Foch Lakes
Montmorency County, T32N, R01E, Section 28
Black River watershed, last surveyed 2018

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Environment

Foch Lakes is located in Michigan's northeastern Lower Peninsula (Figure 1) southwest of the town of Onaway, and northwest of the town of Atlanta. It is situated in sandy plains with pine and oak stands and is completely surrounded by state-owned forest land. The lake is comprised of two small natural lake basins which are over 20 feet deep and an impounded area of shallow water and flooded timber (figures 2 and 3). Townline Creek, a small warm water stream, enters the flooding, flows through both natural lake basins, and then out a state-owned water control structure to form Foch Creek which flows into the East Branch Black River. The water control structure is state dam identification number 238, and is classified as "low hazard potential" by the Michigan Department of Environmental Quality (MDEQ), meaning that failure may cause damage limited to agriculture, uninhabited buildings, structures, or township or county roads; environmental degradation would be minimal; and danger to individuals slight or nonexistent. The flooding drains 2.3 square miles of land.

The control structure of Foch Lakes floods approximately 85 surface acres when all stoplogs are inserted. The flooding was first created in 1955 but only impounded a surface area of approximately 23 acres. The flooding was modified for repairs in 1963 to expand the surface acreage to what it is today. The control structure is owned by the Michigan Department of Natural Resources (MDNR) Fisheries Division, which is responsible for its routine structural inspections and maintenance. Despite multiple repairs over the decades, the structure continued to deteriorate and a 2011 MDEQ safety inspection required complete drawdown of the flooding and return to the natural lake basins to allow better examination of the structure. Local fisheries managers heard from many users of the flooding regarding the drawdown, and weighed the options of complete removal or renovation. In 2013, Fisheries Division received significant funding from the MDNR Dam Management Grant program with lesser matching funds from local entities to renovate the entire structure. The flooding was drawn down in 2014, the control structure and outlet were completely replaced in the fall of 2015, and the flooding was restored to its normal pool elevation.

Water quality of Foch Lakes is good. The shallow zones of the flooding have ample aquatic vegetation and standing timber. The two natural lake basins are separated by littoral zone sedges and have steep dropoffs. Recreation around the lake is high; there are many dispersed camping sites along the flooding that people use as a home base for nearby fishing, hunting, morel picking, horseback riding, all-terrain vehicle riding, and other uses.

History

No historical fisheries survey data exists for Foch Lakes prior to 2018, and only one stocking record (Largemouth Bass in 1979) exists for the waterbody. Angler reports indicated that the lakes were fished frequently from shore or small watercraft and that fish communities were dominated by Bluegill and Largemouth Bass, and to a lesser degree, Pumpkinseed, Yellow Perch, and Northern Pike. These

reports also suggested that Bluegill densities were good, but fish sizes were generally small with most less than 8 inches. High-quality bass fishing was also present at Foch Lakes according to a number of anglers who called during the draw down period. Opposition to the drawdown and concern for the future of the flooding was evident based on phone calls Fisheries Division received during the renovation period.

Current Status

The first fish community survey of Foch Lakes was made from May 14-17, 2018. Effort consisted of: 4 experimental gill-net lifts, 5 large-mesh trap-net lifts, 9 large-mesh fyke-net lifts, and 4 small-mesh fyke-net lifts. Water temperature was in the low- to mid-60s Fahrenheit as a very cold spring preceded the survey. Panfish spawning activity had not yet occurred. A total of 264 fish were captured during the survey (Table 1). The most abundant species in the catch were Bluegill and Largemouth Bass. Panfish such as Bluegill, Pumpkinseed, and Rock Bass made up 60% of the total catch by number, and 27% by weight. Predators such as Largemouth Bass and Northern Pike comprised 36% of the total catch by number, and 58% by weight. Overall species diversity in the catch was very low, as can be expected in a small headwaters flooding which drains very little acreage. In fact, only seven species of fish were collected (Table 1), only two of which are considered non-game species (Iowa Darter and White Sucker). It is likely that some other species were present but not collected due to lower densities or lesser susceptibilty to the sampling gear. For example, Yellow Perch are known to be present in Foch Lakes based on angler reports, but were not collected in the survey.

