

Pretty Lake

Luce County, T49N, R11W, section 34
Two Hearted River watershed, last surveyed 2016

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Environment

Pretty Lake is a 47-acre natural lake (small size per Michigan Status and Trends Inland Lakes protocol) located approximately 22 miles north of the Village of Newberry, Michigan in Luce County. There is one intermittent inlet to the lake from Brush Lake and no outlet. The lake is located within the Two Hearted River watershed nestled in the middle of the Lake Superior State Forest. Pretty Lake lies within the Pretty Lakes Complex (a proposed quiet area) managed as "old growth" and considered a Special Conservation Area. The Pretty Lakes complex cover-types are comprised primarily of natural White Pine with some mixed deciduous species. Michigan Natural Features Inventory has identified the area as the Pretty Lakes dry-mesic northern forest community. The Pretty Lakes Complex is an area set aside for special management with recreational use as a key value. Within the complex, motorized vehicles and boat motors are not allowed and this regulation is enforced by the Michigan DNR Law Enforcement Division.

Pretty Lake is a bowl-shaped basin with 70% of the lake deeper than 15 feet (deep lake) and a maximum depth of 68 feet. The littoral zone consists primarily of sand with sparse submergent aquatic vegetation. Aquatic vegetation identified in 1954 was Water lobelia, Slender-milfoil (native), Large-leaf pondweed, Pipewort sp., and Water lily. In the benthic region of the lake, the substrate is primarily fibrous peat with a mix of sand and marl. The surrounding surface geology is comprised of coarse textured sandy soil types (Croswell, Rubicon, and Paquin) created from glacial outwash. These soil types make the surrounding area highly drainable. The lake has no shoreline development as it is surrounded entirely by land owned by the State of Michigan state forest system. A popular State Forest Campground (rustic) is located on the northeast shoreline with 27 sites. There is also a small day use area located at the campground where small nonmotorized watercraft can be launched. Users who wish to float or fish can portage from Pretty Lake to the rest of the lakes located within the complex (Figure 1). Parking at the day-use area is limited with room for about 3-4 vehicles.

The trophic status of a lake refers to overall productivity (biomass). Lakes can be described as oligotrophic, mesotrophic, and eutrophic which are defined as low, medium, or high productivity, respectively. Water samples collected in 2016 were examined for chlorophyll-a, total phosphorus, total nitrogen, and alkalinity, which are parameters used to measure a lake's productivity. Chlorophyll-a concentrations were identified as low (1.69 µg/L). Total phosphorus was found to be low (4.4 µg/L) and total nitrogen was found to be medium (0.717 mg/L). Total alkalinity is a measure of buffering capacity and plays an important role in determining pH and consequently, overall lake productivity. In 2016, alkalinity in Pretty Lake was measured at 28 mg/L (low). Comparably, pH was measured at 8.35 at the water surface making Pretty Lake more alkaline (basic). For a complete description of ranges for chlorophyll-a, total phosphorus, and total nitrogen for Michigan inland lakes, see Wehrly et al. (2015).

Dissolved Oxygen (DO) is a critical component to suitable habitat in aquatic ecosystems. Dissolved oxygen in lakes derives from the atmosphere as well as from aquatic plants during photosynthesis. Concentration of DO in lakes can limit the distribution and growth of fish in lakes as well as the size

composition and biomass of zooplankton, which is a primary food resource for juvenile and prey fishes. Concentrations of DO begin to limit fish populations at approximately 4.0 mg/L and are often lethal below 0.5 mg/L. Profiles of the water column have been conducted in the summers of 1954, 1963, 1977, 2004, and 2016 (Figure 2). When comparing the profiles conducted in 1954 and 2016, acceptable DO levels for fish were found down to 57 and nearly 50 feet, respectively. Critical depth is defined as the depth at which DO concentrations are below 0.5 mg/L which may be lethal to fish populations. The recorded critical depth in Pretty Lake in 2016 was 56 feet and in 1954 no measurements of DO were recorded past 57 feet (6 mg/L). In 2004, DO readings were greater than 10 mg/L throughout the water column which could be contributed to instrument malfunction. In addition, Secchi disk readings are an excellent indicator for primary production occurring in the water column by measuring lake transparency. Secchi disk readings may vary pending on time of the open water season when measured and weather preceding the reading. Readings may also vary pending the time of year when taken, such as during early thermal stratification and early lake turnover in the fall. In September of 1954 and 1963, Secchi disk readings on Pretty Lake were recorded at 35 and 11 feet, respectively. Preceding weather for the reading in 1963 was rainy and overcast. Secchi disk readings in June 2004 and May 2016 were 24 and 20 feet, respectively. According to Wehrly et al. (2015), a Secchi depth greater than 13.5 feet is still considered high in Michigan lakes, although the reading in 2016 is certainly less than in 1954. Using the above attributes, Pretty Lake can be characterized as an oligotrophic lake, which suggests low production and the capability to support a relatively simple fish community and low biomass.

