

THREE MILE ISLAND AQUATIC STUDY

Monthly Report for January 1980

by

Ichthyological Associates, Inc.
P.O. Box 223, Etters, PA 17319

George A. Nardacci, Project Leader

For

Metropolitan Edison Company

Ichthyological Associates, Inc.
Edward C. Raney, Ph.D., President
301 Forest Drive
Ithaca, New York 14850

8008110 554

TABLE OF CONTENTS

Introduction.	1
Compliance with Environmental Technical Specifications; G. Nardacci	2
Macroinvertebrates; G. Hoover, R. Evans	3
Ichthyoplankton; B. Lathrop, P. Ritson.	3
Trapnet; R. Malick, Jr.	3
Seine; R. Malick, Jr.	4
Impingement of Fish; L. Wike.	4
Electrofishing; H. Hagerty.	5
Movements of Fishes; H. Hagerty	6
Creel Survey; R. Ritota	6
Ambient Water Quality; G. Nardacci.	6

TABLE OF TABLES

Table		Page
1	Sampling conducted in compliance with the Generation Procedures Manual in January 1980.	8
2	Fishes taken by trapnet on 2-4 January 1980 near TMINS . .	9
3	Fishes taken by trapnet on 21-23 January 1980 near TMINS .	10
4	Numbers of fishes impinged at the Unit 1 Intake during a 24-hr impingement survey on 10-11 January 1980	11
5	Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 10-11 January 1980	11
6	Numbers of fishes Unit 1 24-25 January 1980. . .	12
7	Summary Unit 1 24-25 January 1980.	12
8	Numbers of fishes Unit 2 10-11 January 1980. . .	13
9	Summary Unit 2 10-11 January 1980.	13
10	Numbers of fishes Unit 2 30-31 January 1980. . .	14
11	Summary Unit 2 30-31 January 1980.	14
12	Number of fishes captured by AC electrofisher near TMINS in January 1980.	15
13	Creel survey data from the GR for each survey day in January 1980	16
14	Creel survey data from the West Dam for each survey day in January 1980	17
15	Creel survey data from the East Dam for each survey day in January 1980	18
16	Creel survey data from the YHGS for each survey day in January 1980	19

INTRODUCTION

The ecology of York Haven Pond near the Three Mile Island Nuclear Station (TMINS) has been under investigation since February 1974. Studies initiated in April 1974 include analysis of ambient water quality, ichthyoplankton (far-field), ichthyoplankton entrainment, macroinvertebrates, fish population dynamics, impingement of fishes, creel survey, and thermal plume mapping.

This report discusses the progress of investigations conducted in January 1980.

COMPLIANCE WITH ENVIRONMENTAL TECHNICAL SPECIFICATIONS (ETS)

Objective: To determine compliance with the nonradiological (aquatic) environmental monitoring programs specified in sections 3.1.1.a.(4), 3.1.2.a, 4.2, and 4.6.1 of the ETS and to insure that said programs are performed as detailed in the Generation Procedures Manual.

Progress: Compliance with the trapnet, seine, and impingement programs specified in the ETS and detailed in the Generation Procedures Manual was achieved in January (Table 1). Compliance with all other programs was hampered by ice cover on York Haven Pond during the weeks of 6, 13, and 27 January.

The electrofishing, macroinvertebrate, and water quality programs were conducted on 21 January. Ice cover prevented additional sampling in January.

The creel survey program was conducted at all areas on 4 and 19 January. The third creel survey period (1700-2100 h) was not conducted on 4 and 19 January at the East Dam, West Dam, and General Reservoir areas due to darkness. Creel surveys scheduled for 13 and 28 January were only conducted at the York Haven Generating Station. All other areas were inaccessible due to ice cover.

A problem with the traveling screens at Unit 2 on 24-25 January, forced a cancellation of the program. The program was subsequently rescheduled and completed on 30-31 January.

A program by program summary of the progress for January follows.

MACROINVERTEBRATES

Objective: To describe the diversity and distribution of the benthic macroinvertebrates occurring at the five benthos sampling stations near TMINS.

Progress: Replicate (4) benthos samples were taken on 21 January (Table 1); ice prevented the collection of a second set of samples. Sorting of the 21 January collections has been completed while enumeration and determination of dry weights of the macroinvertebrates are in progress. Tables for the 1979 report were completed and the first draft of the written section was started.

