FISHERIES ECOLOGY OF SCHOHARIE CREEK

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No Abstract

INTRODUCTION

The fisheries ecology of Schoharie Creek is very important to local fishermen and many others that use the river. The purpose of this survey report is to identify fish populations in the creek, paying particular attention to walleye (Stizostedion vitreum), and measure water quality and invertebrate production in the stream. Particular attention will be paid to factors that may affect the fisheries of the lower reservoir at Blenheim-Gilboa, and any changes from past studies.

MATERIALS AND METHODS

The study was conducted on Schoharie Creek (42°30′ N., 74°30′ W.) between Schoharie Reservoir at Gilboa, NY, through Lower Blenheim-Gilboa Reservoir, to Middleburgh, NY, in Schoharie County (see Map).

Chainshocking using the SUNY Cobleskill chainshocker and a portable generator was done on 4/19/91 by fisheries students between the lower reservoir and the Gilboa Dam. Species were identified as far as genus and species, and each specimen was measured for length. An attempt to chainshock was also made in the morning of 4/19/91, however the generator could not be started, although it started before leaving the college.

Invertebrate production was measured in the stream at the points indicated on the map. A one square foot sample area was measured using

a Surber Sampler to a depth of six inches. All specimens were identified as to order, and were weighed.

Since so little data was collected by the class through field labs, the group doing this project elected to make an extra trip to Schoharie Creek outside of class to collect water quality data. Water samples were taken at the indicated points and taken back to the lab for pH and conductivity analysis using the Hydrolab. During collection of the water samples, two fishermen were interviewed, and scale samples from their catch were taken for age and growth measurements using the microfiche reader.

RESULTS AND DISCUSSION

Fish Species:

Chainshocking produced nine creekchubs (Semotilus atromaculatus), seven white suckers(Catostomus commersoni), eight spottail shiners (Notropis hudsonius), six bluntnose minnows (Pimephales notatus), four tessellated darters (Ethiostoma spp.), three northern hogsuckers (Hypentelium nigricans), two brassy minnows (Hybognathus hankinsoni), one fantail darter (Ethiostoma flabellare), and one long nose dace(Rhinicthys cataractae). Length measurements are given in Table #1. Although this is a fairly broad range of species, past surveys of the creek (Culp 1974) revealed 28 species of fish present, consisting of walleye, yellow perch (Perca flavescens), chain pickeral (Esox niger), pumpkinseed (Lepomis gibbosus), rockbass

(Ambloplites rupestris), fallfish (Simotilus corporalis), and bass (Micropterus spp.) populations. Culp reports that although abundant, smallmouth and largemouth bass populations are somewhat stunted and appear to have a slow growth rate. Also found in many of the deeper pools were fallfish (Semotilus corporalis), bluntnose minnows, and shiners (Notropis spp.). The larger tributaries to the creek support trout (Salmonidae spp.) populations (Culp 1974).

Two fishermen interviewed caught two white suckers, and claimed bass, rockbass, pumkinseed and pickerel were also present. The two fishermen disagreed with each other as to whether walleye spawned in the creek, one claiming to have caught them in the past. No walleye were observed spawning during the study. Scale samples from the suckers (see Table #2) showed a good growth rate until the third year, when growth slowed dramatically.

Water Quality:

Conductivity decreased as we moved downstream (see Table #3), especially as we moved away from the reservoirs, suggesting that they provide increased nutrients to the stream. The pH remained fairly constant, just slightly basic. This does not seem to represent any problem.

One thing that may affect fish populations more dramatically is the extreme fluctuations in volume of the river, and the resultant fluctuations in turbidity as described by Culp (1976). The minimum flow as recorded at Prattsville (Culp 1982) was 31 cfs, compared to a

maximum flow of 7670 cfs, more than 220 times the minimum flow, with turbidity ranging from 0.5 NTU to 140 NTU. These would have a drastic effect on mid-summer survival, growgh rate, invertebrate production, and flooding during spring spawning. This may be a limiting factor in the fish populations. Other water quality factors seem to be sufficient (Culp 1976).

