Oak Orchard Harbor

Autumn Data Report

to the

Army Corps of Engineers

Buffalo District

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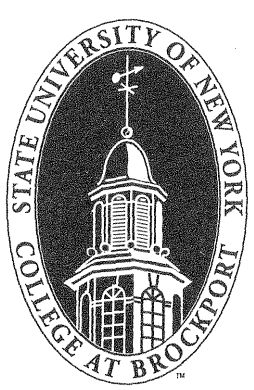

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We acknowledge the assistance of Drs. Ronald Dilcher and Stephen Arnold, Michael Calaban, and Samuel Insalaco in data collection and analysis.

v. 1

INTRODUCTION

Benthos, fish, and macrophyte samples were collected over four days (30 September through 3 October 1978) at Oak Orchard Harbor, New York, to evaluate the potential biological impact of dredging the harbor area. Fig. 1 is a map of the harbor indicating locations of sample sites. Information on marina development, boat traffic, and fishing pressure is included to document the heavy usage of this harbor during the fall salmon run.

This is a data report. In the final report we will include both our analysis and interpretation of the data regarding potential impacts of dredging.

METHODS

Fish

Ichthyoplankton and Egg Sampling

A 2/3-meter diameter tow net equipped with 1-mm mesh Nitex netting was towed for 3 minutes at the surface and near the bottom at Stations 3, 5, 7, and 8 for ichthyoplankton and pelagic eggs. At Stations 1 to 10, benthos samples were taken with a Ponar dredge and also examined for eggs.

Electrofishing

A 220-volt DC generator equipped with two hand-held probes was used to shock two 35-m sections of shoreline at Stations 7 and 8. Since the

east shore is developed with marinas and heavy boat traffic, only the shallow water areas and macrophyte beds of the west shore, adjacent to Station 8, were electroshocked. At Station 7 both the east and west shores were electroshocked.

Trawl Netting

A 6-m head rope otter trawl net with a 1.2-cm minnow net liner was towed for three minutes each at Stations 3, 5, and 7. Station 8 was not trawled because of the large amount of debris and large number of snags encountered in the channel.

Gill Netting

Gill nets, 40 m in length and consisting of 1.5" (3.9 cm) to 2.5" (6.4 cm) bar mesh, were set for 24 hours at Stations 3, 5, 7, and 8. Nets were set to minimize interference with fishing and boat traffic. However, at Station 5 in Lake Ontario, the gill net and accompanying floats, weights, and lead line were stolen during the night. Results are expressed as total number of each species captured per net set.

All fish were measured (total length), weighed, and sexed. Sexing was accomplished by opening the body cavity and visually examining the gonads. The state of maturity of each fish was determined using the following classification criteria: immature fish (I) possessing undeveloped or invisible gonads; mature fish (M) with developed gonads and/or ripe sex products; and spent fish (S) with large flaccid collapsed gonads and few sex products.

Benthos

Three Ponar grabs were taken at each of the ten sampling stations (Fig. 1). Samples were randomly taken at each site in Lake Ontario, while sample sites at each station in Oak Orchard Creek were spaced horizontally across the channel and labeled East, West, or Center. In some instances, a benthic sample was not initially retrieved with the Ponar sampler. A repeat sample was attempted, but if no substrate was dredged up, the bottom was assumed to be rock or large cobble.

In the field, each dredge sample was washed through a 0.471-mm mesh screened bucket to remove fine sediments. Debris and organisms retained on screens were placed in bottles and preserved in 10% formalin solution.

In the laboratory, organisms were hand-picked from the debris. Invertebrates were initially sorted to order and counted as they were put into 95% ethyl alcohol for temporary storage. Four randomly selected samples were repicked, and picking efficiency was computed for each taxon (lowest efficiency = 82%, for oligochaetes). Counts per grab were converted to individuals per square meter (Ponar grab bite = 0.0529 m^2) and corrected for picking efficiency.

All invertebrates collected alive were keyed to the species level where possible. The Sialidae are a monotypic family, but the larvae of only three of the 23 North American species of Sialis have been described, making specific identification impossible. The single nymphalin caterpillar was too badly damaged (apparently during sieving) for generic determination. The single ceratopogonid specimen was keyed to genus in Wirth and Stone (1956). Specific identification of

the single ceratopogonid specimen will be made when we receive the appropriate taxonomic key through interlibrary loan.

Specific identifications of the Chironomidae must be based on pupae or adults. Associations between larvae and pupae or adults of the resident species will be attempted during the spring and summer of 1979.

Macrophytes

The presence, location, and the extent of aquatic macrophyte beds were determined and mapped (Fig. 2) from a survey of the entire project area. Representative specimens were taken by hand, dip net, or with a grab sampler.

Birds and Mammals

One man day was spent observing and identifying birds and mammals in the project area.