ICHTHYOPLANKTON

Objectives: (1) To determine the species composition, abundance, and distribution of ichthyoplankton in York Haven Pond; and (2) To investigate ichthyoplankton entrained at TMINS Unit 1 and 2 Intakes.

Far-Field

Progress: Work continued on the first draft of the written section for the 1979 report.

Entrainment

Progress: A second draft of the section for the 1979 report was completed.

TRAPNET

Objectives: (1) To determine the distribution and relative abundance of fishes in the Three Mile Island area vulnerable to trapnet; (2) To provide specimens for movements studies; (3) To monitor the

occurrence of diseased fishes; (4) To provide specimens for radiation analysis; and (5) To determine reproductive status for fishes throughout the year.

Progress: Samples were taken on 2-4 and 21-23 January (Table 1). Twenty fish of seven species were collected; suckers and sunfishes predominated (Tables 2 and 3). Total biomass for January was 4.79 kg. Five of the 16 collections yielded no fish. No dead fish were observed in January.

Work on the section for the 1979 report was initiated.

SEINE

Objectives: (1) To determine the species composition of fish upstream and downstream from the TMINS Discharge vulnerable to seine; (2) To determine the relative condition factor for important species; and (3) To determine the reproductive status for fishes throughout the year.

Progress: Collections were made at the 10 stations on 2 and 21 January (Table 1). All collections have been rinsed and are now stored in 40% isopropanol awaiting sorting and identification.

The section for the 1979 report was started.

IMPINGEMENT OF FISH

Objectives: (1) To determine the numbers and species impinged on the river water intake screens; (2) To determine day-night differences in impingement frequency; and (3) To determine the extent of mortality of impinged fish.

Progress: Impingement surveys were conducted at the Unit 1 Intake on 10-11 and 24-25 January (Table 1). Three fish of 2 species weighing 1.9 g were impinged on 10-11 January. Two fish were young and one was juvenile; two of the three specimens were alive (Tables 4 and 5). No fish were taken on 24-25 January (Tables 6 and 7). The total estimated impingement from Unit 1 for January was 46.5 fish weighing 29.4 g (0.06 lb).

Unit 2 impingement surveys were conducted on 10-11 and 30-31 January (Table 1). Ten fish of two species weighing 7.5 g were taken. All fish were young and none were alive (Tables 8 through 11). Eight of the 10 fish were taken on 10-11 January. The total estimated impingement from Unit 2 for January was 155 fish weighing 116.2 g (0.26 lb).

Total estimated impingement at TMINS in January was 201.5 fish weighing 145.6 g (0.32 lb).

ELECTROFISHING

Objectives: (1) To provide specimens for radiation analysis and movement studies; and (2) To determine the relative abundance of fishes vulnerable to electrofishing in various parts of York Haven Pond.

Progress: Sampling was conducted on 21 January (Table 1); ice prevented the collection of a second set of samples. Twelve collections in 12 zones yielded 27 specimens of 9 species (Table 12). The walleye (9 specimens), quillback (7), rock bass (3), and black crappie (3) were most abundant.

Work was initiated on the section for the 1979 report.

MOVEMENTS OF FISHES

Objective: To determine if fishes in waters receiving the TMINS effluent mix with fishes from other areas.

Progress: No specimens were tagged for movements studies in January. No recaptures were reported by anglers or in Ichthyological Associates, Inc. monitoring programs.

CREEL SURVEY

Objectives: (1) To determine the extent and success of sport fishing; and (2) To determine information on angler residence and use of catch.

Progress: Creel surveys were conducted in all areas on 4 and 19 January and at York Haven Generating Station (YHGS) only on 13 and 28 January (Table 1) due to high river flows. No surveys were conducted at the General Reservoir, West Dam, or East Dam throughout January during the 1700-2100 h period due to darkness.

The eleven anglers interviewed fished 5.15 hours and caught and kept one carp (Tables 13 through 16). Most of the anglers (9), most hours fished (5.00) and the one fish caught occurred at the YHGS.

Seven of the anglers were from York or Dauphin counties. Most of the anglers reported they eat some of their catch.

AMBIENT WATER QUALITY

Objective: To determine the concentrations of selected water quality parameters in ambient river areas and the TMINS effluent.

Progress: Water quality samples were collected on 21 January at the five river stations (Table 1). Data are currently being analyzed; results will be presented in the February 1980 progress report.

Ice cover on York Haven Pond prevented a second water quality sampling in January.

Table 1

Sampling conducted in compliance with the Generation Procedures Manual in January 1980.

