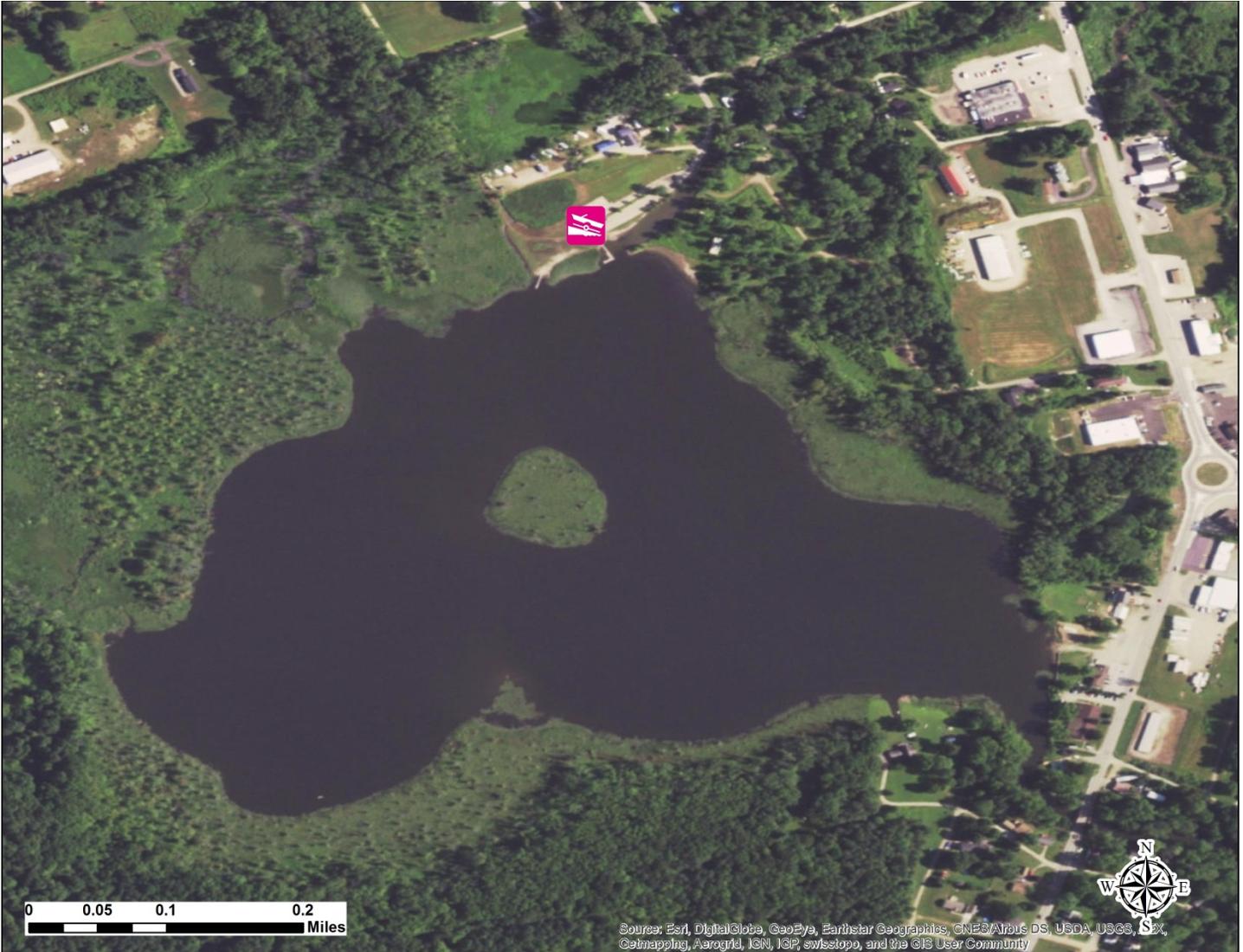


Leboeuf Lake

Erie County

Spring 2016 Trap Net and Night Boat Electrofishing Surveys



Aerial photo of Leboeuf Lake.