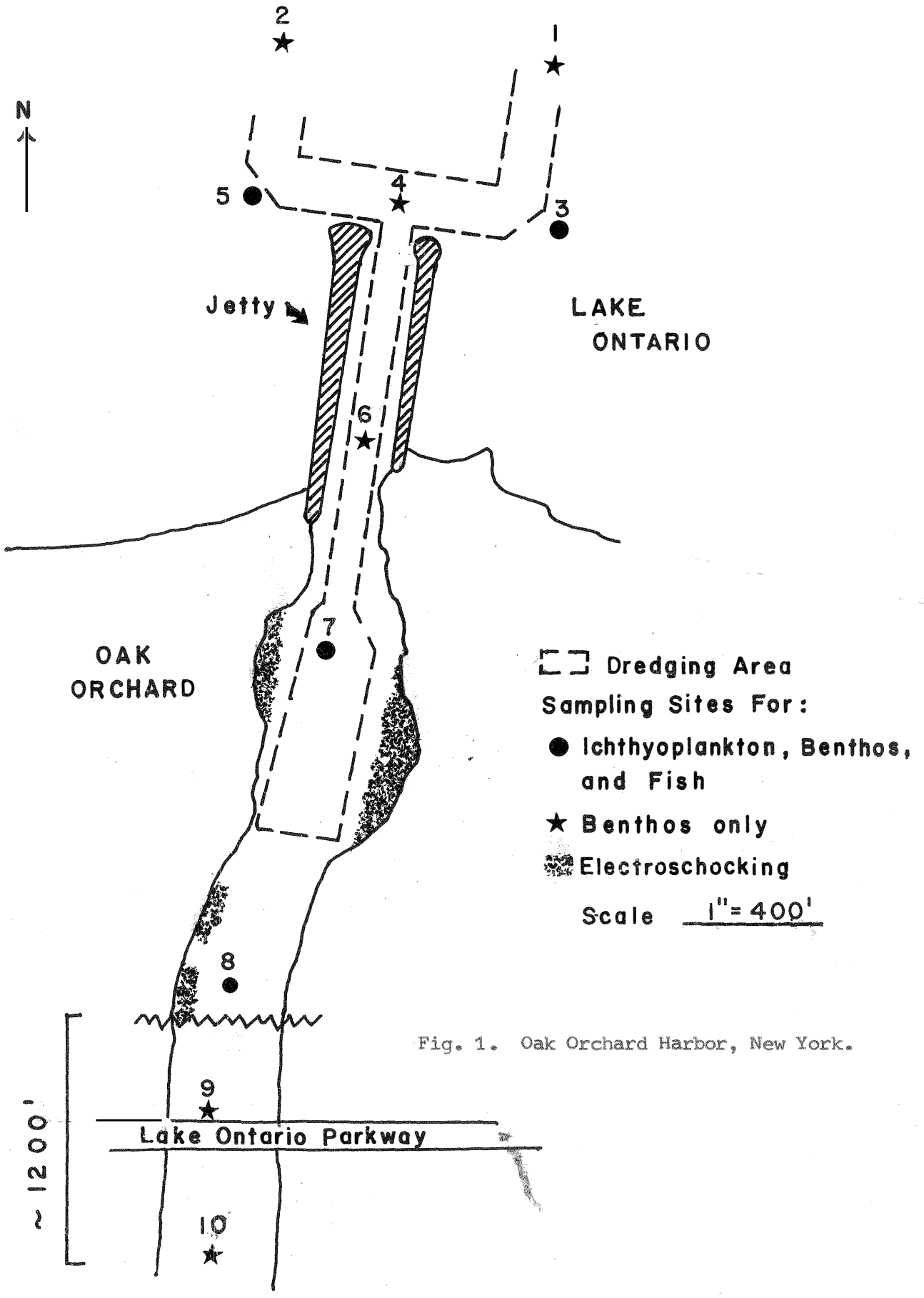

Fig. 1. Oak Orchard Harbor, New York.

Table 1. Fishing pressure, boat usage, and harbor development, Oak Orchard.

Marinas	Nine within two miles of Lake Ontario
Fishermen	September 30, 1978
	~30 on jetties
	~700 on 260 boats within two miles of Oak Orchard Creek
	October 2, 1978
	~100 on 50 boats and 12 shore fishermen
	October 3, 1978
	About the same as on October 2, 1978
Boat Types	Ranged from sailboat to commercial
	Two types of boats predominated: 16 - 18 ft covered runabouts and 12 - 14 ft open boats
Permanent Boat Births	~70

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Table 2. Bottom characteristics and specific information on location of sample sites.

Station 1	Sand and cobble bottom.
Station 2	Cobble bottom.
Station 3	Sand and cobble bottom.
Station 4	Mud and sand bottom. Hydrogen sulfide evident.
Station 5	Cobble and sand bottom.
Station 6	Sand mixed with gyttja. Located halfway along jetties.
Station 7	Located at sign marking location of channel. Channel sediments a brown mud (mixture of sand and organic debris). Outside of the channel and propsed dredging area, dense mats of algae and macrophytes were prevalent on both sides of the creek. This area outside of the channel appears to be a prime centrachid spawning area as indicated by the numerous old nests.
Station 8	Located 100 m upstream from the dock with Mobil pump. In the channel a black gyttja sediment containing hydrogen sulfide was evident. Western shoreline dominated by dense algal and macrophyte beds overlying a deep, soft hydrogen sulfide laden sediment. Eastern shoreline developed with launching ramps and docks.
Station 9	Black gyttja with hydrogen sulfide in channel. Located north of Ontario Parkway bridge.
Station 10	Black gyttja with hydrogen sulfide in channel. Located at north end of Oak Orchard Yacht Club.
	Between Stations 8 and 10, a deep channel occurs along the east shore while the western half of the creek is shallow with dense macrophyte beds.