PROGRAM	Jan 1-5	Jan 6-12	Jan 13-19	Jan 20-26	Jan 27-31
Macroinvertebrates				X	
Ichthyoplankton:					
Far-Field ¹					
Entrainment ¹					
Trapnet	X			X	
Seine	X			X	
Impingement of Fish		X		X	X
Electrofishing				X	
Movements of Fishes	X			X	
Creel Survey	X		X		X
Ambient Water Quality				X	

¹ Sampling scheduled to resume in April 1980.

Table 2

Fishes taken by trapnet on 2-4 January 1980 near THENS.

Station	TH-AQF-1A1		TH-AQF-11A2		TH-AQF-11A3		TH-AQF-9B2		Total	% Catch
Date	2-3	3-4	2-3	3-4	2-3	3-4	2-3	3-4		
Time	0915-0845	0846-0857	0926-0857	0858-0908	0934-0904	0908-0919	0944-0918	0921-0934		
Air Temp. (C)	0.5, 0.5	0.5, -3.5	0.5, 1.0	1.0, -3.5	0.5, 1.0	1.0, -3.5	0.5, 1.0	1.0, -3.5		
Water Temp. (C)	1.5, 1.5	1.5, 1.5	1.5, 1.5	1.5, 1.5	2.0, 1.5	1.5, 1.5	1.5, 1.5	1.5, 1.5		
Dissolved Oxygen (mg/l)	12.6, 13.4	13.4, 12.8	12.6, 13.6	13.6, 12.8	12.4, 13.4	13.4, 12.5	11.9, 13.2	13.2, 12.8		
pH	7.7, 7.5	7.5, 7.3	7.7, 7.4	7.4, 7.4	7.7, 7.4	7.4, 7.3	NA, 7.4	7.4, 7.3		
Secchi Disc (cm)	51, 102	102, 132	56, 86	86, 107	61, 91	91, 107	41, 102	102, 112		
River Stage (m)	1.60, 1.55	1.55, 1.52	1.60, 1.55	1.55, 1.52	1.60, 1.55	1.55, 1.52	1.60, 1.55	1.55, 1.52		
Weather	Overcast, Overcast	Overcast, Overcast	Overcast, Overcast	Overcast, Overcast	Overcast, Overcast	Overcast, Overcast	Overcast, Overcast	Overcast, Overcast		
No. of Specimens	-	1	-	1	1	4	5	1	13	
No. of Species	-	1	-	1	1	4	2	1	6	
White sucker	-	-	-	-	-	1	3	-	5	38.5
Northern hog sucker	NO	-	NO	-	-	1	-	-	1	7.7
Shorthead redhorse	-	-	-	-	1	1	-	-	4	30.8
Rock bass	FISH	1	FISH	-	-	-	-	-	1	7.7
Black crappie	-	-	-	1	-	-	-	-	1	7.7
Walleye	TAKEN	-	TAKEN	-	-	1	-	-	1	7.7
NA Not Available.									1	7.7

POOR ORIGINAL

Table 3

Fishes taken by trapnet on 21-23 January 1980 near TMDS.

Station	TM-AQF-1A3		TM-AQF-11A2		TM-AQF-11A3		TM-AQF-9B2		Total	1 Catch
	21-22 0920-0853	22-23 0856-0838	21-22 0930-0905	22-23 0907-0850	21-22 0944-0915	22-23 0921-0901	21-22 0956-0930	22-23 0932-0915		
Date	21-22	22-23	21-22	22-23	21-22	22-23	21-22	22-23		
Time	0920-0853	0856-0838	0930-0905	0907-0850	0944-0915	0921-0901	0956-0930	0932-0915		
Air Temp. (C)	-1.0, 1.0	1.0, 1.5	-1.0, 2.0	2.0, 2.5	-0.5, 2.0	2.0, 2.5	-0.5, 2.0	2.0, 3.0		
Water Temp. (C)	1.0, 1.5	1.5, 1.5	1.0, 1.5	1.5, 2.0	1.0, 1.5	1.5, 2.0	1.0, 1.5	1.5, 2.0		
Dissolved Oxygen (mg/l)	13.4, 13.8	13.8, 13.6	13.4, 13.8	13.8, 13.4	13.2, 13.7	13.7, 13.3	13.1, 13.7	13.7, 12.9		
pH	8.0, 7.6	7.6, 7.5	8.1, 7.5	7.5, 7.6	7.9, 7.7	7.7, 7.5	7.9, 7.6	7.6, 7.5		
Secchi Disc (cm)	117, 107	107, 152	137, 117	117, 147	117, 112	112, 132	122, 127	127, 127		
River Stage (m)	1.39, 1.36	1.36, 1.34	1.39, 1.36	1.36, 1.34	1.39, 1.36	1.36, 1.34	1.39, 1.36	1.36, 1.34		
Weather	Clear, Overcast	Overcast, Overcast	Clear, Overcast	Overcast, Overcast	Clear, Overcast	Overcast, Overcast	Clear, Overcast	Overcast, Overcast		
No. of Specimens	1	-	1	2	2	1	-	-	7	
No. of Species	1	-	1	2	2	1	-	-	4	
Rock bass	-	-	-	1	-	-	-	-	1	14.3
White crappie	-	NO	-	-	1	1	NO	NO	2	28.6
Black crappie	1	FISH	1	-	-	-	FISH	FISH	2	28.6
Walleye	-	TAKEN	-	1	1	-	TAKEN	TAKEN	2	28.6

