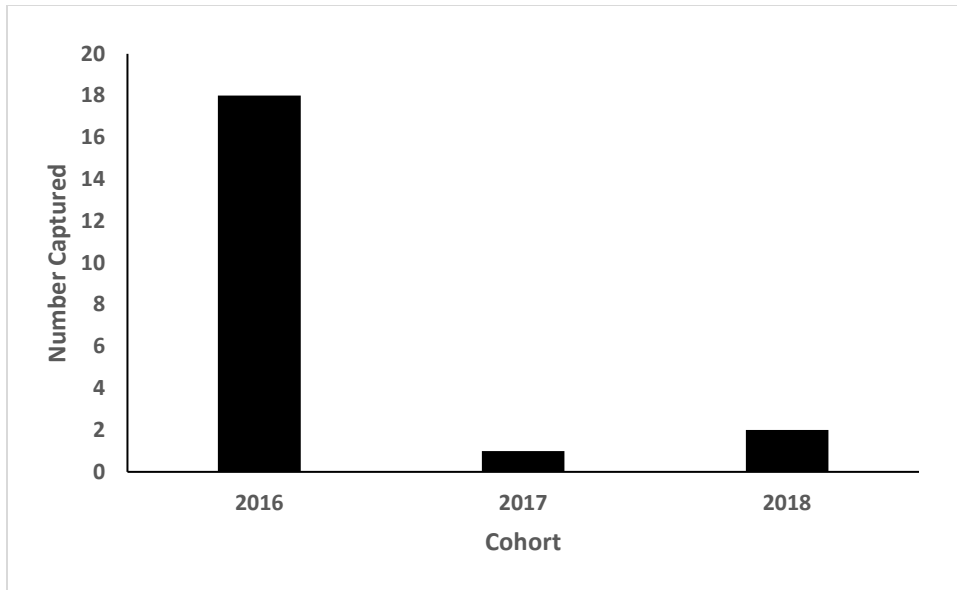


Figure 2. Cohorts of yellow perch captured during annual spawning assessments on Green Can Reef, Lake Michigan, Milwaukee, DNR 2021.

Young of Year Survey

Survey Dates (Sep. 15, 2021-Sep. 16, 2021)

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 2021, an abbreviated micromesh survey was completed. Due to budget constraints, seining occurs every other year, but weather conditions were not favorable for micromesh during the traditional sampling time in 2021, resulting in only one day of effort out of the Milwaukee Harbor near Bradford Beach.

Two hundred feet of micromesh gill net was set out for an overnight set. Nine perch were captured, four were hatched in 2021 and five were hatched in 2020. Since this was a very limited survey, it is difficult to make inferences about regional trends for the 2021-year class. However, we saw higher numbers in this net than the recent years. Micromesh surveys in 2022 as well as spawning and graded mesh assessments in future years should indicate a stronger year class if recruitment was up slightly in 2021. The most recent significant recruitment we have noticed was from the 2016 cohort, which has also been observed in spawning surveys.

