

**Adirondack Lake
Boat Electro-Fishing Survey
September 18, 2018**

The Adirondack Lake Weed Control District requested that a fish survey of Adirondack Lake be conducted in the fall 2018. The survey was requested to determine the current status of the fish community with special focus on the gamefishes (i.e., northern pike, largemouth bass and smallmouth bass). The concern was that the significant loss of aquatic plants due to the grass carp introduction had negatively impacted the fish community and degraded the recreational fishery in Adirondack Lake.

Dr. Mark Cornwell from SUNY Cobleskill was contacted about conducting the boat electrofishing survey on Adirondack Lake. Dr. Cornwell worked with Brian Farrell of the Adirondack Lake Weed Control District to schedule the survey on September 18, 2018.

This report summarizes the results of the boat electrofishing survey conducted by SUNY Cobleskill and fish management recommendations.

Study Site

Six electrofishing sites were selected and delineated by GPS coordinates in Adirondack Lake (Figure 1). A water quality survey was conducted at the deep site in front of the Adirondack Lake dam prior to the boat electrofishing survey (Figure 1).

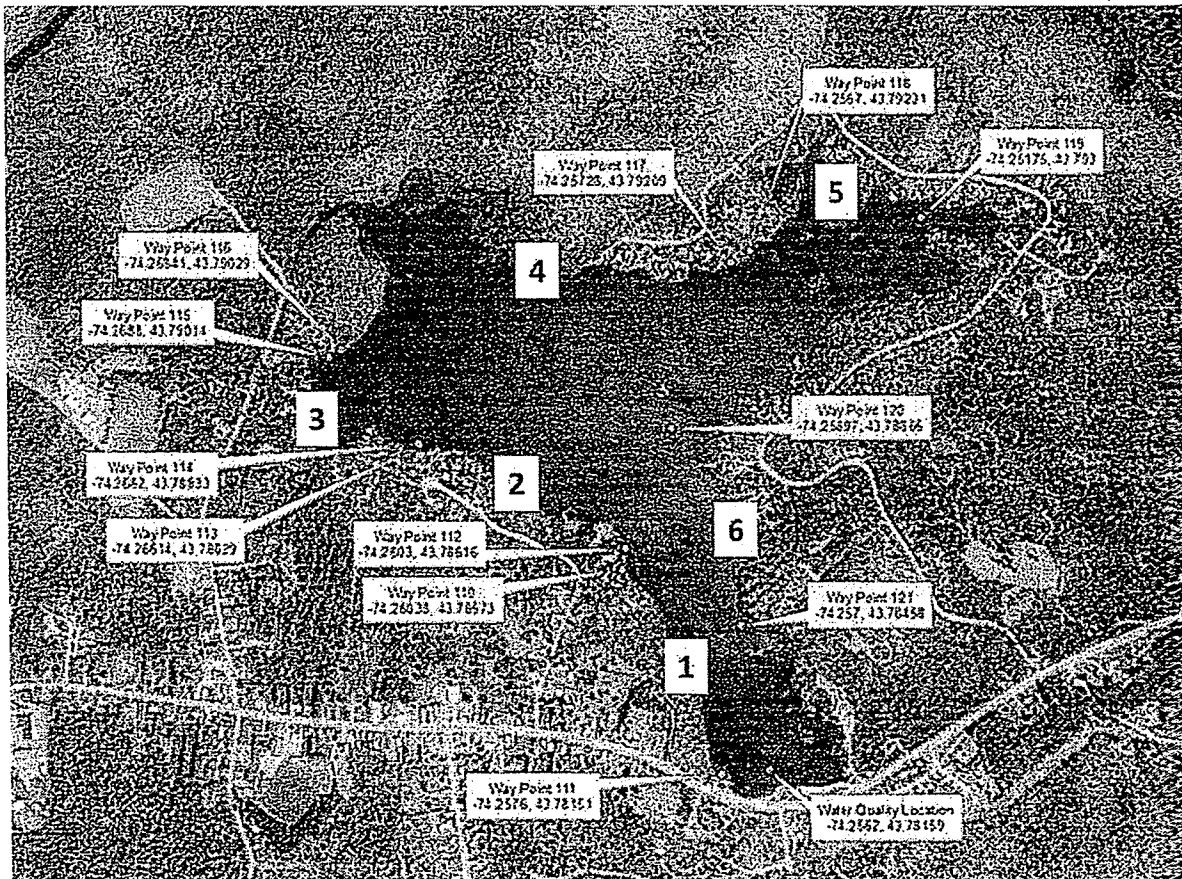


Figure 1. Site map of electro-fishing sites on Adirondack Lake. Sites 1 through 6 are located between GPS waypoints shown on the map.

Methods

Water Quality Survey : The deep site in Adirondack Lake was located and a water quality profile was conducted prior to the boat electrofishing survey. The following parameters were measured at one foot intervals:

- Temperature (oC)
- Dissolved Oxygen (mg/L)
- Conductivity ($\mu\text{S}/\text{cm}$)
- Total Dissolved Solids (mg/L)
- Salinity
- pH

