Canada Alberta Northwest Territories

# Northern River Basins Study

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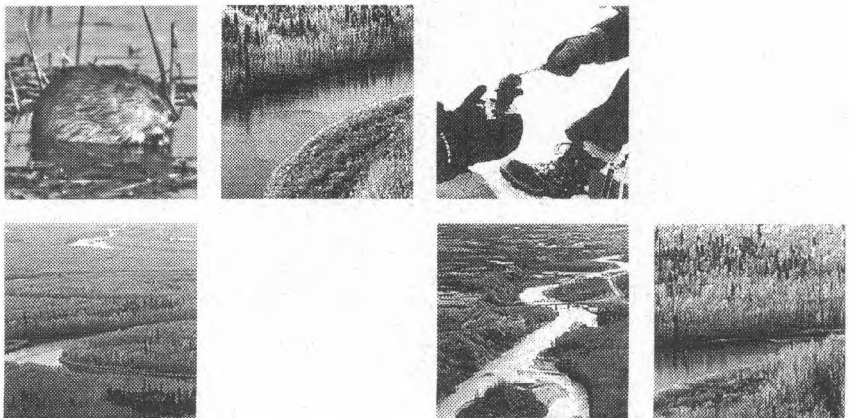

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Prepared for the
Northern River Basins Study
under Projects 2382-B1 and 2521-B1

by
R.L. & L. Environmental Services Ltd.

NORTHERN RIVER BASINS STUDY PROJECT REPORT NO. 5

# AQUATIC MACROINVERTEBRATE IDENTIFICATIONS,

## UPPER ATHABASCA RIVER, APRIL AND MAY, 1992

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**PREFACE:**

The Northern River Basins Study was initiated through the "Canada-Alberta-Northwest Territories Agreement Respecting the Peace-Athabasca-Slave River Basin Study, Phase II - Technical Studies" which was signed September 27, 1991. The purpose of the Study is to understand and characterize the cumulative effects of development on the water and aquatic environment of the Study Area by coordinating with existing programs and undertaking appropriate new technical studies.

This publication reports the method and findings of particular work conducted as part of the Northern River Basins Study. As such, the work was governed by a specific terms of reference and is expected to contribute information about the Study Area within the context of the overall study as described by the Study Final Report. This report has been reviewed by the Study Science Advisory Committee in regards to scientific content and has been approved by the Study Board of Directors for public release.

It is explicit in the objectives of the Study to report the results of technical work regularly to the public. This objective is served by distributing project reports to an extensive network of libraries, agencies, organizations and interested individuals and by granting universal permission to reproduce the material.

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**IT IS THEREFORE REQUESTED BY THE STUDY OFFICE THAT;**
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(Dr. F.J. Wrona, Ph.D., Science Director) — (Date) 2 June 93

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**IT IS HERE APPROVED BY THE BOARD OF DIRECTORS THAT;**
this publication be released to the public, and that this publication be designated for: **[ ] STANDARD AVAILABILITY [ ] EXPANDED AVAILABILITY**

(Bev Burns, Co-chair) — (Date) 10/6/93

(Peter Melnychuk, Co-Chair) — (Date) 22/06/93

NRBS.005

**AQUATIC MACROINVERTEBRATE IDENTIFICATIONS**
**UPPER ATHABASCA RIVER**
**APRIL AND MAY, 1992**

# STUDY PERSPECTIVE

Fundamental to understanding the effects of industrial, agricultural and municipal-related contaminants within an aquatic ecosystem is understanding their origin, pathway fate and effects on biological communities. The Northern River Basins Study is investigating the presence, absence and distribution of these contaminants within the basins. Also being considered is how they enter the food chain, at what level, if they are being transferred upwards within the food chain, and if they are accumulating to concentrations of potential concern to humans and wildlife. Detailed information is therefore being assembled on the kinds and abundance of invertebrates in rivers, and the importance of these invertebrates in the food chain.

***Related Study Questions***

*1a)* *How has the aquatic ecosystem, including fish and/or other aquatic organisms, been affected by exposure to organochlorines or other toxic compounds?*

*2)* *What is the current state of water quality in the Peace, Athabasca and Slave river basins, including the Peace-Athabasca Delta?*

*4a)* *What are the contents and nature of the contaminants entering the system and what is their distribution and toxicity in the aquatic ecosystem with particular reference to water, sediments and biota?*

*13b)* *What are the cumulative effects of man made discharges on the water and aquatic environment?*

*14)* *What long term monitoring programs and predictive models are required to provide an ongoing assessment of the state of the aquatic ecosystems. These programs must ensure that all stakeholders have the opportunity for input.*

This report provides a detailed description of the benthic invertebrate community of the Athabasca River from upstream of Hinton to Whitecourt. The kinds (taxa) and abundance of all invertebrate species were determined from replicate samples. In conjunction with this task, the food of mountain whitefish and northern pike were determined for this same reach. The stomach contents were weighed, and each food item was identified and measured.

The data presented in this report will provide key information for modelling the fate of pulp mill contaminants and determining levels of contaminants in mountain whitefish and pike. Furthermore, this information will be used to assess the impact of municipal and industrial effluents on species composition and health (eg., abundance, deformities, genetic makeup, etc.) of aquatic macroinvertebrate communities.

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# 1.0 INTRODUCTION

Aquatic macroinvertebrate samples were collected from six locations in the upper Athabasca River (Hinton through Whitecourt area) during April 1992 (Project 2371). Concurrently, stomach content samples were collected from mountain whitefish and northern pike during spring 1992 (Project 3119).

The sample sites for both projects were located in the vicinity of the following:

1) Upstream of Hinton, near Entrance;
2) Weldwood Bridge;
3) Obed Mountain Coal Bridge;
4) Emerson Lakes Bridge;
5) Berland Bridge/Knight Bridge;
6) Windfall Bridge.

R.L. & L. Environmental Services Ltd. was contracted to process the benthic invertebrate and fish stomach samples collected during these projects. This study is part of a pilot program examining the movement of trace contaminants through the food chain. To help assess time budgets and expenditures on future studies, an estimate of time used to perform tasks in this report is summarized.

# 2.0 METHODS

Methods used in the identification and enumeration of aquatic invertebrates followed procedures outlined in Alberta Environment (1990). Whenever possible, identifications were made to the genus or species level. Identifications were determined with the aid of the following taxonomic keys.

ALL TAXA:

Clifford, H.F. 1991. Aquatic Invertebrates of Alberta. The University of Alberta Press, Edmonton. 538 p.

Pennak, R.W. 1978. Freshwater invertebrates of the United States. 2nd ed. John Wiley and Sons, Inc., Toronto. 803 p.

INSECTS:

Merritt, R.W., and K.W. Cummins. 1984. An introduction to the aquatic insects of North America. 2nd ed. Kendall/Hunt Publ. Co., Dubuque, Iowa. 722 p.

CHIRONOMIDS (MIDGES):

Coffman, W.P., and L.C. Ferrington, Jr. 1984. Chironomidae. p. 551-652. *In* R.W. Merritt and K.W. Cummins [ed.] An introduction to the aquatic insects of North America. 2nd ed. Kendall/Hunt Publ. Co., Dubuque, Iowa.

Wiederholm, T. 1983. Chironomidae of the Holarctic region: keys and diagnoses. Part I. Larvae. Entomologica Scandinavica Supplement No. 19. 457 p.

EPHEMEROPTERANS (MAYFLIES):

Allen, R.K., and G.F. Edmunds, Jr. 1962. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae). V. The subgenus *Drunella* in North America. Misc. Publ. Entomol. Soc. Amer. 3: 147-179.

Allen, R.K., and G.F. Edmunds, Jr. 1965. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae). VII. The subgenus *Ephemerella* in North America. Misc. Publ. Entomol. Soc. Amer. 4:243-282.

Edmunds, G.F., Jr. 1959. Subgeneric groups within the mayfly genus *Ephemerella* (Ephemeroptera: Ephemerellidae). Ann. Entomol. Soc. Amer. 52: 543-547.

Edmunds, G.F., Jr., S. Jensen, and L.Berner. 1976. The mayflies of North and Central America. University of Minnesota Press. 330 p.

Morihara, D.K., and W.P. McCafferty. 1979. The *Baetis* larvae of North America (Ephemeroptera: Baetidae). Trans. Amer. Ent. Soc. 105: 139-221.

OLIGOCHAETA (AQUATIC EARTHWORMS):

Brinkhurst, R.O. 1986. Guide to the freshwater aquatic microdrile oligochaets of North America. Can. Spec. Publ. Fish. Aquat. Sci. 84: 259 p.

PLECOPTERANS (STONEFLIES):

Baumann, D.W., A.R. Gaufin, and R.F. Sardick. 1977. The stoneflies (Plecoptera) of the Rocky Mountains. Memoirs Am. Entomol. Soc. No. 31. 208 p.

Stewart, K.W., and B.P. Stark. 1988. Nymphs of the North American stonefly genera (Plecoptera). Entomol. Soc. Am. 457 p.

TRICHOPTERANS (CADDISFLIES):

Wiggins, G.W. 1977. Larvae of the North American caddisfly genera (Trichoptera). University of Toronto Press, Toronto. 401 p.