Table 3. Species list of fish.

Chordata

Amiidae

Amia calva

Lepisosteidae

Lepisosteus osseus

Clupeidae

Dorosoma cepedianum

Salmonidae

Oncorhynchus tschawytscha
Salmo trutta
Salmo gairdneri
Salvelinus namaycush

Esocidae

Esox lucius

Cyprinidae

Campostoma anomalum
Carassius auratus
Nocomis micropogon

Catostomidae

Moxostoma sp.

Ictaluridae

Ictalurus nebulosus
Noturus flavus

Cyprinodontidae

Fundulus diaphanus

Centrachidae

Micropterus salmoides
Micropterus dolomieui
Pomoxis nigromaculatus
Ambloplites rupestris
Lepomis macrochirus
Lepomis gibbosus

Percidae

Etheostoma nigrum

Serranidae

Morone americana
Morone chrysops

Table 4. Results of ichthyoplankton tows.

Station 3	Surface - no eggs or larvae
	Bottom - no eggs or larvae
Station 5	Surface - no eggs or larvae
	Bottom - no eggs or larvae
Station 7	Surface - no eggs or larvae
	Bottom - no eggs or larvae
Station 8	Surface - no eggs or larvae
	Bottom - no eggs or larvae

SAMPLING DATE 10-2-78
STATION NUMBER 5
GILL NET

BROWN TROUT (Salmo trutta)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
55	2.1	F	M	46	1.2	M	M
52	1.8	M	M	63	3.2	M	M
72	4.6	M	M	56	2.1	M	M

CHINOOK SALMON (Oncor hynchus tshawytscha)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
100	10.6	M	M				

GIZZARD SHAD (Dorosoma cepedianum)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
36	0.6	M	M	31.5	0.3	M	M

LAKE TROUT (Salvelinus namaycush)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
55.5	1.9	M	M				

NORTHERN PIKE (Esox lucius)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
67	1.8	M	M				

SAMPLING DATE 10-2-78
STATION NUMBER 5 (continued)
GILL NET

REDHORSE SUCKER (Moxostoma spp.)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
46.0	1.1	F	M	43.5	0.9	M	M
41.5	0.8	M	M	46.0	1.0	F	M

SMALLMOUTH BASS (Micropterus dolomieui)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
32	0.4	M	M				

WHITE BASS (Morone chrysops)

LENGTH(cm)	W IGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
31	0.4	M	M				

WHITE PERCH (Morone americana)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
25.5	0.3	F	M	28	0.3	F	M

SAMPLING DATE 10-2-78
STATION NUMBER 7
GILL NET

BROWN TROUT (Salmo trutta)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
47.5	1.7	F	M	59.5	2.8	M	M
39.0	0.6	M	M	58.5	2.4	M	M

CHINOOK SALMON (Oncorhynchus tshawytscha)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
96	10.5	M	M	98	8.0	M	M

GOLDFISH (Carassius auratus)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
32.5	0.8	-	-				

LONGNOSE GAR (Lepisosteus osseus)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
72.5	0.9	M	M				

NORTHERN PIKE (Esox lucius)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
62	1.9	M	M	69	2.0	M	M
69	2.1	M	M	62	1.5	F	M

RAINBOW TROUT (Salmo giardneri)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
45	1.6	M	M				

SAMPLING DATE 10-2-78
STATION NUMBER 8
GILL NET

BLACK CRAPPIE (Pomoxis nigromaculatus)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	W IGHT(kg)	SEX	MATURITY
19.5	0.1	-	-				

BOWFIN (Amia calva)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
57	1.8	M	M				

NORTHERN PIKE (Esox lucius)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
68.5	2.0	F	M	58	1.2	F	M
66.5	1.8	F	M				

PUMPKINSEED (Lepomis gibbosus)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
16.5	0.1	M	M				

REDHORSE SUCKER (Moxostoma spp.)

LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY	LENGTH(cm)	WEIGHT(kg)	SEX	MATURITY
40	0.7	M	M	32	0.3	F	I

SAMPLING DATE 10-1-78
STATION NUMBER 7E
ELECTROSHOCKING

BOWFIN (Amia Calva)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
16.4	53	-	I				

PUMPKINSEED (Lepomis gibbosus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
2.9	<1	-	I	10.3	25	M	I
3.7	<1	-	I	11.3	32	F	I
4.2	2	-	I	15.0	97	M	M
5.3	3	-	I	14.8	81	M	M
8.3	11	-	I	14.9	83	M	M

ROCK BASS (Ambloplites rupestris)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
4.5	2.5	-	I	6.0	5.0	M	I
4.9	2.0	-	I	6.0	5.0	M	I

SMALLMOUTH BASS (Micropterus dolomieui)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
11.7	23	M	I				

JOHNNY DARTER (Etheostoma nigrum)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
6.2	1.5	M	M	5.5	<1	F	M
5.3	<1.0	M	M				

SAMPLING DATE 10-1-78
STATION NUMBER 7E (continued)
ELECTROSHOCKING

BANDED KILLIFISH (Fundulus diaphanus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
4.3	<1	-	I	3.2	<1	-	I

SAMPLING DATE 10-1-78
STATION NUMBER 7W
ELECTROSHOCKING

BROWN BULLHEAD (Ictalurus nebulosus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
15.4	46	-	I				