Leboeuf Lake is a 72-acre open-system lake (no dam), located a few miles northeast of Waterford, PA in Erie County. The lake's inlet is supplied by Trout Run and its outlet forms Leboeuf Creek, a tributary to French Creek. The lake is owned and maintained by the Waterford Township Borough and boating is restricted to un-powered boats and those using electric motors only. The Commission manages the reservoir's warmwater fishery under [Statewide Regulations for Commonwealth Inland Waters](#) and stocks it annually with Walleye, Channel Catfish (new for 2016) and Muskellunge fingerlings.

Biologists from Fisheries Management Area 2 and 9 offices set and retrieved Pennsylvania-style trap nets in April and conducted night-time boat electrofishing (NTBEF) surveys in March and May. The purpose of these surveys was to evaluate the status of the lake's Walleye, panfish and black bass populations. Specifically, we wanted to evaluate the status of the Walleye stocking program to determine if it was meeting the minimum criteria for producing a high quality fishery based on current

[Walleye Management Plan](#) criteria.

All captured fish were measured for total length and a sub-sample (10 fish from each 1 inch size grouping) was weighed to the nearest gram. Additionally, pelvic fin rays (i.e. Northern Pike, Muskellunge), and scale samples (all other game and panfish) were collected in order to determine age and compute growth statistics. Relative abundance, or catch rate, of fish collected, was expressed as catch-per-unit-effort (CPUE); or number of targeted fish collected per unit of time gear was deployed or “fishing”.

Spring NTBEF Walleye Sampling:

Our first survey specifically targeted Walleye, and was conducted on the night of March 21st using boat electrofishing gear. The survey occurred shortly after ice-out conditions, when water temperatures reached 40 degrees, and thus coincided with initiation of walleye spawning movements as Walleye were congregating along the near-shore areas. In three electrofishing runs, consisting of the entire lake’s shoreline, a total of seven Walleye were captured in 1.35 hours of electrofishing effort. Although the catch was low, those adults that were captured were of good size and ranged from 13 – 20 inches in length (Figure 1) with 99% recorded as of legal size (≥ 15 inches). The largest Walleye measured 20 inches and weighed over 5 pounds.

Spring Trap netting:

Pennsylvania-style trap nets were used to further assess the lake’s Walleye and other sportfish populations. Twenty overnight trap nets (24 hour period intervals) were set during the week of April 18th encompassing 276.52 hours of effort. We captured fish representing 22 different species (Table 1). A total of 17 Walleye were captured by our trap nets. Although all fish were of legal size (≥ 15 inches), the low number of adults along with the absence of sub-legal sized fish, was disappointing. The calculated trap net catch rate of 0.06 fish/hr was well below the minimum statewide objective of 0.20 fish/hr established in the Walleye Fisheries Management Plan for lakes as having a high-quality Walleye fishery. Meeting statewide objectives, established in the PFBC’s Walleye Fisheries Management Plan, is required for continued fingerling stocking.

Table 1. Species, abundance and size range of fish collected during trap net sampling at Leboeuf Lake during the week of April 18th, 2016.

Species	Number	Size Range (inches)
Walleye	17	16 – 29
Muskellunge	4	29 – 45
Northern Pike	2	24 – 31
Bluegill	148	3 – 8
Black Crappie	152	3 – 13
White Crappie	5	9 – 11
Pumpkinseed	2	4 – 7
Rock Bass	1	6

Yellow Perch	14	7 – 13
Yellow Bullhead	2	10 – 12
Brown Bullhead	99	9 – 14
Golden Redhorse	11	14 – 21
Silver Redhorse	175	14 – 22
Smallmouth Redhorse	2	11 – 18
River Redhorse	1	26
Bowfin	48	13 – 25
Common Carp	4	18 – 21
White Sucker	2	18
Northern Hog Sucker	1	9
Quillback	59	18 – 22
White Perch	1	9
Golden Shiner	8	4 – 9
Total	758	