## 2.1 IDENTIFICATION OF REPRESENTATIVE SPECIMENS

At each of the six sampling locations, macroinvertebrate tissue samples were collected for trace contaminant analyses. Representative specimens at Site 1 (upstream of Hinton, near Entrance) were collected with three dipnet sweeps in the vicinity of the area where tissue samples were taken. At the remaining sites, representative specimens were sub-sampled from the trace contaminant tissue samples. To determine which genera or species were being collected, specimens were sampled for identification.

## 2.2 SPECIES COMPOSITION

Thirty (five replicates per sampling location) quantitative invertebrate samples (0.1 $m^2$ Neill cylinder samples) were processed for identification and enumeration, wet weight, deformities and size class measurements. Analytical procedures are outlined below.

### 2.2.1 Wet Weight

Wet weights of all invertebrates in individual Neill samples were measured with a Mettler® AK160 microbalance, accurate to $\pm 0.1$ mg. Wet weights of individual taxonomic groups in seven Neill samples were determined with the use of a Chan® C-31 microbalance, accurate to $\pm 0.001$ mg. Prior to being weighed, extra liquid adhering to specimens was removed by blotting on paper towelling.

### 2.2.2 Morphological Deformities and Abnormalities

In stressed systems, extra or misshaped abdominal segments, antennae and cerci have been documented to occur in stoneflies (Plecoptera) (e.g., Zwick 1976; Donald 1980). Simpson (1980) described abnormal tracheal gills in Hydropsychidae (Trichoptera) and Perlidae (Plecoptera). Concurrent with the identification and enumeration of macroinvertebrates in Neill samples, all specimens (except chironomids) were examined for deformities or abnormal growths of body parts mentioned above. For chironomids, larvae of the most abundant genus was examined.

A large body of work has been published on the incidence and causes of deformities in Chironomidae (Diptera) larvae (e.g., Cushman 1984; Warwick and Tisdale 1988; Warwick 1989; Warwick 1990). Deformities in chironomids occur mainly in antennal segments and mouthparts. Preparation of chironomid specimens for identification and deformity analysis is labour intensive as head capsules have to be separated from their bodies and mounted on slides for examination under a compound microscope.

*Orthocladius* (*O.*) larvae (Chironomidae: Orthocladiinae) from the Neill samples were examined for deformities. Specimens were mounted on microscope slides according to methods outlined in Beckett and Lewis (1982). Each specimen was examined in the following manner:

1) the whole head capsule was scanned for major abnormalities (e.g., additional antennae, eyes, mouthparts, etc.);

2) antennae were examined in detail for missing or malformed segments (e.g., poorly developed antennal blades, missing or duplicate ring organs, etc.);

3) the mentum and mandibles were scanned for malformations.

### 2.2.3 Size Distribution

Size class measurements were collected on three taxa within each replicate Neill sample. Although the Terms of Reference state that measurements be made for one stonefly, one mayfly, one caddisfly and one chironomid larvae, measurements were performed on two mayflies and one chironomid. Size measurements of a stonefly and a caddisfly were not performed because densities were very low.

Body lengths (less antennae and cerci) of the mayflies *Baetis spp.* (Baetidae) and *E. needhami* (Ephemerellidae) were measured. The *Baetis* species examined were a combination of *B. flavistriga* and *B. tricaudatus* (see Section 2.4).

Head capsule widths (across the eyes) of the midge *Orthocladius* (*O.*) *spp.* were recorded. All intact specimens of *Baetis spp.* and *E. needhami* were measured. If there were over 100 specimens of *Orthocladius* (*O.*) *spp.* larvae in a sample replicate, head widths were measured on at least 50 specimens that were chosen at random.

## 2.3 FISH FOOD HABITS

Eighty-six stomach content samples of mountain whitefish and northern pike were available for processing. All samples were frozen and contained in individual Whirl-Pac®-type bags. The samples were individual stomach contents only, and did not contain whole stomach tissue.

These samples and destined for stable carbon, nitrogen and sulphur isotope analysis, thus, liquids high in these elements (e.g., formaldehyde and ethyl alcohol) were not used or allowed to come into contact with samples while being processed.

The stomach content samples were processed as follows.

1) Wet weight of the entire sample and bag was measured with an OHAUS® triple-beam balance, accurate to 0.1 g.

2) An estimate of the sample volume was visually assessed. This was accomplished by comparing the sample to a series of Whirl-Pac® bags containing 5, 10, 15, ... 50 ml of water. Estimates were to the nearest ml. An alternate method using water displacement, on samples protected in their bag, was investigated and found to be cumbersome and difficult to use.

3) Contents of a sample was emptied into a plastic, disposable petri dish. Sample remnants remaining in the bag was examined to ensure that invertebrates were not overlooked.

4) Sample contents were identified and enumerated. The size of organisms (size-class) and their life stage in each sample were also documented.

5) An evaluation of the general physical condition of each sample with respect to the state of decomposition was determined.

6) All specimens, except chironomids, were examined for deformities as outlined in Section 2.2.2. Chironomidae larvae were not examined because they could not be removed from the samples (i.e., samples were kept intact for stable isotope analysis).

7) Upon completion of processing, individual samples were returned to their original sample bag. Wet weight of the sample was recorded on the sample bag to signify that the sample had been processed and to provide this information for chemistry technicians.

8) To help prevent sample contamination, new petri dishes were used for each sample (i.e., a petri dish was used only once). Forceps used to manipulate specimens were thoroughly cleaned with distilled water and dried between samples.

9) Samples were delivered frozen and stored at -20°C throughout the period the samples were in R.L. & L.'s possession. However, samples were thawed (one at a time) prior to processing.

## 2.4 QUALITY CONTROL

To ensure taxonomic quality assurance and control (QA/QC), specimens of the following tentatively identified taxa were delivered to Dr. J.J.H. Ciborowski, Associate Professor, University of Windsor, Department of Biological Sciences.

1) DIPTERA
   - Chironomidae
     - Orthocladiinae
       - *Orthocladius* v.d. Wulp (*O.*)

2) EPHEMEROPTERA
   - Baetidae
     - *Baetis flavistriga* McDunnough

2) EPHEMEROPTERA
   - Ephemerellidae
     - *Ephemerella aurivillii* (Bengtsson)

2) PLECOPTERA
Nemouridae
*Podmosta* Ricker

Dr. Ciborowski has identified the taxonomic QA/QC samples as follows: 1) *Orthocladius* (*O.*) is correct, 2) *B. flavistriga* is a combination of *B. flavistriga* and *B. tricaudatus* Dodds, 3) *E. aurivillii* is *E. needhami* McDunnough, and 4) *Podmosta* is *Nemoura* Latreille. These names have been incorporated into this report.

To check sorting efficiency and accuracy, three Neill samples (chosen at random) were resorted by someone other than the original sorter.

# 3.0 RESULTS

## 3.1 MACROINVERTEBRATE IDENTIFICATIONS

### 3.1.1 Identification of Representative Specimens

Taxonomic composition (species or genus) of tissue samples collected for trace contaminant analyses are presented in Table 3.1

### 3.1.2 Species Composition

Table 3.2 summarizes identifications and enumerations as well as total wet weight of all invertebrates in each of the 30 Neill samples. Wet weights of individual taxonomic groups in seven Neill samples was also determined (Table 3.3).

*Quality Control*

Less than 10% (range 4.6 to 8.2%) of all invertebrates were overlooked when they were sorted from debris (Table 3.4). M. Braeuer resorted samples and M. Dunnigan performed identifications and enumerations.

## Table 3.1 Taxonomic list of specimens collected for trace contaminant analysis from the Athabasca River.

### SITE 1: UPSTREAM OF HINTON, NEAR ENTRANCE

Date: 08 April 1992
Sampler: Dipnet Sweeps (0.210 mm mesh)
Identifications by: M. Dunnigan

INSECTA

- COLEOPTERA
  - Amphizoidae
    - *Amphizoa*
- DIPTERA
  - Athericidae
    - *Atherix*
  - Chironomidae
    - Orthocladiinae
- EPHEMEROPTERA
  - Ephemerellidae
    - *Ephemerella needhami* McDunnough
    - *Ephemerella (Drunella) doddsi* Needham
  - Heptageniidae
    - *Cinygmula* McDunnough
    - *Heptagenia* Walsh
    - *Rhithrogena* Eaton
  - Siphlonuridae
    - *Ameletus* Eaton
- PLECOPTERA
  - Chloroperlidae
    - *Claassenia sabulosa* (Banks)
    - *Hesperoperla pacifica* (Banks)
  - Perlodidae
    - *Isogenoides elongatus* (Hagen)
    - *Isoperla ebria* (Hagen)
  - Pteronarcyidae
    - *Pteronarcella badia* (Hagen)
  - Taeniopterygidae
    - *Taenionema* Banks
- TRICHOPTERA
  - Hydropsychidae
    - *Arctopsyche* McLachlan
    - *Hydropsyche* Pictet

## SITE 2: WELDWOOD BRIDGE

Date: 09 April 1992
Sampler: Sub-sample of Tissue Collections
Identifications by: M. Dunnigan