Bluegill up to 10 inches were collected in the survey (Table 1), with relatively good numbers of fish 8 inches and larger (Table 2). Prior to the drawdown, this flooding was known by anglers for abundant but small Bluegill. It appears the drawdown may have thinned out numbers and improved size structure, possibly by confining the fish to a smaller area and making them more susceptible to predators. Eight year classes of Bluegill were collected (Table 3) and growth was considered good. Pumpkinseed, another important panfish for anglers, were caught in lower numbers compared to Bluegill (Table 1). They also were represented by fish of large sizes and a number of ages (tables 2 and 3). Their growth rates were also considered excellent, possibly due to lower panfish densities than reported by anglers in the past.

The important predators captured during the survey were Largemouth Bass and Northern Pike (Table 1). Largemouth Bass were considered abundant and had many specimens of legal size (14 inches) and larger. Large fish up to 19 inches were found (Table 2) and there may be larger fish in Foch Lakes. Bass growth rates were average, and densities were considered fairly high relative to other area waters. Nine year classes of bass were caught (Table 3). Northern Pike can also be found in the flooding, but are not as abundant as bass. Pike up to 36 inches were collected, and represented by six year classes (tables 2 and 3). Pike older than age-4 were not common.

Analysis and Discussion

The current fish community and environment of Foch Lakes is recovering from the recent drawdown and dam renovation and has the following characteristics: 1) a naturally-reproducing panfish community with low diversity, low densities, high growth rates, and dominated by Bluegill, 2) a predator fish population low in diversity but balanced with naturally-sustaining Largemouth Bass and Northern Pike populations that display multiple age classes and average to slow growth, 3) a non-game

fish community low in diversity and abundance, and 4) a recovering fish population following a recent drawdown and dam renovation.

The Foch Lakes panfish community is low in diversity but demonstrates good growth. Species available to anglers include Bluegill, Pumpkinseed, and Rock Bass. Yellow Perch, though not captured in the survey, are likely still present in the waterbody in lower densities. Growth of sunfish is good and these species can live long. It appears that Bluegill can currently attain large sizes by having low mortality rates and through fast growth. Pumpkinseed are important components of the fishery, they add diversity to the catch and may take angling pressure off of Bluegill. The dam renovation and refilling has restored much of the shallow areas of the flooding that are used by panfish for spawning. In coming years, we may see depression of current panfish growth rates as their densities increase.

There are two main fish predators in Foch Lakes, Largemouth Bass and Northern Pike. Like most other species in this lake, their populations have built up over time since the creation of the flooding. Both species attain large sizes and can provide a quality experience to anglers. In the recent decade anglers have considered the bass fishing in this waterbody superior to many others. The current population of Largemouth Bass following the drawdown still appears to be of excellent quality.

The non-game fish community of Foch Lakes is currently limited. Most northern Michigan waterbodies have an abundance of competing fish such as bullheads and White Suckers, but they appear absent or in low numbers in the lakes today. Their continued absence or low numbers will be important for maintaining the quality of this fish community as competition with these non-game species for resources is currently small.

Management Direction

1) The Foch Lakes flooding is currently in the state of a recovering fish community following a recent drawdown and dam renovation. An additional survey should be completed within the next fifteen years to document this evolving fish community. The DNR owns the dam infrastructure and has invested time and money into maintaining this flooding for all users, not just anglers. This impounded waterbody has numerous dispersed camping sites along its shoreline, and is popular with locals and downstate users. This was evident by concerns expressed during the drawdown. DNR Fisheries Division will continue to have the dam inspected routinely as was done in the past.

2) Anglers are urged to report catches of all species to the local DNR biologist. Sampling gear is not always efficient at capturing some fish, sometimes leaving information gaps for individual species. Such reports are useful for current and future management of the fishery. The current State of Michigan fishing regulations are appropriate for Foch Lakes Flooding.

References

Table 1.-Relative abundance, by species, of fishes collected with survey gear at Foch Lakes, May 14-17, 2018.

