The Hon. J.W. (Jack) Cookson
Minister of the Environment
222 Legislative Building
Edmonton, Alberta

and

The Hon. John Fraser
Minister of the Environment
Environment Canada
Ottawa, Ontario

Sirs:

Enclosed is the report "Supplemental Fisheries Life History Data for Selected Lakes and Streams in the AOSERP Study Area".

This report was prepared for the Alberta Oil Sands Environmental Research Program, through its Water System, under the Canada-Alberta Agreement of February 1975 (amended September 1977).

Respectfully,

W. Solodzuk, P.Eng.
Chairman, Steering Committee, AOSERP
Deputy Minister, Alberta Environment

A.H. Macpherson, Ph.D
Member, Steering Committee, AOSERP
Regional Director-General
Environment Canada
Western and Northern Region

SUPPLEMENTAL FISHERIES LIFE HISTORY DATA FOR SELECTED LAKES AND STREAMS IN THE AOSERP STUDY AREA

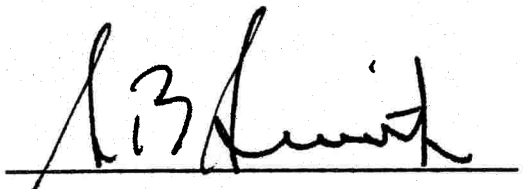
DESCRIPTIVE SUMMARY

BACKGROUND

Detailed fish fauna investigations have been conducted by AOSERP researchers throughout the Athabasca Oil Sands region since 1976 (see AOSERP Reports 2, 26, 36, 61, and 76. The studies have concentrated on gathering baseline information to provide a regional picture of the fisheries resources of the area. The present project has added to the baseline picture by describing some miscellaneous fisheries data for some lakes and tributaries in the area. The present researchers examined fish samples which had been previously collected and preserved.

ASSESSMENT

The report has been reviewed in the AOSERP management office. The document contains detailed data of value to fisheries research and management. Thus, it is recommended that the report be made available by distribution to selected Canadian libraries. The Alberta Oil Sands Environmental Research Program accepts this report "Supplemental Fisheries Life History Data for Selected Lakes and Streams in the AOSERP Study Area" and thanks the author and others associated with the project for their efforts.



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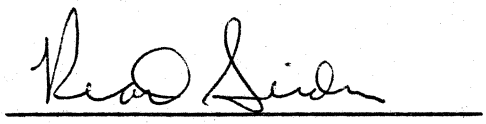

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Research Manager
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SUPPLEMENTAL FISHERIES LIFE HISTORY DATA FOR SELECTED LAKES AND STREAMS IN THE AOSERP STUDY AREA

by

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LGL Limited

for

Alberta Oil Sands Environmental Research Program

Project WS 1.5.2

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ABSTRACT

During 1977, various rivers and lakes from the MacKay, Richardson, and Maybelle river drainages, the Ells River headwaters, and the east slope of the Birch Mountains were spot sampled for fish. Life history information and location data for the 672 fish, of 17 species, collected from these areas are presented in table format. The 17 species collected during this survey are as follows: Arctic Grayling, Lake Whitefish, Lake Cisco, Lake Trout, Northern Pike, Longnose Dace, Lake Chub, Pearl Dace, Longnose Sucker, White Sucker, Burbot, Trout-Perch, Brook Stickleback, Ninespine Stickleback, Yellow Perch, Walleye, and Slimy Sculpin.

ACKNOWLEDGEMENTS

These analyses were funded by the Alberta Oil Sands Environmental Research Program, a joint Alberta-Canada research program established to fund, direct, and co-ordinate environmental research in the Athabasca Oil Sands area of northeastern Alberta.

I would also like to thank A. Birdsall, J. Kristensen, M. Psutka, W. Roberts, and B. Walton for their help in analysis and writing.

1. INTRODUCTION

During the 1977 field season, W.A. Bond and M.R. Orr (Project AF 4.3.2) collected fish from the MacKay, Richardson, and Maybelle river drainages, the Ells River headwaters, and six rivers along the east slope of the Birch Mountains. Samples were stored until 1979 at which time they were catalogued and analyzed by LGL Limited. This report summarizes the information gained from these collections.

2. STUDY AREA

The Alberta Oil Sands Environmental Research Program (AOSERP) study area encompasses a 28 000 km^2 area located in northeastern Alberta (Figure 1). The sampling locations were scattered over the MacKay, Richardson, and Maybelle river drainages, the Ells River headwaters, and the east slope of the Birch Mountains (Table 1; Figure 2).

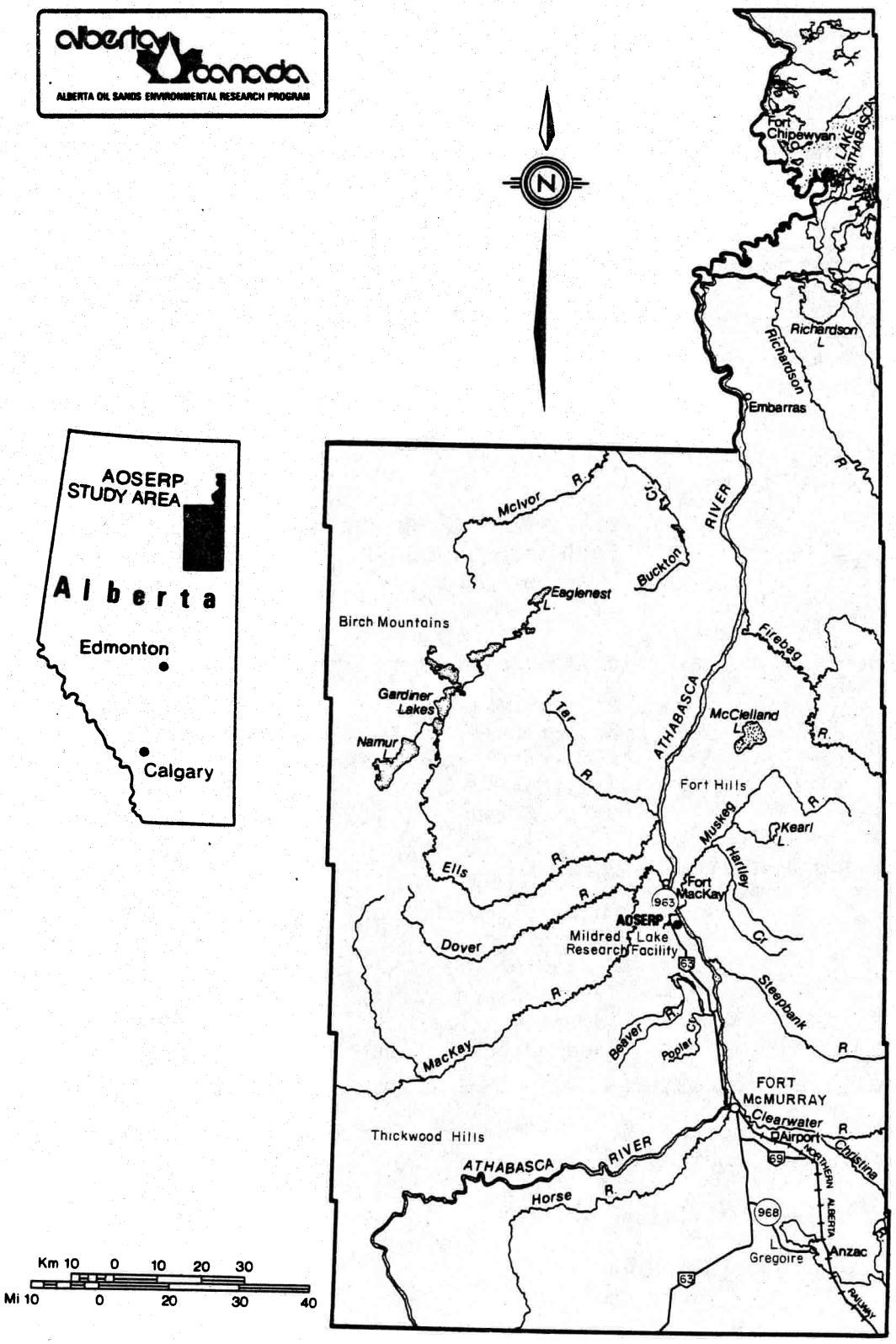

Figure 1. The AOSERP study area.

Table 1. Sampling locations and dates of sampling.

Drainage	Location[a]	Date[b]
1) MacKay River drainage		
	Birch Lake	20 September
	Clearwater Lake	20 September
2) Ells River headwaters		
	Big Island (Unnamed) Lake	24 September
	Eaglenest Lake	24 September
	Gardiner Lake	27 September
	Namur Lake	27 September
3) Richardson and Maybelle river drainages		
	Archer Lake	22 September
	Barber Lake	22 September
	Richardson Tower Lake (57°54'N; 111°02'W)	22 September
	Unnamed Lake (Tp 107 R4 W4)	21 September
4) East slope of Birch Mountains		
	Calumet River (200 m[c], 2 km)	6 June
	Ells River (5 km)	8 June
	Eymundson Creek (2 km)	7 June
	Pierre River (2 km)	7 June
	Tar River (1.4 km)	6 June
	Unnamed Creek (mouth)	7 June

[a]All distances are from the sampling location downstream to the Athabasca River confluence.

[b]All samples were collected in 1977.

[c]This is only for the sucker fry.