Since 1982 the Commission has stocked in excess of 500,000 fingerling Walleye with the primary goal to provide anglers a productive Walleye fishery. Despite our continued stocking efforts over these years, the lake has failed to meet management plan requirements and thus future Walleye stockings will be terminated. The failure of these Walleye fingerling stockings to provide a quality recreational fishery was most likely the result of a combination of factors that include a lack of adequate shallow water adult spawning areas (aka littoral zones) and young-of-the-year rearing habitat. Also, some movement of fingerling out of Leboeuf Lake likely occurred in this natural open system; although we were unable to specifically account for movement in this study. Upstream movement of spawners may partly explain the number of mature Walleye encountered.



Area 9 Fisheries Biologist Mark Haffley with two legal-size adult Walleye captured in our trap nets.

Despite a poor Walleye fishery as measured by new Walleye Plan benchmarks, Leboeuf Lake continues to maintain a quality panfish population for its size. Bluegill and Black Crappie were the most abundant panfish species captured in our nets followed by Yellow Perch, White Crappie, Pumpkinseed and Rock Bass. Of the 148 Bluegill captured 74% were greater than 7 inches in length. The lakes Black Crappie population is also providing good numbers and size structure with 91% of all captured fish measured in the 8 – 10 inch size range. Yellow Perch up to 13 inches were also present in our nets and several shore anglers were observed targeting them during our survey. Other gamefish species of interest to anglers captured in our nets included Muskellunge, Northern Pike, Yellow Bullhead, Brown Bullhead and Bowfin. Leboeuf Lake contains an abundant Bowfin population, these fish can provide a spirited fight when hooked. Nearly all the Bowfin captured in our trap nets and observed during the night electrofishing surveys were of adult size (>20 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, 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 gamefish that inhabit the lake.



Fisheries Biologist Mark Haffley with a pre-spawn female Yellow Perch caught in our trap nets.

Since our spring night boat electrofishing and trap net surveys targeted Walleye, other species such as Muskellunge, were captured in lower abundance. Despite our survey occurring when water temperatures favored Walleye movement and capture in trap nets, we also captured four adult Muskellunge. Captured musky ranged in lengths from 29 - 45 inches with the largest fish measuring 46 inches and weighing 26 pounds (pictured below). Typically, adult Muskellunge are most effectively captured by trap nets when water temperatures reach 50°F, when spawning activity and associated spawning movement is triggered. Trap nets are a passive capture gear and rely exclusively upon fish movement to capture targeted species.



Area 2 Fisheries Biologist Brian Ensign with the largest adult Muskellunge caught in our trap nets.

NTBEF Black Bass Sampling:

During the night of May 11, 2016, Area 2 and Area 9 biologists returned to Leboeuf Lake to access the status of the black bass population via night-time boat electrofishing. The entire lake's shoreline was electrofished in three total runs that encompassed 2.1 hours of effort. We captured both Largemouth Bass and Smallmouth Bass, but Largemouth Bass were the most frequently caught black bass species and greatly outnumbered Smallmouth Bass. A total of 150 Largemouth Bass and seven Smallmouth Bass were netted and both species produced quality sized fish. Largemouth Bass ranged from 3 to 19 inches in length (Figure 2) with a total catch rate of 73.2 fish/hr. The number of Largemouth Bass ≥ 12 inches was the highest on record at 45.4 fish/hr compared to 34.5 fish/hr in 2009 and 7.0 fish/hr in 2000. Additionally, the number of Largemouth Bass ≥ 15 inches was also the highest on record with a catch rate of 10.7 fish/hr compared to 6.6 fish/hr in 2009 and 4.0 fish/hr in 2000 (Figure 3). Furthermore, most (67%) of the Largemouth Bass captured were 11-14 inches in length, providing quality bass fishing opportunities currently with such opportunities anticipated to remain good for the foreseeable future. As mentioned, a Smallmouth Bass population is present in the lake but occurs at a much lower density. Captured Smallmouth Bass ranged in size from 6 to 18 inches for a total catch rate 3.3 fish/hr. Nearly all Smallmouth Bass were netted along the inlet/outlet areas of the lake, where water temperatures were much cooler and also contained a slight amount of flow.