PUMPKINSEED (Lepomis gibbosus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
17.0	117	M	M	10.6	29	M	M
11.4	36	M	I	9.4	18	M	I
14.8	74	M	M	10.7	26	M	I
10.9	28	M	I				

BLUEGILL (Lepomis macrochirus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
10.1	18	M	I	8.2	15	F	I
14.3	66	M	M	11.0	32	M	M
10.5	28	M	M	10.2	26	M	I
10.2	25	M	I				

LARGEMOUTH BASS (Micropterus salmoides)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
25.1	260	F	M				

ROCK BASS (Ambloplites rupestris)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
7.8	12	-	I				

SAMPLING DATE 10-1-78
STATION NUMBER 7W (continued)
ELECTROSHOCKING

SMALLMOUTH BASS (Micropterus dolomieui)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
8.4	12	-	I	8.5	11	-	I
9.6	14	-	I				

JOHNNY DARTER (Etheostoma nigrum)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
7.9	6	M	M	4.5	<1.0	-	I
6.2	3	M	M	4.9	<1.0	-	I
6.4	4	M	M	4.5	1.5	-	I
6.6	4	F	M	4.5	1.5	-	I
6.5	4	F	M				

BANDED KILLIFISH (Fundulus diaphanus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.7	3	M	M	5.4	3	M	M

SAMPLING DATE 10-2-78
STATION NUMBER 8a
ELECTROSHOCKING

ROCK BASS (Ambloplites rupestris)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
8.6	10.3	M	I
4.9	<1.0	-	I
4.6	<1.0	-	I
4.9	<1.0	-	I
5.4	1.0	-	I
5.8	1.8	-	I
5.5	1.5	-	I
6.0	1.4	-	I
6.0	1.4	-	I
5.5	1.5	-	I
4.8	<1.0	-	I
4.9	<1.0	-	I
6.8	2.2	-	I
5.3	1.0	-	I
4.4	<1.0	-	I
3.9	<1.0	-	I
5.1	<1.0	-	I
5.2	1.0	-	I
5.9	1.2	-	I
8.4	9.7	-	I
8.1	9.5	-	I
7.8	7.9	M	I
5.1	1.5	-	I
5.9	2.5	-	I
5.3	1.5	-	I
4.8	1.0	-	I
6.2	3.5	-	I
5.5	1.5	-	I
5.7	1.2	-	I
4.6	<1.0	-	I
5.9	2.5	-	I
5.4	1.5	-	I
3.5	<1.0	-	I
5.5	2.1	-	I
5.5	2.1	-	I
5.0	1.0	-	I
5.1	1.5	-	I
4.8	1.0	-	I
5.5	2.1	-	I
5.0	1.0	-	I
5.3	1.5	-	I
3.9	<1.0	-	I
3.8	<1.0	-	I
3.5	<1.0	-	I
4.7	<1.0	-	I
6.2	3.5	-	I
5.5	2.0	-	I
5.3	1.5	-	I
5.3	1.5	-	I
5.4	2.1	-	I
5.6	2.0	-	I
5.3	2.0	-	I
4.4	<1.0	-	I
5.0	2.0	-	I
4.8	<1.0	-	I
4.7	<1.0	-	I
4.8	1.5	-	I

SAMPLING DATE 10-2-78
STATION NUMBER 8a (continued)
ELECTROSHOCKING

PUMPKINSEED (Lepomis gibbosus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
8.5	11.5	M	I
8.0	9.5	M	I
5.7	1.5	-	I
5.3	1.3	-	I
5.6	1.5	-	I
4.6	<1.0	-	I
5.0	1.0	-	I
5.6	2.3	-	I
5.3	1.5	-	I
5.0	1.0	-	I
3.8	<1.0	-	I
5.5	1.8	-	I
4.8	1.0	-	I
5.2	1.8	-	I
5.0	1.5	-	I
5.2	1.8	-	I

JOHNNY DARTER (Etheostoma nigrum)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.2	<1.0	F	M
5.9	<1.0	F	M
5.2	<1.0	F	M
4.8	<1.0	F	M
4.8	<1.0	F	M
5.2	<1.0	F	M
5.0	<1.0	F	M
5.5	<1.0	F	M
4.6	<1.0	F	M
4.5	<1.0	F	M
4.7	<1.0	F	M

EASTERN BANDED KILLIFISH (Fundulus diaphanus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.6	<1.0	-	I
5.9	<1.0	M	M
5.1	<1.0	M	I
4.5	<1.0	-	I
4.5	<1.0	-	I
4.4	<1.0	-	I

SAMPLING DATE 10-2-78
STATION NUMBER 8a (continued)
ELECTROSHOCKING

STONECAT (Noturus flavus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
4.2	<1.0	-	I				

COMMON STONEROLLER (Campostoma anomalum)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
8.0	5.0	-	I				