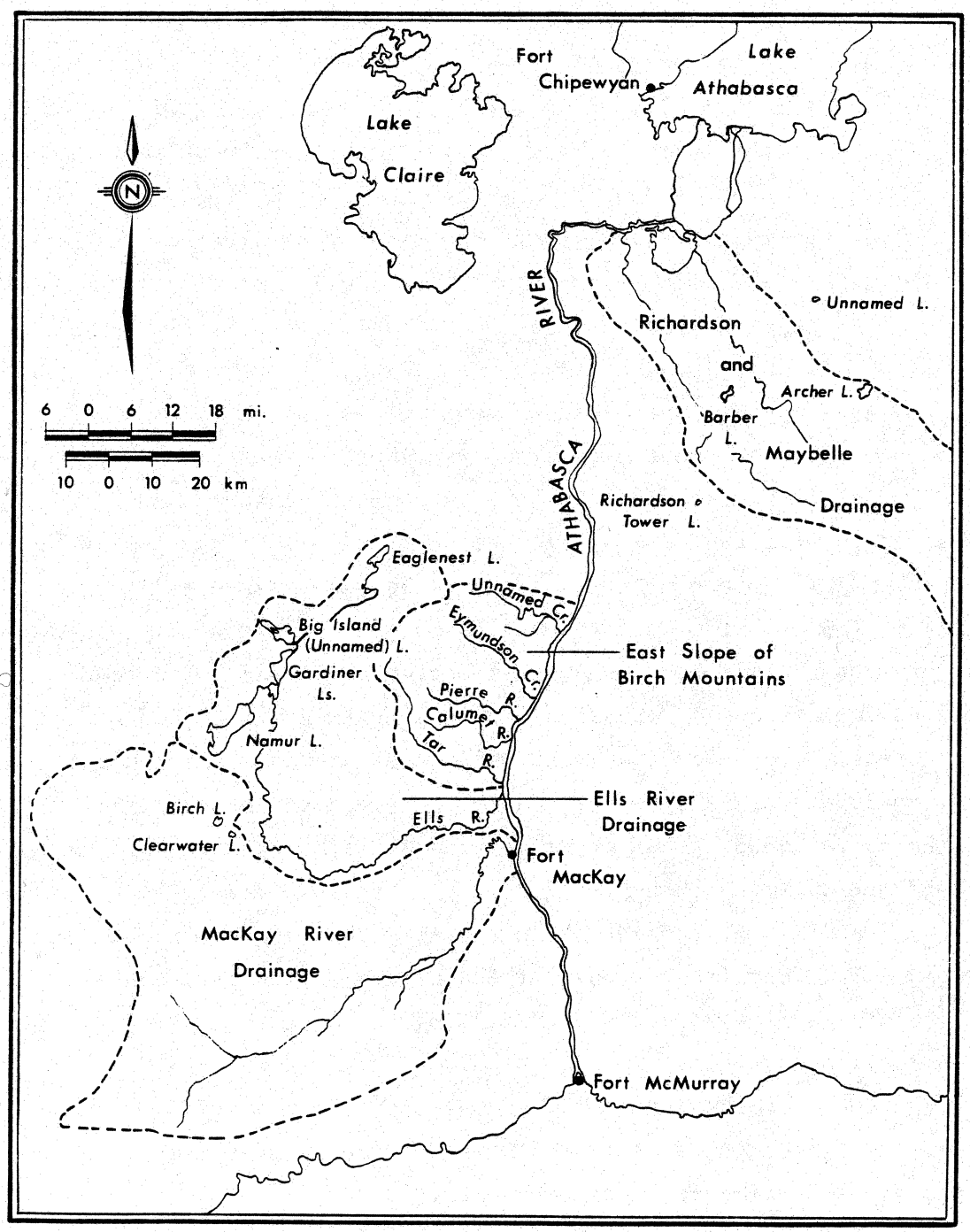

Figure 2. Locations of sampling sites.

3. MATERIALS AND METHODS

Three methods of collection were used:

1. Gill net gangs of 9.1 m x 2.4 m with 2.5, 3.8, 5.1, 6.4, 7.6, 8.9, and 10.2 cm mesh were used in the lakes. The sets varied between 10.25 h and 24 h and at depths between 1 m and 26.5 m;
2. Between one and five seine hauls were made in lakes (seine dimensions 6.1 m x 1.2 m x 0.64 cm) and in rivers (seine dimensions 3.0 m x 1.2 m x 0.32 cm); and
3. Dip nets were used; however, there is no information about mesh size or number of sweeps.

The fish collected from the lakes were measured and weighed in the field. Some of the stomachs, otoliths, and scales were preserved, stomachs in formalin and the scales and otoliths in glycerin. The otoliths were read using a Wild M5A dissecting microscope or a Bausch and Lomb compound microscope. Scales were read by making impressions on acetate slides using an Ann Arbor 110 roller press. They were then read using a Bausch and Lomb projecting microscope. At least three readings of each scale and otolith were taken. A random group of scales and otoliths were checked by a second person for accuracy.

The fish collected in the rivers were preserved whole in formalin. The formalin destroyed the otoliths, therefore, scales were the only available material for aging. The scales were read as previously described.

The stomachs from the fish collected in the rivers were removed and the contents were identified as far as practical (i.e., Cladocera, Hirudinea, Ephemeroptera, etc.).

The preserved stomachs from the fish from the lakes and all the stomachs taken from the whole fish from the rivers were analyzed for fullness and content. The fullness was estimated using the Hynes Point method, according to the following rating system:

0 = empty
5 = 1/4 full
10 = 1/2 full
15 = 3/4 full
20 = full
25 = distended

After each stomach was rated, it was cut open and the contents removed. The contents were sorted into related groups. The portion of the Hynes Point score of the stomach that was attributed to each taxonomic group was then estimated. The portions of the Hynes Point scores were then converted to percentages of the total.

4. RESULTS

The data for ages, lengths, weights, and stomach contents of fish are summarized in Tables 1 to 6. The data for individual fish are contained in Appendix 5.

4.1 LENGTHS AND WEIGHTS

The fish length and weight data have been summarized on a drainage by drainage basis:

1. MacKay River drainage (Table 2);
2. Ells River headwater (Table 3);
3. Richardson and Maybelle river drainages (Table 4); and
4. East slope of Birch Mountains (Table 5).

4.2 SUMMARY OF STOMACH CONTENTS

The stomach contents were identified to order (insects) or class (other animals), and the percentage of each group in the stomachs was estimated (Table 6).

Table 2. Summary of lengths and weights of fish collected in Birch Lake, MacKay River drainage.

Species	Age	Number	Length[a] (mm)	Weight (g)
Northern Pike	4	4	$\bar{x}$ = 455.3 SD = 13.8	$\bar{x}$ = 670.0 SD = 77.9
	5	4	$\bar{x}$ = 522.8 SD = 20.8	$\bar{x}$ = 1028.8 SD = 123.5
	6	7	$\bar{x}$ = 544.6 SD = 39.6	$\bar{x}$ = 1222.1 SD = 271.6
	7	2	$\bar{x}$ = 641.5 SD = 54.5	$\bar{x}$ = 2140.0 SD = 410.1
White Sucker	ND[a]	ND	ND	ND
Brook Stickleback	0	48	$\bar{x}$ = 37.7 SD = 8.1	$\bar{x}$ = 0.48 SD = 0.33

[a]Symbols
ND = No Data
$\bar{x}$ = Mean
SD = Standard Deviation

Table 3. Summary of lengths and weights of fish collected in the Ells River headwaters.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
Lake Whitefish	5	5	$\bar{x}$ = 305.4 SD = 22.2	$\bar{x}$ = 366.0 SD = 95.3	Eaglenest L. Big Island (Unnamed) L. Gardiner L. Namur L.
	6	6	$\bar{x}$ = 319.0 SD = 60.4	$\bar{x}$ = 503.3 SD = 374.7	
	7	6	$\bar{x}$ = 299.2 SD = 12.8	$\bar{x}$ = 351.7 SD = 76.5	
	8	4	$\bar{x}$ = 332.0 SD = 52.4	$\bar{x}$ = 545.0 SD = 396.2	
	9	1	461.0	1460.0	
	10	1	388.0	780.0	
Lake Cisco	2	2	$\bar{x}$ = 211.0 SD = 21.2	$\bar{x}$ = 102.5 SD = 3.5	Big Island (Unnamed) L. Gardiner L. Namur L.
	3	1	212.0	110.0	
	6	1	331.0	540.0	
	7	9	$\bar{x}$ = 317.8 SD = 28.6	$\bar{x}$ = 502.2 SD = 91.1	

Continued...

Table 3. Continued.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
	8	4	$\bar{x}$ = 332.0 SD = 13.6	$\bar{x}$ = 580.0 SD = 70.7	
	9	3	$\bar{x}$ = 329.7 SD = 12.6	$\bar{x}$ = 570.0 SD = 36.1	
Northern Pike	4	2	$\bar{x}$ = 621.5 SD = 58.7	$\bar{x}$ = 1810.0 SD = 636.4	
	5	4	$\bar{x}$ = 573.5 SD = 23.3	$\bar{x}$ = 1338.0 SD = 283.0	Big Island (Unnamed) L. Eaglenest L. Gardiner L.
	6	8	$\bar{x}$ = 632.0 SD = 72.8	$\bar{x}$ = 1831.3 SD = 884.0	
	7	1	656.0	2060.0	
	9	2	$\bar{x}$ = 676.5 SD = 89.8	$\bar{x}$ = 2690.0 SD = 1060.7	
Longnose Sucker	2	2	$\bar{x}$ = 405.5 SD = 24.8	$\bar{x}$ = 970.0 SD = 155.6	Namur L.

Continued...

Table 3. Continued.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
White Sucker	0	3	$\bar{x}$ = 37.7 SD = 13.4	$\bar{x}$ = 0.80 SD = 0.95	Big Island (Unnamed) L. Eaglenest L.
	3	1	337.0	520.0	
	4	3	$\bar{x}$ = 365.7 SD = 18.6	$\bar{x}$ = 740.0 SD = 150.9	
Burbot	2	1	288.0	130.0	Namur L.
Yellow Perch	0	24	$\bar{x}$ = 39.0 SD = 2.6	$\bar{x}$ = 0.70 SD = 0.15	Big Island (Unnamed) L. Gardiner L.
	3	1	147.0	42.0	
Walleye	5	1	398.0	710.0	
	6	1	387.0	660.0	Gardiner L. Big Island (Unnamed) L.
	7	1	439.0	910.0	
	8	5	$\bar{x}$ = 452.8 SD = 55.4	$\bar{x}$ = 1152.0 SD = 357.4	

Continued...

Table 3. Concluded.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
	9	1	660.0	3770.0	
	10	1	514.0	1480.0	
	11	2	$\bar{x}$ = 604.5 SD = 75.7	$\bar{x}$ = 2380.0 SD = 339.4	

[a]Symbols: $\bar{x}$ = Mean
SD = Standard Deviation

Table 4. Summary of lengths and weights of fish collected in the Richardson and Maybelle river drainages.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
Lake Whitefish	4	1	372.0	210.0	
	6	2	$\bar{x}$ = 328.0 SD = 55.2	$\bar{x}$ = 460.0 SD = 254.6	
	7	1	331.0	420.0	Archer L. Unnamed L.
	8	4	$\bar{x}$ = 387.0 SD = 18.6	$\bar{x}$ = 751.3 SD = 116.2	
	9	4	$\bar{x}$ = 417.8 SD = 21.2	$\bar{x}$ = 1010.0 SD = 219.4	
Lake Cisco	6	2	$\bar{x}$ = 348.0 SD = 0.0	$\bar{x}$ = 585.0 SD = 7.1	Richardson Tower L.
Lake Trout	2	1	344.0	470.0	Unnamed L.
	5	1	628.0	2700.0	
Northern Pike	1	4	$\bar{x}$ = 17.6 SD = 15.6	$\bar{x}$ = 44.1 SD = 15.5	

Continued...