Invertebrate Production:

Except for a small 1/2 inch worm-like invertebrate that the group failed to identify, only one order of invertebrates (Diptera), was found, for a total of 27 invertebrates in seven sample plots (see Table #4). This gives an average invertebrate production of .017 g/sq ft. This is an extremely low production, and suggests that error may have been introduced somewhere in the experiment. I would think that 27 specimens would weigh more than one-tenth of a gram total, however this is the data we were given. Culp (1974) reports fair production of caddis and mayfly invertebrates, although there are a relatively narrow number of orders present. He also reports an abundance of crayfish and other bottom organisms that were not measured in this study. I would be cautious to draw conclusions on our very limited results.

10 samples indicate very low production. If you didn't like results you could borrow a surber sampler

CONCLUSIONS

Fish species present in the creek were identified, and supplemented by past studies done on the creek. Not enough information was gathered to determine abundance and trophic relationships. Scale samples indicate the fish may begin to become stunted, as was suggested by Culp (1974). No evidence of walleye spawning or presence was obtained, other than that of past studies and sketchy reports by fishermen, which does not help the fisheries objectives of the Lower Blenheim Gilboa Reservoir. More intense study of walleye populations through netting and electrofishing would be of additional benefit.

Water quality seems sufficient, although fluctuation in water level and turbidity should be researched to determine their effect on the fishery.

Invertebrate production was very sparse, although questionable. Further investigation to determine whether this is indeed the case is warranted, and if so, possible reasons for this. We simply cannot make any conclusions from the results of one lab study.

ACKNOWLEDGEMENTS

This manuscript was prepared by Tom Brooking, Kyle Spendiff, and John Morgan. Gratitude is also extended to the NR 221 Fisheries Management class for performing some of the surveys, and to Dr. Foster for guidance and supervision.

Literature Cited

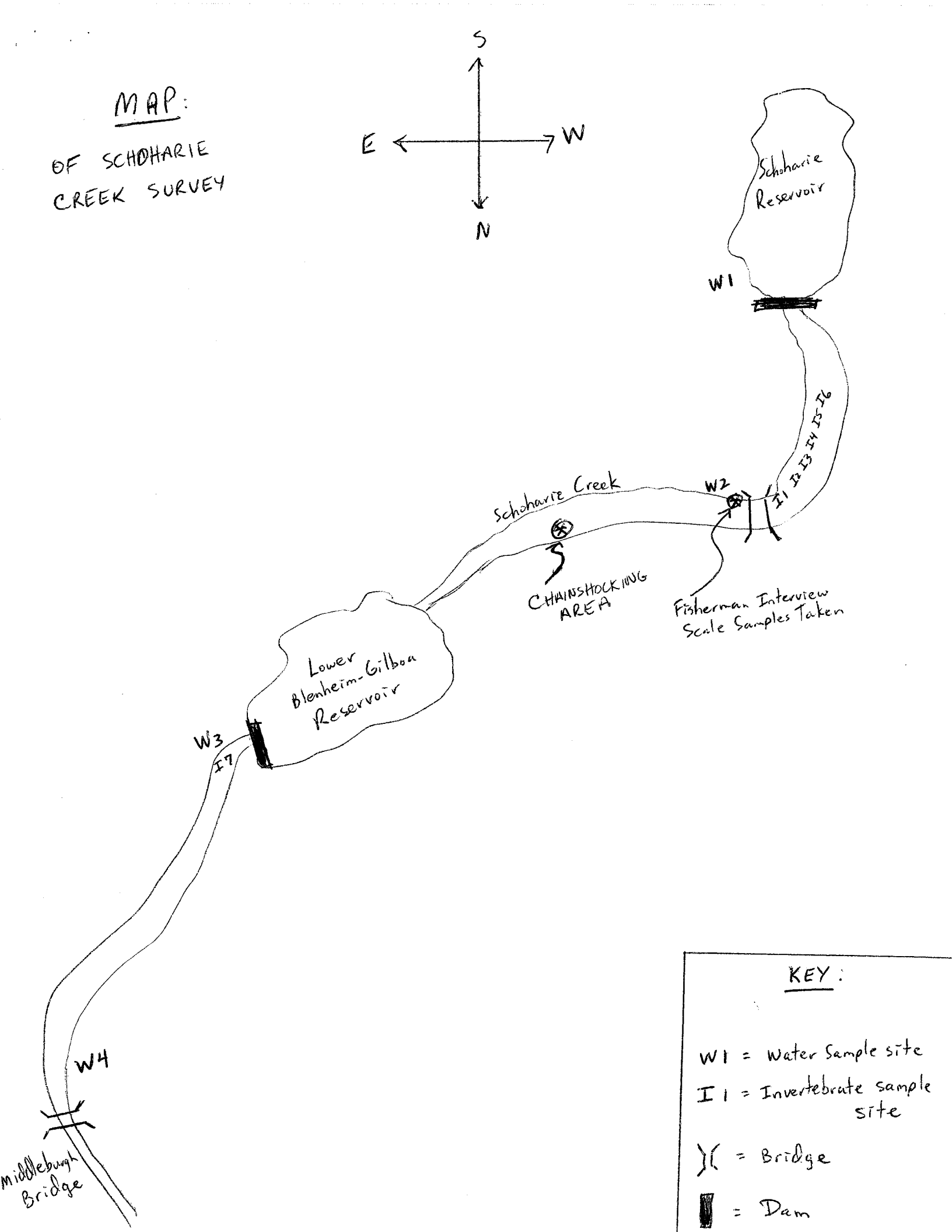
Culp, T. 1974. Studies of the ecology of the Blenheim-Gilboa pumped storage reservoir and Schoharie Creek in the vicinity of a proposed pump storage facility near Breakabeen, NY. Progress Report for 1972 and 1973. Ichthyological Associates. Stamford, NY.