Boat Electrofishing Survey : The electrofishing survey was conducted using a the SUNY Cobleskill boat operated by Dr. Mark Cornwell. The lake was divided into six sites delineated by GPS coordinates. The survey consisted of electrofishing each site running parallel to the shoreline. The effort expended within each site was:

- Site 1: 0.25 hours
- Site 2: 0.25 hours
- Site 3: 0.25 hours
- Site 4: 0.53 hours
- Site 5: 0.26 hours
- Site 6: 0.25 hours

Results

Water Quality Survey : Adirondack Lake was weakly thermally stratified on September 18, 2018. The dissolved oxygen content of the water was depleted from 14 to 16 feet depth (i.e., 3.96 to 2.19 mg/L). The conductivity was relatively high for the Adirondack region improving the effectiveness of the electrofishing boat. The pH was relatively high (range 6.52-7.50) and the Secchi depth was 8.5 feet which indicates low transparency and high turbidity compared to many Adirondack lakes.

Table 1. Deep site water quality profile in Adirondack Lake on September 18, 2018. Water quality site location is shown on Figure 1.

Depth (ft)	Temp ($^{\circ}\text{C}$)	DO (mg/L)	Cond ($\mu\text{S}/\text{cm}$)	TDS (mg/L)	Salinity	pH
0	23.6	8.24	104.7	70.2	0.05	7.48
1	23.6	7.79	104.7	70.2	0.05	7.43
2	23.5	7.81	104.7	70.2	0.05	7.45
3	23.6	8.17	104.7	70.2	0.05	7.45
4	23.6	8.07	104.7	70.2	0.05	7.47
5	23.5	7.71	104.7	70.2	0.05	7.48
6	23.5	7.47	104.8	70.2	0.05	7.5
7	23.4	7.73	104.4	70.2	0.05	7.5
8	23.3	7.6	104.3	70.2	0.05	7.48
9	23.1	7.94	104	70.2	0.05	7.44
10	22.1	7.38	101.6	70.2	0.05	7.26
11	20.7	6.04	98.6	69.5	0.05	6.92
12	20.1	4.71	97.5	70.2	0.05	6.68
13	19.7	4.18	97.2	70.2	0.05	6.62
14	19.4	3.96	97.2	70.8	0.05	6.59
15	19.3	3.38	97.4	70.8	0.05	6.57
16	19.1	2.19	98.7	72.1	0.05	6.52

Overall, the water quality conditions were very suitable for fish survival and growth.

