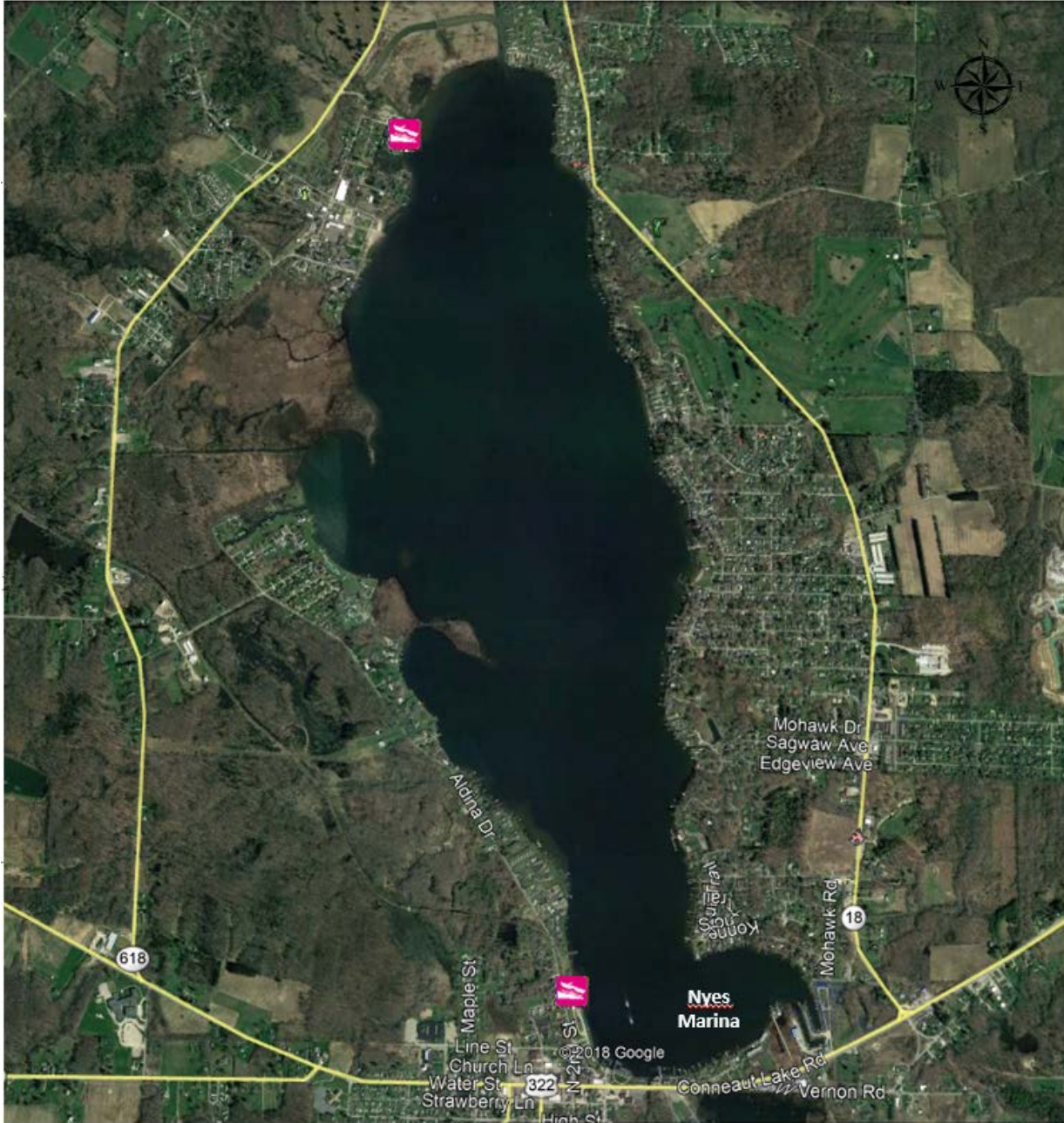


# Conneaut Lake

## Crawford County

### Spring 2019 Muskellunge Trap Net Survey



*Aerial photo of Conneaut Lake, courtesy of Google Earth*

Conneaut Lake is a 929-acre water body located near the town of Meadville in Crawford County. The Pennsylvania Fish and Boat Commission (PFBC) manages Conneaut Lake as a warmwater fishery

under [Statewide Regulations for Commonwealth Inland Waters](#) and stocks it with Muskellunge yearlings. The PFBC, up until recently (2016), had been stocking the lake annually with Muskellunge fingerlings, new protocols referenced in the [2017 Update to Pennsylvania's Muskellunge Management Plan](#), now allocate larger Muskellunge yearlings every other year to Conneaut Lake. Additionally, Conneaut Lake is part of the Brood Stock Lakes Program utilized by our state hatchery system to secure adults for production of young. Anglers are encouraged to consult the PFBC summary book for further details regarding the [Brood Stock Lakes Program](#).