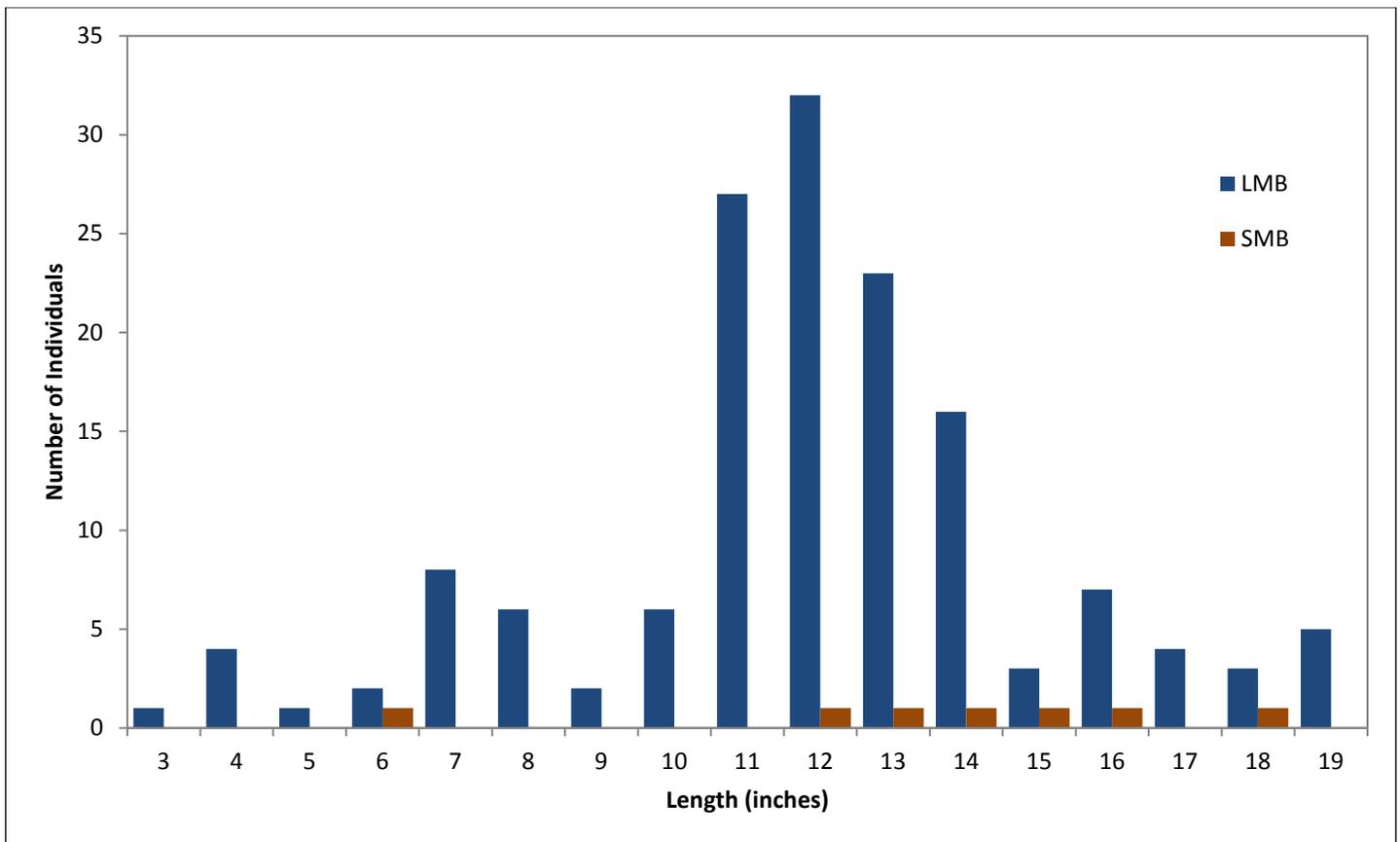


Figure 2. Length frequency distribution for Black Bass captured during night-time boat electrofishing surveys at Leboeuf Lake.