Common Name	Number	Percent by number	Length Range *(inches)*	Weight (lbs)*	Percent by weight	Growth** (inches)
Bluegill	129	48.7	1-10	43.6	21.7	+1.4
Largemouth Bass	81	30.6	5-19	75.4	37.5	+0.2
Pumpkinseed	19	7.2	1-9	8.0	4.0	+2.0
Northern Pike	15	5.7	14-36	41.9	20.9	-1.4
Rock Bass	12	4.5	3-8	2.6	1.3	
Iowa Darter	7	<1	1-2	0.0	0.0	
White Sucker	1	<1	13	1.0	0.5	
TOTAL	264			201.0		

* calculated based on length-weight relationships

**based on a comparison to statewide growth for that species (inches)

Table 2.-Length-frequency distribution of select game fishes collected during the May 14-17, 2018 survey at Foch Lakes.

Length (in)	Bluegill	Pumpkinseed	Largemouth Bass	Northern Pike
1	32	1		
2	3			
3	1	1		
4	12			
5	10	1	3	
6	2	2	7	
7	1	3	5	
8	26	9	6	
9	29	2	18	
10	13		5	
11			2	
12			1	
13			10	
14			18	3
15			2	1
16			1	
17				1
18			2	1
19			1	1
20				1
21				
22				1
23				2
24				1
25				
26				1
27				
28				
29				
30				1
31				
32				
33				
34				
35				
36				1

Table 3. Weighted mean length and age composition of selected species in the Foch Lakes survey, May 2018.

Species/Age	No. Aged	Length range (in.)	State avg. length (in.)	Weighted mean length (in.)	Weighted age freq.
Bluegill					
1	2	2.6	1.8	2.6	2.1%
2	4	2.5 – 4.4	3.8	3.6	4.1%
3	19	4.0 – 6.2	5.0	4.9	19.6%
4	3	5.5 – 6.6	5.9	5.9	3.1%
5	5	7.8 – 8.8	6.7	8.5	11.8%
6	14	8.2 – 10.1	7.3	8.9	35.1%
7	6	9.2 – 10.0	7.8	9.6	12.1%
8	7	9.8 – 10.5	8.2	10.0	12.1%
Pumpkinseed					
2	1	3.0	3.8	3.0	5.6%
3	2	6.1 – 6.6	4.9	6.3	11.1%
4	2	5.8 – 7.4	5.6	6.7	13.9%
5	5	7.5 – 8.9	6.2	8.1	30.6%
6	3	8.2 – 8.9	6.6	8.5	16.7%
7	2	8.6 – 9.5	7.1	9.0	11.1%
8	2	8.6 – 9.1	7.5	8.8	11.1%
Largemouth Bass					
2	21	5.0 – 9.4	7.1	7.2	26.2%
3	21	7.9 – 11.2	9.4	9.6	27.9%
4	4	9.4 – 13.9	11.6	11.8	5.1%
5	10	12.7 – 14.7	13.2	13.9	15.5%
6	11	13.5 – 16.4	14.7	14.5	19.1%
7	2	13.8 – 15.3	16.3	14.5	2.5%
8					
9	2	18.3 – 18.6	18.3	18.4	2.5%
10	1	19.9	19.3	19.9	1.2%
Northern Pike					
2	7	14.1 – 20.9	17.7	16.3	46.7%
3	2	19.0 – 22.0	20.8	20.5	13.3%
4	3	23.2 – 26.2	23.4	24.6	20.0%
5	1	23.0	25.5	23.0	6.7%
6					
7					
8	1	30.0	31.2	30.0	6.7%
9					
10					
11	1	36.1	--	36.1	6.7%

Figure 1. General location of Foch Lake Flooding the northern Lower Peninsula of Michigan. Location indicated by red arrow.