The Pennsylvania Fish and Boat Commission (PFBC) conducted a Muskellunge and general fish population survey during the week of April 18<sup>th</sup>, 2019 at Conneaut Lake. Objectives of the survey were to: 1) evaluate the overall abundance and size structure of Muskellunge collected; 2) determine if Conneaut Lake is meeting the minimum criteria for producing a high-quality Muskellunge fishery as outlined in the PFBC's recently updated [Muskellunge Management Plan \(2017\)](#); and 3) assess the overall success of our Muskellunge stocking program. Although our primary target was Muskellunge an inventory of the other gamefish and panfish species was also carried out during this survey.

Fisheries biologists from Fisheries Management Area 2 and Area 9 offices set five Pennsylvania-style trap nets, which were deployed and retrieved throughout the week of April 29<sup>th</sup>, 2019. Our sampling effort consisted of 20 overnight sets (approximately 24-hour fishing periods) encompassing a total of 470.97 hours that yielded a total catch of 1,677 fish representing 20 different species (Table 1). All captured fish were measured for total length and a sub-sample (10 fish from each 1-inch size grouping) were weighed to the nearest gram with all fish released following prompt data collection. Additionally, pelvic fin rays from adult Muskellunge and scale samples (all other game and panfish) were collected to determine age and compute growth statistics. Below we describe relative abundance or catch rate, of fish collected, as catch-per-hour (CPUE); or number of targeted-fish collected per unit time gear was deployed or "fishing".

**Table 1. Number and size range of game species collected during trap net sampling at Conneaut Lake during the week of April 29<sup>th</sup>, 2019 (MSL=minimum size limit).**

| Species         | Number Collected | Size Range (inches) | Comment                |
|-----------------|------------------|---------------------|------------------------|
| Muskellunge     | 14               | 28 – 41             | 14% ≥ 40 inches (MSL)  |
| Northern Pike   | 52               | 20 – 38             | 52% ≥ 24 inches (MSL)  |
| Bluegill        | 845              | 3 – 10              | 62% ≥ 7 inches         |
| Black Crappie   | 241              | 2 – 19              | 98% ≥ 9 inches         |
| Pumpkinseed     | 49               | 5 – 8               | 76% ≥ 7 inches         |
| Rock Bass       | 38               | 6 – 10              | 82% ≥ 7 inches         |
| Yellow Perch    | 7                | 3 – 12              | 29% ≥ 7 inches         |
| Largemouth Bass | 6                | 14 – 21             | 100% ≥ 12 inches (MSL) |

|                 |              |         |                        |
|-----------------|--------------|---------|------------------------|
| Smallmouth Bass | 18           | 15 – 20 | 100% ≥ 12 inches (MSL) |
| White Bass      | 51           | 16 – 22 | 100% ≥ 12 inches       |
| Brown Bullhead  | 136          | 10 – 16 | 99% ≥ 12 inches        |
| Yellow Bullhead | 24           | 8 – 14  | 38% ≥ 12 inches        |
| <b>Total</b>    | <b>1,481</b> |         |                        |

**Table 2. Number and size range of non-game species collected during trap net sampling at Conneaut Lake during the week of April 29<sup>th</sup>, 2019.**

| <b>Species</b>      | <b>Number Collected</b> | <b>Size Range (inches)</b> |
|---------------------|-------------------------|----------------------------|
| Bowfin              | 153                     | 8 – 27                     |
| Golden Shiner       | 28                      | 5 – 9                      |
| Silver Redhorse     | 4                       | 18 – 28                    |
| Smallmouth Redhorse | 1                       | 20                         |
| Quillback           | 2                       | 20 – 25                    |
| White Sucker        | 2                       | 16 – 17                    |
| Golden Redhorse     | 1                       | 18                         |
| Common Carp         | 5                       | Not measured               |
| <b>Total</b>        | <b>196</b>              |                            |

As mentioned previously, Conneaut Lake was primarily assessed to determine the status of the Muskellunge population. Historical assessment surveys, prior to 2012, have documented minimal numbers of adult Muskellunge in recent years, despite Conneaut Lake being the source of the Pennsylvania state record musky. That state record Muskellunge was caught in 1924 and measured 54 lb and 3 oz. Recent low assessment catch at Conneaut Lake resulted in its classification as a “last chance water” by new plan benchmarks, thus requiring a Muskellunge assessment prior to its approval for continued Muskellunge stocking. For all lakes, and notably for last chance lakes to be eligible for continued Muskellunge stocking, each must meet statewide objectives based on minimum catch rates as referenced in the Muskellunge Management Plan.



*FM Area 2 Fisheries Biologist Brian Ensign with our largest adult Muskellunge*

Our catch of Muskellunge in 2019 was impressive, with populations at an all-time high. A total of 14 adult Muskellunge were captured. Captured Muskellunge ranged in size from 28 to 41 inches total length and weighed between 1.8 to 28.8 lbs. The largest Muskellunge measured 40.9 inches and weighed 28.8 pounds (pictured). The Muskellunge catch rate was 0.03 fish/hr or approximately two Muskellunge caught in every four trap net sets. This catch rate at Conneaut Lake was well above the statewide standard established for Pennsylvania lakes (0.01 fish/hr or one Muskellunge in every four trap nets), providing evidence that the current musky population is trending upward and should continue to improve with each stocking event.