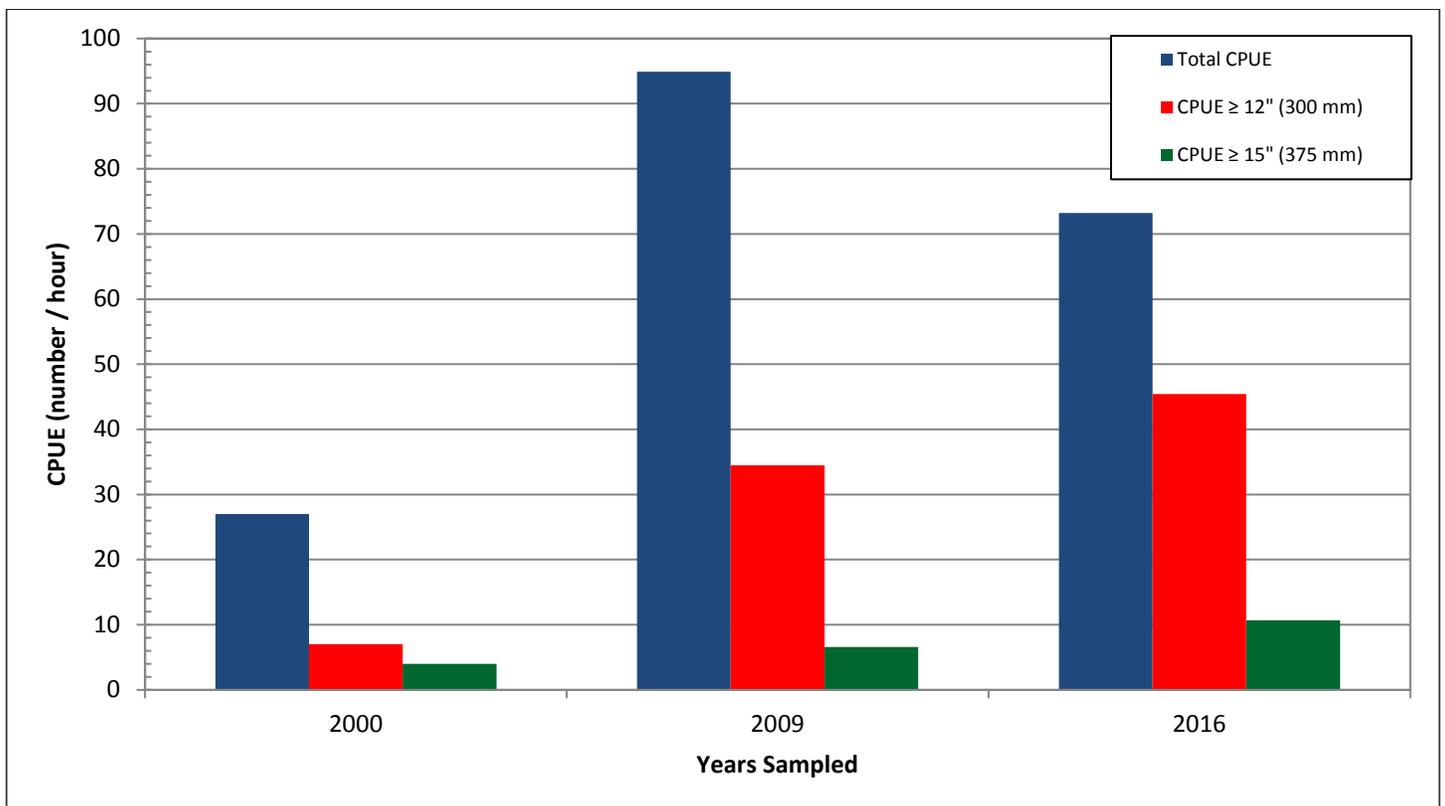


Figure 3. Catch rates (CPUE) for Largemouth Bass captured during night-time boat electrofishing surveys at Leboeuf Lake.