Culp, T. 1977. Summary of water quality data from 1972 through 1976 in Schoharie Reservoir, its tributaries, Blenheim-Gilboa Reservoir, Schoharie Creek, and Esopus Creek. Ichthyological Associates. Stamford, NY.

Culp, T. 1982. Studies of the aquatic ecology and water quality of the Prattsville pumped storage site and the Blenheim-Gilboa pumped storage reservoirs. Progress Report for 1 January to 31 December 1981. Ichthyological Associates. Stamford, NY.

MAP:

OF SCHOHARIE CREEK SURVEY



KEY:

W1 = Water Sample site

I 1 = Invertebrate sample site

}{ = Bridge

▮ = Dam

TABLE #1:

CHAINSHOCKING RESULTS 4/19/91

SPECIES	NUMBER CAUGHT	LENGTH (mm)
WHITE SUCKER	1	410
WHITE SUCKER	6	60-65
CREEK CHUB	2	65
CREEK CHUB	6	40
CREEK CHUB	1	30
TESSELATED DARTER	1	70
TESSELATED DARTER	3	50
BLUNTNOSE MINNOW	2	50
BLUNT NOSE MINNOW	4	40-45
NORTHERN HOGSUCKER	3	N/A
BRASSY MINNOW	2	N/A
SPOTTAIL SHINER	8	N/A
FANTAIL DARTER	1	N/A
LONGNOSE DACE	1	N/A

TABLE #2

BACK CALCULATION OF GROWTH FROM SCALE SAMPLES OF TWO WHITE SUCKERS

YEAR	FISH #1 LENGTH OF RING	FISH #1 LENGTH OF FISH	FISH #2 LENGTH TO RING	FISH #2 LENGTH OF FISH
1	6 mm	135 mm	4	95 mm
2	10 mm	226 mm	10	237 mm
3	16 mm	361 mm	15	355 mm
4	17 mm	383 mm	-	-
5	18 mm	406 mm	-	-

TABLE #3:

WATER QUALITY ANALYSIS

SITE #	LOCATION	CONDUCTIVITY(NTU)	pH
1	Schoharie Reservoir near [redacted] Dam	71	7.1
2	Bridge below Schoharie Reservoir	17	7.3
3	Below Lower Reservoir	66	7.2
4	Rt. 30 bridge at Middleburgh	26	7.0

TABLE #4:

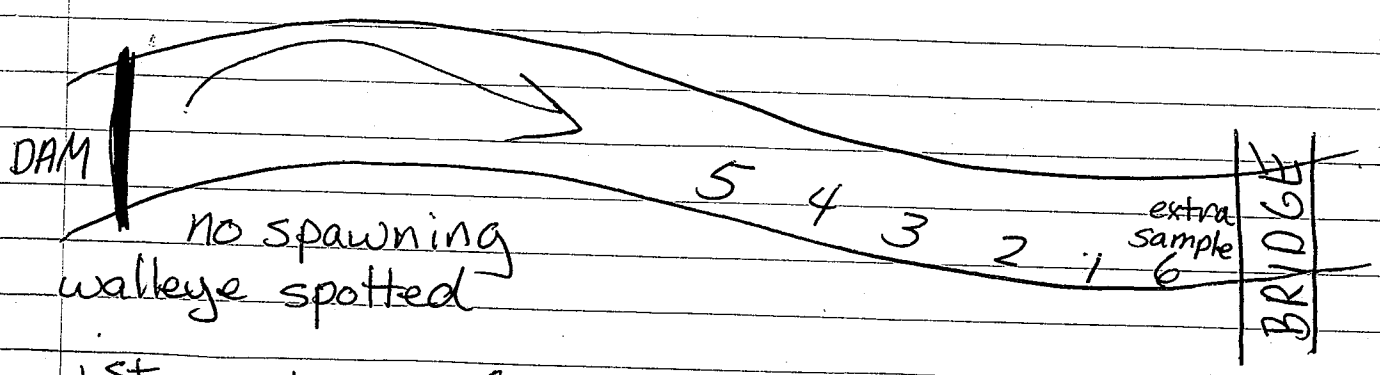
INVERTEBRATE PRODUCTION

SITE #	NUMBER OF INDIVIDUALS	ORDER	WEIGHT (g)
1	9	Diptera midge larvae	.05
2	7	Diptera 6midge larvae, 1adultmidge	.02
3	6	Diptera midge larvae	.02
4	1	Diptera pupa midge larvae	.01
5	3	Diptera midge larvae	.01
6	0	—	0
7	1	unidentified 1/2" worm like	.01

Mike, Ryan, Joe, Chris

Scoharie Creek

equip. used - surber sample



1st sample - less than .05 grams
9 midge larvae - Order Diptera

2nd sample - .02 grams
6 midge larvae | adult midge fly - Order - Diptera

3rd sample - .02 grams

6 midge larvae - Order Diptera

4th sample - < .01 grams

1 midge larvae | 1 pupa midge larvae - Diptera

5th sample - < .01 grams 3 midge larvae

6th sample - nothing!

A good stream should produce at least 2 grams of aquatic insects per foot!

Fisheries Management Lab

4/19/91

Afternoon chain shocking group.
Chris O., Ryan C., Doug L., Mike M., Janine D.

The chain shocking equipment was taken to the Scholarie creek between the lower reservoir and the Gilboa dam. Four runs with the chain shocker were made and the following species of fish were found:

#'s	Species	Length
6	Sucker, white	60-65 mm
1	Sucker, white	410 mm
2	creek chubs	65 mm
6	creek chubs	40 mm
1	creek chub	30 mm
3	Tesselated darter	50mm
1	Tesselated darter	70mm
2	bluntnose Minnow	50 mm

over

Unknown Species

#	Species	Length
3	bluntnose minnow	40 mm
1	bluntnose minnow	45 mm

from 4/19 afternoon

Unknown fish [redacted] Chainshocking

Species	nos.
Northern Hog Sucker Hypentelium nigricans	3
* Brassy Minnow Hybognathus hankinsoni	2
Spottail Shiner Notropis hudsonicus	8
Fantail Darter Etheostoma flabellare	1
Rhinichthys cataractae Longnose Dace	1

* Should check specimens for correct identification.

12 April 1991

Chris Heaf - marc Baker

D.J Clarke

Jim John

Lab Report

The invertebrate fauna found in this stream consisted of only one visiable invertebrate that we could not identify. this invertebrate was worm like about 1/2 inch long. ~~Weight~~ - 0.01 grams

Turbidity of the water was great. This may be ~~do~~ to recent rains. When testing the water, it was noticeable on how murky and high in nutrients the water was.

This stream at first look seems to be a productive stream. Although with a better look into the interal structure of the stream you can see w/out invertebrates, fish will not be able to live in the waters. The Stream also may be to high in nutrients.

There are two areas we found most suitable for testing fish. At the base of the dam for spawning walleye and in the middle between the dam and the bridge. this are consits of a large pool that takes up the width of the stream. No walleye were spotted in ~~this~~ ~~water~~ stream.

Hydro lab water testing 5/3/91

Tom Brookins
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(4) Middleburg
pH - 7.0
conductivity - 26 x 2K

(2) Bridge below Schoharie Reservoir
pH - 7.3
conductivity - 17 x 2K

(3) Below Gilboa Dam
pH - 7.2
conductivity - 66 x 2K

(1) Schoharie Reservoir
pH - 7.1
conductivity - 71 x 2K