### INSECTA

EPHEMEROPTERA
- Ephemerellidae
  - *Ephemerella (Drunella) doddsi* Needham
- Heptageniidae
  - *Rhithrogena* Eaton
  - *Heptagenia* Walsh

PLECOPTERA
- Perlodidae
  - *Isogenoides elongatus* (Hagen)
- Pternonarcyidae
  - *Pteronarcella badia* (Hagen)

TRICHOPTERA
- Hydropsychidae
  - *Arctopsyche* McLachlan
  - *Hydropsyche* Pictet

## SITE 3: OBED MOUNTAIN COAL BRIDGE

Date: 10 April 1992
Sampler: Sub-sample of Tissue Collections
Identifications by: M. Dunnigan

### INSECTA

EPHEMEROPTERA
- Ametropodidae
  - *Ametropus* Albarda
- Ephemerellidae
  - *Ephemerella needhami* McDunnough
  - *Ephemerella (Drunella) doddsi* Needham
- Heptageniidae
  - *Rhithrogena* Eaton
- Siphlonuridae
  - *Ameletus* Eaton

PLECOPTERA
- Perlidae
  - *Hesperloperla pacifica* (Banks)
- Perlodidae
  - *Isogenoides elongatus* (Hagen)
- Pteronarcyidae
  - *Pteronarcella badia* (Hagen)
  - *Pteronarcys californica* Newport

TRICHOPTERA
- Hydropsychidae
  - *Arctopsyche* McLachlan
  - *Hydropsyche* Pictet

## SITE 4: EMERSON LAKES BRIDGE

Date: 11 April 1992
Sampler: Sub-sample of Tissue Collections
Identified by: M. Dunnigan

### INSECTA

- EPHEMEROPTERA
  - Ephemerellidae
    - *Ephemerella needhami* McDunnough
    - *Ephemerella (Drunella) doddsi* Needham
  - Heptageniidae
    - *Rhithrogena* Eaton
  - Siphlonuridae
    - *Ameletus* Eaton
- PLECOPTERA
  - Perlidae
    - *Claassenia sabulosa* (Banks)
  - Perlodidae
    - *Isogenoides elongatus* (Hagen)
  - Pteronorcyidae
    - *Pteronarcella badia* (Hagen)
- TRICHOPTERA
  - Hydropsychidae
    - *Arctopsyche* McLachlan
    - *Hydropsyche* Pictet

## SITE 5: KNIGHT BRIDGE

Date: 13 April 1992
Sampler: Sub-sample of tissue collections
Identified by: M. Dunnigan

INSECTA

- EPHEMEROPTERA
  - Ephemerellidae
    - *Ephemerella (Drunella) doddsi* Needham
  - Heptageniidae
    - *Rhithrogena* Eaton
  - Siphlonuridae
    - *Ameletus* Eaton
- PLECOPTERA
  - Perlidae
    - *Claassenia sabulosa* (Banks)
  - Perlodidae
    - *Isogenoides elongatus* (Hagen)
  - Pteronorcyidae
    - *Pteronarcys californica* Newport
  - Taeniopterygidae
    - *Taenionema* Banks

TRICHOPTERA
- Hydropsychidae
  - *Arctopsyche* McLachlan
  - *Hydropsyche* Pictet

**SITE 6: WINDFALL BRIDGE**

Date: 14 April 1992
Sampler: Sub-sample of Tissue Collections
Identified by: M. Dunnigan

## INSECTA

EPHEMEROPTERA
- Ephemerellidae
  - *Ephemerella (drunella) doddsi* Needham
- Heptageniidae
  - *Rhithrogena* Eaton
- Siphlonuridae
  - *Ameletus* Eaton

PLECOPTERA
- Perlodidae
  - *Isogenoides elongatus* (Hagen)
- Pteronarcyidae
  - *Pteronarcella badia* (Hagen)
- Taeniopterygidae
  - *Taenionema* Banks

TRICHOPTERA
- Hydropsychidae
  - *Arctopsyche* McLachlan
  - *Hydropsyche* Pictet

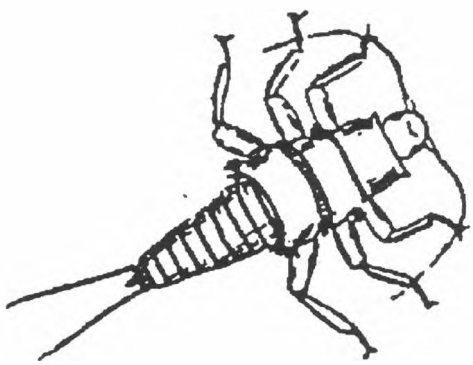


**Table 3.2 Summary of quantitative invertebrate identifications from the Athabasca River. Five replicate Neill samples were collected from six sites. Wet weight of all invertebrates within each sample is also presented.**

**SITE 1: UPSTREAM OF HINTON, NEAR ENTRANCE**

DATE: 08 APRIL 1992
SAMPLER: NEILL CYLINDER SAMPLER (0.1 $m^2$)
FINEST MESH SIZE: 0.210 mm
COLLECTION BY: C. PATTENDEN AND M. BRAEUER
SORTING BY: G. WILEY
COUNTS AND IDENTIFICATIONS BY: M. DUNNIGAN, M. BRAEUER, AND R. SCHINDLER

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| OLIGOCHAETA | | | | | |
| HAPLOTAXIDA | | | | | |
| Enchytraeidae | 3 | 3 | 0 | 0 | 0 |
| Naididae | 1 | 2 | 0 | 0 | 0 |
| Tubificidae | 0 | 1 | 0 | 0 | 0 |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 1 | 0 | 1 | 0 | 0 |
| INSECTA | | | | | |
| DIPTERA | | | | | |
| Chironomidae | 0 | 0 | 6 | 0 | 0 |
| Chironimini | 11 | 4 | 15 | 3 | 8 |
| Diamesinae | 0 | 0 | 1 | 0 | 0 |
| Orthocladiinae | 6 | 6 | 2 | 5 | 6 |
| *Coryononeura* | 0 | 1 | 0 | 0 | 1 |
| *Orthocladius (O.)* | 6 | 2 | 4 | 1 | 0 |
| Tanytarsini | 6 | 2 | 4 | 1 | 1 |
| Empididae | | | | | |
| *Chelifera* | 2 | 0 | 1 | 0 | 0 |
| Tipulidae | | | | | |
| *Dicranota* | 1 | 1 | 0 | 0 | 0 |
| *Hexatoma* | 0 | 1 | 0 | 0 | 1 |
| EPHEMEROPTERA | 0 | 0 | 0 | 2 | 2 |
| Baetidae | | | | | |
| *Baetis* | 4 | 10 | 11 | 3 | 0 |
| Ephemerellidae | | | | | |
| *Ephemerella* | 0 | 3 | 0 | 0 | 0 |
| Heptageniidae | 0 | 0 | 1 | 0 | 2 |
| *Rhithrogena* | 0 | 1 | 1 | 2 | 0 |
| Siphlonuridae | | | | | |
| *Ameletus* | 0 | 1 | 0 | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| PLECOPTERA | 0 | 0 | 1 | 0 | 0 |
| Chloroperlidae | 3 | 2 | 1 | 2 | 2 |
| Perlidae | 0 | 0 | 1 | 0 | 0 |
| Perlodidae | 2 | 1 | 1 | 1 | 0 |
| NEMATODA | 0 | 3 | 3 | 0 | 0 |
| WET WEIGHT (mg) | 4.341 | 24.27 | 5.886 | 1.446 | 19.32 |

**SITE 2: WELDWOOOD BRIDGE**

DATE: 09 APRIL 1992
SAMPLER: NEILL CYLINDER SAMPLER (0.1 $m^2$)
FINEST MESH SIZE: 0.210 mm
COLLECTION BY: C. PATTENDEN AND M. BRAEUER
SORTING BY: G. WILEY
COUNTS AND IDENTIFICATIONS BY: M. DUNNIGAN AND M. BRAEUER