Large woody debris is an important habitat component offering cover for fishes and other aquatic organisms as well as offering stability for the lake bottom and shorelines. Since Pretty Lake has experienced some water level fluctuations the past 80 years, large woody debris recruitment has been limited for extended periods and not recruiting like other undeveloped inland lakes in Michigan. In 2016, an assessment of lake habitat and riparian conditions was conducted. Given the lake is surrounded entirely by state forest land, the shoreline was characterized as highly intact (except for the small areas at the campground day-use area). The amount of large woody debris along the shoreline in 2016 was recorded to be 66 trees per mile which is considered high for any inland lake in Michigan.

History

Fishery management practices have varied over the past 80 years in Pretty Lake. This is reflected in the amount and type of fish stocking efforts that have occurred in this time frame. Early on, initial stocking efforts focused on warm water species such as Bluegill and Smallmouth Bass. Fisheries managers during this time sought an opportunity to create a fishery which would be attractive to the general angler. A general lake survey (observation without netting gear) was conducted in 1953 by the Institute for Fisheries Research of the Michigan Department of Conservation (MDOC). In 1953, it was noted that known species present in the lake were Bluegill, Bullheads, and Largemouth Bass (in office files, Newberry CSC). It was common for the MDOC to stock such warm- and coolwater species throughout Michigan lakes in the first half of the twentieth century, without having quality presence and absence data for fish populations. By the mid 1950's, fisheries managers for MDOC began further investigating fish populations quantitatively with more intentional fisheries management objectives.

Pretty Lake from 1939 to 1942 was managed as a coolwater fishery with Bluegill and Smallmouth Bass being stocked in most years (Table 1). Not until 1954 was a fisheries survey conducted using netting gear (gill nets and bag seine). This survey lasting two nights captured no fish in gill nets, but the two seine hauls captured Iowa Darter, Smallmouth Bass, and Yellow Perch. In 1956, management shifted

to Rainbow Trout following a limnological profile which indicated suitable DO and temperature stratification for coldwater species. Reports in 1956 from anglers of Pike's Cabin (former private residence located near where the campground is currently located), indicated very good condition of Rainbow Trout and good catches. Rainbow Trout management continued through 1961 with annual stocking. Fisheries managers installed 111 brush shelters in 8 to 10 feet of water with the intent to improve woody habitat for fish and as orientation structures for Rainbow Trout. These brush shelters were observed by the Fisheries Biologist while skin-diving. Few fish were observed using the structures; however, there were some Smallmouth Bass and Yellow Perch oriented around a few structures. In 1958, the open fishing season was extended from September through November increase angling opportunity for Rainbow Trout.

In 1962, following a 10-day fishing trip, campers complained of not seeing any Rainbow Trout rising on the lake and failure of catching any during this time. A netting survey investigating this report captured many Yellow Perch and only one Rainbow Trout. Following another netting survey in 1963 which only captured Yellow Perch, fisheries managers decided to conduct a chemical lake treatment removing the existing fish community and restock the following year with Splake. The lake was also designated as a trout lake in 1963 bringing changes to regulations for trout. Through 1977 Splake were stocked in most years with a second lake treatment occurring in 1975. This treatment was conducted following angler reports of the presence of Brook Trout (stocked in Brush Lake), Bullheads, Pumpkinseed Sunfish, and Yellow Perch. Special attention had been drawn to Pretty Lake because of its popular campground and a destination for out-of-area anglers. Angler reports in the 1970s were characterized by the Fisheries Biologist as "good". Fish up to 4 pounds were captured, with one fish achieving 6 pounds by one angler from the Detroit area. Heavy fishing pressure and good catch rates over this period raised concerns for overharvest which was followed up on by local law enforcement officers. No evidence was found for illegal overharvest from Pretty Lake.