Table 4. Continued.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
	4	4	$\bar{x}$ = 455.3 SD = 13.8	$\bar{x}$ = 670.0 SD = 77.9	
	5	3	$\bar{x}$ = 471.7 SD = 53.9	$\bar{x}$ = 650.0 SD = 185.2	
	6	2	$\bar{x}$ = 526.5 SD = 60.1	$\bar{x}$ = 940.0 SD = 282.8	Archer L. Barber L.
	7	3	$\bar{x}$ = 509.0 SD = 20.0	$\bar{x}$ = 803.3 SD = 98.7	Richardson Tower L. Unnamed L.
	8	4	$\bar{x}$ = 617.3 SD = 81.1	$\bar{x}$ = 1522.5 SD = 544.1	
	10	2	$\bar{x}$ = 929.5 SD = 33.2	$\bar{x}$ = 6920.0 SD = 806.1	
	13	1	834.0	3840.0	
White Sucker	3	1	411.0	910.0	Archer L.

Continued...

Table 4. Concluded.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
Ninespine Stickleback	0	41	$\bar{x}$ = 41.5 SD = 3.0	$\bar{x}$ = 0.40 SD = 0.09	Barber L. Unnamed L.
	1	2	$\bar{x}$ = 41.0 SD = 1.4	$\bar{x}$ = 0.50 SD = 0.00	
Yellow Perch	0	20	$\bar{x}$ = 41.1 SD = 2.6	$\bar{x}$ = 0.74 SD = 0.15	Archer L. Unnamed L.
Walleye	0	3	$\bar{x}$ = 36.0 SD = 2.7	$\bar{x}$ = 0.52 SD = 0.16	Barber L. Richardson Tower L.
	7	1	376.	490.	
	8	4	$\bar{x}$ = 409.3 SD = 37.3	$\bar{x}$ = 695.0 SD = 152.0	

[a]Symbols: $\bar{x}$ = Mean
SD = Standard Deviation

Table 5. Summary of lengths and weights of fish caught at sampling sites on the east slope of the Birch Mountains.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
Arctic Grayling	0	19	$\bar{x}$ = 15.5 SD = 1.2	$\bar{x}$ = 0.02 SD = 0.01	Pierre R.
	1	1	105.0	12.0	
Longnose Dace	1	1	45.0	1.0	Ells R.
Lake Chub	1	12	$\bar{x}$ = 35.0 SD = 5.6	$\bar{x}$ = 0.45 SD = 0.18	Ells R. Pierre R.
	2	2	$\bar{x}$ = 44.5 SD = 0.7	$\bar{x}$ = 0.85 SD = 0.01	Tar R. Unnamed R.
	3	1	76.0	4.0	
Pearl Dace	1	23	$\bar{x}$ = 38.0 SD = 4.1	$\bar{x}$ = 0.55 SD = 0.21	Calumet R. Ells R.
Longnose Sucker	1	4	$\bar{x}$ = 52.0 SD = 10.0	$\bar{x}$ = 1.6 SD = 0.6	Calumet R.

Continued...

Table 5. Concluded.

Species	Age	Number	Length[a] (mm)	Weight (g)	Location
White Sucker	1	8	$\bar{x}$ = 55.6 SD = 4.6	$\bar{x}$ = 1.7 SD = 0.5	Calumet R.
	2	1	97.0	8.0	
Sucker sp.	0	342	$\bar{x}$ = 13.6 SD = 1.7	$\bar{x}$ = 0.01 SD = 0.01	Calumet R. Ells R. Unnamed R.
Trout-Perch	2	3	$\bar{x}$ = 54.3 SD = 10.1	$\bar{x}$ = 1.6 SD = 0.9	Ells R.
	3	2	$\bar{x}$ = 67.5 SD = 20.5	$\bar{x}$ = 3.3 SD = 2.3	
Brook Stickleback	ND[a]	1	46.0	1.0	Calumet R.
Slimy Sculpin	ND	1	48.0	1.0	Tar R.

[a]Symbols: $\bar{x}$ = Mean
SD = Standard Deviation
ND = No Data

Table 6. Summary of food items found in the fish stomachs by species and drainage. (1-MacKay River drainage; 2-Ells River headwaters; 3-Richardson and Maybelle river drainages; and 4-east slope of the Birch Mountains).

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
Arctic Grayling	1, 2, 3	0	N/A		
	4	20	Annelida	0.3	1
			Copepoda	0.6	2
			Plecoptera	4.1	6
			Ephemeroptera	4.7	7
			Hemiptera	0.2	1
			Simuliidae Larva	0.2	1
			Chironomidae	62.7	20
			Diptera Pupa	20.5	12
			Insect Adult Remnant	1.1	3
			Lepidoptera Larva	0.2	1
			Hymenoptera	0.0	2
			Arachnida	0.0	1
			Remnant	5.4	6
	Total	20	Same as drainage number 4		
Lake Cisco	1, 3, 4	0	N/A		
	2	19	Remnant	100.	9
	Total	19	Same as drainage number 2		

Continued...

Table 6. Continued.

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
Lake Whitefish	1, 3, 4	0	N/A		
	2	28	Remnant	74.7	19
			Unknown	25.3	6
	Total	28	Same as drainage number 2		
Northern Pike	1	17	Fish Remnant	100.0	12
	2	13	Lake Whitefish	88.9	2
			Remnant	11.1	1
	3	19	Hirudinea	5.3	1
			Amphipoda	5.3	1
			Yellow Perch	5.3	1
			Fish Remnant	84.1	6
	4	0	N/A		
	Total	53	Hirudinea	1.8	1
			Amphipoda	1.8	1
			Lake Whitefish	29.6	2
			Yellow Perch	1.8	1
			Fish Remnant	61.3	18
			Remnant	3.7	1

Continued...

Table 6. Continued.

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
Longnose Dace	1, 2, 3	0	N/A		
	4	1	Ephemeroptera	50.0	1
			Chironomidae	20.0	1
			Remnant	30.0	1
	Total	1	Same as drainage number 4		
Pearl Dace	1, 2, 3	0	N/A		
	4	23	Annelida	0.0	2
			Ephemeroptera	0.5	1
			Chironomidae	64.3	16
			Remnant	35.2	13
	Total	23	Same as drainage number 4		
Lake Chub	1, 2, 3	0	N/A		
	4	15	Ephemeroptera	20.6	4
			Chironomidae	1.8	2
			Insect Adult	47.9	5
			Remnant	29.7	7
	Total	15	Same as drainage number 4		
Yellow Perch	1, 4	0	N/A		

Continued...

Table 6. Continued.

Species	Drainage	Number of fish[a]	Food Item[b]	%	N
	2	24	Cladocera	94.2	22
			Copepoda	1.8	2
			Chironomidae	0.4	1
			Remnant	3.6	3
	3	9	Hirudinea	1.1	1
			Cladocera	18.4	6
			Copepoda	17.4	5
			Ostracoda	0.5	1
			Hydracarina	10.5	2
			Diptera	17.9	2
			Arachnida	0.5	1
			Remnant	33.7	4
	Total	33	Hirudinea	0.5	1
			Cladocera	56.3	28
			Copepoda	9.6	7
			Ostracoda	0.2	1
			Hydracarina	5.2	2
			Chironomidae	0.2	1
			Diptera	9.0	2
			Arachnida	0.3	1
			Remnant	18.7	7
Walleye	1, 4	0	N/A		
	2	12	Fish Remnant	90.0	4
			Remnant	10.0	1

Continued...

Table 6. Continued.

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
	3	8	Cladocera	10.0	1
			Fish Remnant	50.0	2
			Remnant	40.0	2
	Total	20	Cladocera	5.0	1
			Fish Remnant	70.0	6
			Remnant	25.0	3
White Sucker	1, 3	0	N/A		
	2	9	Cladocera	3.3	1
			Copepoda	3.3	1
			Pelecypoda	8.4	1
			Remnant	85.0	4
	4	9	Ephemeroptera	2.0	1
			Tricoptera	2.0	1
			Chironomidae	36.0	4
			Remnant	60.0	6
	Total	18	Cladocera	1.8	1
			Copepoda	1.8	1
			Ephemeroptera	0.9	1
			Tricoptera	0.9	1
			Chironomidae	16.4	4
			Pelecypoda	4.5	1
			Remnant	73.7	10

Continued...

Table 6. Continued.

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
Longnose Sucker	1, 3	0	N/A		
	2	2	Remnant	100.0	2
	4	4	Chironomidae	44.0	4
			Remnant	56.0	4
	Total	6	Chironomidae	16.9	4
			Remnant	83.1	6
Sucker spp.	1, 2, 3	0	N/A		
	4	341	Still with Yolk Sacs	N/A	199
			Plecoptera	0.2	2
			Ephemeroptera	1.4	6
			Simuliidae Larva	0.3	1
			Diptera Larva	0.3	2
			Diptera Pupa	28.0	48
			Insect Remnant	0.6	3
			Chironomidae	42.6	69
			Remnant	26.6	51
	Total	341	Same as drainage number 4		
Slimy Sculpin	1, 2, 3	0	N/A		
	4	1	Chironomidae	65.0	1
			Remnant	35.0	1
	Total	1	Same as drainage number 4		

Continued...

Table 6. Continued.

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
Burbot	1, 3, 4	0	N/A		
	2	1	Remnant	100.0	1
	Total	1	Same as drainage number 2		
Trout-Perch	1, 2, 3	0	N/A		
	4	5	Copepoda	0.0	1
			Ephemeroptera	0.0	1
			Tricoptera	1.6	1
			Chironomidae	46.7	4
			Remnant	51.7	5
	Total	5	Same as drainage number 4		
Ninespine Stickleback	1, 2, 4	0	N/A		
	3	49	Cladocera	4.7	7
			Copepoda	4.1	5
			Ostracoda	0.3	1
			Amphipoda	1.4	1
			Chironomidae	0.3	1
			Remnant	4.4	5
			Unknown	84.8	36
	Total	49	Same as drainage number 3		

Continued...

Table 6. Concluded.