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| OLIGOCHAETA | | | | | |
| HAPLOTAXIDA | | | | | |
| Enchytraeidae | 0 | 11 | 4 | 9 | 2 |
| Naididae | 25 | 16 | 0 | 4 | 1 |
| Tubificidae | 13 | 26 | 15 | 39 | 32 |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 7 | 4 | 1 | 2 | 7 |
| CRUSTACEA | | | | | |
| COPEPODA | | | | | |
| Cyclopoida | 0 | 1 | 0 | 0 | 0 |
| INSECTA | | | | | |
| DIPTERA | | | | | |
| Chironomidae | 0 | 14 | 3 | 1 | 13 |
| Chironomidae Pupae | 101 | 90 | 108 | 162 | 96 |
| Chironomini | 0 | 10 | 10 | 10 | 9 |
| Orthocladiinae | 23 | 25 | 22 | 33 | 13 |
| Orthocladiinae (Parasitized) | 0 | 4 | 4 | 0 | 0 |
| *Orthocladius (O.)* | 926 | 1041 | 914 | 674 | 765 |
| *Orthocladius (O.)* (Parasit.) | 3 | 31 | 17 | 34 | 45 |
| Tanypodinae | 0 | 3 | 2 | 0 | 1 |
| Tanytarsini | 0 | 2 | 0 | 0 | 1 |
| Empididae | | | | | |
| *Chelifera* | 8 | 5 | 3 | 4 | 4 |
| *Oreogeton* | 0 | 1 | 0 | 0 | 0 |
| Tipulidae | | | | | |
| *Hexatoma* | 0 | 3 | 0 | 1 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| EPHEMEROPTERA | | | | | |
| Ametropodidae | | | | | |
| *Ametropus* | 0 | 1 | 0 | 0 | 0 |
| Baetidae | | | | | |
| *Baetis* | 270 | 166 | 104 | 55 | 130 |
| Ephemerellidae | | | | | |
| *Ephemerella* | 49 | 40 | 8 | 16 | 27 |
| *E. (Drunella) doddsi* | 4 | 1 | 1 | 2 | 0 |
| Heptageniidae | | | | | |
| *Heptagenia* | 4 | 0 | 1 | 0 | 1 |
| *Rhithrogena* | 34 | 3 | 6 | 3 | 6 |
| PLECOPTERA | 0 | 0 | 0 | 1 | 1 |
| Capniidae | 0 | 1 | 0 | 0 | 0 |
| Chloroperlidae | 9 | 12 | 9 | 0 | 7 |
| Nemouridae | | | | | |
| *Nemoura* | 1 | 0 | 0 | 0 | 0 |
| Perlidae | 2 | 0 | 1 | 0 | 0 |
| *Claassenia* | 1 | 0 | 1 | 0 | 0 |
| Perlodidae | 0 | 0 | 1 | 0 | 0 |
| *Isogenoides* | 1 | 0 | 0 | 0 | 1 |
| *Isoperla* | 3 | 0 | 0 | 0 | 1 |
| Taeniopterygidae | | | | | |
| *Taenionema* | 8 | 0 | 0 | 0 | 3 |
| TRICHOPTERA | | | | | |
| Brachycentridae | | | | | |
| *Brachycentrus* Pupae | 1 | 0 | 0 | 0 | 0 |
| Glossosomatidae | | | | | |
| *Glossosoma* | 0 | 0 | 0 | 1 | 1 |
| Hydropsychidae | 0 | 0 | 0 | 0 | 2 |
| *Hydropsyche* | 9 | 1 | 0 | 0 | 0 |
| NEMATODA | 9 | 21 | 4 | 20 | 27 |
| TERRESTRIAL | 0 | 0 | 0 | 0 | 1 |
| WET WEIGHT (mg) | 1084 | 674.3 | 689.7 | 906.0 | 663.9 |

**SITE 3: OBED MOUNTAIN COAL BRIDGE**

DATE: 10 APRIL 1992
SAMPLER: NEILL CYLINDER SAMPLER (0.1 $m^2$)
FINEST MESH SIZE: 0.210 mm
COLLECTION BY: C. PATTENDEN AND M. BRAEUER
SORTING BY: G. WILEY
COUNTS AND IDENTIFICATIONS BY: M. DUNNIGAN AND M. BRAEUER

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| OLIGOCHAETA | | | | | |
| HAPLOTAXIDA | | | | | |
| Enchytraeidae | 1 | 2 | 4 | 3 | 0 |
| Naididae | 0 | 1 | 0 | 0 | 0 |
| Tubificidae | 5 | 13 | 7 | 8 | 4 |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 2 | 2 | 4 | 3 | 2 |
| CRUSTACEA | | | | | |
| COPEPODA | | | | | |
| Cyclopoida | 1 | 0 | 0 | 0 | 0 |
| Harpacticoida | 0 | 0 | 0 | 0 | 1 |
| INSECTA | | | | | |
| DIPTERA | | | | | |
| Athericidae | | | | | |
| *Atherix* | 0 | 0 | 1 | 0 | 0 |
| Chironomidae | 0 | 6 | 6 | 8 | 8 |
| Chironomidae Pupae | 2 | 0 | 0 | 3 | 2 |
| Chironomini | 14 | 28 | 15 | 29 | 5 |
| Chironomini (Parasitized) | 0 | 0 | 0 | 1 | 0 |
| Orthocladiinae | 16 | 16 | 21 | 13 | 8 |
| *Orthocladius (O.)* | 31 | 10 | 26 | 217 | 53 |
| *Orthocladius (O.)* (Parasit.) | 3 | 0 | 1 | 6 | 0 |
| Tanypodinae | 2 | 4 | 8 | 5 | 0 |
| Tanytarsini | 1 | 10 | 11 | 10 | 14 |
| Empididae | | | | | |
| *Chelifera* | 0 | 11 | 8 | 6 | 8 |
| Tipulidae | | | | | |
| *Hexatoma* | 1 | 3 | 1 | 0 | 0 |
| EPHEMEROPTERA | | | | | |
| Baetidae | | | | | |
| *Baetis* | 0 | 0 | 0 | 1 | 1 |
| Ephemerellidae | | | | | |
| *Ephemerella* | 1 | 5 | 1 | 16 | 4 |
| Heptageniidae | | | | | |
| *Heptagenia* | 0 | 0 | 1 | 0 | 0 |
| *Rhithrogena* | 0 | 0 | 0 | 0 | 1 |
| Siphlonuridae | | | | | |
| *Ameletus* | 5 | 0 | 1 | 1 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| PLECOPTERA | 1 | 0 | 0 | 0 | 0 |
| Capniidae | 0 | 1 | 1 | 1 | 0 |
| Chloroperlidae | 0 | 4 | 2 | 1 | 1 |
| Nemouridae | | | | | |
| *Nemoura* | 1 | 0 | 0 | 0 | 0 |
| Perlidae | | | | | |
| *Claassenia* | 1 | 0 | 1 | 2 | 0 |
| Perlodidae | | | | | |
| *Isoperla* | 0 | 0 | 1 | 0 | 0 |
| TRICHOPTERA | | | | | |
| Brachycentridae | | | | | |
| *Brachycentrus* | 1 | 1 | 0 | 0 | 0 |
| *Brachycentrus* Pupae | 0 | 1 | 0 | 2 | 0 |
| Hydropsychidae | | | | | |
| Hydropsyche | 0 | 0 | 1 | 2 | 0 |
| NEMATODA | 75 | 88 | 89 | 100 | 27 |
| TERRESTRIAL | 0 | 0 | 1 | 0 | 0 |
| WET WEIGHT (mg) | 337.2 | 181.9 | 309.3 | 448.0 | 122.9 |

**SITE 4: NEAR EMERSON LAKES**

DATE: 11 APRIL 1992
SAMPLER: NEILL CYLINDER SAMPLER (0.1 $m^2$)
FINEST MESH SIZE: 0.210 mm
COLLECTION BY: S. MILLAR AND K. DeJAGER
SORTING BY: G. WILEY
COUNTS AND IDENTIFICATIONS BY: M. DUNNIGAN AND M. BRAEUER

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| OLIGOCAETA | | | | | |
| HAPLOTAXIDA | | | | | |
| Enchytraeidae | 1 | 0 | 0 | 0 | 1 |
| Tubificidae | 8 | 7 | 5 | 0 | 1 |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 1 | 0 | 1 | 6 | 1 |
| CRUSTACEA | | | | | |
| COPEPODA | | | | | |
| Cyclopoida | 1 | 2 | 0 | 0 | 2 |
| Harpacticoida | 0 | 3 | 0 | 0 | 0 |
| OSTRACODA | 0 | 1 | 0 | 0 | 0 |

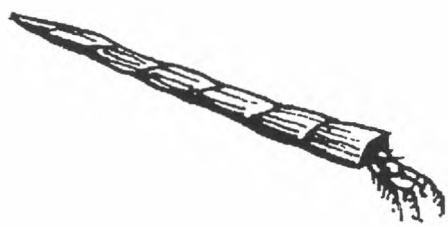
| | | | | | |
|---|---|---|---|---|---|
| INSECTA | | | | | |
| COLEOPTERA | | | | | |
| Amphizoidae | | | | | |
| *Amphizoa* Adult | 0 | 1 | 1 | 0 | 1 |
| COLLEMBOLA | | | | | |
| Isotomatidae | | | | | |
| *Agrenia* | 0 | 0 | 0 | 0 | 1 |
| DIPTERA | | | | | |
| Chironomidae | 23 | 8 | 9 | 6 | 1 |
| Chironomidae Pupae | 2 | 0 | 3 | 0 | 0 |
| Chironomini | 42 | 13 | 28 | 8 | 8 |
| Chironomini (Parasitized) | 0 | 0 | 1 | 0 | 0 |
| Orthocladiinae | 67 | 29 | 43 | 31 | 19 |
| *Coryononeura* | 0 | 1 | 0 | 0 | 0 |
| *Orthocladius (O.)* | 38 | 13 | 16 | 11 | 2 |
| Tanypodinae | 12 | 9 | 16 | 1 | 7 |
| Tanytarsini | 45 | 14 | 17 | 23 | 7 |
| Empididae | | | | | |
| *Chelifera* | 7 | 4 | 14 | 0 | 1 |
| *Hemerodromia* | 0 | 2 | 1 | 0 | 0 |
| EPHEMEROPTERA | | | | | |
| Baetidae | | | | | |
| *Baetis* | 4 | 1 | 0 | 0 | 2 |
| Ephemerellidae | | | | | |
| *Ephemerella* | 16 | 32 | 46 | 17 | 19 |
| Heptageniidae | | | | | |
| *Cinygmula* | 0 | 0 | 1 | 0 | 0 |
| *Rhithrogena* | 0 | 0 | 3 | 1 | 3 |
| Leptophlebiidae | | | | | |
| *Paraleptophlebia* | 0 | 1 | 0 | 0 | 0 |
| PLECOPTERA | 0 | 0 | 0 | 0 | 1 |
| Capniidae | 0 | 0 | 1 | 0 | 0 |
| Nemouridae | | | | | |
| *Nemoura* | 0 | 0 | 0 | 1 | 1 |
| Perlidae | 0 | 0 | 1 | 0 | 1 |
| *Claassenia* | 0 | 0 | 2 | 1 | 0 |
| Perlodidae | | | | | |
| *Isoperla* | 0 | 1 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | |
| Brachycentridae | | | | | |
| *Brachycentrus* | 0 | 0 | 1 | 0 | 0 |
| Hydropsychidae | | | | | |
| *Hydropsyche* | 1 | 0 | 1 | 2 | 0 |
| NEMATODA | 21 | 15 | 18 | 7 | 11 |
| TERRESTRIAL | 0 | 0 | 0 | 0 | 1 |
| WET WEIGHT (mg) | 67.2 | 32.9 | 110.4 | 41.2 | 24.8 |