SAMPLING DATE 10-2-78
STATION NUMBER 8b
ELECTROSHOCKING

ROCK BASS (Ambloplites rupestris)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.6	2.5	-	I
4.3	<1.0	-	I
4.8	1.5	-	I
5.4	2.0	-	I
4.0	<1.0	-	I
5.7	3.3	-	I
4.8	1.5	-	I
5.4	3.0	-	I
5.1	2.0	-	I
5.0	2.0	-	I
5.3	2.5	-	I
4.1	1.5	-	I
4.9	1.5	-	I
5.5	3.0	-	I
9.0	14.5	F	I
6.1	5.3	-	I
5.6	3.5	-	I
4.7	2.0	-	I
4.5	2.1	-	I
5.7	3.5	-	I
5.7	3.5	-	I
6.0	4.5	-	I
5.5	3.0	-	I
4.9	2.0	-	I
3.9	1.0	-	I
4.8	2.0	-	I
5.5	3.3	-	I
5.6	3.0	-	I
5.5	2.8	-	I
5.4	3.0	-	I
4.5	2.2	-	I
4.7	2.5	-	I
5.9	4.5	-	I
5.3	2.5	-	I
3.8	1.5	-	I
5.2	3.0	-	I
5.0	2.5	-	I
5.5	3.5	-	I
4.9	2.5	-	I
4.8	2.5	-	I
4.8	2.5	-	I
6.0	4.5	-	I
8.4	11.0	M	M

SAMPLING DATE 10-2-78
STATION NUMBER 8b (continued)
ELECTROSHOCKING

PUMPKINSEED (Lepomis gibbosus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.3	2.5	-	I	4.7	1.5	-	I
4.8	1.5	-	I	5.2	2.0	-	I
5.2	1.5	-	I	4.3	1.0	-	I
4.9	1.5	-	I	4.9	1.5	-	I
5.1	2.0	-	I	4.6	1.2	-	I
5.0	1.5	-	I	4.2	1.0	-	I
4.9	1.5	-	I	4.8	1.5	-	I
5.8	3.0	-	I	7.2	6.5	M	I
4.9	1.5	-	I	7.8	8.5	M	M

BLUEGILL (Lepomis macrochirus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.5	1.5	-	I	5.0	1.0	-	I
3.8	<1.0	-	I	5.1	1.0	-	I
3.0	<1.0	-	I	4.6	<1.0	-	I
3.0	<1.0	-	I	3.5	<1.0	-	I
5.0	1.0	-	I				

LARGEMOUTH BASS (Micropterus salmoides)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
11.9	23	-	I				

JOHNNY DARTER (Etheostoma nigrum)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.2	<1.0	F	M	4.7	<1.0	F	M
6.0	<1.0	F	M	5.2	<1.0	F	M
5.0	<1.0	M	I	4.7	<1.0	F	M

SAMPLING DATE 10-2-78
STATION NUMBER 8b (continued)
ELECTROSHOCKING

JOHNNY DARTER (Etheostoma nigrum)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
4.6	<1.0	M	M	4.7	<1.0	F	M
4.3	<1.0	F	M	4.8	<1.0	F	M
4.1	<1.0	F	I				

EASTERN BANDED KILLIFISH (Fundulus diaphanus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.3	<1.0	M	I	3.2	<1.0	-	I
3.9	<1.0	-	I	3.4	<1.0	-	I
4.7	<1.0	M	I	4.4	<1.0	-	I
3.5	<1.0	-	I				

STONECAT (Noturus flavus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
6.2	1.0	-	I	6.0	1.0	-	I

BROWN BULLHEAD (Ictalurus nebulosus)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
5.5	1.0	-	I	6.5	2.5	-	I

RIVER CHUB (Nocomis micropogon)

LENGTH(cm)	WEIGHT(g)	SEX	MATURITY	LENGTH(cm)	WEIGHT(g)	SEX	MATURITY
3.8	<1.0	-	I				

SAMPLING DATE 10-2-78
STATION NUMBERS 3, 5, and 7
TRAWL NET

No fish caught

Table 5. Species list of benthic invertebrates for Oak Orchard Creek.

Annelida
- Oligochaeta
  - Tubicidae
    - *Limnodrilus hoffmeisteri*

Arthropoda
- Amphipoda
  - Gammaridae
    - *Gammarus fasciatus*
- Insecta
  - Ephemeroptera
    - Ephemeridae
      - *Hexagenia limbata*
    - Heptageniidae
      - *Stenonema tripunctatum*
  - Megaloptera
    - Sialidae
      - *Sialis sp.*
  - Lepidoptera
    - Pyralidae
      - (specimen unidentifiable)
  - Diptera
    - Chironomidae
      - *Chironomus sp.*
      - *Cryptochironomus sp.*
      - *Glyptotendipes sp.*
      - *Procladius sp.*
      - *Rheotanytarsus sp.*
    - Ceratopogonidae
      - *Palpomyia sp.*

Mollusca
- Pelecypoda
  - Unionidae
    - *Proptera alata*

Gastropoda
- Sphaeridae
  - *Pisidium sp.* (unidentifiable)
  - Pisidium castertanum
  - Pisidium lilljeborgi

Table 6. Density of benthic invertebrates in Oak Orchard Creek. Values are expressed in individuals/m^2.