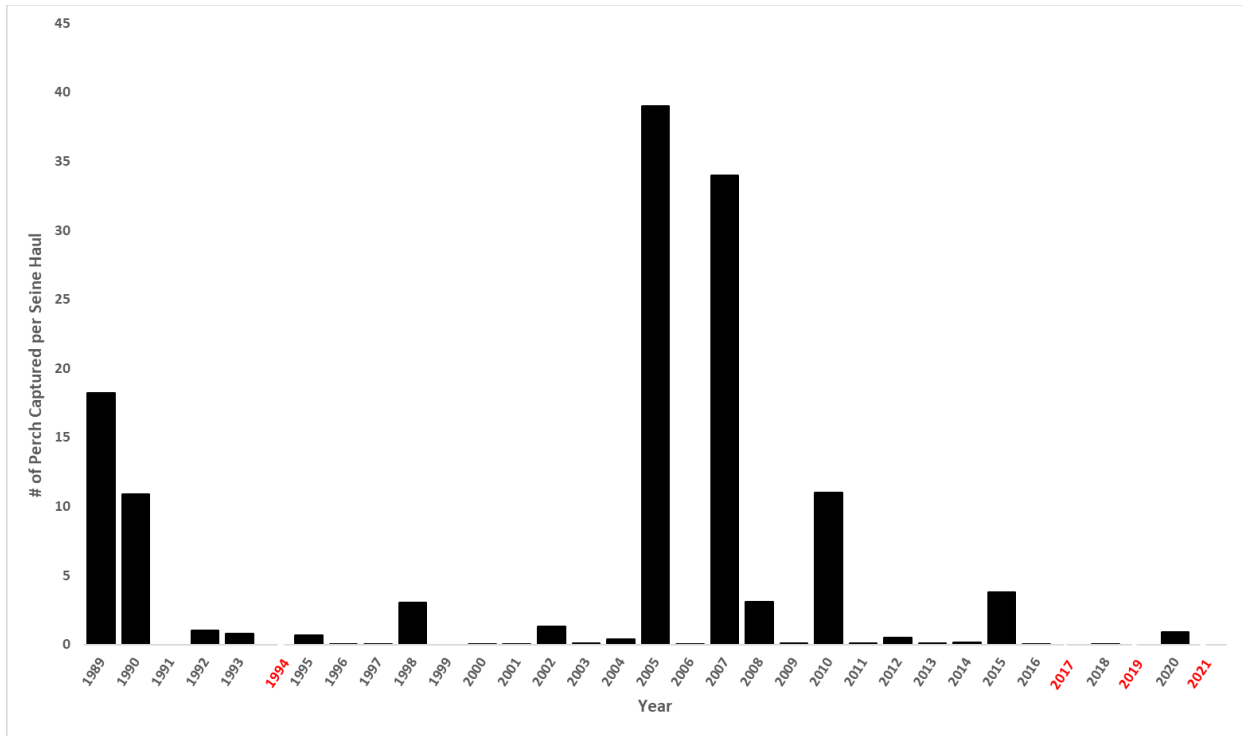


Figure 3. Number of yellow perch captured per seine haul in annual beach seining surveys at index sites from Kenosha to Sheboygan on Lake Michigan from 2004-2020. Surveys were not conducted in 1994, 2017, 2019 or 2021.

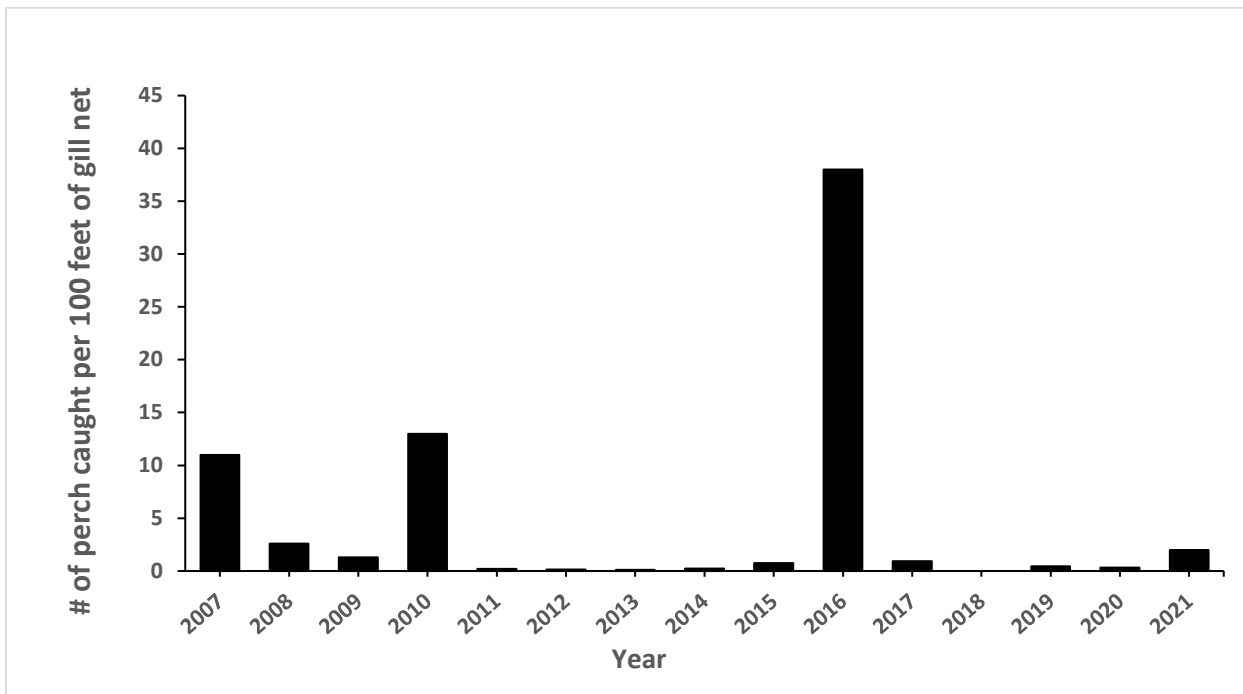


Figure 4. Micromesh gill net CPUE of young-of-the-year yellow perch in the nearshore waters of Lake Michigan, DNR 2004-2021.

Winter Graded Mesh Assessment

Survey Dates (Dec. 3, 2021 – Dec. 8, 2021)

Our annual winter graded mesh assessment of the yellow perch population in Lake Michigan was conducted between Dec. 3, 2021 and Dec. 8, 2021. Historically, this survey would be conducted January of 2022 and labeled as the winter of 2022 survey, however, due to availability of the boat and marina space, this survey was conducted in December when yellow perch should be schooled in similar locations. This survey will be conducted in early December or late November for the foreseeable future.