Species	Drainage	Number[a] of fish	Food Item[b]	%	N
Brook Stickleback	1	19	Cladocera	34.1	15
			Copepoda	21.3	12
			Ostracoda	2.0	4
			Amphipoda	10.5	6
			Chironomidae	10.2	5
			Gastropoda	1.6	1
			Remnant	20.3	11
	2, 3	0	N/A		
	4	1	Cladocera	0.0	1
			Copepoda	10.0	1
			Amphipoda	25.0	1
			Chironomidae	50.0	1
			Remnant	15.0	1
	Total	20	Cladocera	32.0	16
			Copepoda	20.6	13
			Ostracoda	1.9	4
			Amphipoda	11.4	7
			Chironomidae	12.6	6
			Gastropoda	1.5	1
			Remnant	20.0	12

[a]Symbols: N/A = Not Applicable.

[b]Unknown due to only fullness recorded and not content.

5. APPENDIX

The following tables include a species list by drainage; and a listing of lengths, weights, age, sex, maturity, stomach content, method of capture, and location for individual fish species by drainage.

Table 7. Fish species list by drainage.

(1) MacKay River drainage	
Northern Pike	- *Esox lucius*
White Sucker	- *Catostomus commersoni*
Brook Stickleback	- *Culaea inconstans*
(2) Ells River headwaters	
Lake Whitefish	- *Coregonus clupeaformis*
Lake Cisco	- *Coregonus artedii*
Northern Pike	- *Esox lucius*
Longnose Sucker	- *Catostomus catostomus*
White Sucker	- *Catostomus commersoni*
Burbot	- *Lota lota*
Yellow Perch	- *Perca flavescens*
Walleye	- *Stizostedion vitreum vitreum*
(3) Richardson and Maybelle river drainages	
Lake Whitefish	- *Coregonus clupeaformis*
Lake Cisco	- *Coregonus artedii*
Lake Trout	- *Salvelinus namaycush*
Northern Pike	- *Esox lucius*
White Sucker	- *Catostomus commersoni*
Ninespine Stickleback	- *Pungitius pungitius*
Yellow Perch	- *Perca flavescens*
Walleye	- *Stizostedion vitreum vitreum*
(4) East slope Birch Mountains	
Arctic Grayling	- *Thymallus arcticus*
Longnose Dace	- *Rhinichthys cataractae*
Lake Chub	- *Couesius plumbeus*
Pearl Dace	- *Semotilus margarita*
Longnose Sucker	- *Catostomus catostomus*
White Sucker	- *Catostomus commersoni*
Sucker spp.	- *Catostomus* spp.
Trout-Perch	- *Percopsis omiscomaycus*
Brook Stickleback	- *Culaea inconstans*
Slimy Sculpin	- *Cottus cognatus*

Table 8. Individual data for MacKay River drainage.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
Northern Pike	680	2430.0	7	F	2	5	ND ND	Stickleback Fish Remnant	GNG	Clearwater L.
	535	1090.0	5	F	2	5	ND	Fish Remnant		
	500	870.0	5	F	2	10	ND	Stickleback Fish Remnant		
	452	670.0	4	F	2	5	5	Stickleback		
	570	1260.0	6	F	2	5	5	Fish Remnant		
	565	1360.0	6	F	2	20	ND ND	Stickleback Fish Remnant		
	578	1520.0	6	F	2	20	ND ND	Stickleback Fish Remnant		
	451	660.0	4	M	7	0				
	475	770.0	4	F	2	0				
	443	580.0	4	F	2	0				
	532	1040.0	6	M	7	20	ND ND	Stickleback Fish Remnant		
	544	1250.0	6	F	2	5	5	Fish Remnant		
	561	1415.0	6	M	7	10	ND ND	Stickleback Fish Remnant		
	511	1000.0	5	F	2	20	ND ND	Stickleback Fish Remnant		
	545	1155.0	5	F	2	0				
	603	1850.0	7	F	2	15	ND ND	Stickleback Fish Remnant		
	462	710.0	6	M	7	0				
White Sucker	369	730.0	ND[a]	F	2	0			GNG	Clearwater L.
	400	890.0	ND	F	2	ND				
	354	580.0	ND	M	7	ND				
Brook Stickleback	38	0.40	0	F	2	ND			SEI	Clearwater L.
	37	0.40	0	M	7	25	10 15	Copepoda Cladocera		Birch L.
	50	1.1	0	F	2	20	8 10 2	Chironomidae Cladocera Remnant		
	51	1.2	0	F	2	15	7 4 2 2	Amphipoda Cladocera Copepoda Remnant		
	35	0.45	0	F	2	15	6 6 3	Cladocera Copepoda Remnant		
	52	1.3	0	M	7	25	3 1 1 20	Amphipoda Copepoda Cladocera Remnant		

Continued ...

Table 8. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content			Gear[c]	Location
						Hynes Point[b]	Food Point	Food Item		
	47	0.80	0	M	7	20	10	Amphipoda		
							3	Copepoda		
							3	Cladocera		
							1	Ostracoda		
							3	Remnant		
	51	1.0	0	M	7	5	5	Remnant		
	48	0.60	0	F	2	10	2	Amphipoda		
							5	Cladocera		
							1	Copepoda		
							2	Chironomidae		
	47	1.0	0	M	7	5	5	Amphipoda		
	44	0.80	0	M	7	20	10	Copepoda		
							5	Cladocera		
							5	Amphipoda		
	33	0.40	0	M	7	5	5	Cladocera		
	29	0.20	0	F	2	20	12	Chironomidae		
							8	Cladocera		
	52	1.1	0	F	2	25	0	Ostracoda		
							0	Copepoda		
							15	Cladocera		
							10	Remnant		
	46	0.70	0	F	2	ND		ND		
	35	0.30	0	M	7	10	7	Copepoda		
							3	Cladocera		
	46	0.70	0	F	2	15	5	Gastropoda		
							3	Ostracoda		
							5	Copepoda		
							0	Cladocera		
							2	Remnant		
	40	0.50	0	F	2	20	5	Chironomidae		
							5	Cladocera		
							10	Remnant		
	45	0.75	0	M	7	15	10	Copepoda		
							2	Ostracoda		
							3	Remnant		
	36	0.35	0	M	7	15	10	Copepoda		
							3	Cladocera		
							2	Remnant		
	44	0.70	0	M	7	20	20	Cladocera		
	38	0.40	0	F	2	15		ND		
	37	0.50	0	F	2	20		ND		
	38	0.45	0	F	2	20		ND		
	31	0.20	0	F	2	20		ND		
	33	0.30	0	M	6	10		ND		
	47	0.90	0	M	7	15		ND		
	45	0.70	0	M	7	10		ND		
	29	0.10	0	F	1	10		ND		

Continued ...

Table 8. Concluded.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes Point[b]	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	45	0.75	0	M	7	15		ND		
	31	0.20	0	M	7	5		ND		
	27	0.15	0	M	6	5		ND		
	33	0.30	0	F	2	0		ND		
	28	0.10	0	M	7	5		ND		
	23	0.08	0	F	1	10		ND		
	27	0.15	0	M	6	0		ND		
	34	0.30	0	M	7	15		ND		
	45	0.80	0	F	2	5		ND		
	34	0.30	0	M	7	5		ND		
	31	0.20	0	M	7	0		ND		
	33	0.30	0	F	2	5		ND		
	28	0.15	0	M	7	5		ND		
	34	0.30	0	M	7	0		ND		
	32	0.20	0	M	7	10		ND		
	31	0.20	0	F	2	10		ND		
	31	0.20	0	F	2	0		ND		
	29	0.10	0	F	2	20		ND		
	28	0.20	0	M	7	15		ND		

[a]Maturity: Unknown = 0

F		M
1	Immature	6
2	Maturing	7
3	Mature	8
4	Ripe	9
5	Spent	10

[b]Hynes Point:
0 = Empty
5 = 1/4 Full
10 = 1/2 Full
15 = 3/4 Full
20 = Full
25 = Distended

[c]Symbols:
ND = No Data
GNG = Gill Net Gang
SEI = Seine

Table 9. Individual data for Ells River headwaters.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content			Gear[c]	Location
						Hynes[b] Point	Food Point	Food Item		
Lake Cisco	226	105.0	2	M	7	ND		ND	GNG	Big Island (Unnamed) L.
	196	100.0	2	M	7	ND		ND		
	212	110.0	3	M	7	ND		ND		Gardiner L.
	338	590.0	8	F	3	ND		ND		Namur L.
	318	500.0	8	F	3	ND		ND		
	334	560.0	7	F	3	ND		ND		
	328	540.0	9	F	3	ND		ND		
	318	560.0	9	F	3	ND		ND		
	333	540.0	7	F	3	0		ND		
	310	450.0	ND	F	3	0		ND		
	348	670.0	8	F	3	20	20	Remnant		
	310	540.0	7	M	8	10	10	Remnant		
	250	290.0	7	F	2	20	20	Remnant		
	324	560.0	8	F	3	20	20	Remnant		
	305	440.0	7	M	8	10	10	Remnant		
	342	560.0	7	F	3	10	10	Remnant		
	318	510.0	7	F	2	10	10	Remnant		
	341	590.0	7	M	7	5	5	Remnant		
	331	540.0	6	M	7	5	5	Remnant		
	327	490.0	7	M	7	0				
	343	610.0	9	F	3	0				
	336	500.0	ND	F	3	0				
Lake Whitefish	329	380.0	6	M	7	0			GNG	Big Island (Unnamed) L.
	340	400.0	ND	M	6	5	5	Remnant		
	461	1460.0	9	F	3	5	5	Remnant		Eaglenest L.
	408	1130.0	8	F	3	ND		ND		Gardiner L.
	429	1220.0	6	F	3	0				Namur L.
	320	440.0	5	M	8	20	20	Remnant		
	327	420.0	5	M	8	10	10	Remnant		
	298	330.0	4	F	1	15	15	Remnant		
	312	420.0	5	M	8	20	20	Remnant		
	263	210.0	4	M	7	15	15	Remnant		
	297	340.0	5	M	7	15	15	Remnant		
	291	280.0	4	F	1	10	10	Remnant		
	293	320.0	4	M	8	10	10	Remnant		
	271	210.0	5	ND	ND	0				
	274	220.0	4	ND	ND	ND		ND		
	282	260.0	4	M	6	0				
	293	420.0	7	M	7	20	20	Remnant		

Continued ...

