

G.3 Fisheries and Water Quality(FLCC)

**STRATEGIC DEVELOPMENT PLAN FOR THE HAMLET OF RUSH AND THE
HONEOYE CREEK GREENWAY**

Fisheries Assessment for Honeoye Creek 2007-2008.

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Purpose

The Environmental Conservation and Horticulture Department at Finger Lakes Community College was contracted to perform a fisheries assessment of Honeoye Creek as part of the STRATEGIC DEVELOPMENT PLAN FOR THE HAMLET OF RUSH AND THE HONEOYE CREEK GREENWAY. In addition to performing a fisheries survey, water quality analysis and potential fishery enhancement strategies were to be recommended.

Honeoye Creek originates as the outlet of Honeoye Lake and flows northwestward to the Genesee River. It is a cool to warm-water stream with gentle gradients and is currently not being managed by the NYSDEC for any fish species (e.g. trout stocking) due to the low angler use. A fisheries survey had not been conducted in this stream for nearly twenty-five years (Smith 1985).

Methods

The sample corridor was confined to the stream segment from the Village of Honeoye Falls downstream to the Hamlet of Rush. A total of ten sample sites were selected based upon accessibility, location, and suitability for sampling. Five of the sample sites were located within the study corridor (5-8,10) and four were located upstream (1-4) and one downstream (site 9) (Figure 1). The study period was during July and October 2007 and June 2008. Each site was visited once during this period. At sites 1-9, quantitative samples were collected using a backpack electro-fisher (Smith-Root model 15C) and insulated scap nets. Stream segments 100 (m), upstream and downstream of the road crossings, were sampled. The tenth site was sampled for a total of 2700 continuous seconds with a Smith-Root SR16 electrofishing vessel in June of 2008. Species and length data (mm) were recorded for each fish collected.

Water quality data was recorded at each site using an YSI 85 and included the following parameters: dissolved oxygen (DO, mg/L), temperature (°C), and specific conductance (µS/cm). Qualitative habitat descriptions were noted for each site.

Data was analyzed using the Shannon-Weaver index (H') for species diversity (Shannon and Weaver 1949). This index is widely used in assessing fish populations and considers both species richness and evenness (Kohler and Hubert 1999). Comparisons to historical data were made using the NYS second biological survey conducted by Smith (1985).

Findings

Water quality

The water quality parameters for eight of the sites are listed in Table 1. Water temperature ranged from 18.5°C in October to 25.8°C in July. Dissolved oxygen ranged from 4.5 mg/L in October to 9.2 mg/L in July. Conductivity was highly variable, ranging from 397 µS/cm to 1013 µS/cm. Variations in water quality parameters may be attributed to the sampling date and concurrent weather patterns.

Fish assemblage

A total of 1,972 individuals representing 35 taxa were encountered during this study (Table 2). Cutlips minnow (*Exoglossum maxillingua*) was the most abundant species ($n = 202$) and was found at eight of the ten sampling sites. Other abundant species were bluegill (*Lepomis macrochirus*) and pumpkinseed (*Lepomis gibbosus*). It should be noted that despite the

abundance of bluegill and pumpkinseed, their distribution was primarily limited to site 1. This is likely due to the close proximity of site 1 to Honeoye Lake where these two species are abundant. Only two game species (large and smallmouth bass) were captured within the study area. Smallmouth bass (*Micropterus dolomieu*) (n = 139) were captured in seven of the ten sample sites with the majority (n = 45) captured at site 5. The size range for smallmouth bass was 46-420mm with an average length of 125mm. Only five of the 133 smallmouth bass captured were of legal size (12in or 305mm). Largemouth bass (*Micropterus salmoides*) were found at four of the ten sites. However, only one of the sites (10) was within the study area where water flow was significantly reduced (i.e. reservoir in the hamlet of Rush). No other game fishes were captured.

Diversity

Diversity values (Shannon-Weaver) were moderate at all sites, ranging from a minimum of 1.73 at site 1 to 2.53 at site 3. Currently, New York State does not have a protocol for direct comparisons of streams. However, applying the Index for Biotic Integrity (IBI) protocol developed for New Jersey streams, Honeoye Creek scores a 38 which classify it as a fair to good stream based on the present fish assemblage (Shinn 2000). Honeoye Creek is a warm-water stream with moderate species diversity. However, six of the species present (21%) are considered intolerant of habitat degradation and are therefore good indicator species for the system. The cutlips minnow, an intolerant species, was captured (n = 202) at eight of the ten sites (Table 2) suggesting favorable conditions throughout the study area.

Trophic guild

The majority of the species present (54%) are considered insectivores including the families cyprinidae, catostomidae, ictaluridae, and percidae. The only predatory piscivores are in the family centrarchidae (e.g. large and smallmouth bass).

Historical data

Historical data from Smith 1985 was used to determine possible changes in the Honeoye Creek fish assemblage. The following species (common names) were collected from Honeoye Creek by Smith but were absent from our sampling:

- brindled madtom
- emerald shiner
- striped shiner
- mimic shiner
- brook silverside
- tessellated darter
- yellow perch

Conversely, there were eight species collected in this study that were not encountered by Smith (1985) Second Biological Survey:

- common carp
- spottail shiner
- brown bullhead
- largemouth bass
- johnny darter
- rainbow darter
- banded killifish
- central mudminnow

The addition of the common carp and brown bullhead may prove to be detrimental due to their benthic feeding behavior causing the continual re-suspension of sediment, particularly in the reservoir area.