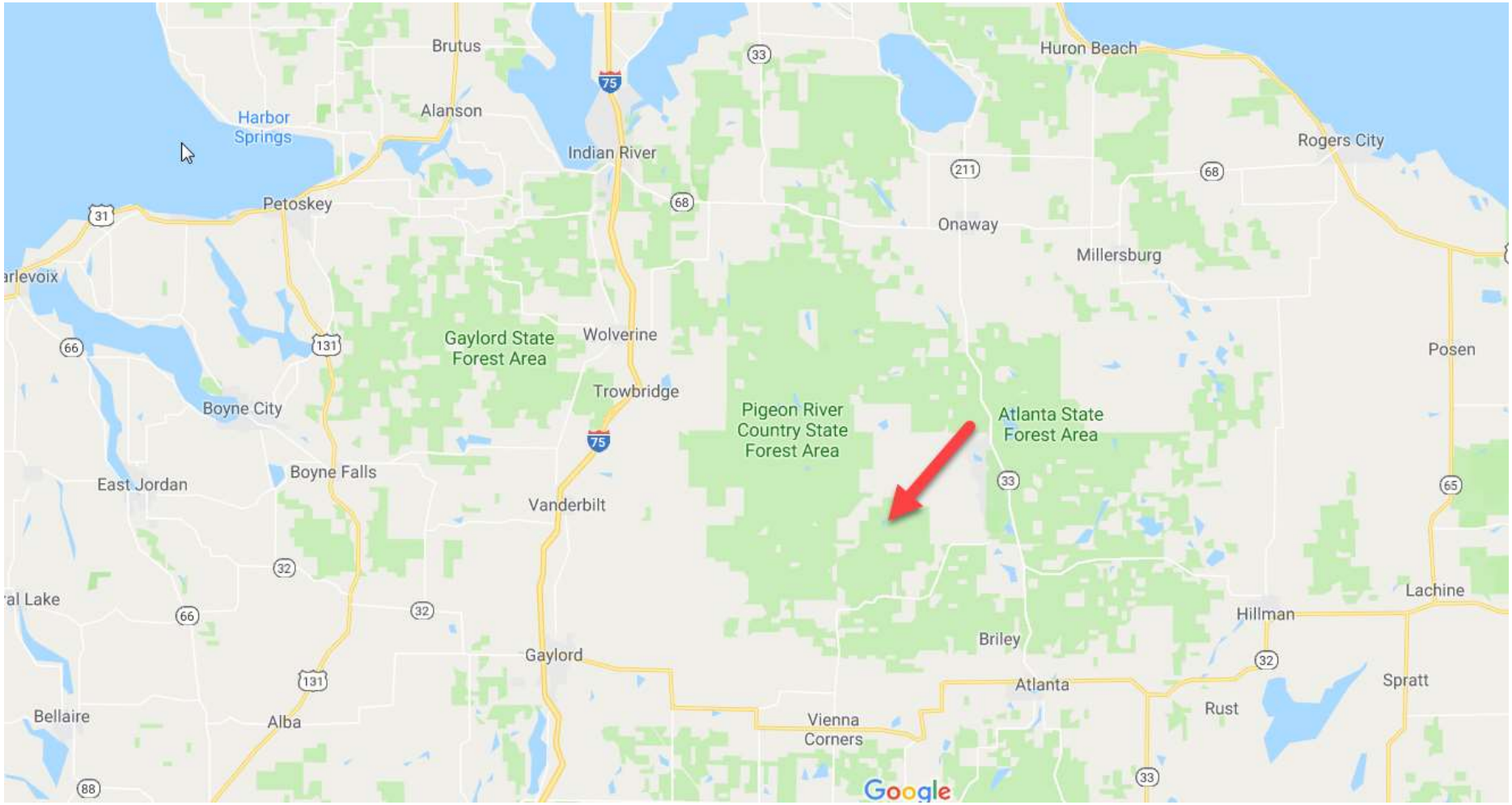

Figure 2. Aerial photo showing Foch Lakes natural basins and surrounding impounded area.

Figure 3. Original bathymetric map for Foch Lakes and impounded area, 1963.