POOR ORIGINAL

Table 4

Numbers of fishes impinged at the Unit 1 Intake during a 24-hr impingement survey on 10-11 January 1980.

Date	10	11	11							
Time	2000	0400	1200							
Volumetric Flow Rate (m ³ /s)	1.33	1.82	1.33							
Number of River Water Pumps:										
Nuclear Service	1	1	1							
Secondary Service	1	1	1							
Decay Heat	1	2	1							
Intake Velocity (cm/s)	NA	NA	NA							
River Flow (m ³ /s)	583.3	529.5	529.5							
Air Temp. (C)	-0.5	1.0	3.0							
Water Temp. (C)	0.0	0.0	2.0							
Condition of Fish	Alive		Dead		Alive		Dead		Total	
Channel catfish	1	-	-	-	-	-	1	-	-	-
Tessellated darter	-	-	1	-	-	1	1	1	-	-
Total	1	-	1	-	-	1	2	1	-	-

NA Not Available.

Table 5

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 10-11 January 1980.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Channel catfish	41-45	1 Young	0.8	1
Tessellated darter	36-45	1 Young, 1 Juvenile	1.1	2
Total			1.9	3

Table 6

Numbers of fishes impinged at the Unit 1 Intake during a 24-hr impingement survey on 24-25 January 1980.

Date	24	25	25		
Time	2000	0400	1200		
Volumetric Flow Rate (m ³ /s)	1.33	1.33	1.33		
Number of River Water Pumps:					
Nuclear Service	1	1	1		
Secondary Service	1	1	1		
Decay Heat	1	1	1		
Intake Velocity (cm/s)	NA	NA	NA		
River Flow (m ³ /s)	608.8	589.0	574.8		
Air Temp. (C)	-3.5	-4.0	0.0		
Water Temp. (C)	0.0	0.0	2.0		
Condition of Fish	Alive	Dead	Alive	Dead	Total
					Alive
					Dead
	NO FISH TAKEN				

NA Not Available.

12

Table 7

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 24-25 January 1980.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
NO FISH TAKEN				

Table 8

Numbers of fishes impinged at the Unit 2 Intake during a 24-hr impingement survey on 10-11 January 1980.

Date	10	11	11					
Time	2000	0400	1200					
Volumetric Flow Rate (m ³ /s)	2.09	2.09	2.09					
Number of River Water Pumps:								
Nuclear Service	1	1	1					
Secondary Service	2	2	2					
Intake Velocity (cm/s)	NA	NA	NA					
River Flow (m ³ /s)	583.3	529.2	529.2					
Air Temp. (C)	-0.5	1.0	3.0					
Water Temp. (C)	0.0	0.0	2.0					
Condition of Fish	<u>Alive</u>	<u>Dead</u>	<u>Alive</u>	<u>Dead</u>	<u>Alive</u>	<u>Dead</u>	<u>Alive</u>	<u>Dead</u>
Spotfin shiner	-	6	-	-	-	-	-	6
Channel catfish	-	2	-	-	-	-	-	2
Total	-	8	-	-	-	-	-	8

NA Not Available.

Table 9

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 2 Intake on 10-11 January 1980.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Spotfin shiner	21-40	6 Young	1.3	6
Channel catfish	46-55	2 Young	3.0	2
Total			4.3	8

Table 10

Numbers of fishes impinged at the Unit 2 Intake during a 24-hr impingement survey on 30-31 January 1980.