**SITE 5: KNIGHT BRIDGE**

DATE: 12 & 13 APRIL 1992
SAMPLER: NEILL CYLINDER SAMPLER (0.1 $m^2$)
FINEST MESH SIZE: 0.210 mm
COLLECTION BY: M. BRAEUER AND K. DeJAGER
SORTING BY: G. WILEY
COUNTS AND IDENTIFICATIONS BY: M. DUNNIGAN AND M. BRAEUER

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| HIRUDINEA | 0 | 0 | 0 | 1 | 0 |
| OLIGOCAETA | | | | | |
| HAPLOTAXIDA | | | | | |
| Enchytraeidae | 0 | 2 | 0 | 1 | 0 |
| Naididae | 4 | 5 | 2 | 3 | 2 |
| Tubificidae | 11 | 13 | 7 | 30 | 9 |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 9 | 8 | 12 | 14 | 7 |
| CRUSTACEA | | | | | |
| COPEPODA | | | | | |
| Cyclopoida | 1 | 2 | 0 | 0 | 0 |
| Harpacticoida | 1 | 0 | 0 | 0 | 0 |
| INSECTA | | | | | |
| DIPTERA | | | | | |
| Athericidae | | | | | |
| *Atherix* | 1 | 0 | 0 | 0 | 0 |
| Ceratopogonidae | | | | | |
| *Bezzia* | 0 | 0 | 0 | 3 | 1 |
| Chironomidae | 13 | 27 | 6 | 5 | 4 |
| Chironomidae Pupae | 0 | 0 | 0 | 0 | 1 |
| Chironomini | 30 | 10 | 12 | 4 | 20 |
| Chironomini (Parasitized) | 0 | 1 | 0 | 0 | 0 |
| Orthocladiinae | 297 | 151 | 225 | 240 | 255 |
| *Coryononeura* | 2 | 0 | 0 | 0 | 0 |
| *Orthocladius (O.)* | 250 | 138 | 333 | 206 | 337 |
| Tanypodinae | 8 | 6 | 8 | 11 | 7 |
| Tanytarsini | 52 | 46 | 23 | 51 | 50 |
| Empididae | | | | | |
| *Chelifera* | 8 | 7 | 5 | 8 | 1 |
| *Hemerodromia* | 5 | 4 | 2 | 1 | 2 |
| *Oreogeton* | 0 | 1 | 0 | 0 | 0 |
| Tipulidae | | | | | |
| *Hexatoma* | 0 | 0 | 5 | 2 | 2 |
| EPHEMEROPTERA | | | | | |
| Ametropodidae | | | | | |
| *Ametropus* | 0 | 0 | 1 | 1 | 1 |
| Baetidae | | | | | |
| *Baetis* | 41 | 34 | 18 | 31 | 12 |

| | | | | | |
|---|---|---|---|---|---|
| Ephemerellidae | | | | | |
| *Ephemerella* | 28 | 43 | 38 | 43 | 29 |
| *E. (Drunella) doddsi* | 1 | 0 | 1 | 0 | 1 |
| Heptageniidae | 0 | 6 | 2 | 0 | 1 |
| *Cinygmula* | 2 | 0 | 0 | 1 | 0 |
| *Heptagenia* | 6 | 9 | 0 | 7 | 1 |
| *Rhithrogena* | 14 | 16 | 5 | 14 | 14 |
| Siphlonuridae | | | | | |
| *Ameletus* | 3 | 1 | 2 | 1 | 5 |
| HEMIPTERA | | | | | |
| Corixidae | | | | | |
| *Callicorixa* | 0 | 2 | 0 | 0 | 0 |
| PLECOPTERA | 2 | 0 | 0 | 0 | 0 |
| Chloroperlidae | 0 | 2 | 1 | 5 | 0 |
| Perlidae | 1 | 0 | 4 | 1 | 1 |
| *Claassenia* | 0 | 1 | 0 | 3 | 2 |
| Hesperoperla | 0 | 1 | 0 | 0 | 0 |
| Perlodidae | 4 | 6 | 2 | 0 | 4 |
| *Isogenoides* | 0 | 0 | 1 | 0 | 1 |
| Taeniopterygidae | | | | | |
| *Taenionema* | 0 | 1 | 0 | 0 | 1 |
| TRICHOPTERA | | | | | |
| Brachycentridae | | | | | |
| *Brachycentrus* | 2 | 1 | 4 | 0 | 3 |
| *Brachycentrus* Pupae | 0 | 0 | 0 | 0 | 1 |
| Hydropsychidae | | | | | |
| *Arctopsyche* | 0 | 1 | 0 | 0 | 0 |
| *Hydropsyche* | 10 | 29 | 22 | 12 | 19 |
| Lepidostomatidae | | | | | |
| *Lepidostoma* | 0 | 0 | 0 | 1 | 0 |
| Molannidae Pupae | 1 | 0 | 0 | 0 | 1 |
| NEMATODA | 17 | 9 | 10 | 20 | 8 |
| SOIL MITES | 8 | 14 | 0 | 5 | 1 |
| WET WEIGHT (mg) | 476.4 | 534.6 | 705.0 | 943.1 | 436.2 |



## SITE 6: WINDFALL BRIDGE

DATE: 13 & 14 APRIL 1992
SAMPLER: NEILL CYLINDER SAMPLER (0.1 $m^2$)
FINEST MESH SIZE: 0.210 mm
COLLECTION BY: M. BRAEUER AND K. DeJAGER
SORTING BY: G. WILEY
COUNTS AND IDENTIFICATIONS BY: M. DUNNIGAN AND M. BRAEUER

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| HIRUDINEA | 0 | 0 | 0 | 0 | 1 |
| OLIGOCAETA | | | | | |
| HAPLOTAXIDA | | | | | |
| Enchytraeidae | 0 | 0 | 1 | 0 | 1 |
| Naididae | 0 | 0 | 13 | 2 | 1 |
| Tubificidae | 32 | 6 | 33 | 20 | 10 |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 0 | 0 | 6 | 2 | 0 |
| CRUSTACEA | | | | | |
| COPEPODA | | | | | |
| Cyclopoida | 2 | 0 | 0 | 1 | 0 |
| INSECTA | | | | | |
| DIPTERA | | | | | |
| Chironomidae | 7 | 2 | 19 | 3 | 1 |
| Chironomini | 6 | 2 | 11 | 10 | 1 |
| Orthocladiinae | 46 | 54 | 156 | 47 | 51 |
| *Orthocladius (O.)* | 9 | 32 | 61 | 7 | 12 |
| Tanypodinae | 1 | 1 | 5 | 1 | 3 |
| Tanytarsini | 15 | 36 | 73 | 14 | 18 |
| Empididae | | | | | |
| *Chelifera* | 4 | 2 | 6 | 5 | 0 |
| *Hemerodromia* | 2 | 0 | 5 | 2 | 2 |
| Simuliidae | 0 | 0 | 1 | 0 | 0 |
| Tipulidae | | | | | |
| *Hexatoma* | 2 | 0 | 0 | 0 | 1 |
| EPHEMEROPTERA | | | | | |
| Baetidae | | | | | |
| *Baetis* | 65 | 72 | 110 | 57 | 57 |
| Ephemerellidae | | | | | |
| *Ephemerella* | 10 | 6 | 18 | 7 | 7 |
| *E. (Drunella) doddsi* | 0 | 0 | 1 | 1 | 3 |
| Heptageniidae | 17 | 7 | 4 | 15 | 13 |
| *Rhithrogena* | 14 | 7 | 22 | 20 | 19 |
| Siphlonuridae | | | | | |
| *Ameletus* | 3 | 1 | 2 | 4 | 7 |
| PLECOPTERA | | | | | |
| Capniidae | 3 | 0 | 0 | 0 | 0 |
| Chloroperlidae | 0 | 1 | 8 | 2 | 3 |
| Perlidae | 0 | 1 | 6 | 0 | 1 |
| *Claassenia* | 0 | 0 | 1 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Perlodidae | 7 | 0 | 0 | 1 | 2 |
| *Isogenoides* | 1 | 0 | 0 | 4 | 1 |
| Pteronarcyidae | | | | | |
| *Pteronarcella* | 0 | 0 | 1 | 0 | 0 |
| Taeniopterygidae | | | | | |
| *Taenionema* | 0 | 1 | 2 | 5 | 1 |
| TRICHOPTERA | | | | | |
| Brachycentridae | | | | | |
| *Brachycentrus* | 2 | 4 | 6 | 1 | 1 |
| Hydropsychidae | | | | | |
| *Arctopsyche* | 0 | 0 | 2 | 0 | 1 |
| *Hydropsyche* | 3 | 10 | 8 | 6 | 12 |
| Lepidostomatidae | | | | | |
| *Lepidostoma* | 0 | 0 | 1 | 0 | 0 |
| Leptoceridae | | | | | |
| *Oecetis* | 0 | 0 | 0 | 0 | 1 |
| Limnephilidae | 0 | 0 | 0 | 1 | 0 |
| Molannidae Pupae | 3 | 0 | 0 | 0 | 0 |
| NEMATODA | 10 | 15 | 16 | 1 | 3 |
| SOIL MITES | 0 | 1 | 2 | 4 | 0 |
| WET WEIGHT (mg) | 455.2 | 311.1 | 695.5 | 761.1 | 674.4 |