SPECIES	Stations 1	2	3	4	5	6	7	8	9	10
Limnodrilus hoffmeisteri	299.8		69.2	1567.9	46.1	507.3	15.4	99.9	192.2	76.9
Gammarus fasciatus		3553.2	604.8				25.2			
Hexagenia limbata							6.3	6.3	12.6	25.2
Stenonema tripunctatum		18.9								
Sialis sp.							6.3		12.6	18.9
Pyralidae †									6.3	
Chironomus sp.						31.5	31.5	94.5	50.4	25.2
Cryptochironomus sp.	37.8			37.8		37.8			6.3	
Glyptotendipes sp.			18.9							
Procladius sp.							6.3		6.3	
Rheotanytarsus sp.									6.3	
Palpomyia sp.							6.3			
Proptera alata							350.3*			
Pisidium sp. †							6.3			
Pisidium lilljeborgi								6.3		
Pisidium castertanum										6.3

† unidentifiable

* expressed in grams shell-free wet weight/m^2

Table 7. Species list of terrestrial and aquatic macrophytes, Oak Orchard Creek, New York.

Terrestrial Macrophytes

Code	Genus and Species	Common Name
An	Anacharis occidentalis	Waterweed
B	Bidens coronata	Tickseed Sunflower
Ca	Cornus amomum	Silky Dogwood
Ce	Ceratophyllum demersum	Coon-tail
Cr	Carya ovata	Shagbark Hickory
Cs	Cornus stolonifera	Red-osier Dogwood
E	Epilobium sp.	Willow Herb
Eu	Eupatorium perfoliatum	Boneset
F	Fraxinus americana	White Ash
H	Hamamelis virginiana	Witch-hazel
I	Impatiens sp.	Touch-me-not
J	Juncus effusus	Soft Rush
Jc	Juglans cinerea	White Walnut
Lm	Lemna minor	Lesser Duckweed
Lt	Lemna trisulca	Star Duckweed
M	Myriophyllum sp.	Water Milfoil
N	Nymphaea sp.	Water Lily
O	Ostrya virginiana	Hop Hornbeam
Pd	Populus deltoides	Cottonwood
Pc	Potamogeton crispus	Pondweed
Pl	Polygonum lapathifolium	Smartweed
Po	Potamogeton sp.	Narrow-leaf Pondweed
Pr	Prunus serotina	Wild Black Cherry
Pt	Populus tremuloides	Trembling Aspen
Q	Quercus borealis	Red Oak
Qa	Quercus alba	White Oak
Qe	Quercus ellipsoidalis	Pin Oak
S	Salix alba	White Willow
Sc	Scirpus sp.	Bulrush
T	Typha augustifolia	Narrow-leaf Cattail
V	Vallesnaria americana	Tape Grass
Vd	Viburnum dentatum	Arrow-wood
Vi	Vitis sp.	Wild Grape
Cy	Cyperus dentatus	Sedge

Fig. 2. Location and extent of aquatic macrophyte beds.