Fisheries management through the 1980s included stocking Brook Trout, Brown Trout (adults), Lake Trout (adults), Rainbow Trout (yearlings and adults), and Splake. A third lake treatment was conducted in 1983. The treatment evaluation observed Central Mudminnow, Common Shiner, Common White Sucker, Johnny Darter, Largemouth Bass, Pumpkinseed Sunfish, Splake, and Yellow Perch. Then a netting survey in 1986 found Brown Trout, Lake Trout, and Splake, but also Common White Sucker, Golden Shiner, and Rock Bass. Fisheries managers believed angler's bait buckets were the most likely culprit for these rapid introductions. A fourth lake treatment was completed in 1991 following a netting survey which found many Rock Bass, small Yellow Perch, and poor trout survival.

Stemming from camper (angler) complaints and after four lake treatments, fisheries managers realized single species management for Pretty Lake was not an efficient way to manage. In addition, treatments did not have lasting effects as indicated from multiple treatments over a span of 30 years. In 1996, a two-night netting survey captured 1,642 Yellow Perch, 12 Splake, and one Common White Sucker. Fisheries managers wished to continue Splake management in Pretty Lake; however, these results reinforced a needed change in management.

In 1997, Splake stocking was continued, but with the addition of Walleye to the management prescription. Walleye could help reduce Yellow Perch densities while allowing Splake to thrive in the more profundal region of the lake. The first request was made for adult Walleye; however, due to their limited availability the request was changed to spring and fall fingerlings. Although stocking rates were

not determined in this management request, Walleye stocking rates from 1997 to 2002 ranged from 140 to 3,000 spring fingerlings and 132 to 2,380 fall fingerlings.

In fall of 1997, an electrofishing survey (Serns Index) was conducted to evaluate young of year Walleye growth and survival after the first year of stocking. The entire shoreline was sampled (1 mile; 0.6 hours); however, due to low conductivity of the water (17.0 μs) capture efficiency was poor and only one Walleye was captured at 6 inches. Many young of year and age-1 Yellow Perch were observed during the survey. In 1999, a netting survey using fyke nets captured 329 Yellow Perch, 27 Walleye, and three Common White Sucker. Walleye had a length range of 6 to 15 inches. As indicated by fin clips (left pectoral), fall fingerling stocked in 1997 and 1998 represented 20% and 33% of the stocked fish captured, respectively. Although no Splake were captured during this survey, fisheries managers were satisfied with these results and recommended managing Pretty Lake for Splake, Walleye, and Yellow Perch. The Walleye experiment to keep Yellow Perch abundance under control appeared to be working. Therefore, in 2003 a stocking prescription was approved to stock 21 Splake yearlings per acre annually and 21 Walleye spring fingerlings per acre in alternate years.

In 2004, a late June netting survey captured 383 Yellow Perch, 15 Walleye, and one Splake. Also captured in the survey were Common Shiner and Common White Sucker. Size structure for Yellow Perch resembled a population with heavy angler harvest with 2% at 7 inches or greater. However, age and growth analysis found Yellow Perch growing 1.6 inches below statewide average and fish at age-6 with an average length of 6.5 inches. This growth data supports that Yellow Perch are unable to attain larger sizes in this unproductive lake. Walleye aging found three cohorts from non-stocked years. Although natural reproduction is possible, these results are likely the result of aging error or variability in aging dorsal spines from Walleye greater than age 4. Substrate in Pretty Lake is not conducive to Walleye spawning and consists primarily of sand and flocculant organics.

Additionally, in 2004 fisheries managers assessed the zooplankton community using plankton tows per the protocol outlined in Galbraith and Schneider (2000). Plankton tows were conducted in June 2004 and found no *Daphnia* sp. The sample did contain a few copepods.

Current Status

The most recent fisheries survey of Pretty Lake was conducted in 2016 from May 16-19, 2016 using Status and Trends protocols. This was the first Status and Trends assessment conducted on Pretty Lake. The purpose of Status and Trends assessment is to provide a lake-wide inventory of various lake characteristics including fish community composition, water chemistry, and habitat status. Managers can then use results from this assessment and compare across similar waterbody types and species compositions to determine trends in the ecosystem. The 2016 effort consisted of: 2 experimental gill-nets (6 net lifts), 3 large mesh fyke-nets (9 net lifts), 2 small mesh fyke-nets (4 net lifts), and 2 seine hauls. No fish were captured in the seine hauls and were not included in the calculation for catch per unit effort (CPUE). Water temperatures ranged from 54°F to 55°F during the survey.