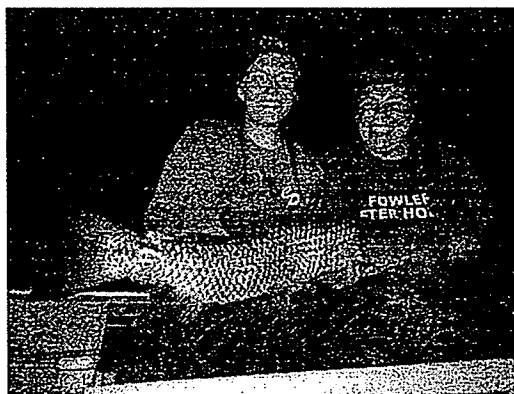
Boat Electrofishing Survey : The boat electrofishing survey included total of 1.79 hours of on time (i.e., when electrical current was on). The catch was diverse and comprised of ten fish species including largemouth bass, smallmouth bass, yellow perch, northern pike, pumpkinseed, rock bass, brown bullhead, golden shiner, white sucker and grass carp (Table 1). The fish community was categorized by (1) gamefish and panfish and (2) other fishes for purposes of this report.

Table 2. Boat electrofishing fish catch in Adirondack Lake (September 18, 2018)

Species	Sample Size (n)	Mean Length (in)	Catch Per Effort (n/hr)
Largemouth Bass	79	9.4	44.1
Smallmouth Bass	82	4.8	45.8
Yellow Perch	443	4.1	247.5
Northern Pike	1	26.5	0.6
Pumpkinseed	32	4.8	17.9
Rock Bass	23	5.2	12.8
Brown Bullhead	3	6.9	1.7
Golden Shiner	16	3.9	8.9
White Sucker	22	14.7	12.3
Grass Carp	1	36.0	0.6



Northern Pike



Grass Carp



Largemouth Bass

Gamefish/Panfish Catch : The length-frequency distribution of gamefish (i.e., largemouth bass, smallmouth bass, northern pike) and panfish (i.e., rock bass, yellow perch, pumpkinseed) are shown in Figure 2. Descriptions of the catch of each species follow.