Table 9. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	313	340.0	8	F	1	20	20	Remnant		
	331	510.0	6	M	8	10	10	Remnant		
	309	370.0	7	F	1	20	20	Remnant		
	283	490.0	6	F	1	5	5	Remnant		
	319	440.0	8	F	3	20	20	Remnant		
	314	450.0	7	M	8	20	20	Remnant		
	288	270.0	8	F	1	20	20	Remnant		
	388	780.0	10	M	8	15		ND		
	272	230.0	6	M	8	20		ND		
	270	190.0	6	M	6	20		ND		
	288	290.0	7	M	6	20		ND		
	308	330.0	7	M	6	20		ND		
	283	250.0	7	ND	ND	20	20	Remnant		
Northern Pike	721	3380.0	6	F	2	20	20	Lake Whitefish	GNG	Big Island (Unnamed) L.
	571	1010.0	6	M	7	0				
	706	2480.0	6	F	2	0				Eaglenest L.
	580	1360.0	4	M	7	0				Gardiner L.
	656	2060.0	7	F	2	0				
	541	960.0	5	M	7	0				
	535	780.0	6	M	7	0				
	613	1940.0	9	M	7	0				
	663	2260.0	4	F	2	5	5	Remnant		
	643	1750.0	6	M	7	0				
	573	1282.0	5	M	7	0				
	594	1550.0	5	M	7	0				
	740	3440.0	9	F	2	20	20	Lake Whitefish		
	586	1560.0	5	M	7	0				
	566	1150.0	6	M	7	0				
	706	2440.0	6	F	2	0				
	608	1660.0	6	F	2	0				
Yellow Perch	147	41.8	3	M	7	0			SEI	Big Island (Unnamed) L.
	41	0.80	0	F	1	10	1	Chironomidae	GNG	
							9	Cladocera		Gardiner L.
	41	0.75	0	F	1	5	1	Cladocera		
							4	Remnant		
	33	0.40	0	F	1	ND		ND		
	35	0.50	0	F	1	15	5	Cladocera		
							5	Copepoda		
							5	Remnant		

Continued ...

Table 9. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	41	0.80	0	F	1	10	0 9 1	Copepoda Cladocera Remnant		
	40	0.70	0	M	6	10	10	Cladocera		
	41	0.90	0	F	1	5	5	Cladocera		
	39	0.70	0	F	1	10	10	Remnant		
	38	0.60	0	F	1	10	10	Cladocera		
	39	0.45	0	M	6	15	15	Cladocera		
	43	0.80	0	F	1	10	10	Cladocera		
	42	0.80	0	F	1	20	20	Cladocera		
	39	0.70	0	F	1	5	5	Cladocera		
	39	0.78	0	M	6	15	15	Cladocera		
	39	0.65	0	F	1	5	5	Cladocera		
	42	0.90	0	F	1	20	20	Cladocera		
	37	0.60	0	F	1	20	20	Cladocera		
	35	0.60	0	F	1	20	20	Cladocera		
	35	0.50	0	M	6	0				
	38	0.65	0	M	6	5	5	Cladocera		
	39	0.70	0	M	6	5	5	Cladocera		
	38	0.70	0	F	1	20	20	Cladocera		
	43	1.0	0	F	1	20	20	Cladocera		
	39	0.75	0	M	6	20	20	Cladocera		
Walleye	508	1480.0	8	M	8	5	5	Fish Remnant	GNG	Big Island (Unnamed) L.
	658	2620.0	11	F	2	5	5	Remnant		
	398	710.0	5	M	8	15	15	Fish Remnant		Gardiner L.
	660	3770.0	9	F	3	20	20	Fish Remnant		
	551	2140.0	11	F	3	0				
	460	1340.0	8	M	8	5	5	Fish Remnant		
	387	660.0	6	M	7	0				
	360	580.0	8	M	7	0				
	514	1480.0	10	M	8	0				
	475	1320.0	8	M	7	0				
	461	1040.0	8	M	8	0				
	439	910.0	7	M	7	0				
	514	1480.0	ND	ND	ND	ND		ND		
Longnose Sucker	323	450.0	ND	ND	ND	0	0		GNG	Namur L.
	388	860.0	2	M	8	20	20	Remnant		
	423	1080.0	2	F	2	20	20	Remnant		

Continued ...

Table 9. Concluded.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes Point[b]	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
White Sucker	53	1.9	0	F	1	10	2 2 6	Copepoda Cladocera Remnant	GNG SEI	Big Island (Unnamed) L. Eaglenest L.
	387	900.0	4	M	7	15	15	Remnant		
	311	410.0	ND	M	6	15	15	Remnant		
	353	600.0	4	ND	ND	0				
	32	0.30	0	F	1	0				
	28	0.20	0	F	1	5	5	Pelecypoda		
	332	540.0	ND	F	1	0				
	357	720.0	4	F	2	15	15	Remnant		
	337	520.0	3	M	6	0				
Burbot	288	130.0	2	M	6	5	5	Remnant	GNG	Namur L.

[a]Maturity: Unknown = 0
F 1 - Immature - 6 M
2 - Maturing - 7
3 - Mature - 8
4 - Ripe - 9
5 - Spent - 10

[b]Hynes Point: 0 = Empty
5 = 1/4 Full
10 = 1/2 Full
15 = 3/4 Full
20 = Full
25 = Distended

[c]Symbols: ND = No Data
GNG = Gill Net Gang
SEI = Seine

Table 10. Individual data for Richardson and Maybell river drainages.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content			Gear[c]	Location
						Hynes[b] Point	Food Point	Food Item		
Lake Trout	344	470.0	2	F	1	ND		ND	GNG	Unnamed L.
	628	2700.0	5	F	4	0		ND		
Lake Cisco	348	580.0	6	M	7	ND		ND	GNG	Richardson
	348	590.0	6	F	3	ND		ND		Tower L.
Lake Whitefish	438	1180.0	9	M	7	ND		ND	GNG	Archer L.
	428	1180.0	9	M	8	ND		ND		Barber L.
	416	960.0	9	M	7	0				Unnamed L.
	367	640.0	6	F	2	ND		ND		
	389	720.0	9	F	4	ND		ND		
	289	280.0	6	M	1	ND		ND		
	331	420.0	7	F	1	ND		ND		
	361	600.0	8	M	7	ND		ND		
	401	840.0	8	F	3	ND		ND		
	386	720.0	8	F	3	ND		ND		
	400	845.0	8	F	ND	ND		ND		
	372	210.0	4	M	6	ND		ND		
Northern Pike	648	1560.0	8	M	7	0			GNG	Archer L.
	556	1360.0	ND	M	7	5	5	Fish Remnant	SEI	Barber L.
	569	1140.0	6	F	2	0				Richardson
	953	7490.0	10	F	2	5	5	Hirudinea		Tower L.
	906	6350.0	10	F	2	0				Unnamed L.
	834	3840.0	13	F	2	0				
	613	1610.0	8	F	2	0				
	193	62.4	1	F	1	20	20	Fish Remnant		
	834	3840.0	ND	ND	ND	ND		ND		
	514	870.0	7	F	2	10	10	Fish Remnant		
	487	690.0	7	F	2	10	10	Fish Remnant		
	495	660.0	5	F	2	5	5	Amphipoda		
	700	2120.0	8	F	2	10		ND		
	526	850.0	7	F	2	10	10	Fish Remnant		
	508	800.0	8	F	2	5	5	Fish Remnant		
	510	830.0	5	F	2	0				
	484	740.0	6	F	2	0				
	410	460.0	5	F	2	15	15	Fish Remnant		
	184	49.2	1	M	7	5	5	Yellow Perch		
	169	38.7	1	M	7	5	5	Fish Remnant		
	158	25.9	1	M	6	0				

Continued ...

Table 10. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
Yellow Perch	38	0.40	0	ND	ND	0			SEI	Archer L.
	104	13.5	1	F	2	0				Unnamed L.
	44	1.0	0	F	1	20	9	Diptera Adult		
							2	Arachnida		
							9	Remnant		
	45	0.90	0	F	1	10	0.5	Hydracarina		
							0.5	Copepoda		
							0.5	Ostracoda		
							0.5	Cladocera		
							8	Remnant		
	43	0.70	0	M	6	5	5	Cladocera		
	38	0.60	0	F	1	ND		ND		
	43	0.90	0	M	6	20	8	Arachnida		
							8	Diptera Adult		
							1	Copepoda		
							1	Cladocera		
							2	Remnant		
	39	0.60	0	M	6	ND		ND		
	36	0.50	0	F	1	10	2	Copepoda		
							8	Cladocera		
	41	0.80	0	F	1	20	4	Copepoda		
							2	Cladocera		
							1	Hirudinea		
							13	Remnant		
	40	0.70	0	M	6	10	9	Copepoda		
							1	Cladocera		
	40	0.70	0	M	6	10		ND		
	43	0.80	0	M	6	10		ND		
	40	0.70	0	M	6	5		ND		
	46	1.0	0	F	1	20		ND		
	44	0.80	0	M	6	20		ND		
	40	0.70	0	F	1	20		ND		
	41	0.70	0	M	6	10		ND		
	41	0.80	0	F	1	0		ND		
	41	0.80	0	M	6	20		ND		
	39	0.60	0	F	1	20		ND		
Walleye	376	490.0	7	M	7	5	5	Fish Remnant	GNG	Barber L.
	411	740.0	8	F	2	0			SEI	Richardson
	437	770.0	8	F	2	0				Tower L.
	433	800.0	8	F	2	20	20	Fish Remnant		
	356	470.0	8	M	7	0				
	34	0.45	0	ND	ND	10	10	Remnant		
	35	0.40	0	ND	ND	10	10	Remnant		
	39	0.70	0	M	6	5	5	Cladocera		
White Sucker	411	910.0	3	M	8	ND		ND	GNG	Archer L.

Continued ...

Table 10. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
Ninespine Stickleback	40	0.50	1	F	3	10	1 9	Cladocera Remnant	SEI	Barber L. Unnamed L.
	42	0.50	1	M	8	ND		ND		
	45	0.60	0	M	7	20	10 7 2 1	Amphipoda Copepoda Chironomidae Remnant		
	46	0.60	0	M	7	5	5	Cladocera		
	39	0.30	0	F	2	20		ND		
	37	0.30	0	F	2	15	10 2 3	Copepoda Ostracoda Remnant		
	39	0.40	0	F	2	10	1 9	Copepoda Cladocera		
	44	0.40	0	F	2	20		ND		
	42	0.40	0	F	2	20		ND		
	44	0.40	0	F	2	5	5	Cladocera		
	33	0.35	0	F	2	10	0 10	Copepoda Cladocera		
	41	0.45	0	M	7	ND		ND		
	42	0.30	0	F	2	20	11 7 2 0	Remnant Copepoda Cladocera Ostracoda		
	39	0.30	0	F	2	15	5 2 8	Copepoda Cladocera Remnant		
	43	0.40	0	F	2	20		ND		
	39	0.30	0	M	7	20		ND		
	44	0.50	0	F	2	20		ND		
	46	0.50	0	F	2	20		ND		
	43	0.40	0	F	2	20		ND		
	40	0.30	0	F	2	20		ND		
	39	0.40	ND	F	2	5		ND		
	41	0.40	0	F	2	20		ND		
	43	0.30	0	F	2	20		ND		
	46	0.55	ND	M	7	20		ND		
	43	0.40	0	M	7	20		ND		
	40	0.40	ND	F	2	20		ND		
	38	0.35	0	F	2	15	6 6 3	Copepoda Cladocera Remnant		
	47	0.60	0	M	7	20		ND		
	40	0.40	0	F	2	20		ND		
	44	0.40	0	F	2	20		ND		

Continued ...