A total of 2,671 fish were captured during the survey comprised of eight different species (Table 2). Predators or gamefish species (Yellow Perch, Walleye, Smallmouth Bass, and Splake) comprised 87% of the total catch by number and 31% of the total biomass. Pelagic species, such as shiners and panfish comprised 9% of the total catch by number and 3% of the total biomass. For benthic species, only

Common White Sucker were captured and represented less than 4% of the total catch by number; however, they comprised 66% of the biomass.

Yellow Perch catch totaled 2,301 with an average total length of 3.1 inches and a size range of 2 to 5 inches. As indicated by size structure, zero Yellow Perch were greater than preferred harvestable size at 7 inches. Age analysis indicated Yellow Perch were growing 2.3 inches below statewide average (Schneider et al. 2000). Age analysis also found two age classes (ages 3 and 4). Catch per unit effort for Yellow Perch was 121.1 fish/net lift.

Pumpkinseed Sunfish catch totaled 113 with an average total length of 3.9 inches and a size range of 1 to 4 inches. As indicated by size structure, zero Pumpkinseed Sunfish were greater than preferred harvestable size at 6 inches. Not enough Pumpkinseed Sunfish were aged to create a growth estimate, but age analysis did find one year class of age 4. Catch per unit effort for Pumpkinseed Sunfish was 5.9 fish/net lift.

The catch for Walleye totaled 17 with an average total length of 20.8 inches and a size range of 12 to 27 inches. A total of 15 fish (88%) were 15 inches (legal size) or greater. Age analysis of spines revealed seven age classes (ages 2-4, 9-11, and 13). Walleye aged from non-stocked years are possibly a result of read variability of dorsal spines from fish older than age 4. Although unlikely, there is a possibility a small portion of the population is of natural recruitment. Age analysis also indicated Walleye were growing 1.8 inches above statewide average. Catch per unit effort for Walleye was 0.9 fish/net lift.

Splake catch totaled 7 fish. Because stocking occurred during the weeks leading up to the survey, 6 of the 7 fish captured came from that stocking effort and ranged in size from 6 to 8 inches. One fish was caught during the survey at 17 inches and was age 3. Catch per unit effort for Splake was 0.4 fish/net lift.

Common White Sucker catch totaled 95 during the survey and amassed 66% of the total biomass. Average total length for Common White Sucker was 17.1 inches and the length range was 11 to 21 inches. Catch per unit effort was 5 fish/net lift for Common White Sucker.

Other species captured during the survey were Golden Shiner (n=121), Blacknose Shiner (n=13), and Smallmouth Bass (n=4). Smallmouth Bass had an average total length of 10.3 inches and a length range of 3 to 16 inches. Age analysis found two year classes for Smallmouth Bass (ages 2 and 4). The presence of Smallmouth Bass is likely due to the movement by anglers from another lake within the complex with a Smallmouth Bass population (i.e., Camp Eight Lake).

Analysis and Discussion

Pretty Lake can be characterized as a small natural lake in the Eastern Upper Peninsula with low productivity. As a small-deep lake, Pretty Lake is limited in habitat despite the presence of 66 trees per mile found in 2016. Even with an undeveloped shoreline, the addition of brush structures could benefit both juvenile fishes for orientation cover and anglers seeking to target structure.

The current fish community of Pretty Lake can be generally characterized as having: 1) a simple predator population created through stocking which exhibit above average growth rates, 2) a low diversity panfish

community mostly comprised of below acceptable sizes, 3) a non-game fish community low in abundance while growing in diversity due to movement via anglers from other nearby lakes.

