Wisconsin Department of Natural Resources
Fishery Information Sheet

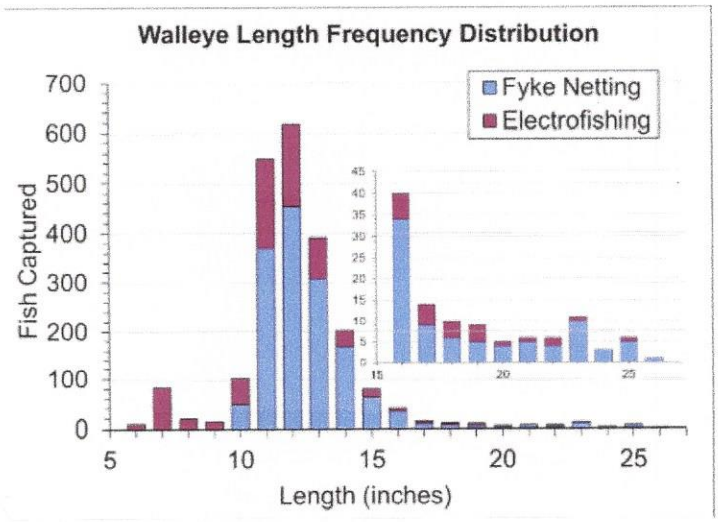
LAKE: Butternut Lake **COUNTY:** Price **YEAR:** 2018–2019

Butternut Lake is a 1,006-acre drainage lake in Price and Ashland counties. Average depth is 14 feet, and maximum depth is 32 feet. Near shore the lakebed is 75% sand, 15% rock/rubble, 5% muck, 3% boulder, and 2% gravel. The lake has five tributaries, and its uncontrolled outlet, Butternut Creek, discharges 16 cubic feet per second to the North Fork Flambeau River. Lake level fluctuates 3–6 inches naturally. Humic compounds leaching from wetlands impart a dark-brown stain, and water clarity is low, even when algae are scarce. Butternut Lake is classified as eutrophic, having high nutrient concentrations and high biological productivity. The lake rarely stratifies in summer to form cold bottom layer of water deficient in dissolved oxygen because its shallow depth and long fetch allow wind-induced currents to keep the water column well mixed. Most of the buildable shoreland is occupied by homes, cottages, resorts, and campgrounds. WDNR maintains the Hoffman Rocks boat landing off Lakeview Drive (formerly County Highway B), and the Town of Chippewa has a gravel boat ramp on the north end. Dead-end town roads on the east and west shores offer unimproved carry-in and drive-on public access for small boats and snowmobiles.

Shortly after the ice thawed, 35 net-nights of fyke netting coupled with 5.83 hours of electrofishing along Butternut Lake's 11.1 shoreline miles yielded an estimate of adult walleye density in spring 2019. We also estimated muskellunge population density by fyke netting in spring 2018 (48 net-nights) and spring 2019 (115 net-nights; 30% targeting walleye). In late spring 2019 when water temperature was 58-63°F, WDNR assessed black bass and bluegill populations by electrofishing, collecting gamefish along 5.00 shoreline miles in 2.17 hours and subsampling bluegills for 2.00 miles in 0.83 hour. We assessed walleye recruitment by electrofishing in fall 2019, sampling the entire 11.2 shoreline miles in 4.2 hours.