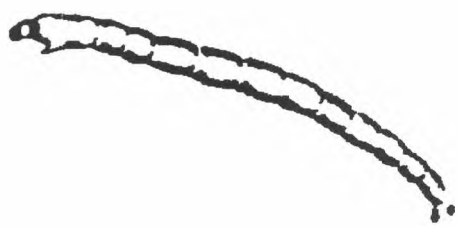


**Table 3.3 Wet weights of taxonomic groups in seven of 30 Neill samples collected from the Athabasca River. Wet weights were determined with a Chan C-31 microbalance.**

**SITE 1: UPSTREAM OF HINTON, NEAR ENTRANCE**

| | REPLICATE | | | | |
|---|---|---|---|---|---|
| ANNELIDA | | | | | |
| OLIGOCHAETA | 0.227 | 0.035 | 0.164 | - | - |
| ARTHROPODA | | | | | |
| ARACHNOIDA | | | | | |
| ACARI | 0.100 | - | 0.080 | - | - |
| INSECTA | | | | | |
| DIPTERA | | | | | |
| Chironomidae | 1.565 | 4.080 | 1.498 | 0.749 | 4.653 |
| Empididae | 0.127 | - | 0.214 | - | - |
| Tipulidae | 1.063 | 1.356 | - | - | 14.29 |
| EPHEMEROPTERA | | | | | |
| Baetidae | | | | | |
| *Baetis* | 0.908 | 1.224 | 1.922 | 0.012 | - |
| Ephemerellidae | | | | | |
| *Ephemerella* | - | 0.433 | - | - | - |
| Heptageniidae | - | 0.932 | 1.731 | 0.012 | - |
| Siphlonuridae | | | | | |
| *Ameletus* | - | 15.140 | - | - | - |
| PLECOPTERA | 0.351 | 0.830 | 0.265 | 0.673 | 0.375 |
| NEMATODA | - | 0.017 | 0.012 | - | - |
| TOTAL: | 4.341 | 24.27 | 5.886 | 1.446 | 19.32 |

**SITE 2: WELDWOOD BRIDGE**

NOTE: Mass estimates for replicate No. 2 were made on organisms retained on a 1 mm sieve (i.e., individuals < 1mm were not weighed). Only replicates 1 and 2 were weighed.

| | REPLICATE | |
|---|---|---|
| ANNELIDA | | |
| OLIGOCHAETA | 1.421 | 0.493 |
| ARTHROPODA | | |
| ARACHNOIDA | | |
| ACARI | 2.056 | - |

| | | |
|---|---|---|
| INSECTA | | |
| DIPTERA | | |
| Chironomidae | 308.900 | 156.314 |
| Chironomidae Pupae | 74.010 | 44.574 |
| Empididae | | |
| *Chelifera* | 3.633 | 1.419 |
| *Oreogeton* | - | 1.827 |
| Tipulidae | | |
| *Hexatoma* | - | 7.651 |
| EPHEMEROPTERA | | |
| Ametropodidae | | |
| *Ametropus* | - | 47.370 |
| Baetidae | | |
| *Baetis* | 68.470 | 48.960 |
| Ephemerellidae | | |
| *Ephemerella* | 35.660 | 13.705 |
| *E. (Drunella) doddsi* | 228.700 | 50.095 |
| Heptageniidae | | |
| *Heptagenia* | 1.186 | - |
| *Rhithrogena* | 178.700 | 22.362 |
| PLECOPTERA | 115.500 | 4.638 |
| TRICHOPTERA | | |
| Brachycentridae | | |
| *Brachycentrus* Pupae | 61.151 | - |
| Hydropsychidae | | |
| *Hydropsyche* | 4.132 | 0.346 |
| NEMATODA | 0.063 | 0.163 |
| TOTAL: | 1084.000 | 399.900 |

**Table 3.4 Summary of quality assurance and control analysis on sorting efficiency and accuracy of Neill samples from the Athabasca River.**

**SITE 2: WELDWOOD BRIDGE (Replicate No. 1)**

| | | |
|---|---|---|
| ANNELIDA | | |
| OLIGOCHAETA | 15 | |
| ARTHROPODA | | |
| ARACHNOIDA | | |
| ACARI | 3 | |
| INSECTA | | |
| DIPTERA | | |
| Chironomidae | 53 | |
| Chironomidae Pupae | 9 | |
| Empididae | | |
| *Hemerodromia* | 1 | |
| EPHEMEROPTERA | | |
| Baetidae | | |
| *Baetis* | 33 | |
| Ephemerellidae | | |
| *Ephemerella* | 11 | |
| Heptageniidae | | |
| *Heptagenia* | 4 | |
| PLECOPTERA | | |
| Chloroperlidae | 1 | |
| Perlidae | 1 | |
| TRICHOPTERA | | |
| Hydropsychidae | 1 | |
| NEMATODA | 5 | |
| Terrestrial Chironomidae | 1 | |
| Terrestrial Mite | 1 | |
| Q.C. Total | 137 | (minus terrestrials) |
| Total Enumerated | 1523 | |
| % Error* | 8.2 | |

*Error = Q.C. Total/(Total Enumerated + Q.C. Total) X 100

**SITE 3: OBED MOUNTAIN COAL BRIDGE (Replicate No. 4)**

| | |
|---|---|
| ARTHROPODA | |
| ARACHNOIDA | |
| ACARI | 2 |
| INSECTA | |
| DIPTERA | |
| Chironomidae | 12 |
| Chironomidae Pupae | 1 |
| Empididae | |
| *Chelifera* | 1 |
| EPHEMEROPTERA | |
| Baetidae | |
| *Baetis* 1 | |
| Ephemerellidae | |
| *Ephemerella* | 2 |
| TRICHOPTERA | |
| Hydropsychidae | |
| *Hydropsyche* | 1 |
| NEMATODA 1 | |
| Q.C. Total | 21 |
| Total Enumerated | 435 |
| % Error* | 4.6 |

*Error = Q.C. Total/(Total Enumerated + Q.C. Total) X 100.

**SITE 4: NEAR EMERSON LAKE (Replicate No. 2)**

| | |
|---|---|
| INSECTA | |
| DIPTERA | |
| Chironomidae | 9 |
| EPHEMEROPTERA | |
| Ephemerellidae | |
| *Ephemerella* | 1 |
| Q.C. Total | 10 |
| Total Enumerated | 158 |
| % Error* | 6.0 |

*Error = Q.C. Total/(Total Enumerated + Q.C. Total) X 100.

### 3.1.3 Morphological Deformities and Abnormalities

*Neill Samples*

With the exception of chironomids, no specimens were found with deformities. The only morphological abnormalities observed were missing and regenerating limbs.

In Chironomid larvae, it was difficult discerning between deformities and missing or physically damaged body parts (Table 3.5). Antennal segments or portions of the mentum may have been damaged during normal incidences in the environment (i.e., while specimen was alive and in the river) or when manipulated during sample processing, and slide preparation. Furthermore, the incidence of deformities may be conservative because not all head capsule features could be observed. For example, the antennae of some specimens were hidden under or within the head capsule.

During identification and enumeration procedures, it was noted that some of the chironomid larvae were parasitized by nematods. The number of parasitized specimens, relative to the total number of chironomids present in a sample, is recorded in Table 3.2. An increase in the rate of parasitism in a population may reflect greater environmental stress in that population (J.J.H. Ciborowski, University of Windsor, Windsor, Ontario, pers. comm.).

*Fish Stomach Samples*

Deformities and abnormalities were not observed in specimens of stomach samples.