Walleye have been stocked with the intent to control non-trout species in place of costly chemical treatments, therefore maintaining their abundance is key in continuing the Splake fishery. Currently the Walleye and Yellow Perch dynamic in Pretty Lake appears to have a positive relationship. Walleye with above average growth rates and Yellow Perch with below average growth rates, leads to an extended period of vulnerability for Yellow Perch to Walleye predation (Rudstam et al. 1997). Keeping Walleye at a low to moderate density will allow for the Yellow Perch and Pumpkinseed Sunfish populations to stay relatively maintained while still offering a desirable fishery for anglers. Even if some natural reproduction for Walleye occurs in Pretty Lake, it has shown to not be enough to sustain a population density large enough to control non-desirable and competing non-trout species. Because Walleye are the top predator in the lake, fisheries managers can control their densities through stocking and harvest regulations. To protect Walleye, fisheries managers could consider a higher minimum size limit and reduced daily possession limit allowing them to continue control on the Yellow Perch and Pumpkinseed Sunfish populations.

Early in the introduction of Splake to Pretty Lake, anglers had success catching them. Over the course of 40 years, angler catches have diminished and few Splake have been captured in netting surveys. Angler reports have been limited as many target other waters in the Pretty Lakes Complex due to the challenges associated with fishing the deep clear water of Pretty Lake without a motor-powered vessel. Additionally, according to local law enforcement officers, winter fishing activity is limited on Pretty Lake. It should also be noted that many anglers have targeted Tank Lake and have good success catching Splake year-round. Another consideration for the lack of success for stocked Splake in Pretty Lake, could possibly be due to the predation by Walleye and Smallmouth Bass. This predation likely results in fewer fish recruiting to the fishery. To continue the Splake fishery in Pretty Lake, fisheries managers need to understand more about angler use and desires for the fishery. This information can be collected through spot creels during the summer and winter fishing season or through a passive angler survey method such as onsite postcards. Response from postcards have aided in management decisions for many inland waters where a formal creel cannot be conducted with any reasonable efficiency.

The presence of Smallmouth Bass is expected to interrupt the predator/prey dynamic in Pretty Lake and is a concern for fisheries managers. In lakes managed for trout species, Smallmouth Bass both prey on and compete with piscivorous trout for a good portion of their life. Smallmouth Bass are a product of either fish movement within the Pretty Lakes Complex or through bait buckets. Angler education within the complex should instruct that fish should not be moved due to the interruption it creates in fisheries management. Fish movement creates higher costs in fisheries management, concerns of spreading pathogens, and failed fisheries managed for a particular species. Anglers are encouraged to review Fisheries Order 245 for rules and regulations regarding Fish Disease Control and fish movement without a permit.

Management Direction

Splake and Walleye stocking should continue for Pretty Lake through 2023 (expiration of management prescription). Before 2023, the Splake fishery should be evaluated through a postcard survey, random

spot creels, and a fall netting survey to determine the success of Splake stocking. Pending the results of these efforts, the decision on whether to continue Splake stocking should be made.

In the event Splake stocking does not continue, Pretty Lake should be managed as a cool- warmwater fishery. The existing fish community comprised of Pumpkinseed Sunfish, Smallmouth Bass, and Yellow Perch, along with Walleye, would likely create a satisfactory fishery. When resources (staffing and budget) allow, brush structures should be installed in Pretty Lake to benefit the fish community and anglers. Brush structures should be arranged in water deep enough to overlap with pelagic and benthic species, while still allowing enough distance from the surface of the water to avoid obstruction for boaters. Staff should consider the methods outlined in the Wisconsin Department of Natural Resources- Fish Sticks program when constructing brush structures. Habitat improvement work should be focused on improving size-structure and growth for Pumpkinseed Sunfish, Smallmouth Bass, and Yellow Perch (Sass et al. (2012) and Schindler et al. (2000)). Additional habitat protections of the surrounding public land should be corroborated with MDNR-FRD through the Compartment Review process.

Current regulations for game fish are appropriate to continue the fishery here (Type B for Splake and Michigan statewide standard fishing regulations for all other species). To offer additional protections for Walleye, fisheries managers could consider increasing the minimum size limit and reducing the daily possession limit to reduce harvest allowing for them to continue control of Yellow Perch and Pumpkinseed Sunfish. Changes to Walleye regulations for Pretty Lake should not be considered if predator abundance becomes too high. Predator abundance should be carefully monitored to prevent from too much pressure on their primary forage (i.e., Pumpkinseed Sunfish and Yellow Perch).