Table 10. Concluded.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes Point[b]	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	43	0.35	0	M	7	20		ND		
	41	0.40	0	F	2	20		ND		
	44	0.50	0	F	2	20		ND		
	41	0.40	0	M	7	20		ND		
	40	0.30	0	M	7	20		ND		
	43	0.60	0	M	7	20		ND		
	41	0.30	0	F	2	20		ND		
	36	0.30	ND	M	7	15		ND		
	43	0.50	0	F	2	20		ND		
	37	0.30	0	F	2	20		ND		
	42	0.40	0	F	2	20		ND		
	43	0.40	0	F	2	20		ND		
	40	0.30	0	F	2	20		ND		

[a]Maturity: Unknown = 0
F 1 - Immature - 6 M
2 - Maturing - 7
3 - Mature - 8
4 - Ripe - 9
5 - Spent - 10

[b]Hynes Point: 0 = Empty
5 = 1/4 Full
10 = 1/2 Full
15 = 3/4 Full
20 = Full
25 = Distended

[c]Symbols: ND = No Data
GNG = Gill Net Gang
SEI = Seine

Table 11. Individual data for east slope of the Birch Mountains.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content			Gear[c]	Location
						Hynes[b] Point	Food Point	Food Item		
Arctic Grayling	14	0.017	0	N/A	0	20	20	Chironomidae	SEI	Pierre R.
	15	0.016	0	N/A	0	20	9	Diptera Pupa		
							2	Ephemeroptera		
							9	Chironomidae		
	17	0.027	0	N/A	0	20	4	Diptera Pupa		
							4	Chironomidae		
							4	Ephemeroptera		
							4	Plecoptera		
							4	Remnant		
	15	0.013	0	N/A	0	15	15	Chironomidae		
	14	0.015	0	N/A	0	15	1	Ephemeroptera		
							2	Plecoptera		
							12	Chironomidae		
	16	0.023	0	N/A	0	15	1	Annelida		
							2	Plecoptera		
							12	Chironomidae		
	15	0.015	0	N/A	0	15	6	Diptera Pupa		
							1	Plecoptera		
							1	Copepoda		
							6	Chironomidae		
							1	Remnant		
	16	0.029	0	N/A	0	20	2	Diptera Pupa		
							16	Chironomidae		
							2	Ephemeroptera		
								Remnant		
	15	0.014	0	N/A	0	15	15	Chironomidae		
	15	0.016	0	N/A	0	15	10	Chironomidae		
							3	Diptera Pupa		
							1	Ephemeroptera		
							1	Insect Remnant		
	15	0.017	0	N/A	0	15	8	Chironomidae		
							3	Diptera Pupa		
							1	Copepoda		
							3	Plecoptera		
	16	0.018	0	N/A	0	15	7	Diptera Pupa		
							6	Chironomidae		
							2	Insect Remnant		
	17	0.023	0	N/A	0	15	6	Chironomidae		
							8	Diptera Pupa		
							1	Remnant		
	16	0.018	0	N/A	0	20	11	Chironomidae		
							9	Diptera Pupa		
	15	0.013	0	N/A	0	10	8	Chironomidae		
							2	Remnant		
	16	0.019	0	N/A	0	15	1	Plecoptera		
							10	Diptera Pupa		
							4	Chironomidae		
	18	0.024	0	N/A	0	15	13	Chironomidae		
							2	Diptera Pupa		

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	13	0.007	0	N/A	0	5	4	Ephemeroptera		
							1	Chironomidae		
	17	0.010	0	N/A	0	15	15	Chironomidae		
	105	11.8	1+	M	7	20	.6	Hymenoptera		
							.3	Arachnida		
							.5	Ephemeroptera		
							.5	Simuliidae Larva		
							.5	Hemiptera		
							.5	Lepidoptera		
							1	Diptera Pupa		
							.5	Ephemeroptera Adult		
							6.5	Chironomidae		
							9	Remnant		
Pearl Dace	35	0.45	1	M	6	0			SEI	Calumet R.
	42	0.78	1	M	7	10	8	Chironomidae		Ells R.
							2	Remnant		
	45	0.92	1	F	2	5	5	Chironomidae		
	43	0.83	1	M	7	5	5	Remnant		
	44	1.0	1	M	7	0	0			
	43	0.87	1	M	7	5	1	Chironomidae		
							4	Remnant		
							0	Annelida		
	40	0.54	1	F	2	5	2	Chironomidae		
							3	Remnant		
	41	0.77	1	F	2	10	10	Chironomidae		
	40	0.64	1	M	7	15	4	Chironomidae		
							11	Remnant		
	37	0.52	1	M	7	20	20	Chironomidae		
	38	0.54	1	F	2	0	0			
	38	0.52	1	F	2	5	5	Remnant		
	41	0.54	1	M	7	10	4	Chironomidae		
							6	Remnant		
	41	0.49	1	M	7	10	10	Remnant		
	35	0.45	1	F	2	15	15	Chironomidae		
	35	0.42	1	M	7	5	2	Chironomidae		
							3	Remnant		
	38	0.46	1	F	1	10	4	Chironomidae		
							6	Remnant		
	39	0.36	1	F	2	10	8	Chironomidae		
							2	Remnant		
	34	0.37	1	M	6	5	5	Remnant		
	34	0.35	1	F	1	10	7	Chironomidae		
							0	Annelida		
							3	Remnant		
	34	0.32	1	F	1	5	5	Chironomidae		

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	32	0.28	1	M	1	15	15	Chironomidae		
	31	0.25	1	F	2	10	9	Chironomidae		
							1	Remnant		
Longnose Dace	45	0.81	1	F	2	10	5	Annelida	SEI	Ells R.
							2	Chironomidae		
							3	Remnant		
Lake Chub	42	0.70	1	F	2	5	5	Remnant	SEI	Ells R.
							0	Chironomidae	DIP	Pierre R.
	38	0.40	1	M	7	10	10	Remnant		Tar R.
	76	4.4	3	M	8	0	0			Unnamed R.
	41	0.72	1	M	4	5	5	Remnant		
	41	0.75	1	M	4	5	5	Remnant		
	44	0.86	2	F	2	5	5	Remnant		
	45	0.84	2	F	2+	10	10	Remnant		
	38	0.47	1	F	2	10	7	Insect Remnant		
							3	Chironomidae		
	35	0.45	1	F	2	10	10	Ephemeroptera		
	34	0.39	1	F	1	15	6	Ephemeroptera		
							9	Remnant		
	35	0.35	1	F	1	20	20	Remnant		
	32	0.36	1	F	1	20	20	Remnant		
	33	0.32	1	F	1	15	15	Remnant		
	28	0.32	1	F	1	15	15	Ephemeroptera		
	23	0.17	1	M	6	20	3	Ephemeroptera		
							17	Remnant		
Trout-Perch	82	4.9	3	M	9	5	5	Remnant	SEI	Ells R.
	65	2.6	2+	M	8	10	3	Chironomidae		
							6	Remnant		
							1	Trichoptera		
							0	Copepoda		
	53	1.6	3	M	8	20	7	Chironomidae		
							13	Remnant		
	53	1.3	2	M	8	20	15	Chironomidae		
							0	Ephemeroptera		
							5	Remnant		
	45	0.91	2	M	7	5	3	Chironomidae		
							2	Remnant		
Slimy Sculpin	48	1.1	ND	M	ND	20	13	Chironomidae	SEI	Tar R.
							7	Remnant		
Brook Stickleback	46	0.98	ND	M	8	20	5	Amphipoda	SEI	Calumet R.
							10	Chironomidae		
							2	Copepoda		
							0	Cladocera		
							3	Remnant		

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
Longnose Sucker	58	1.8	1	N/A	0	5	2 3	Chironomidae Remnant	SEI	Calumet R.
	57	1.7	1	N/A	0	10	4 6	Chironomidae Remnant		
	56	1.8	1	N/A	0	5	1 4	Chironomidae Remnant		
	37	0.62	1	N/A	0	5	4 1	Chironomidae Remnant		
White Sucker	97	8.1	2	F	2	5	5	Remnant	SEI	Calumet R.
	65	2.5	1	N/A	0	0	0			
	58	2.0	1	N/A	0	10	1 4 1 4	Trichoptera Chironomidae Ephemeroptera Remnant		
	52	1.4	1	N/A	0	5	5	Remnant		
	54	1.5	1	N/A	0	5	5	Remnant		
	56	1.8	1	N/A	0	5	5	Chironomidae		
	52	1.3	1	N/A	0	10	6 4	Chironomidae Remnant		
	53	1.2	1	N/A	0	10	3 7	Chironomidae Remnant		
	57	1.7	1	N/A	0	0	0			
Sucker Spp.	14	0.009	0	N/A	0	0	0		SEI	Ells R.
	17	0.021	0	N/A	0	10	7 2 1	Diptera Pupa Chironomidae Plecoptera		Unnamed R.
	12	0.006	0	N/A	0	0	0			
	14	0.008	0	N/A	0	5	5	Remnant		
	12	0.008	0	N/A	0	0	0			
	13	0.006	0	N/A	0	0	0			
	13	0.008	0	N/A	0	5	5	Diptera Pupa		
	14	0.009	0	N/A	0	5	5	Remnant		
	14	0.008	0	N/A	0	0	0			
	13	0.007	0	N/A	0	0	0			
	13	0.007	0	N/A	0	0	0			
	12	0.006	0	N/A	0	0	0			
	12	0.006	0	N/A	0	5	5	Remnant		
	13	0.009	0	N/A	0	5	5	Remnant		
	11	0.002	0	N/A	0	0	0			
	12	0.004	0	N/A	0	0	0			
	12	0.006	0	N/A	0	5	5	Diptera Pupa		
	11	0.003	0	N/A	0	0	0			
	13	0.007	0	N/A	0	0	0			