Walleye

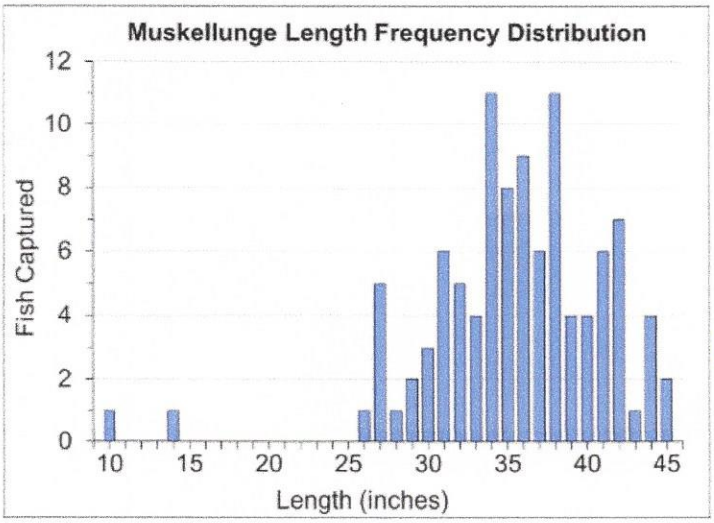
Early spring fyke nets captured 1,649 walleyes at a rate of 47 fish ≥ 10" per net-night. Of those, the 1,498 captured only once ranged 10–26" and averaged 12.9" long. Unique males outnumbered unique females by nearly 13 to 1 in fyke nets, and about 0.7% of walleye in that sample had unknown gender. Early spring electrofishing captured 933 walleyes at rates of 73 fish ≥ 10" per mile or 139 per hour. Those 676 not handled before in this survey ranged 6–25" and averaged 11.5". The chart shows the length distributions of our netting and electrofishing samples, excluding recaptured fish. The inset is zoomed to a finer scale for fish ≥ 16".



With an estimated density of 4.0 adults per acre in spring 2019, Butternut Lake's walleye population was at the lower end of the objective range (4–8 adults/acre) in the *2005 Butternut Lake Fishery Management Plan*. Only 10% of walleye in fyke nets were at least 15" long, so the population did not achieve the size structure that anglers said they wanted (30–50% ≥ 15"). Unlike many walleye populations with faltering recruitment in northern Wisconsin and neighboring states, the addition of young recruits to replace adults that die from harvest and natural causes continues to be reliable and strong in Butternut Lake. Walleye recruitment, measured as the number fingerlings captured per mile of shoreline electrofishing in fall, exceeded Butternut Lake's long-term average (40/mile) in 16 of 35

fall electrofishing surveys in 1986 – 2019, including 7 of the last 9 years. Ring counts on scales and sectioned dorsal spines revealed that on average males grew to 11.3" in 3 years and 13.2" in 4 years. Female walleyes reached 17.1" in 6 years (range 14.6–21.2; n=12). Growth trailed the regional average for both sexes combined by 0.2" and 0.4" at ages 3 and 5 and by 1.4–1.8" at ages 4, 6, 7, and 9. At ages 8, 10, and 11, growth outpaced the regional average by 1.1–2.5". A special harvest regulation in effect since 2008 aims to direct angling harvest toward the abundant walleye of small and intermediate size and to protect some fish over 14" that might grow larger. Three walleyes of any length may be kept, but only one fish can be over 14". From angler counts and interviews in a creel survey, we estimated that Butternut Lake anglers caught 6,070 walleye and kept 2,089 in the 2019–2020 fishing season. Walleye were the most sought-after sportfish, attracting 13,785 angler-hours or 30% of the directed fishing effort. Harvested walleyes ranged 8.9–23.2" and averaged 12.8", and 90% measured in the creel survey were less than 15" long. Ice anglers accounted for about 8%, 11%, and 27% of the annual walleye catch, harvest, and fishing effort directed toward them.