Date	30	31	31							
Time	2000	0400	1200							
Volumetric Flow Rate (m ³ /s)	2.09	2.09	2.09							
Number of River Water Pumps:										
Nuclear Service	1	1	1							
Secondary Service	2	2	2							
Intake Velocity (cm/s)	NA	NA	NA							
River Flow (m ³ /s)	421.9	584.7	478.6							
Air Temp. (°C)	-4.0	-8.0	-3.0							
Water Temp. (C)	0.0	0.0	0.0							
Condition of Fish	Total		Total		Total		Total			
	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Channel catfish	-	1	-	1	-	-	-	-	-	2
Total	-	1	-	1	-	-	-	-	-	2

NA Not Available.

Table 11

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 2 Intake on 30-31 January 1980.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Channel catfish	41-45, 56-60	2 Young	3.2	2
Total			3.2	2

Table 12

Numbers of fishes captured by AC electrofisher near TMINs in January 1980.

Zone	1582	1588	15A1	15A2	4A1	16A2	13A1	10A3	9B5	10B1	10B3	11B1	Total
Date	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	21 Jan	
Time	1870	1848	1915	1936	1954	2015	2035	2055	2116	2138	2200	2222	
Duration (min)	13	12	11	10	13	12	14	12	14	14	11	12	
Air Temp. (C)	1.0	1.5	-1.0	0.0	-0.5	-1.5	-1.5	-1.0	-2.0	-2.0	-3.0	-4.0	
Water Temp. (C)	2.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	1.5	-1.5	2.5	
Dissolved Oxygen (mg/l)	13.8	17.9	15.2	15.1	13.9	13.6	15.0	13.2	13.5	14.4	14.2	14.5	
pH	7.8	8.1	8.1	8.2	7.9	7.7	7.7	7.5	7.8	8.4	8.4	8.6	
Conductivity (micromhos/cm)	250	180	195	225	300	300	300	300	300	225	225	250	
Secchi Disc (cm)	122	193	142	152	89	99	102	102	94	160	91	132	
Volts	200	200	205	200	195	195	200	200	200	200	200	200	
Amps	4.5	2.5	2.5	3.0	5.0	5.0	5.0	5.0	5.0	4.0	3.0	5.0	
Muskellunge	1	-	NO	NO	NO	1	1	-	2	2	1	-	1
Quillback	-	-	1	-	-	-	-	-	-	-	-	-	1
Channel catfish:	-	1	-	-	-	-	-	-	-	-	-	-	3
Rock bass	1	2	-	-	-	-	-	-	-	-	1	-	1
Pumpkinseed	-	-	FISH	FISH	FISH	-	-	-	-	-	-	-	1
Bluegill	1	-	-	-	-	-	-	-	-	-	-	-	1
White crappie	-	-	-	-	-	-	-	-	-	-	-	-	1
Black crappie	1	-	TAKEN	TAKEN	TAKEN	-	-	-	-	-	-	-	3
Walleye	-	2	-	-	-	2	2	2	1	-	-	-	9
No. of Specimens	4	5	-	-	-	3	3	2	3	2	2	3	27
No. of Species	4	3	-	-	-	2	2	1	2	1	2	2	9

POOR ORIGINAL

Table 13

Creel survey data from the CR for each survey day in January 1980.

Day	4 Fri			13 Sun ¹			19 Sat			28 Mon ¹		
Weather	Overcast			Overcast			Windy			Overcast		
River Stage (m)	1.52	1.32	1.23									
Air Temperature (C)	-2.0	NA	NA	4.5	5.5	NA						
Water Temperature (C)	1.5	1.0	NA	1.5	2.0	NA						
Times:												
a) morning (0900-1300)	a	b	c	a	b	c	a	b	c	a	b	c
b) afternoon (1300-1700)												
c) evening (1700-2100)												
Total Per Time Period:												
Anglers	-	-	-	-	-	-	-	-	-	-	-	-
Fish Caught	-	-	-	-	-	-	-	-	-	-	-	-
Fish Kept	-	-	-	-	-	-	-	-	-	-	-	-
Hours Fished	-	-	-	-	-	-	-	-	-	-	-	-
Catch/Effort (h)	-	-	-	-	-	-	-	-	-	-	-	-
Day Totals:												
Anglers	-	-	-	-	-	-	-	-	-	-	-	-
Fish Caught	-	-	-	-	-	-	-	-	-	-	-	-
Fish Kept	-	-	-	-	-	-	-	-	-	-	-	-
Hours Fished	-	-	-	-	-	-	-	-	-	-	-	-
Catch/Effort (h)	-	-	-	-	-	-	-	-	-	-	-	-
Species	a	b	c	a	b	c	a	b	c	a	b	c
1 Surveys not conducted due to ice.												
NA Not Available.												