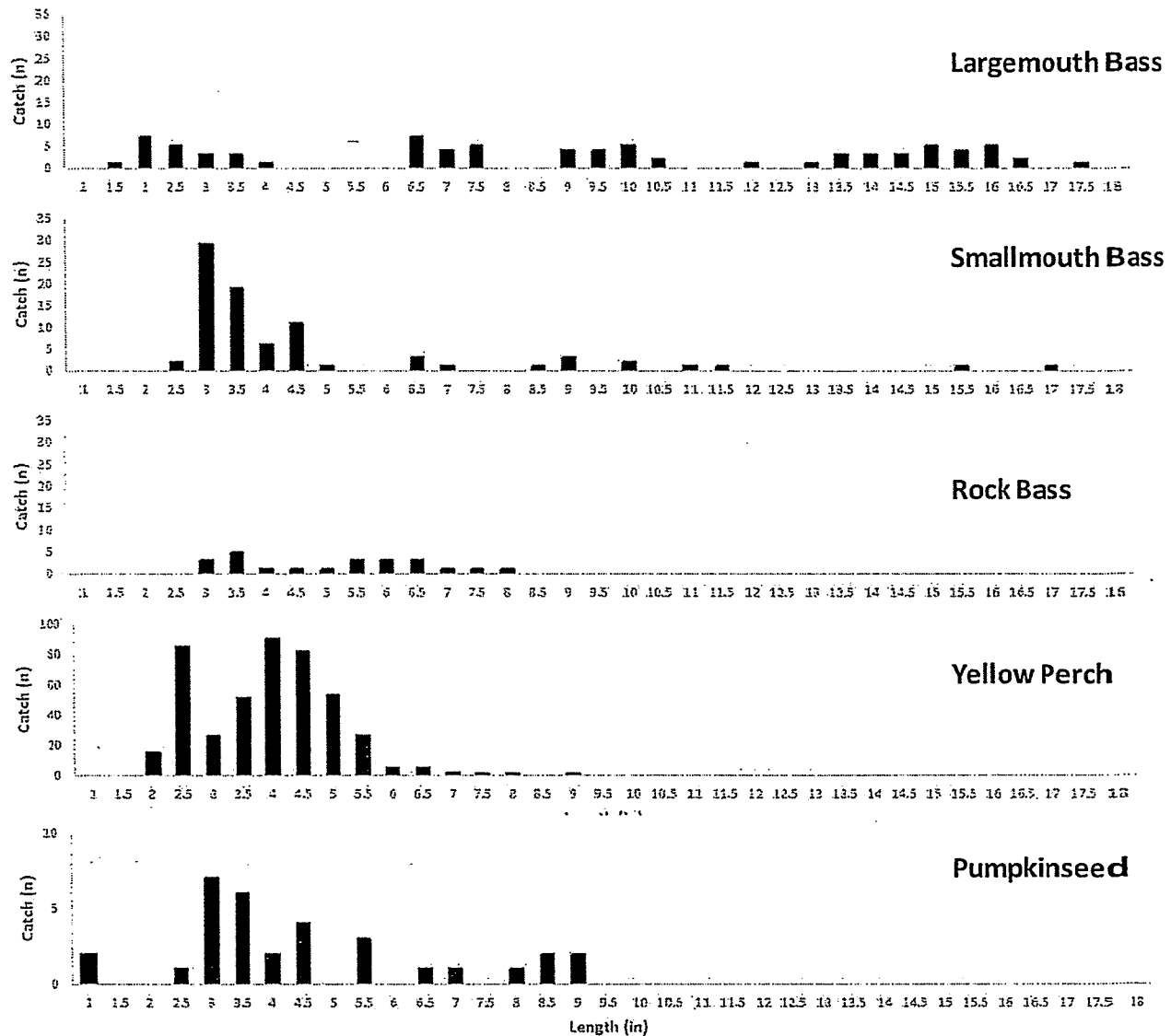


Figure 2. Length-frequency distribution of gamefish and panfish sampled in the boat electrofishing survey in Adirondack Lake (September 18, 2018)

Northern pike : Only one northern pike was captured at a very low catch rate of 0.6 fish/hour. The fish was 26 inches and 7 pounds – and no smaller fish were captured. Smaller fish were absent from the catch.

Largemouth bass : A total of 79 largemouth bass were sampled. The catch rate was 44.1 fish/hour. There were good numbers of legal sized fish ranging from 12.0 to 17.5 inches. In addition, there were young-of-year less than 4 inches.

Smallmouth bass : A total of 82 smallmouth bass were sampled. The catch rate was 45.8 fish/hour. There were very few legal sized fish exceeding 12.0 inches. There were young-of-year less than 4 inches.

Yellow Perch : A total of 443 yellow perch were sampled. The catch rate was 247.5 fish/hour. There were large numbers of fish from 2.0 to 5.5 inches. There were very few fish of harvestable size exceeding 7.0 inches.

Pumpkinseed : A total of 32 pumpkinseed were sampled. There appears to be at least three year classes of this species ranging in size from 1.0 to 9.0 inches.

Rock Bass : A total of 23 pumpkinseed were sampled. Low numbers of this species ranging in size from 3.0 to 8.0 inches were sampled.

Other Fishes : The length-frequency distribution of other fishes (i.e., golden shiner, white sucker, brown bullhead) are shown in Figure 3. Descriptions of the catch of each species follow.