For the winter graded mesh survey, we try to set 20 boxes of net. Each box of gill net contains one 50-foot panel of each 1.0 inch, 1.25 inch, 1.5 inch, 1.75 inch and 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 stretch monofilament mesh, totaling 800 feet per box. Two or three boxes of net are then attached at the ends to create a gang. The survey was conducted off the near shore waters of Milwaukee to the north and south using the DNR research vessel *R/V Coregonus*.

In recent years catch has been extremely low. We tested setting nets in different depths in 2020 and caught all four of our perch in one lift on the shallow end of Green Can Reef, in waters slightly shallower than we had been fishing. For 2021, we set the nets into shallower water than we had historically sampled, and we found more perch. We lifted three 1600-foot gangs on Dec. 3, 2021 to the north of the harbor at depths ranging from 18 to 72 feet. This set captured a total of 16 yellow perch. Five days later, we set two 1600-foot gangs and one 2400-foot gang around the green can reef ranging from 33 to 65 feet. The gangs were lifted on Dec. 8, 2021 capturing another 13 perch. Due to high consistent winds, we were unable to reset for a third lift. With the two lifts combined, we were able to lift 10,400 feet of gill net effort (13 boxes) over two nights.

The surface water temperature during the sampling period was 48-52°F, which was slightly higher than previous years of sampling. Our catch totaled 29 yellow perch and consisted of 17 females, nine males and three perch of unknown sex. Ages ranged from 2-10-years-old (Table 2), and sizes ranged from 4.4 to 14 inches. For standardization purposes, graded mesh assessment data is often reported as catch rate per 10,000 feet of equal length mesh panels. In these terms, our adjusted catch was 24 yellow perch per 10,000 feet of standardized mesh gill net in the December 2021 graded mesh assessment.

Table 1. Number of yellow perch caught by mesh size in the December 2021 graded mesh assessment.

Mesh Size (in)	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25
# of yellow perch	1	0	2	2	9	1	5	2	4	3

Table 2. Number of yellow perch caught by age in the December 2021 graded mesh assessment.

Age	1	2	3	4	5	6	7	8	9	10
# of yellow perch	0	1	8	7	3	1	3	2	2	2
Average Length	-	205	196	228	232	278	273	268	329	358

We maintained our yellow perch graded mesh standard protocol but were not able to reach the goal of 20 boxes of effort. We did, however, capitalize on the nets that we were able to set when we moved into slightly shallower waters. The perch may have been slightly shallower than most of our sets in previous years. Other states surrounding Lake Michigan have noticed similar movements into the shallows as we did.

Overall, these catch rates remain historically low but are higher than those in recent years. We did see more cohorts (ages 2-10) than we have in recent years, some represented stronger than others (Figure 5). This was the highest catch we have encountered since 2013 and 2015. We did capture a wide range of ages suggesting that we may have been missing those fish in previous surveys. Although catch was higher than in previous years, it remains historically low. Prior to 2013, it was not uncommon to capture hundreds of fish per 10,000 feet of net. Other species caught included good numbers of round white fish (332), lake trout (11), burbot, white sucker, longnose sucker, round goby, rockbass and smelt. The nets were not clogged by *Cladophora* which occasionally occurs in shallower waters. We plan on continuing to set in the shallower water for the graded mesh assessments and we will continue to compare our catch rates to other agencies within Lake Michigan.

