Integrated Aquatic Sciences LLC

79 Evans Lane
Lake Placid, NY 12946

Mark Denicore
Chazy Lake Watershed Initiative
Dannemora, NY

VIA EMAIL

21 August 2018

Dear Mark:

Thank you for considering Integrated Aquatic Sciences, LLC for assistance with the fish community survey at Chazy Lake. We are excited to work with you on this project and are providing an approach and costs to conduct the survey. As discussed with you, we are providing an approach that will help better understand the fish community in Chazy Lake that can be incorporated into your ongoing lake management strategies

Background
Chazy Lake is an approximately 740 hectare (1828 acres) lake in the Town of Dannemora. Lake level is controlled at the northern end by a dam that was built in 1923. It is thought that this dam raised the original water level by 8 ft and expanded the shoreline. The maximum depth of the lake is 22 m (72 ft). The New York State Department of Environmental Conservation conducted a fish community survey in 2009 using gillnets and minnow traps to assess impacts from a Northern Pike (*Esox lucius*) introduction. While they did not collect any Northern Pike, they noted the decline in abundance of Lake Trout (*Salvelinus namaycush*) and that landlocked Atlantic Salmon (*Salmo salar*) stocking has continued to provide a fishery. Fish collected in 2009 included (Lance Durfey, personal communication):

- 477 Yellow Perch (*Perca flavescens*)
- 81 Rainbow Smelt (*Osmerus mordax*)
- 36 White Sucker (*Catastomous commersoni*)
- 29 Pumpkinseed (*Lepomis gibbosus*)
- 20 Atlantic Salmon
- 19 Golden Shiner (*Notemigonus chrysoleucas*)
- 16 Smallmouth Bass (*Micropterus dolomieu*)
- 9 Brown Bullhead (*Ameiurus nebulosus*) and
- 5 Lake Trout.

Based on Adirondack Lakes Assessment Program (ALAP) results, Chazy Lake can be described as oligotrophic, although phosphorus concentrations in 2017 were very high due to what appears to be an erroneous result at Eagle Point in July. Since 2002, water transparency has declined with a slight increase in chlorophyll a (although not a significant trend). Chazy Lake has the invasive Eurasian watermilfoil with active efforts to reduce the coverage of this plant. We are not aware of an overall assessment of the aquatic plant composition. Water temperature is also an important parameter to monitor, both at the surface and deep, although we were unable to identify any data. Based on the fish survey, the fishery in Chazy Lake is two-tiered with cold water fish in the deeper waters and warmwater species in the surface waters.

Proposed Plan

For this assessment, we recommend using nighttime boat electrofishing along the shoreline following the NYSDEC Centrarchid Sampling Protocols (Green, D.M. 1989. Fish Sampling Manual. Centrarchid Sampling Manual. Bureau of Fisheries. New York State Department of Environmental Conservation, Albany, New York). This method will target the warmwater fishery, although coldwater species may be captured. In addition, if approved by NYSDEC, we propose conducting gillnetting in the deeper water to specifically target the coldwater species that are more difficult to sample by electrofishing. That sampling would be conducted with short sets (2-3 hours) to reduce fish mortality. Gillnets will be set perpendicular to shore at six locations on the lake overnight during boat electrofishing. All sportfish collected will be measured for total length and weighed to the nearest gram, non-game fish will be measured only. Prior to sampling each evening, we will assess water chemistry by taking a water quality profile (temperature, dissolved oxygen, pH) in the deepest part of lake as well as a secchi depth. Measurements will be recorded from every meter to the maximum depth (13 meters). A report summarizing the results of the survey, including an estimate of the catch per unit effort (CPUE; number of fish per hour), and recommendations for future fish management will be completed and submitted to you within one month of field collection. Sampling is proposed for late summer or early fall when surface water temperatures are approximately 15-20^{0}C (59-68^{o}F). Mark Cornwell from the Department of Fisheries and Wildlife at SUNY-Cobleskill will conduct the boat electrofishing survey (with two fisheries technicians) and Integrated Aquatic Sciences will assist with fish collection and processing, conduct the data analysis, and prepare a report of the findings. Based on the size of Chazy Lake, we have assumed that sampling will take 3 nights.

The total cost for the sampling is $12,327 with $7,362 for SUNY-Cobleskill and $4,965 for Integrated Aquatic Sciences as detailed in Table 1.

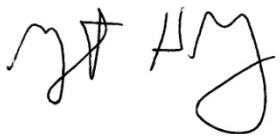
Table 1. Cost estimate for fish community survey of Chazy Lake

Integrated Aquatic Sciences, LLC			
Task	**Hours ($85/hour)**	**Direct Cost**	**Cost**
Preparation and Permitting	6		$510
Assist with fish sampling and processing in field	24	$75 (mileage) $300 (per diem)	$2,415
Data Analysis	8		$680
Report Preparation	16		$1,360
Total (IAS)			**$4,965**
SUNY-Cobleskill*			
Category	**Days**		**Cost**
Personnel – M. Cornwell ($826/day)	3		$2,478
Personnel – Field Techs (2@$165/day)	3		$990
Total Salary			**$3,468**
Direct Costs			
Electrofishing boat ($1,180/day)	3		$3,540
Travel ($118/day)	3		$354
Total (Cobleskill)			**$7,363**
Total Cost (IAS + Cobleskill)			**$12,328**

*SUNY-Cobleskill costs include 18% SUNY Research Foundation overhead charge and a 40% fringe benefit on salaries

I look forward to discussing this proposal with you and working with you and the Chazy Lake Watershed Initiative to more fully understand the fishery. Please feel free to contact me at (315) 730-5342 if you have any questions or want to discuss this with me.

Very Truly Yours,



Margaret H. Murphy, Ph.D.
Principal
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