Considerations for maintaining the Pretty Lake Complex as a destination for anglers and campers are a priority for Michigan DNR. Education regarding fish movement should be made through on-site interpretive signage and when constituent contacts are made. Angler access should be maintained through the Pretty Lake State Forest Campground and the surrounding state forest land.

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Table 1.-Species, age at stocking, and the number by year stocked into Pretty Lake, Luce County from 1939 to 2019.

Year	Species (strain)	Age	Number	Average Length (inches)
1939	Bluegill	3 months	5,000	-
1940	Bluegill	3 months	3,600	-
1940	Smallmouth Bass	3 months	450	-
1941	Bluegill	4 months	4,000	-
1941	Smallmouth Bass	3 months	600	-
1942	Smallmouth Bass	4 months	500	-
1955	Rainbow Trout	Legal	800	7.0
1956	Rainbow Trout	Legal	800	7.0
1957	Rainbow Trout	Legal	800	7.0
1958	Rainbow Trout	Legal	1,500	7.0
1959	Rainbow Trout	Legal	800	7.0
1959	Rainbow Trout	Sub-legal	2,500	5.5
1960	Rainbow Trout	Legal	500	7.0
1961	Rainbow Trout	Legal	400	7.0
1964	Splake	Fingerling	14,700	2.5
1965	Splake	Fingerling	10,000	2.5
1966	Splake	Fall Fingerling	10,000	4.5
1967	Splake	Fall Fingerling	8,000	4.5
1968	Splake	Fall Fingerling	10,000	4.5
1969	Splake	Fall Fingerling	5,000	4.5
1973	Splake	Yearling	2,000	6.0
1974	Splake	Yearling	2,000	6.0
1976	Splake	Yearling	2,000	6.0
1977	Splake	Fall Fingerling	1,400	5.0
1978	Brook Trout	Spring Fingerling	1,250	3.0
1978	Rainbow Trout (steelhead)	Fall Fingerling	4,000	3.0
1979	Rainbow Trout	Yearling	1,150	7.0
1980	Rainbow Trout	Yearling	1,150	7.4
1981	Splake	Yearling	1,150	7.6
1984	Brook Trout	Adult	11	11.5
1984	Brook Trout	Adult	23	13.5
1984	Brown Trout (Harrietta)	Adult	63	13.1
1984	Brown Trout (Harrietta)	Adult	100	14.3
1984	Rainbow Trout (Harrietta)	Adult	8	19.0
1984	Rainbow Trout (Harrietta)	Adult	13	17.7
1984	Splake	Yearling	1,150	5.9
1984	Splake	Adult	18	13.1
1984	Splake	Adult	12	14.3
1985	Lake Trout	Adult	250	21.9
1985	Lake Trout	Adult	150	14.9
1985	Splake	Yearling	1,150	8.1
1986	Splake	Yearling	1,300	8.7
1987	Lake Trout (Marquette)	Adult	1,000	8.7

Table 1.-Stocking history for Pretty Lake, Luce County (continued)

Year	Species (strain)	Age	Number	Average Length (inches)
1987	Splake	Yearling	1,300	7.4
1988	Splake	Yearling	1,240	6.6
1989	Brook Trout (Assinica)	Adult	250	11.3
1989	Brook Trout (Maine)	Adult	100	17.6
1989	Lake Trout (Marquette)	Spring Fingerling	8,000	2.4
1989	Rainbow Trout (Wytheville)	Yearling	1,300	8.2
1990	Splake	Yearling	1,300	7.0
1992	Splake	Yearling	1,300	6.5
1993	Splake	Yearling	1,220	6.8
1994	Splake	Yearling	1,300	6.6
1995	Splake	Yearling	1,300	7.0
1996	Splake	Yearling	1,300	6.9
1997	Splake	Yearling	500	6.7
1997	Walleye	Spring Fingerling	2,290	2.3
1997	Walleye	Fall Fingerling	132	6.0
1998	Splake	Yearling	500	6.0
1998	Walleye	Spring Fingerling	3,000	1.7
1998	Walleye	Spring Fingerling	140	4.8
1998	Walleye	Fall Fingerling	2,380	5.9
1999	Splake	Yearling	500	7.6
2000	Splake	Yearling	500	7.3
2000	Walleye	Spring Fingerling	2,500	1.9
2001	Splake	Yearling	500	7.8
2002	Splake	Yearling	500	8.3
2002	Walleye	Spring Fingerling	1,500	1.9
2003	Splake	Yearling	990	7.5
2004	Splake	Yearling	1,000	6.5
2005	Splake	Yearling	110	7.1
2005	Walleye	Spring Fingerling	910	1.5
2006	Splake	Yearling	1,100	7.8
2007	Splake	Yearling	960	8.3
2008	Splake	Yearling	1,000	7.9
2009	Splake	Yearling	1,100	8.1
2010	Splake	Yearling	1,000	7.5
2011	Splake	Yearling	900	8.3
2012	Splake	Yearling	1,000	8.0
2012	Walleye	Spring Fingerling	980	2.0
2013	Splake	Yearling	1,000	8.6
2013	Walleye	Spring Fingerling	1,500	1.8
2014	Splake	Yearling	1,000	8.6
2014	Walleye	Spring Fingerling	1,000	2.2
2015	Splake	Yearling	930	8.4
2016	Splake	Yearling	1,000	8.0
2016	Walleye	Spring Fingerling	816	1.7