### 3.1.4 Size Distribution

*Neill Samples*

Size-frequency histograms for *Baetis* spp., *E. needhami* and *Orthocladius (O.)* spp. larvae were compiled (Figures 3.1, 3.2 and 3.3) from raw data in Appendix A.

*Stomach Content Samples*

Size-frequency histograms for *Arctopsyche* sp., *Hydropsyche* spp., *E. needhami*, *E. (Drunella) doddsi*, and *Isogenoides* sp. larvae were compiled (Figures 3.4, 3.5, 3.6, 3.7, and 3.8) from raw data in Appendix B. These taxa were relatively abundant in the stomach samples and they were among the invertebrates collected for trace contaminant analyses (Northern River Basins Study Project No. 2371).

## Table 3.5 Preliminary assessment of deformities in *Orthocladius (O.)* (Diptera: Chironomidae) larvae in the Athabasca River.

### SITE 1: UPSTREAM OF HINTON, NEAR ENTRANCE

Total Enumerated: 13
Total Examined for Deformities: 13

SUMMARY:

1 specimen missing last antennal segment
2 specimens with damaged or deformed antennae
2 specimens immature, not many features

### SITE 2: WELDWOOD BRIDGE

Total Enumerated (including those parasitized): 4 450
Total Examined for Deformities: 248

SUMMARY:

13 specimens with damaged or deformed antennae
4 specimens with damaged or deformed mentums
3 specimens with damaged or deformed antennae and mentums

### SITE 3: OBED MOUNTAIN COAL BRIDGE

Total Enumerated (including those parasitized): 347
Total Examined for Deformities: 62

SUMMARY:

3 specimens with damaged or deformed antennae

### SITE 4: EMERSON LAKES BRIDGE

Total Enumerated: 80
Total Examined for Deformities: 20

SUMMARY:

2 specimens with damaged or deformed antennae
1 specimen with damaged or deformed mentums

## SITE 5: KNIGHT BRIDGE

| | |
|---|---|
| Total Enumerated: | 1 264 |
| Total Examined for deformities: | 109 |

SUMMARY:

3 specimens with damaged or deformed antennae
1 specimen with damaged or deformed lauterborn organs

## SITE 6: WINDFALL BRIDGE

| | |
|---|---|
| Total Enumerated: | 121 |
| Total Examined for Deformities: | 43 |

SUMMARY:

1 specimen with damaged or deformed antennae
1 specimen with broken antennal blade

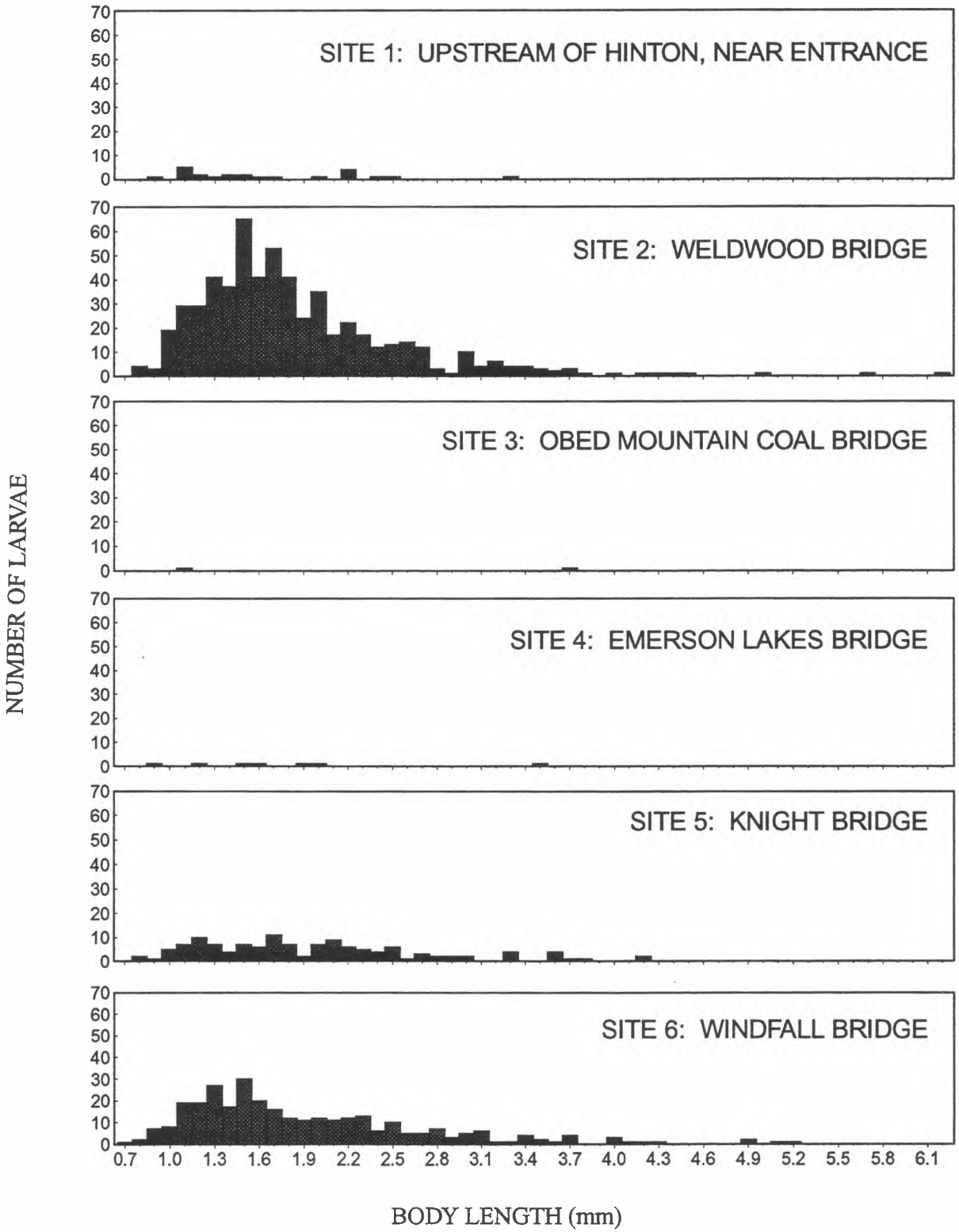



Figure 3.1 Size-frequency histograms for *Baetis* spp. (Ephemeroptera: Baetidae) in the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements.

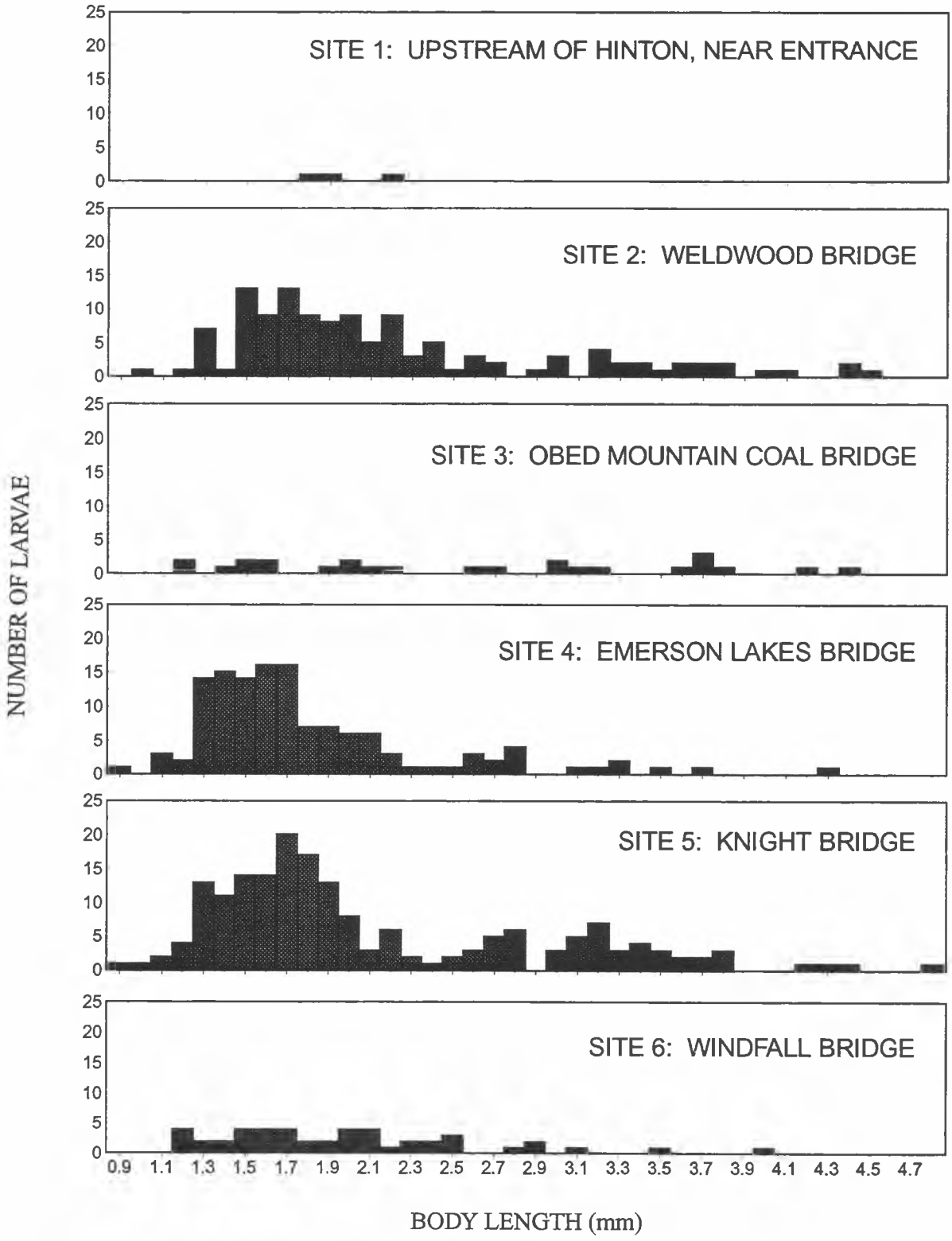



Figure 3.2 Size-frequency histograms for *E. needhami* (Ephemeroptera: Ephemerellidae) in the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements.