Former Area 9 Fisheries Biologist Aid Matt Heard and current Fisheries Biologist Brian Ensign with four trophy size Largemouth Bass.

One disappointing observation regarding our Leboeuf Lake survey has been the persistence and presence of Round Gobies. Round Gobies considered an aquatic invasive species (AIS) were first documented in Leboeuf Lake by the Department of Environmental Protection (DEP) in June 2014. Since then, reproducing populations of Round Gobies have been documented in Leboeuf Creek, and the threat of this species potentially spreading into French Creek is concerning. Round Gobies can be detrimental to aquatic ecosystems and are known to disrupt food chains by outcompeting native fishes (primarily bottom dwellers) for food resources.



Round Gobies, pictured here, are present in Leboeuf Lake, Leboeuf Creek and Fairview Gravel Ponds and Lake Erie (photo courtesy of PA Sea Grant).

Round Gobies are similar in appearance to freshwater sculpins but have some distinguishing characteristics making them unique. Round gobies have large heads with frog-like raised eyes, mottled olive/brown body, fused pelvic fins, and a black spot on the rear of the first dorsal fin.

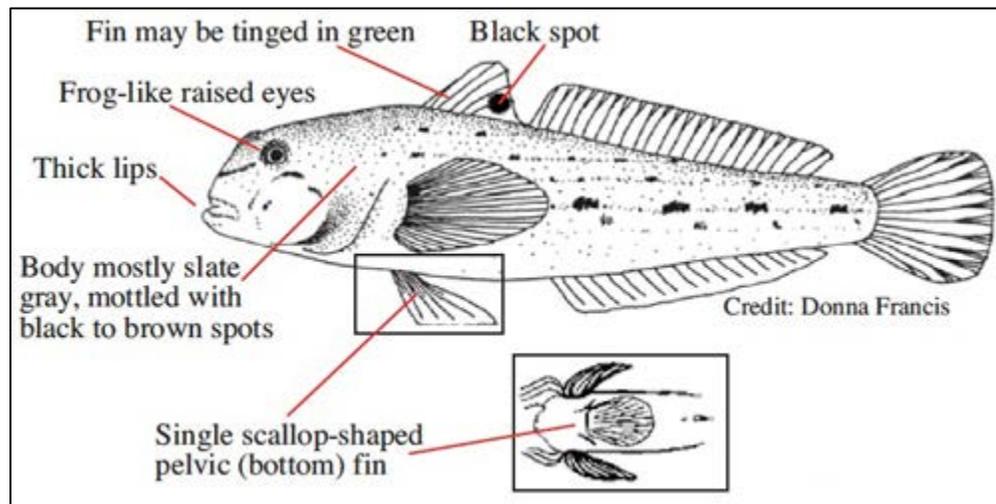


Figure 4. Round Goby vs. Freshwater Sculpin Identification Diagram
(Diagram courtesy of Pennsylvania Sea Grant)

Unfortunately, once Round Gobies begin to reproduce and populate a waterway, it is nearly impossible to eradicate them. It's likely that Gobies were spread by infected boats and/or bait buckets, therefore anglers and boaters are encouraged to take every precaution to prevent additional introductions by not transporting gobies from this particular lake or any other AIS species to other Pennsylvania inland waterways. A detailed description of how anglers can clean boats, boat trailers, and stop the transport of AIS species can be found on our website at <http://www.fishandboat.com/Resource/AquaticInvasiveSpecies/Pages/CleanYourGear.aspx>. Thank you for doing your part.

Prepared by Brian Ensign, Area 2 Fisheries Biologist