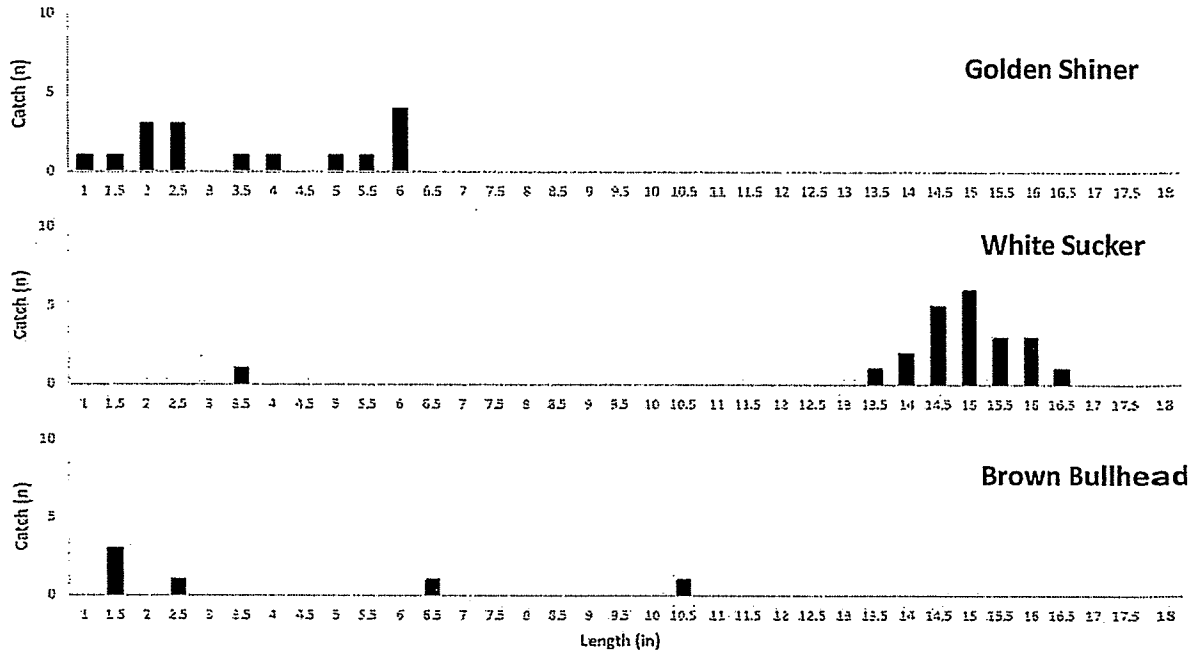


Figure 3. Length-frequency distribution of other fishes sampled in the boat electrofishing survey in Adirondack Lake (September 18, 2018)

Golden Shiner : A total of 16 golden shiners were sampled. Low catch rate of 8.9 fish/hour of this forage fish ranging in size from 1.0 to 6.0 inches.

White Sucker : A total of 22 white suckers were sampled. Low catch rate of 12.3 fish/hour with fish ranging in size from 13.5 to 16.5 inches. Essentially no smaller fish were sampled.

Brown Bullhead : A total of 3 brown bullheads were sampled. Very low catch rate of 1.7 fish/hour.

Grass Carp : Only one grass carp at 36 inches was captured. Two grass carp were shocked but not netted by the crew. The low catch of grass carp is indicative of low abundance of this species in the lake.

Conclusions and Fish Management Recommendations

The Adirondack Lake fish community is diverse with ten fish species present.

The gamefish community is well represented by largemouth bass with many legal-size fish and smallmouth bass with very few legal-size fish exceeding 12 inches. The northern pike population appears to be very low for this historically important gamefish in the recreational fishery.

The panfish population is dominated by an abundance of small yellow perch. Very few panfish were sampled that exceeded 7 inches.

This boat electrofishing survey provides baseline data for future assessments of the fish community in Adirondack Lake as the plant community recovers (i.e., in the eventual absence of grass carp).

In the near term I would consider the following fish management actions:

1. Catch and release all northern pike and smallmouth bass to protect the adult, spawning fish
2. Catch and release all largemouth bass greater than 14 inches to protect the adult, spawning fish

It will be important to protect the adult stocks of largemouth bass, smallmouth bass and northern pike as these game fish populations recover from a period of severe aquatic plant depletion due to the grass carp introduction. Special attention should be given to fishing derbies (open water and ice fishing) and anglers should either be required or encouraged to catch and release all legal sized gamefish.

Based on the aquatic plant survey conducted in August 2017 and 2018, it appears the aquatic plant community is recovering which will benefit all fish in the lake. The low catch of grass carp supports the observations of a recovering aquatic plant community in Adirondack Lake.

Within the next five years, it would be useful to repeat the August aquatic plant survey and the September fish boat electrofishing survey to measure the progress of the recovery of the aquatic plant and fish community in Adirondack Lake.

Respectfully Submitted:

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October 19, 2018