To facilitate identification and measurement of survival of individual Muskellunge in future assessment surveys all captured adults were injected with a Passive Integrated Transponder, or PIT tag. Each tag contained an electronic transponder encapsulated in a glass tube, approximately the size of a grain of rice. Tags were inserted with a 12-gauge needle near the anal fin. PIT tags contain a unique 15-digit ID number and serve as a permanent coded marker that is equivalent to a social security number and

as reliable as a fingerprint for identification of an individual. There is no external sign of the tag, it can only be detected with a PIT tag reader and thus anglers will be unaware if a fish has been tagged because all tags are located underneath the skin.

Assessment results in 2019 insure Conneaut Lake will remain in the current stocking program and will continue to receive alternate year plantings of 12 to 14-inch spring yearlings. As referenced in the 2017 Update to Pennsylvania's Muskellunge Management Plan, results of the PFBC's recent tagging studies conducted at Edinboro Lake, Lake Canadohta, and other PA musky lakes, have demonstrated that stocking larger yearlings yield higher survival rates compared to smaller fall fingerling stockings. Future musky surveys will continue to monitor Muskellunge population status to further document change in abundance associated with new stocking programs and statewide increased minimum size limit (40 inches) in our attempts to rebuild the musky population to historic levels at Conneaut Lake.

The panfish population at Conneaut Lake, specifically the catch rates and size distribution of Bluegill and Black Crappie during the 2019 survey, was noteworthy. Panfish comprised 66% of the total trap net catch. The predominate panfish species captured was Bluegill (845), followed by Black Crappie (241), Pumpkinseed (49), and Yellow Perch (7). The catch of Bluegill and Black Crappie were both the second highest on record with 65% of the Bluegill being greater than 7 inches and 62% of the Crappie greater than 9 inches in length. Conneaut Lake contains an abundant Bowfin population, Bowfin can provide a spirited fight when hooked. Nearly all the Bowfin captured in our trap nets were of adult size (>15 inches). Bowfin are also an important part of balancing fish communities, helping control the numbers of prey fish capable of overpopulating waters, and they rarely consume other sport fish or act as a serious competitor with them for food. Other non-game species such as Golden Redhorse, Silver Redhorse, Smallmouth Redhorse, White Sucker, Quillback and Golden Shiners are also an important component to the overall fish community in that offspring from these adults provide an abundant forage base for the larger game species that inhabit the lake.



*Abundant Bluegill and Black Crappie populations sampled in our trap nets at Conneaut Lake*

The White bass population appears to be stable with good numbers and quality sizes available to interested anglers. The timing of our survey was spot on as we observed their peak movement and spawning activity. Interestingly, all White Bass encountered during our week-long survey were captured in one centrally located trap net, that being adjacent to a cove next to our commission owned

boat launch. Results from this lone trap net saw the capture of 51 adults, all of which were greater than 15 inches in total length with largest fish measuring 21.8 inches and weighing 2.8 pounds.



*A pair of spawning White Bass (left: Male; right: Female) captured in Conneaut Lake*

The timing of our survey occurred when water temperatures were warming, between 55 - 60°F, which was ideal for the capture of spawning Muskellunge but not necessarily ideal for other game species such as Yellow Perch and Northern Pike. The Northern Pike population is sustained through natural reproduction and we continue to sample individuals in good numbers with each successive survey. Despite these warmer conditions, we captured 51 adult Northern Pike that ranged in size from 20 to 38 inches with 25% being of legal size ( $\geq 24$  inches). Typically, both Northern Pike and Yellow Perch spawn early in the spring when water temperatures are much cooler, most often just shortly after ice-out conditions.



*FM Area 2 FBA Nicholas Nelson holding one of several legal-size Northern Pike captured during our spring trap-netting efforts*

Also captured were six Largemouth Bass and 18 Smallmouth Bass, all of which were of good size and measured well above the 12-inch minimum size limit. Typically, trap nets do not capture black bass in proportion to their abundance in inland waters. Measures of black bass abundance in Pennsylvania are best achieved using night time boat electrofishing methods. For further information regarding the status of the black bass populations, anglers are encouraged to read the previous [2012 Conneaut Lake Web Report](#).



*Conneaut Lake contains quality sizes of Largemouth and Smallmouth Bass populations, as pictured here*

In conclusion, the future looks bright regarding the Muskellunge population. Conneaut Lake continues to offer excellent angling opportunities for Northern Pike, panfish and White Bass. The Largemouth Bass and Smallmouth Bass populations are providing good opportunities for anglers who seek good numbers of quality sizes of fish with an occasional trophy sized fish. Brown Bullhead and Yellow Bullhead populations exhibit nice size structure and support a sustainable recreational fishery for anglers to enjoy.

*Prepared by Brian Ensign, Area 2 Fisheries Biologist*