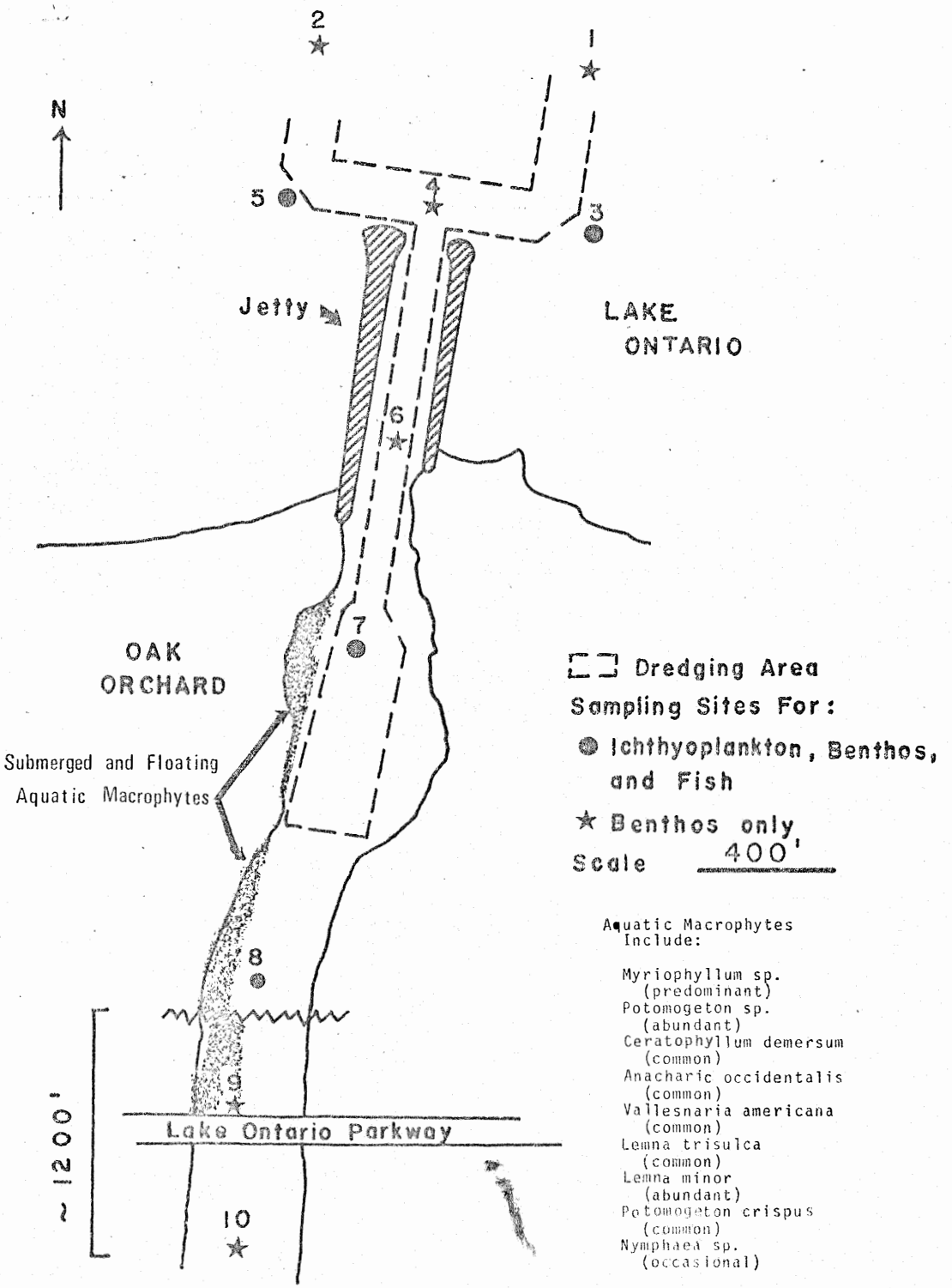

Fig. 3. Photograph of Oak Orchard Creek showing macrophyte bed on the west side of creek and channel on each side. Photograph taken from the Lake Ontario Parkway bridge facing north toward Lake Ontario. Dot indicates Station #8.

Fig. 4. Location of terrestrial macrophytes and emergent aquatic macrophytes. Squares indicate more than one individual plant. Code for identifying organisms is located in Table 7.

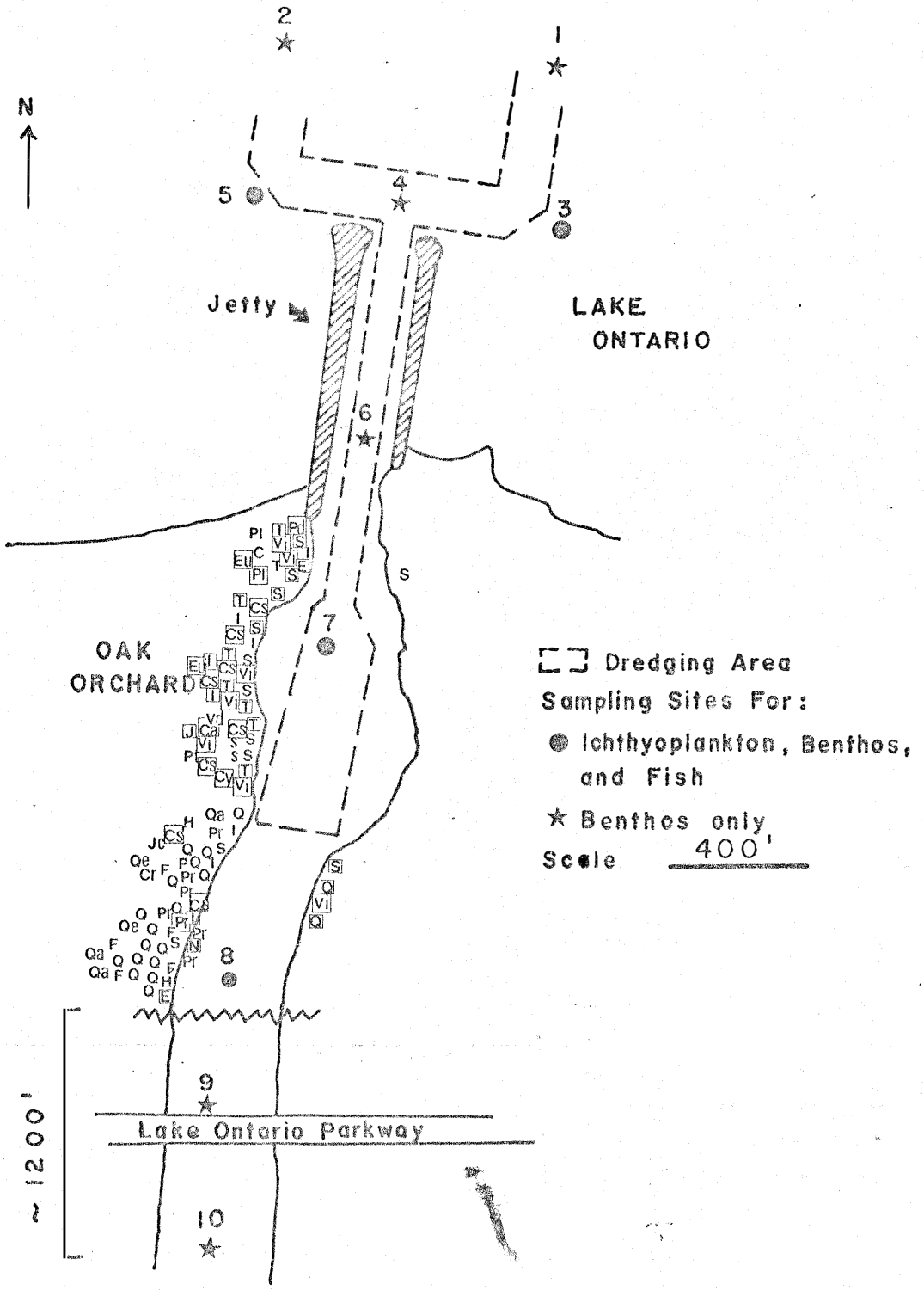

Table 8. Species list and relative abundance of birds in the Oak Orchard Creek area.