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	11	0.005	0	N/A	0	0	0			
	12	0.008	0	N/A	0	0	0			
	12	0.006	0	N/A	0	0	0			
	11	0.004	0	N/A	0	0	0			
	14	0.007	0	N/A	0	0	0			
	13	0.007	0	N/A	0	5	5	Diptera Pupa		
	12	0.007	0	N/A	0	5	5	Chironomidae		
	12	0.008	0	N/A	0	10	5 5	Diptera Pupa Remnant		
	13	0.007	0	N/A	0	5	5	Remnant		
	12	0.008	0	N/A	0	5	4 1	Diptera Pupa Remnant		
	14	0.009	0	N/A	0	5	5	Remnant		
	13	0.006	0	N/A	0	10	7 3	Chironomidae Remnant		
	13	0.006	0	N/A	0	0	0			
	12	0.007	0	N/A	0	0	0			
	13	0.007	0	N/A	0	5	5	Remnant		
	13	0.008	0	N/A	0	0	0			
	13	0.009	0	N/A	0	0	0			
	13	0.008	0	N/A	0	0	0			
	12	0.007	0	N/A	0	5	5	Remnant		
	13	0.009	0	N/A	0	10	10	Diptera Pupa		
	14	0.010	0	N/A	0	10	5 5	Diptera Pupa Remnant		
	15	0.012	0	N/A	0	0	0			
	12	0.006	0	N/A	0	0	0			
	12	0.004	0	N/A	0	0	0			
	13	0.007	0	N/A	0	5	5	Remnant		
	12	0.006	0	N/A	0	10	5 5	Diptera Pupa Remnant		
	13	0.006	0	N/A	0	0	0			
	15	0.008	0	N/A	0	5	5	Remnant		
	13	0.007	0	N/A	0	5	5	Remnant		
	13	0.008	0	N/A	0	5	5	Diptera Pupa		
	15	0.011	0	N/A	0	10	10	Diptera		
	12	0.006	0	N/A	0	0	0			
	13	0.007	0	N/A	0	5	5	Remnant		
	11	0.006	0	N/A	0	5	5	Remnant		
	12	0.006	0	N/A	0	0	0			
	13	0.008	0	N/A	0	5	5	Remnant		
	12	0.006	0	N/A	0	5	5	Remnant		

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	17	0.025	0	N/A	0	15	3	Ephemeroptera		
							12	Chironomidae		
	17	0.027	0	N/A	0	10	4	Diptera Pupa		
							5	Chironomidae		
							1	Remnant		
	18	0.031	0	N/A	0	10	3	Chironomidae		
							7	Remnant		
	16	0.024	0	N/A	0	5	4	Diptera Pupa		
							1	Remnant		
	17	0.028	0	N/A	0	15	4	Diptera Pupa		
							11	Chironomidae		
	19	0.041	0	N/A	0	10	1	Ephemeroptera		
							2	Diptera Pupa		
							3	Chironomidae		
							4	Remnant		
	17	0.028	0	N/A	0	15	3	Chironomidae		
							2	Ephemeroptera		
							5	Diptera Pupa		
							5	Remnant		
	17	0.027	0	N/A	0	10	6	Chironomidae		
							4	Diptera Pupa		
	15	0.019	0	N/A	0	15	15	Chironomidae		
	15	0.029	0	N/A	0	20	10	Diptera Pupa		
							8	Chironomidae		
							2	Remnant		
	16	0.027	0	N/A	0	15	10	Diptera Pupa		
							3	Chironomidae		
							2	Remnant		
	15	0.010	0	N/A	0	5	1	Diptera Pupa		
							4	Chironomidae		
	13	0.005	0	N/A	0	10	10	Remnant		
	16	0.015	0	N/A	0	15	7	Diptera Pupa		
							8	Chironomidae		
	13	0.026	0	N/A	0	10	6	Chironomidae		
							4	Remnant		
	13	0.008	0	N/A	0	5	5	Chironomidae		
	16	0.022	0	N/A	0	5	3	Chironomidae		
							2	Remnant		
	17	0.027	0	N/A	0	15	10	Chironomidae		
							5	Diptera Pupa		
	14	0.010	0	N/A	0	0	0			
	16	0.021	0	N/A	0	15	15	Chironomidae		
	14	0.009	0	N/A	0	5	5	Chironomidae		
	16	0.026	0	N/A	0	15	5	Diptera Pupa		
							10	Chironomidae		
	17	0.027	0	N/A	0	15	4	Diptera Pupa		
							2	Chironomidae		
							9	Remnant		

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content			Gear[c]	Location
						Hynes[b] Point	Food Point	Food Item		
	11	0.004	0	N/A	0	0	0			
	13	0.005	0	N/A	0	0	0			
	13	0.010	0	N/A	0	0	0			
	11	0.003	0	N/A	0	0	0			
	14	0.006	0	N/A	0	5	5	Remnant		
	13	0.008	0	N/A	0	0	0			
	15	0.010	0	N/A	0	5	5	Diptera Pupa		
	14	0.008	0	N/A	0	5	5	Diptera Pupa		
	16	0.010	0	N/A	0	0	0			
	14	0.011	0	N/A	0	0	0			
	18	0.037	0	N/A	0	20	8 12	Diptera Pupa Chironomidae		
	18	0.028	0	N/A	0	15	15	Chironomidae		
	18	0.040	0	N/A	0	15	6 6 3	Diptera Pupa Chironomidae Remnant		
	17	0.022	0	N/A	0	15	8 6 1	Chironomidae Diptera Pupa Remnant		
	17	0.028	0	N/A	0	10	3 7	Chironomidae Remnant		
	17	0.035	0	N/A	0	20	12 5 3	Diptera Pupa Ephemeroptera Remnant		
	17	0.024	0	N/A	0	15	4 3 8	Diptera Pupa Ephemeroptera Chironomidae		
	17	0.029	0	N/A	0	15	5 10	Diptera Pupa Chironomidae		
	15	0.019	0	N/A	0	15	9 6	Chironomidae Remnant		
	16	0.027	0	N/A	0	15	12 3	Chironomidae Remnant		
	17	0.030	0	N/A	0	15	8 4 3	Chironomidae Ephemeroptera Remnant		
	16	0.021	0	N/A	0	5	2 2 1	Chironomidae Diptera Pupa Remnant		
	17	0.032	0	N/A	0	10	5 5	Chironomidae Diptera Pupa		
	16	0.027	0	N/A	0	20	20	Chironomidae		
	15	0.018	0	N/A	0	10	10	Chironomidae		

Continued ...

Table 11. Continued.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	14	0.012	0	N/A	0	10	5	Chironomidae		
							5	Remnant		
	15	0.021	0	N/A	0	15	12	Chironomidae		
							3	Insect Remnant		
	17	0.015	0	N/A	0	15	13	Chironomidae		
							2	Diptera Pupa		
	17	0.028	0	N/A	0	15	11	Chironomidae		
							4	Diptera Pupa		
	15	0.012	0	N/A	0	10	6	Chironomidae		
							4	Diptera Pupa		
	14	0.011	0	N/A	0	5	5	Chironomidae		
	14	0.012	0	N/A	0	5	1	Chironomidae		
							4	Remnant		
	17	0.022	0	N/A	0	15	1	Plecoptera		
							4	Diptera Pupa		
							2	Chironomidae		
							2	Diptera Larva		
							6	Remnant		
	15	0.013	0	N/A	0	10	10	Remnant		
	15	0.013	0	N/A	0	10	8	Chironomidae		
							2	Insect Remnant		
	15	0.018	0	N/A	0	15	15	Chironomidae		
	13	0.008	0	N/A	0	15	5	Chironomidae		
							5	Ephemeroptera		
							5	Remnant		
	13	0.007	0	N/A	0	5	5	Chironomidae		
	17	0.024	0	N/A	0	20	2	Diptera Larva		
							4	Diptera Pupa		
							8	Chironomidae		
							4	Simuliidae Larva		
							2	Remnant		
	14	0.009	0	N/A	0	15	11	Diptera Pupa		
							4	Remnant		
	17	0.019	0	N/A	0	15	10	Diptera Pupa		
							5	Chironomidae		
	14	0.010	0	N/A	0	10	10	Chironomidae		
	15	0.011	0	N/A	0	10	3	Diptera Pupa		
							1	Chironomidae		
							6	Remnant		
	15	0.009	0	N/A	0	5	5	Remnant		
	17	0.027	0	N/A	0	20	20	Chironomidae		
	15	0.014	0	N/A	0	10	10	Chironomidae		
	14	0.009	0	N/A	0	0	0			
	15	0.023	0	N/A	0	15	7	Chironomidae		
							7	Diptera Pupa		
							1	Remnant		

Continued ...

Table 11. Concluded.

Species	Fork Length (mm)	Weight (g)	Age	Sex	Maturity[a]	Stomach Content: Hynes[b] Point	Stomach Content: Food Point	Stomach Content: Food Item	Gear[c]	Location
	17	0.024	0	N/A	0	15	5 4 6	Chironomidae Diptera Pupa Remnant		
	15	0.012	0	N/A	0	5	5	Remnant		
	15	0.009	0	N/A	0	5	5	Chironomidae		
	15	0.010	0	N/A	0	0	0			
	17	0.012	0	N/A	0	10	10	Chironomidae		
	14	0.008	0	N/A	0	5	5	Chironomidae		
	18	0.014	0	N/A	0	5	3 2	Diptera Pupa Chironomidae		
	15	0.012	0	N/A	0	15	15	Chironomidae		
	18	0.021	0	N/A	0	15	15	Chironomidae		
	15	0.010	0	N/A	0	5	5	Chironomidae		
	18	0.025	0	N/A	0	15	15	Chironomidae		
	14	0.014	0	N/A	0	5	5	Chironomidae		
	15	0.011	0	N/A	0	10	10	Diptera Pupa		
	14	0.011	0	N/A	0	5	5	Chironomidae		
	19	0.032	0	N/A	0	20	9 11	Diptera Pupa Chironomidae		

[a]Maturity: Unknown = 0

F		M
1	Immature	6
2	Maturing	7
3	Mature	8
4	Ripe	9
5	Spent	10

[b]Hynes Point:
0 = Empty
5 = 1/4 Full
10 = 1/2 Full
15 = 3/4 Full
20 = Full
25 = Distended

[c]Symbols:
ND = No Data
NA = Not Applicable
SEI = Seine
DIP = Dip Net

Table 12. Individual lengths and weights for sucker fry collected in the Calumet River; all still with yolk sacs.

Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)
14	0.009	13	0.007	15	0.011	14	0.011
14	0.007	12	0.004	14	0.008	14	0.006
14	0.006	14	0.007	13	0.007	11	0.002
14	0.006	13	0.005	15	0.005	12	0.002
13	0.006	12	0.007	11	0.004	13	0.005
13	0.005	12	0.004	12	0.006	13	0.003
12	0.004	12	0.003	14	0.011	12	0.005
14	0.009	13	0.006	12	0.008	13	0.006
16	0.002	13	0.007	14	0.010	13	0.005
13	0.006	13	0.004	12	0.005	15	0.010
14	0.007	14	0.007	13	0.005	12	0.004
13	0.010	14	0.008	11	0.003	12	0.005
13	0.006	12	0.006	13	0.007	13	0.007
13	0.010	13	0.005	13	0.006	10	0.003
13	0.007	13	0.006	13	0.005	13	0.006
13	0.006	13	0.011	12	0.005	12	0.005
13	0.008	12	0.003	13	0.009	11	0.004
12	0.006	13	0.008	13	0.006	11	0.003
14	0.009	12	0.005	11	0.004	12	0.007
13	0.010	12	0.008	13	0.006	12	0.005
10	0.004	13	0.008	11	0.005	14	0.010
14	0.010	13	0.005	13	0.006	12	0.006
13	0.006	13	0.005	13	0.008	13	0.007
12	0.002	13	0.007	14	0.007	13	0.004
13	0.005	13	0.005	14	0.012	14	0.010
13	0.009	13	0.006	15	0.012	13	0.006
14	0.009	13	0.007	12	0.003	12	0.006
14	0.012	15	0.013	14	0.011	12	0.004
13	0.005	13	0.009	13	0.005	13	0.007
12	0.005	13	0.009	11	0.002	15	0.011
14	0.007	12	0.005	12	0.005	15	0.009
14	0.008	16	0.016	14	0.008	14	0.010
15	0.009	13	0.008	13	0.007	13	0.005
15	0.011	12	0.005	12	0.004	12	0.005
13	0.006	13	0.006	14	0.006	12	0.008
14	0.008	13	0.009	12	0.005	13	0.007
12	0.004	14	0.006	14	0.007	12	0.004
14	0.008	12	0.004	13	0.006	13	0.004
11	0.003	14	0.011	12	0.006	13	0.005
13	0.009	12	0.005	11	0.005	13	0.010

Continued ...

Table 12. Concluded.

Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)	Fork Length (mm)	Weight (g)
12	0.007	11	0.001	12	0.002	12	0.005
14	0.006	12	0.003	13	0.005	13	0.007
12	0.004	12	0.005	13	0.005	12	0.003
13	0.004	12	0.006	12	0.003	12	0.007
14	0.007	12	0.004	11	0.003	12	0.007
14	0.008	13	0.006	13	0.004	14	0.010
12	0.004	12	0.008	13	0.006	14	0.010
13	0.006	14	0.008	13	0.006	14	0.005
13	0.004	13	0.006	13	0.010	15	0.010
13	0.006	12	0.005	14	0.006		

6. AOSERP RESEARCH REPORTS

1.		AOSERP First Annual Report, 1975
2.	AF 4.1.1	Walleye and Goldeye Fisheries Investigations in the Peace-Athabasca Delta--1975
3.	HE 1.1.1	Structure of a Traditional Baseline Data System
4.	VE 2.2	A Preliminary Vegetation Survey of the Alberta Oil Sands Environmental Research Program Study Area
5.	HY 3.1	The Evaluation of Wastewaters from an Oil Sand Extraction Plant
6.		Housing for the North--The Stackwall System
7.	AF 3.1.1	A Synopsis of the Physical and Biological Limnology and Fisheries Programs whithin the Alberta Oil Sands Area
8.	AF 1.2.1	The Impact of Saline Waters upon Freshwater Biota (A Literature Review and Bibliography)
9.	ME 3.3	Preliminary Investigations into the Magnitude of Fog Occurrence and Associated Problems in the Oil Sands Area
10.	HE 2.1	Development of a Research Design Related to Archaeological Studies in the Athabasca Oil Sands Area
11.	AF 2.2.1	Life Cycles of Some Common Aquatic Insects of the Athabasca River, Alberta
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13.	ME 2.3.1	Plume Dispersion Measurements from an Oil Sands Extraction Plant, March 1976
14.		
15.	ME 3.4	A Climatology of Low Level Air Trajectories in the Alberta Oil Sands Area
16.	ME 1.6	The Feasibility of a Weather Radar near Fort McMurray, Alberta
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20.	HY 3.1.1	Characterization of Organic Constituents in Waters and Wastewaters of the Athabasca Oil Sands Mining Area
21.		AOSERP Second Annual Report, 1976-77
22.		Alberta Oil Sands Environmental Research Program Interim Report to 1978 covering the period April 1975 to November 1978
23.	AF 1.1.2	Acute Lethality of Mine Depressurization Water on Trout Perch and Rainbow Trout
24.	ME 1.5.2	Air System Winter Field Study in the AOSERP Study Area, February 1977.
25.	ME 3.5.1	Review of Pollutant Transformation Processes Relevant to the Alberta Oil Sands Area

26.	AF 4.5.1	Interim Report on an Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta
27.	ME 1.5.1	Meteorology and Air Quality Winter Field Study in the AOSERP Study Area, March 1976
28.	VE 2.1	Interim Report on a Soils Inventory in the Athabasca Oil Sands Area
29.	ME 2.2	An Inventory System for Atmospheric Emissions in the AOSERP Study Area
30.	ME 2.1	Ambient Air Quality in the AOSERP Study Area, 1977
31.	VE 2.3	Ecological Habitat Mapping of the AOSERP Study Area: Phase I
32.		AOSERP Third Annual Report, 1977-78
33.	TF 1.2	Relationships Between Habitats, Forages, and Carrying Capacity of Moose Range in northern Alberta. Part I: Moose Preferences for Habitat Strata and Forages.
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41.	AF 3.5.1	Acute and Chronic Toxicity of Vanadium to Fish
42.	TF 1.1.4	Analysis of Fur Production Records for Registered Traplines in the AOSERP Study Area, 1970-75
43.	TF 6.1	A Socioeconomic Evaluation of the Recreational Fish and Wildlife Resources in Alberta, with Particular Reference to the AOSERP Study Area. Volume I: Summary and Conclusions
44.	VE 3.1	Interim Report on Symptomology and Threshold Levels of Air Pollutant Injury to Vegetation, 1975 to 1978
45.	VE 3.3	Interim Report on Physiology and Mechanisms of Air-Borne Pollutant Injury to Vegetation, 1975 to 1978
46.	VE 3.4	Interim Report on Ecological Benchmarking and Biomonitoring for Detection of Air-Borne Pollutant Effects on Vegetation and Soils, 1975 to 1978.
47.	TF 1.1.1	A Visibility Bias Model for Aerial Surveys for Moose on the AOSERP Study Area
48.	HG 1.1	Interim Report on a Hydrogeological Investigation of the Muskeg River Basin, Alberta
49.	WS 1.3.3	The Ecology of Macrobenthic Invertebrate Communities in Hartley Creek, Northeastern Alberta
50.	ME 3.6	Literature Review on Pollution Deposition Processes
51.	HY 1.3	Interim Compilation of 1976 Suspended Sediment Date in the AOSERP Study Area
52.	ME 2.3.2	Plume Dispersion Measurements from an Oil Sands Extraction Plan, June 1977

53.	HY 3.1.2	Baseline States of Organic Constituents in the Athabasca River System Upstream of Fort McMurray
54.	WS 2.3	A Preliminary Study of Chemical and Microbial Characteristics of the Athabasca River in the Athabasca Oil Sands Area of Northeastern Alberta
55.	HY 2.6	Microbial Populations in the Athabasca River
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57.	LS 2.3.1	Ecological Habitat Mapping of the AOSERP Study Area (Supplement): Phase I
58.	AF 2.0.2	Interim Report on Ecological Studies on the Lower Trophic Levels of Muskeg Rivers Within the Alberta Oil Sands Environmental Research Program Study Area
59.	TF 3.1	Semi-Aquatic Mammals: Annotated Bibliography
60.	WS 1.1.1	Synthesis of Surface Water Hydrology
61.	AF 4.5.2	An Intensive Study of the Fish Fauna of the Steepbank River Watershed of Northeastern Alberta
62.	TF 5.1	Amphibians and Reptiles in the AOSERP Study Area
63.		Calculate Sigma Data for the Alberta Oil Sands Environmental Research Program Study Area.
64.	LS 21.6.1	A Review of the Baseline Data Relevant to the Impacts of Oil Sands Development on Large Mammals in the AOSERP Study Area
65.	LS 21.6.2	A Review of the Baseline Data Relevant to the Impacts of Oil Sands Development on Black Bears in the AOSERP Study Area
66.	AS 4.3.2	An Assessment of the Models LIRAQ and ADPIC for Application to the Athabasca Oil Sands Area
67.	WS 1.3.2	Aquatic Biological Investigations of the Muskeg River Watershed
68.	AS 1.5.3 AS 3.5.2	Air System Summer Field Study in the AOSERP Study Area, June 1977
69.	HS 40.1	Native Employment Patterns in Alberta's Athabasca Oil Sands Region
70.	LS 28.1.2	An Interim Report on the Insectivorous Animals in the AOSERP Study Area
71.	HY 2.2	Lake Acidification Potential in the Alberta Oil Sands Environmental Research Program Study Area
72.	LS 7.1.2	The Ecology of Five Major Species of Small Mammals in the AOSERP Study Area: A Review
73.	LS 23.2	Distribution, Abundance and Habitat Associations of Beavers, Muskrats, Mink and River Otters in the AOSERP Study Area, Northeastern Alberta
-	--	Interim Report to 1978
74.	AS 4.5	Air Quality Modelling and User Needs
75.	LS 2.1	Interim Report on the Soils Inventory of the AOSERP Study Area

76. AF 4.5.1 An Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta

77. HS 20.1 Overview of Local Economic Development in the Athabasca Oil Sands Region Since 1961.

78. LS 22.1.1 Habitat Relationships and Management of Terrestrial Birds in Northeastern Alberta.

79. AF 3.6.1 The Multiple Toxicity of Vanadium, Nickel, and Phenol to Fish.

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