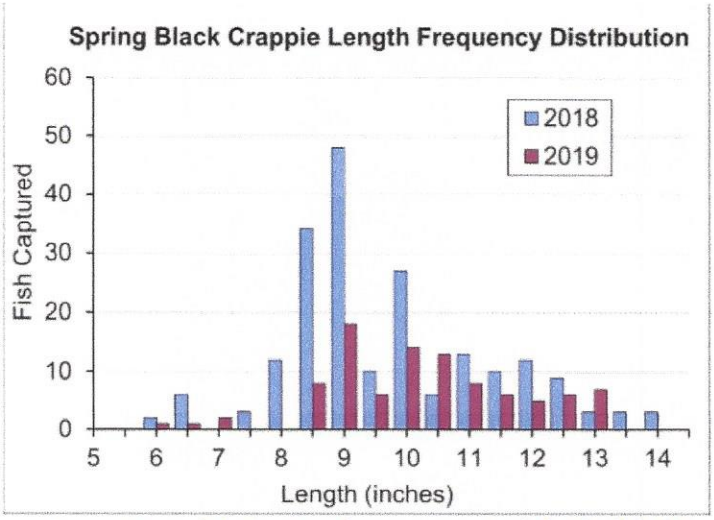
Muskellunge



Twenty years after WDNR suspended musky stocking into Butternut Lake, adult population density is once again within the desired range of 0.2–0.3 adults per acre, as outlined in the *2005 Butternut Lake Fishery Management Plan*. Using the mark-recapture method, fyke netting in spring 2018 and 2019 yielded a population estimate of 214 adults ($CI_{95\%}$=127-300; CV=0.206) or 0.21 adults per acre. Estimated at 1.55 adults/acre in 2003, high musky density and intense food competition were blamed as the suspected causes for the declining musky size structure noticed in the mid- and late-1990s. Now back at moderate population abundance, musky size structure has rebounded to meet our goal that 25–50% should be 38" or longer. Fyke netting in two consecutive springs captured 102 unique muskies that ranged 10–45.6", and 39% of 100 muskies ≥ 20" were at least 38" long. Our combined 2018-2019 netting catch had 58% males, 34% females, and 8% of unknown gender whose average lengths were 34.0, 40.3, and 38.4", respectively. Fyke nets specifically set for muskies captured 1.38 fish ≥ 20" per net-night in 2018 and 0.69/net-night in 2019. We do not know why our targeted catch rates decreased by half. Differences in water temperature patterns (steadily rising 52–62°F in 2018 versus first falling 50–47°F then rising to 57°F in 2019) and our net tending frequency (daily in 2018; alternate days in 2019) may have influenced fyke net catch per effort, especially if captured muskies somehow triggered muskies at large to avoid our nets. The catch rate of Butternut Lake muskies from all netting effort in 2019 (0.54 fish/net-night) nearly matched the median value (0.52 fish/net-night) among lakes classified as having cool, dark water and complex fish communities. Ring counts on sectioned anal fin rays showed that male muskies grew to 31.4" in 6 years, 34.4" in 7 years, and 36.0" in 8 years. Females were 2.3–3.9" longer than males at those ages. Growth outpaced the regional average for both sexes combined by 0.8–1.9" at ages 6–8. Fish tagged in 2018 and recaptured in 2019 demonstrated the slow growth of muskellunge after maturity. Twelve males gained on average 0.4" (range -0.2–0.9") and five females gained only 0.04" (range -0.5–0.3") after 352-369 days at large. Natural reproduction is the sole source of new recruits to replace the adults that die to harvest and natural causes. Most anglers probably release the muskies they catch. For now, the 28-inch minimum length limit remains in effect to accommodate the handful of anglers who expressed their preference to occasionally catch and eat a musky for a special meal. However, there is no longer reason to continue promoting selective harvest of medium-size fish as a strategy to

decrease musky abundance. Muskies ranked second only to walleye in angling popularity, receiving 8,876 hours or 19.3% of targeted fishing effort. Estimated catch and harvest were 333 and 7 muskies. The highest monthly catch estimates occurred in August (101), July (87), and October (67).

Black Crappies



The incidental catch in our spring 2018 and 2019 netting surveys targeting muskellunge revealed excellent opportunity to catch big crappies in Butternut Lake. In 2018 fyke nets caught 212 crappies ranging 6.3–14.1" and averaging 9.9" long. In spring 2019 fyke netting captured 99 crappies that ranged 6.3–13.4" and averaged 10.4". Crappies far exceeded the benchmarks for size structure in *2005 Butternut Lake Fishery Management Plan* (30-50% ≥ 8" and 5-15% ≥ 10"). The share of crappies 10" and longer in our fyke netting samples was 43% in 2018 and 62% in 2019. Nearly one in five crappies in our spring 2019 sample was at least 12 inches long, and 15% were 12 inches or longer in spring 2018. Fyke nets captured 4.4 crappies per net-night in 2018 and 1.5/net-night in 2019. Low catch rates of crappies in fyke nets suggest that the population currently has low to moderate abundance, which is essential for the fast growth rate needed to produce big fish. Under experimental harvest regulations in effect since 2016, Butternut Lake anglers may keep a daily bag limit of 25 panfish combined, but no more than 10 of any one species. Anglers spent 7,066 hours fishing for crappies, accounting for 15.4% of directed fishing effort. They caught an estimated 1,794 crappies and kept two-thirds whose length ranged 7.8–14.3" and averaged 10.3". Preferred-size crappies ≥ 10" comprised 61% of the harvest, and one in ten crappies kept was a memorable-size fish ≥ 12" long. Nearly 53% of the annual crappie catch, 59% of the harvest, and 39% of crappie fishing effort happened in winter. Specific catch and harvest rates for crappies in winter were 2.1 and 2.7 times higher than in summer.