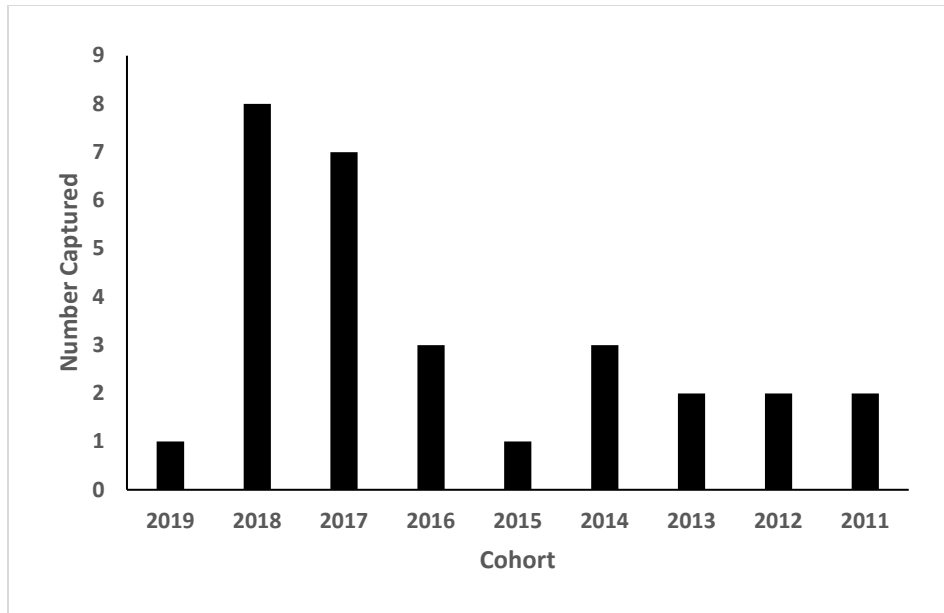


Figure 5. Cohorts of yellow perch captured during annual graded mesh assessment in Milwaukee, WI, 2021.

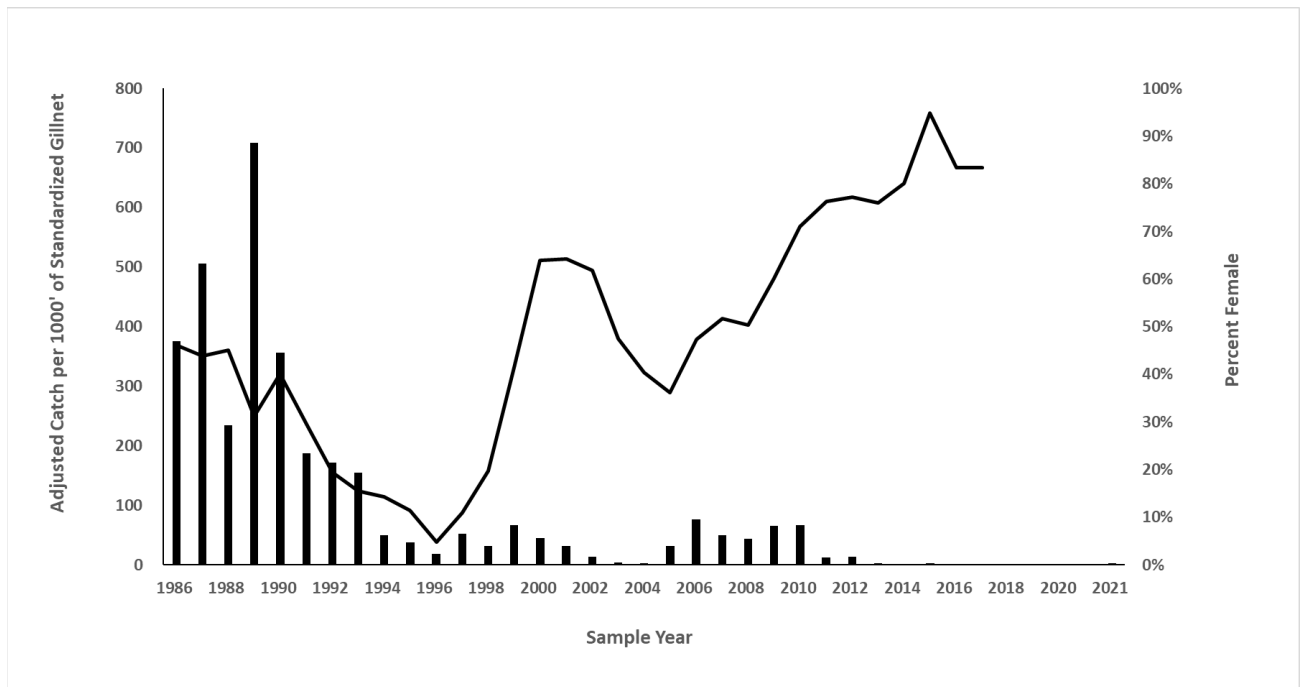


Figure 6. Adult yellow perch standardized CPUE (bars) and percent female (line) in the Wisconsin waters of Lake Michigan winter gill net assessment, Milwaukee, WI, 1986-2021. Percent female calculation ends in 2018 due to insufficient sample size.

2021 Survey Year Summary

Yellow perch populations remain low and struggle to produce significant year classes. Yellow perch from the 2016 cohort were captured during the spawning survey in 2021 and in the graded mesh assessment in December of 2021 and are also showing up in the creel surveys. Although the total catch is low, the 2016 cohort is the most recent successful cohort in the last 10 years. They have been detected in multiple years of spawning surveys and hopefully will be able to contribute to the next significant cohort. Our YOY surveys for 2021 were extremely limited, but did detect some yellow perch. Further evaluation of the strength of the 2021 cohort will be needed. The strength of the 2021 cohort will be evident in later years if they show up in other surveys. Overall, catch remains low and the population is relying heavily on one or two years of successful recruitment.