Enhancement/management recommendations

Angling opportunities

Honeoye Creek offers minimal angling opportunities compared to other local tributaries (e.g. Canandaigua outlet, Irondequoit creek, etc.). Only two game species were found during the study period, large and smallmouth bass. They require different habitat alleviating any potential for inter-specific competition between the two species. The data also confirms the presence of smallmouth bass reproduction through the presence of multiple year classes.

Although not considered game species, other members of the sunfish family (bluegill, pumpkinseed, and rock bass) are considered worthy of angling. Unfortunately, only rock bass were present in fishable numbers within the study area. Walleye (*Sander vitreus*) are present in Honeoye Lake and could possibly inhabit Honeoye Creek intermittently but we found no evidence to support this. Trout species (brown and rainbow) are found in Mill creek which joins Honeoye Creek at Rt. 20A in Ontario County but none were captured within Honeoye Creek. The minimal use of Honeoye Creek by anglers is most likely a product of the species present and limited access.

Enhancement of the fish assemblage through stocking of additional species may be possible but unlikely to happen. The NYSDEC raises and stocks brown trout (*Salmo trutta*) throughout the state as part of a put and take fishery for angler enjoyment. However, each water body approved for stocking is analyzed for its efficacy. The NYSDEC uses the Catch Rate Oriented Trout Stocking (CROTS) protocol to determine the suitability of a stream for stocking (Engstrom 1990). The section of stream immediately upstream of Big Eddy Park (Figure 1) may be suitable for trout stocking. It is recommended that the Region 8 office of DEC in Avon be contacted to discuss this possibility.

Access for anglers

Minimal access is provided for anglers in the Honeoye Creek system. Within the study area, Big Eddy Park in Honeoye Falls and the dam in the Hamlet of Rush are the only practical angling locations. We witnessed anglers at both locations during the study period. Big Eddy Park is aptly named for the empouchment of static water near the waste water treatment plant. The park provides mowed areas close to the shore for angler access.

The dam in the hamlet of Rush has a landing with a railing that can accommodate a few anglers simultaneously. In addition, a steeply sloped, car-top launch site is adjacent to the dam for hand launched watercraft. The dam provides an artificial flow regime which results in high water levels creating a reservoir. The reservoir is a unique resource located within the hamlet. Currently, it supports recreational water sports while providing secondary angling opportunities. Access to the reservoir could be enhanced by developing an elevated fishing platform. The platform could also serve as a canoe/kayak docking center.

At the ecosystem level, the reservoir appears to be functioning as a sedimentation basin. The substrate upstream of the dam is very silty and supports rooted macrophytes. Site nine, downstream of the dam, was dominated by darters which are small members of the family percidae. Many species of darters are sensitive and susceptible to siltation. These species and perhaps many more may be displaced if the dam were to be removed. Removal of the dam may also allow for an influx of the less desirable species (e.g. European carp) into the study area from the lower reaches of Honeoye creek and the Genesee River.

Public shoreline access along the trail system is minimal and underdeveloped. A complete assessment of the stream corridor should be conducted to identify potential angling locations and possible development sites. In order for the location to be productive during the summer months, developments should be concentrated near deeper pools. However, with the lack of desirable game species, stream side developments may not be justified.

Recommendations

- Promote the angling opportunities at Big Eddy Park
 - o Explore potential trout stocking upstream of the park with the NYSDEC
- Improve angling access at the dam in the hamlet of Rush
- Maintain function of the reservoir as a sedimentation basin to protect downstream species

Conclusion

Honeoye Creek is a warm-water stream with moderate fish species diversity. The creek's fish assemblage consists primarily of native warm-water stream species. Several of the species are intolerant of habitat degradation and signify a healthy system. The majority of the sampling sites exhibited typical stream habitats with abundant overhanging riparian vegetation. The only evidence of excessive siltation was in the reservoir area which is to be expected.

Literature cited

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Appendix

Figure 1. Site map of sample locations on Honeoye Creek 2007-2008.



Table 1. Water quality parameters for Honeoye Creek 2007-2008.

Date	Site #	Dissolved oxygen mg/l	Conductivity <i>u</i> S/cm	Temperature °C
10/3/07	1	4.5	397	18.5
10/4/07	2	7.2	430	19.3
10/5/07	4	7.5	552	20.5
7/11/07	5	7.7	461	25.8
7/12/07	6	6.9	529	22.2
7/12/07	7	9.1	634	21.2
7/12/07	8	9.2	829	26.0
10/5/07	9	8.5	1013	18.7

Table 2. Taxonomic composition & number of individuals/site for Honeoye Creek 2007-2008.