AOU Number	Genus and Species	Common Name	Number Seen
375	Bubo virginianus	Great Horned Owl	1
359	Falco tinnunculus	Kestrel	1
477	Cyanocitta cristata	Blue Jay	3
498	Agelaius phoeniceus	Red-winged Blackbird	30
54	Larus delawarensis	Ring-billed Gull	10
655	Dendroica coronata	Myrtle Warbler	7
493	Sturnus vulgaris	Starling	20
273	Charadrius vociferus	Killdeer	6
529	Spinus tristis	American Goldfinch	2
727	Sitta carolinensis	White-breasted Nuthatch	2
316	Zenaidura macroura	Mourning Dove	1
390	Megaceryle aleyon	Belted Kingfish	1
761	Turdus migratorius	Robin	4
172	Branta canadensis	Canada Goose	65
735	Parus atricapillus	Black-capped Chickadee	4
581	Melospiza melodia	Song Sparrow	2
749	Regulus calendula	Ruby-crowned Kinglet	2
619	Bombycilla cedrorum	Cedar Waxwing	3
51	Larus argentatus	Herring Gull	3
47	Larus marinus	Great Black-backed Gull	1
394	Dendrocopos pubescens	Downy Woodpecker	1
165	Melanitta deglandi	White-winged Scoter	1
393	Dendrocopos villosus	Hairy Woodpecker	1
364	Pandion haliaetus	Osprey	1
584	Melospiza georgiana	Swamp Sparrow	1

Table 9. Taxonomic keys used in identifying specimens.

Arthropoda

Amphipoda

Holsinger, J.R. 1972. Biota of freshwater ecosystems identification manual no. 5. The freshwater amphipod crustaceans (Gammaridae) of North America. U.S. Environmental Protection Agency Water Pollution Control Res. Ser. ELD04/72. VII. 89 p.

Birds

American Ornithologist's Union. 1957. Check-list of North American Birds. 5th ed. American Ornithologists' Union. Baltimore, Maryland.

Peterson, R.T. 1947. A Field Guide to the Birds. Houghton Mifflin. Boston, Massachusetts.

Fish

Eddy, S. and J.C. Underhill. 1978. How to Know the Freshwater Fishes. 3rd ed. W.C. Brown Co. Dubuque, Iowa.

Gastropoda

Harman, W.N. and C.O. Berg. 1971. The freshwater snails of central New York with illustrated keys to the genera and species. Search Agriculture (Cornell Univ.). 1(4):1-68.

Insecta

Ceratopogonidae

Grogan, W.L. and W.W. Wirth. 1975. A revision of the genus Palpomyia Meigen of northeastern North America (Diptera: Ceratopogonidae). Contr. Maryland Agric. Expt. Sta. 5076:1-49.

Wirth, W.W. and A. Stone. 1956. Aquatic Diptera. p.372-482. In Usinger, R.L. (ed.). Aquatic insects of California with keys to North American genera and California species. University of California Press, Berkeley. VIII. 508 p.

Chironomidae

Mason, W.T., Jr. 1973. An introduction to the identification of chironomid larvae. U.S. Environmental Protection Agency Analytical Quality Control Laboratory, National Environmental Res. Center, Cincinnati, Ohio. V. 90 p.

Ephemeridae

McCafferty, W.P. 1975. The burrowing mayflies (Ephemeroptera: Ephemeroidea) of the United States. Trans. Amer. Entomol. Soc. 101:447-504.

Insecta

Heptageniidae

Lewis, P.A. 1974. Taxonomy and ecology of Stenonema mayflies (Heptageniidae: Ephemeroptera). U.S. Environmental Protection Agency Environ. Monitoring Ser. EPA-670/4-74-006. VII. 81 p.

Sialidae

Leischner, T.G. and G. Pritchard. 1973. The immature stages of the alderfly, Sialis cornuta (Megaloptera: Sialidae). Can. Entomol. 105:411-518.

Macrophytes

Fassett, N.C. 1960. A Manual of Aquatic Plants. Univ. of Wisconsin Press. Madison, Wisconsin.

Gleason, H.A. and A. Cronquist. 1968. Manual of Vasculaa Plants of Northeastern United States and Adjacent Canada. D. Van Nostrand Co., Inc. Princeton, N.Y.

Muenscher, W.C. 1965. Keys to Woody Plants. Comstock Publishing. Ithaca, N.Y.

Mollusca

Burch, J.B. 1975a. Freshwater sphaeriacean clams (Mollusca: Pelecypoda) of North America. Malacological Publications. Hamburg, Michigan. XI. 96 p.

Burch, J.B. 1975b. Freshwater unionacean clams (Mollusca: Pelecypoda) of North America. Malacological Publications. Hamburg, Michigan. XVIII. 204 p.

Clarke, A.H. 1973. The freshwater molluscs of the Canadian interior basin. Malacologia. 13:1-509.

Oligochaeta

Brinkhurst, R.O. 1971. A guide for the identification of British aquatic Oligochaeta. Freshwater Biological Association Sci. Publ. No. 22. 55 p.

Brinkhurst, R.O. and B.G.M. Jamieson. 1971. Aquatic Oligochaeta of the world. University of Toronto Press. Toronto. XII. 860 p.