Table 1.-Stocking history for Pretty Lake, Luce County (continued)

Year	Species (strain)	Age	Number	Average Length (inches)
2017	Splake	Yearling	1,000	5.2
2017	Walleye	Spring Fingerling	1,031	2.2
2018	Splake	Yearling	1,000	8.6
2018	Walleye	Spring Fingerling	1,398	2.0
2019	Splake	Yearling	1,000	8.1

Table 2.-Numbers, weights, lengths, and mean growth indices for fish species collected during the S&T survey on Pretty Lake, Luce County in 2016. Fish were captured using fyke nets, gill nets, and seine.

2016 Catch Summary

Species	Number	Percent by number	Weight (lb)	Percent by weight	Length range (inches)	Average Length (inches)	Percent legal or harvestable ¹	Growth Index ²
Yellow perch	2301	86.1	29.8	10.1	2-5	3.1	0	-2.3
Golden shiner	121	4.5	2.86	1.0	2-4	4.2	-	-
Pumpkinseed sunfish	113	4.2	5.18	1.8	1-4	3.9	0	-
White sucker	95	3.6	193.86	65.9	11-21	17.1	-	-
Walleye	17	0.6	55.79	19.0	12-27	20.8	88	1.8
Blacknose shiner	13	0.5	0.05	0.0	2-2	2.5	-	-
Splake	7	0.3	2.58	0.9	6-17	8.9	14	N/A
Smallmouth bass	4	0.1	4.05	1.4	3-16	10.3	50	N/A
Total	2,671	100	294.17	100				

¹ Harvestable size is 6 inches for Pumpkinseed Sunfish, 7 inches for Yellow Perch, and 12 inches for Splake. All other game species based on statewide regulations.

² Average deviation from the statewide average length at age. Mean growth indices <-1 indicate below average growth, indices between -1 and +1 indicate average growth, and indices >+1 indicate growth is faster than statewide average.



Figure 1.-Area map of Pretty Lakes Complex, Luce County.