POOR ORIGINAL

Table 14

Creel survey data from the West Dam for each survey day in January 1980.

Day	4 Fri	13 Sun	19 Sat	28 Mon
Weather	Overcast		Overcast	
River Stage (m)	1.52	1.22	1.46	1.23
Air Temperature (C)	-2.0	NA	4.5	NA
Water Temperature (C)	1.5	1.0	1.5	2.0
Times:				
a) morning (0900-1300)	a	a	a	a
b) afternoon (1300-1700)	b	b	b	b
c) evening (1700-2100)	c	c	c	c
Total Per Time Period:				
Anglers	-	-	-	-
Fish Caught	-	-	-	-
Fish Kept	-	-	-	-
Hours Fished	-	-	-	-
Catch/Effort (h)	-	-	-	-
Day Totals:				
Anglers	-	-	-	-
Fish Caught	-	-	-	-
Fish Kept	-	-	-	-
Hours Fished	-	-	-	-
Catch/Effort (h)	-	-	-	-
Species	a	b	c	d
1 Surveys not conducted due to ice.				
NA Not Available.				
Total				

POOR ORIGINAL

Table 15

Creel survey data from the East Dam for each survey day in January 1980.

Day	4 Fri	13 Sun	19 Sat	28 Mon
Weather	Overcast, Snow	Overcast Windy	Overcast Windy	
River Stage (m)	1.52	1.32	1.46	1.23
Air Temperature (C)	-3.0	NA	4.5	NA
Water Temperature (C)	2.5	2.5	3.5	3.5
Times:				
a) morning (0900-1300)	a	a	a	a
b) afternoon (1300-1700)	b	b	b	b
c) evening (1700-2100)	c	c	c	c
Total Per Time Period:				Total
Anglers	-	-	2	2
Fish Caught	-	-	-	-
Fish Kept	-	-	-	-
Hours Fished	-	-	0.15	0.15
Catch/Effort (h)	-	-	-	-
Day Totals:				
Anglers	-	-	2	-
Fish Caught	-	-	-	-
Fish Kept	-	-	-	-
Hours Fished	-	-	0.15	-
Catch/Effort (h)	-	-	-	-
Species	a	b	c	Total
	a	b	c	a
	b	c	a	b
	c	a	b	c

1 Survey not conducted due to ice.
NA Not Available.

POOR ORIGINAL

Table 16

Creel survey data from the YRKS for each survey day in January 1980.

Day	4 Fri			13 Sun			19 Sat			28 Mon		
Weather	Overcast, Snow			Overcast			Overcast Windy			Clear		
River Stage (m)	-4.0	-2.5	-2.5	-2.0	-1.0	-3.0	6.5	6.0	5.5	1.5	2.5	0.5
Air Temperature (C)	0.5	0.5	0.5	0.0	0.0	0.0	3.5	3.5	3.5	0.0	1.5	0.5
Water Temperature (C)												
Times:	a) morning (0900-1300)			b) afternoon (1300-1700)			c) evening (1700-2100)			Total		
Anglers	-	-	-	1	-	-	6	1	-	-	1	9
Fish Caught	-	-	-	-	-	-	1	-	-	-	-	1
Fish Kept	-	-	-	-	-	-	1	-	-	-	-	1
Hours Fished	-	-	-	0.25	-	-	3.15	1.50	-	-	0.10	5.00
Catch/Effort (h)	-	-	-	-	-	-	0.32	-	-	-	-	0.29
Day Totals:												
Anglers	-	-	-	1	-	-	1	7	-	-	1	9
Fish Caught	-	-	-	-	-	-	-	1	-	-	-	1
Fish Kept	-	-	-	-	-	-	-	1	-	-	-	1
Hours Fished	-	-	-	0.25	-	-	0.25	4.65	-	-	0.10	5.00
Catch/Effort (h)	-	-	-	-	-	-	-	0.22	-	-	-	0.29
Species	a	b	c	a	b	c	a	b	c	a	b	c
Carp	-	-	-	-	-	-	1K	-	-	-	-	-

POOR ORIGINAL