Taxa	Common	Sites										Total
		1	2	3	4	5	6	7	8	9	10	
Catostomidae												
<i>Catostomus commersoni</i>	White sucker	15	31	30	40	-	-	3	-	4	31	154
<i>Hypentelium nigricans</i>	Northern hog sucker	-	13	10	43	9	27	5	11	3		121
<i>Moxostoma anisurum</i>	Silver redhorse	-	-	-	-	-	2	-	-	7		9
<i>Moxostoma erythrurum</i>	Golden redhorse	-	-	-	-	-	-	-	-	1		1
<i>Moxostoma macrolepidotum</i>	Shorthead redhorse	-	-	-	-	-	-	-	-	8	4	12
Centrarchidae												
<i>Ambloplites rupestris</i>	Rock bass	52	3	7	12	13	39	21	9	1	2	159
<i>Lepomis gibbosus</i>	Pumpkinseed	154	27	7	1	-	1	-	-	-	8	198
<i>Lepomis macrochirus</i>	Bluegill	138	48	15	-	1	1	-	-	-	1	204
<i>Micropterus dolomieu</i>	Smallmouth bass	1	-	-	25	45	27	24	10	1		133
<i>Micropterus salmoides</i>	Largemouth bass	1	3	8	-	-	-	-	-	-	5	17
Cyprinidae												
<i>Campostoma anomalum</i>	Central stoneroller	-	3	20	43	30	2	-	-	4		102
<i>Cyprinella spiloptera</i>	Spotfin shiner	1	-	-	2	1	15	-	-	12		31
<i>Cyprinus carpio</i>	Common carp	4	-	-	-	3	-	-	-	-	5	12
<i>Exoglossum maxillingua</i>	Cutlips minnow	1	1	9	52	42	18	61	18	-		202
<i>Luxilus cornutus</i>	Common shiner	-	-	-	1	4	4	-	4	-		13
<i>Nocomis biguttatus</i>	Horneyhead chub	-	-	-	-	2	1	2	-	-		5
<i>Notemigonus crysoleucas</i>	Golden shiner	-	-	-	-	1	-	-	-	-	8	9
<i>Notropis hudsonius</i>	Spottail shiner	-	1	7	2	11	19	1	7	5	1	54
<i>Notropis rubellus</i>	Rosyface shiner	1	-	-	3	-	-	2	5	2		13
<i>Pimphales notatus</i>	Bluntnose minnow	11	23	40	8	1	4	3	1	5		96
<i>Pimphales promelas</i>	Fathead minnow	3	2	2	-	-	-	-	-	-		7
<i>Semotilus atromaculatus</i>	Creek chub	19	56	40	16	-	-	-	-	-		131

Taxa	Common	Sites										Total
		1	2	3	4	5	6	7	8	9	10	
<i>Rhinichthys atratulus</i>	E. blacknose dace	-	14	12	-	-	-	-	-	-		26
Esocidae												
<i>Esox niger</i>	Chain pickerel	1	-	-	-	-	-	-	-	-		1
Fundulidae												
<i>Fundulus diaphanis</i>	Banded killifish	1	-	-	-	-	-	-	-	-		1
Ictaluridae												
<i>Ameiurus nebulosis</i>	Brown bullhead	2	-	-	-	-	-	-	-	-	5	7
<i>Noturus flavus</i>	Stonecat	1	-	3	2	6	8	40	4	-		64
<i>Noturus gyrinus</i>	Tadpole madtom	8	-	-	-	-	-	-	-	-		8
Percidae												
<i>Etheostoma blennioides</i>	Greenside darter	-	4	4	11	4	6	12	11	29		81
<i>Etheostoma flabellare</i>	Fantail darter	-	-	2	3	3	-	-	-	-		8
<i>Etheostoma nigrum</i>	Johnny darter	1	22	12	-	-	-	-	4	14		53
<i>Etheostoma caeruleum</i>	Rainbow darter	-	-	-	-	-	-	-	-	6		6
<i>Percina caprodes</i>	Logperch	-	-	-	-	-	1	2	4	1		8
<i>Percina maculata</i>	Blackside darter	-	-	-	-	-	-	-	-	1		1
Umbridae												
<i>Umbra limi</i>	Central mudminnow	9	9	3	-	-	-	-	-	-		21

Site Characteristics (observation):

Site 1 (20A)- Sandy/gravel substrate, few rooted macrophytes, residential

Site 2 (CR15) – Marshy, moderate rooted macrophytes, muddy bottom, silt

Site 3 (Belcher) – Turbid, some rocks, log jam, muddy bottom, moderate vegetation

Site 4 (Pond Rd) – Rocky bottom, small to medium cobbles, adjacent farmland, no vegetation

Site 5 (Town hall park HF) – Rocky, large slab rock, deep pools, step falls, no vegetation

Site 6 (Big Eddy Park HF) – Rocky (south of eddy), silt (north of eddy), water treatment outflow

Site 7 (Sibley) – Mostly silt, some rocks, deep pool, some vegetation

Site 8 (Plains) – Rock/silt substrate, little structure, some vegetation, duckweed, wide

Site 9 (Rte 15) – Wide, rocky/silt substrate, open, little structure, little vegetation

Site 10 (dam, Hamlet of Rush)- Shallow, silty, turbid, near-shore macrophytes