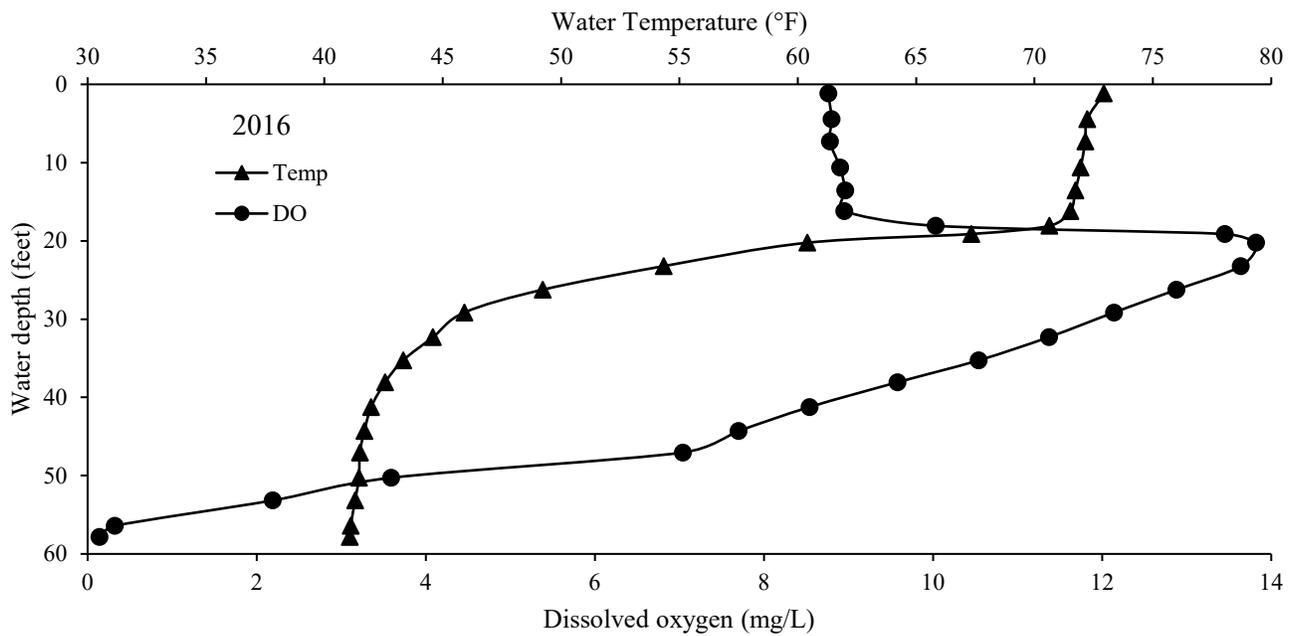
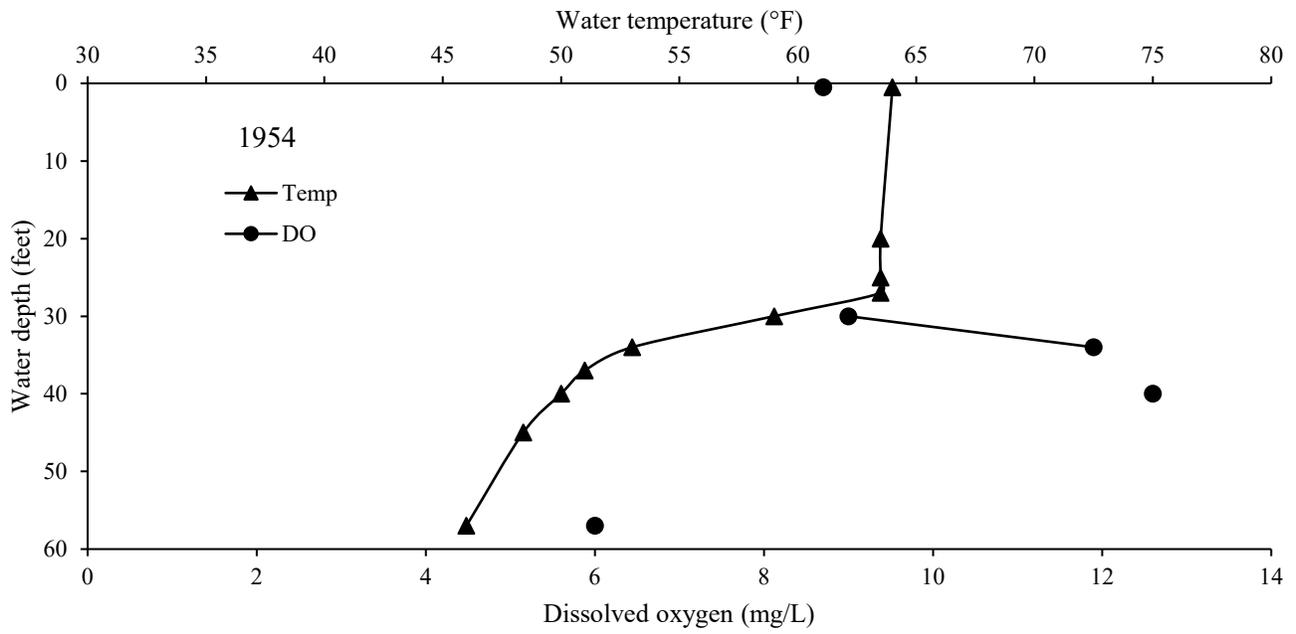


Figure 2.-Limnological profiles for Pretty Lake, Luce County conducted in summer 1954 and 2016.

Patrick Hanchin, Unit Review and Approval

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