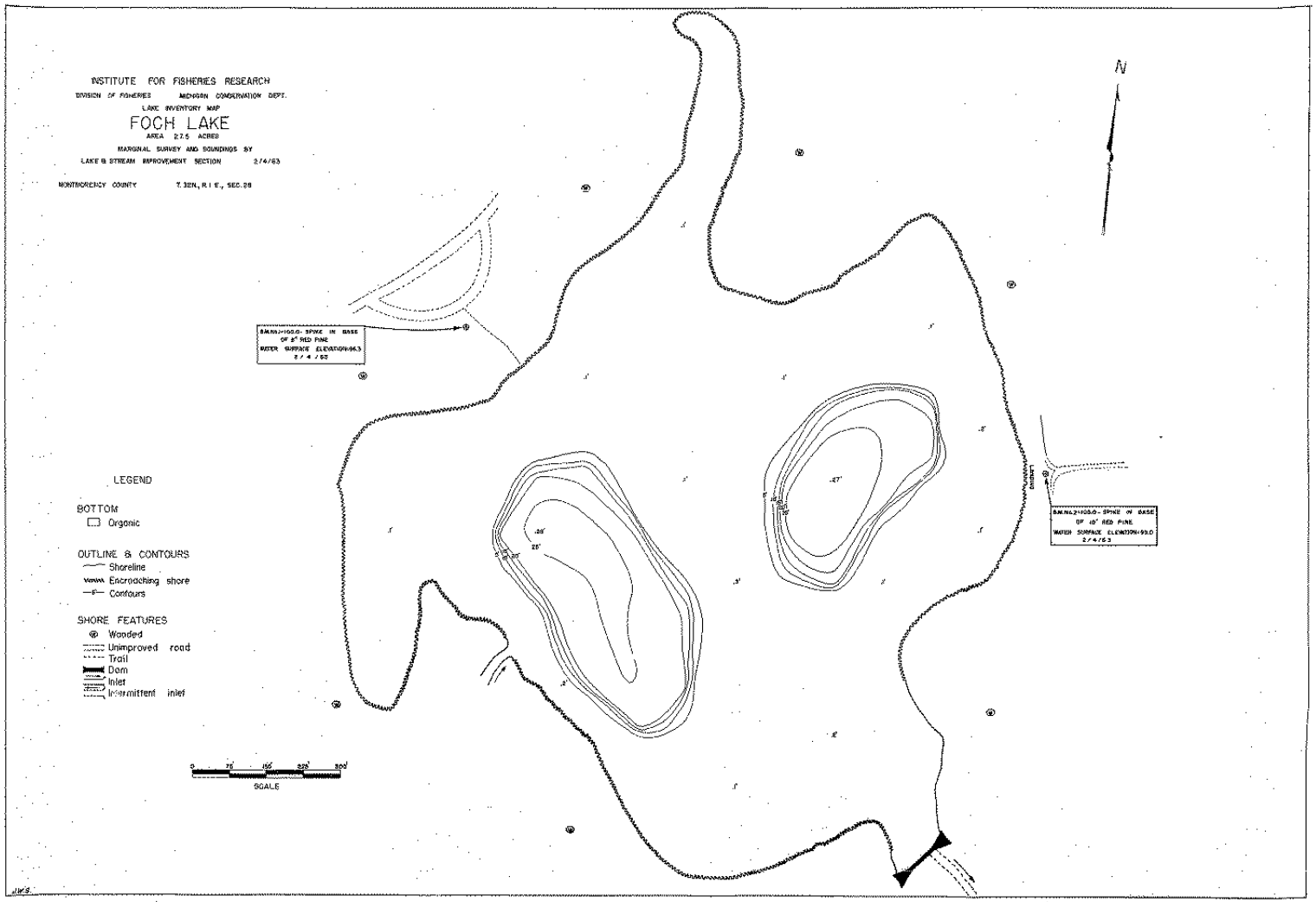

Photo 1. Foch Lakes bottom substrate and environment under recent drawdown.

Photo 2. Foch Lake under a recent drawdown for dam renovation. The natural lake basins are evident as is the old dam spillway.

Photo 3. Foch Dam control structure under renovation in 2016.

Photo 4. Foch Dam control structure and levee post renovation 2016.