Northern Pike

In the first 3 days of our early spring 2019 survey, fyke nets captured 64 northern pike in 30 net-nights or 2.1 pike/net night. All 18 pike caught on day 3 were the only pike measured in early spring fyke nets—they ranged 15.2–27.7 and averaged 20.1 inches long. Butternut Lake anglers fished 2,072 directed hours to catch an estimated 819 pike. They kept about 10% that ranged 19.5–27.5" and averaged 23.3". About 10% of the annual catch, a third of the annual harvest, and 64% of annual pike fishing effort occurred in the ice-covered season.

Smallmouth Bass and Largemouth Bass

Late spring 2019 electrofishing captured five smallmouth bass at a very low rates of 1.0 bass per mile and 2.3 bass per hour, decreasing again from 5.6 bass/hour in June 2014 and 10.7 bass/hour in June 2009. Smallmouth bass in our small 2019 sample ranged 10.3–18.4" and averaged 13.6". Fyke nets targeting muskies in spring 2018 incidentally caught 22 smallmouth bass at a rate of 0.46 per net-night, but none of those fish were measured. Largemouth bass appeared sporadically in earlier surveys, but they were absent in netting and electrofishing samples from 2018 and 2019, and none were captured by spring electrofishing since 2003. Anglers rarely targeted bass in Butternut Lake, focusing only 1,348 hours or 2.9% of directed fishing effort on largemouth bass and smallmouth bass combined. Their projected catch was 274 smallmouth bass and no largemouth bass. Anglers kept 25 smallmouth bass, all in August, that ranged 15.1–17.3" and averaged 16.0" long.

Bluegill
In our late spring 2019 electrofishing survey we captured 15 bluegills, ranging 6.0–9.1" and averaging 7.0". Electrofishing catch rates of 7.5 bluegill ≥ 3" per mile and 18/hour indicated very low population abundance. Nearly half the bluegills in our sample were keeper-size fish ≥ 7". Creel survey projections reveal that anglers caught 1,153 bluegills and harvested 515 in 4,447 hours or 9.7% of directed fishing effort. Virtually all the catch (97%), harvest (99%), and bluegill fishing effort (82%) took place in summer. Bluegill harvested by anglers reflected the size structure of our electrofishing sample. Harvested bluegills ranged 6.5–9.5" and averaged 7.6" with 87% at least 7" and 28% at least 8" long.

Yellow Perch
None of our recent netting and electrofishing surveys offered meaningful insights on yellow perch population status, but the season-long creel survey revealed that anglers targeted perch in Butternut Lake with 8,022 angling-hours. Perch received 17.4% of all directed fishing effort, making them the third-most pursued sportfish species. Anglers caught 10,268 perch and kept nearly a third that ranged 6.2–11.7" and averaged 8.5" long. Twenty-eight percent of harvested perch were 9" or longer and 4% were at least 10" long.

Lake Sturgeon
Lake sturgeon received 22 hours of targeted fishing effort in the open season that extended September 7-30, 2019. Most or all of that attention probably came from one hopeful and patient angler who fishes for sturgeon in Butternut Lake nearly every year. We occasionally catch sturgeon in fyke nets and see them breaching the surface, so we can infer that they occur at low abundance in Butternut Lake. With no impassible barriers to hinder their movements, sturgeon in Butternut Lake can freely interact with the much larger sturgeon population in the Flambeau River. Anglers reported no sturgeon taken from Butternut Lake in mandatory harvest registration records 2006–2019.

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