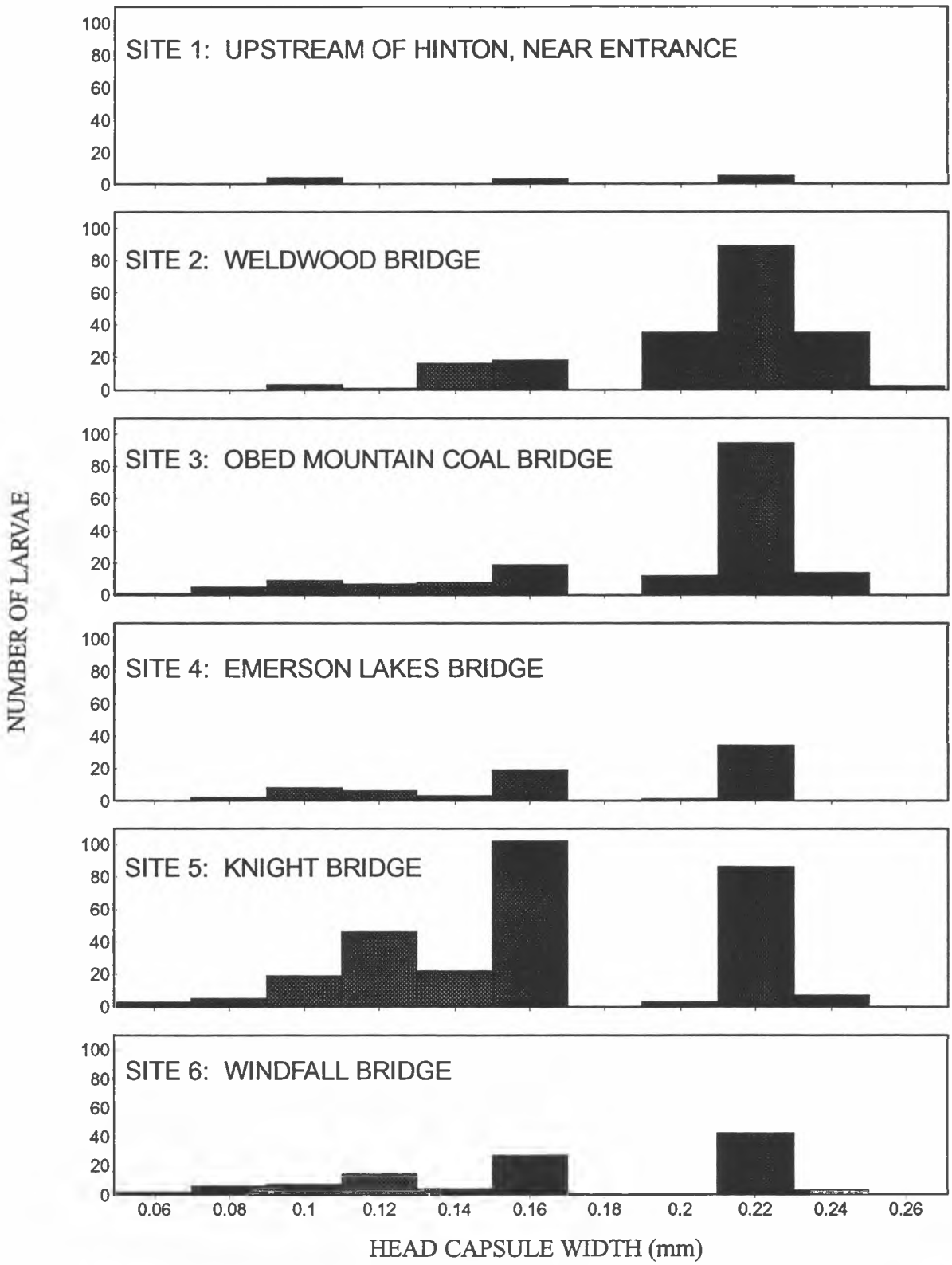



Figure 3.3 Size-frequency histograms for *Othocladius (O.)* spp. (Diptera: Chironomidae) in the Athabasca River. Data were compiled from head capsule width (across eyes) measurements.

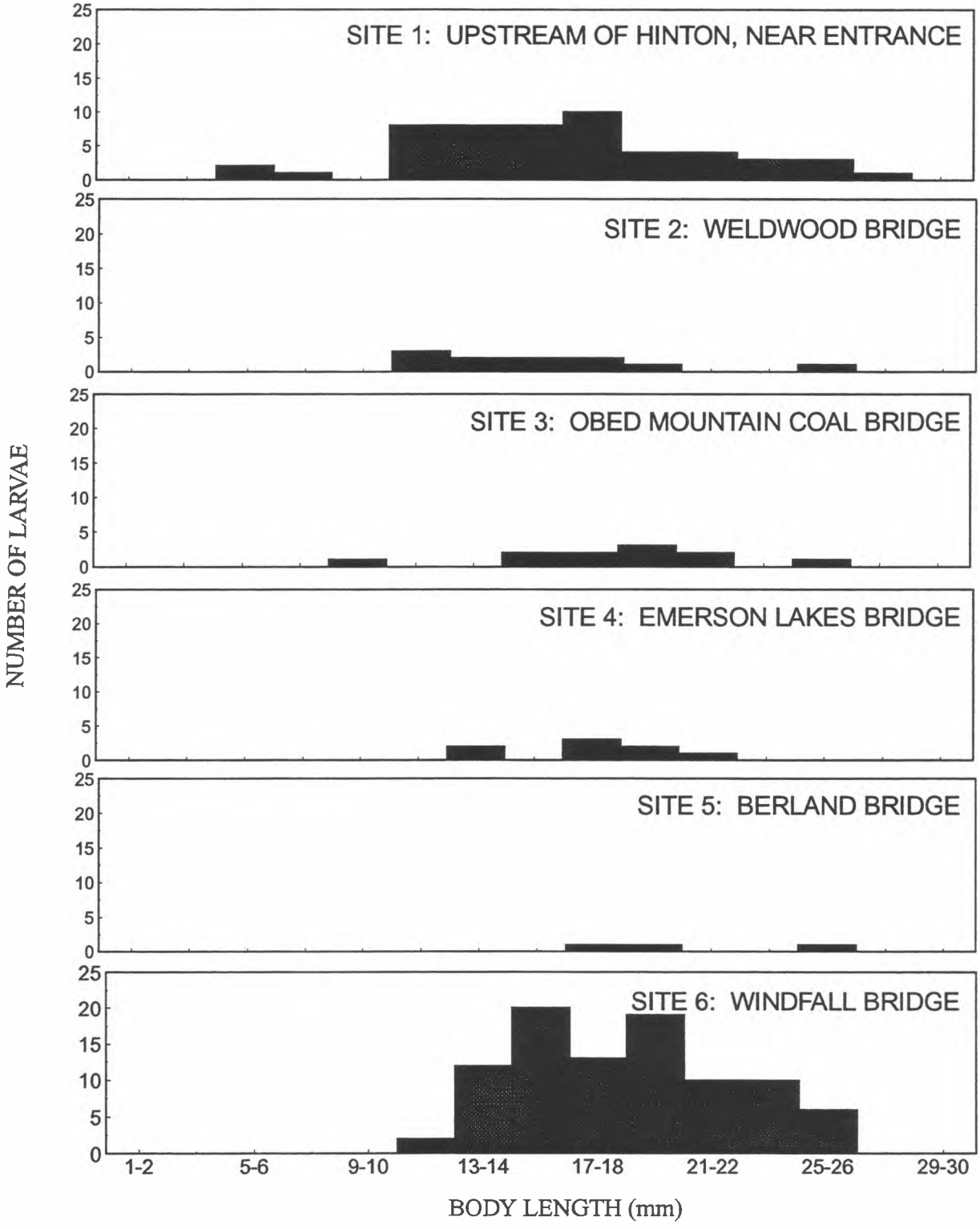



Figure 3.4 Size-frequency histograms for *Arctopsyche* sp. (Trichoptera: Hydropsychidae) in mountain whitefish stomachs of the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements of specimens that were 100% intact.

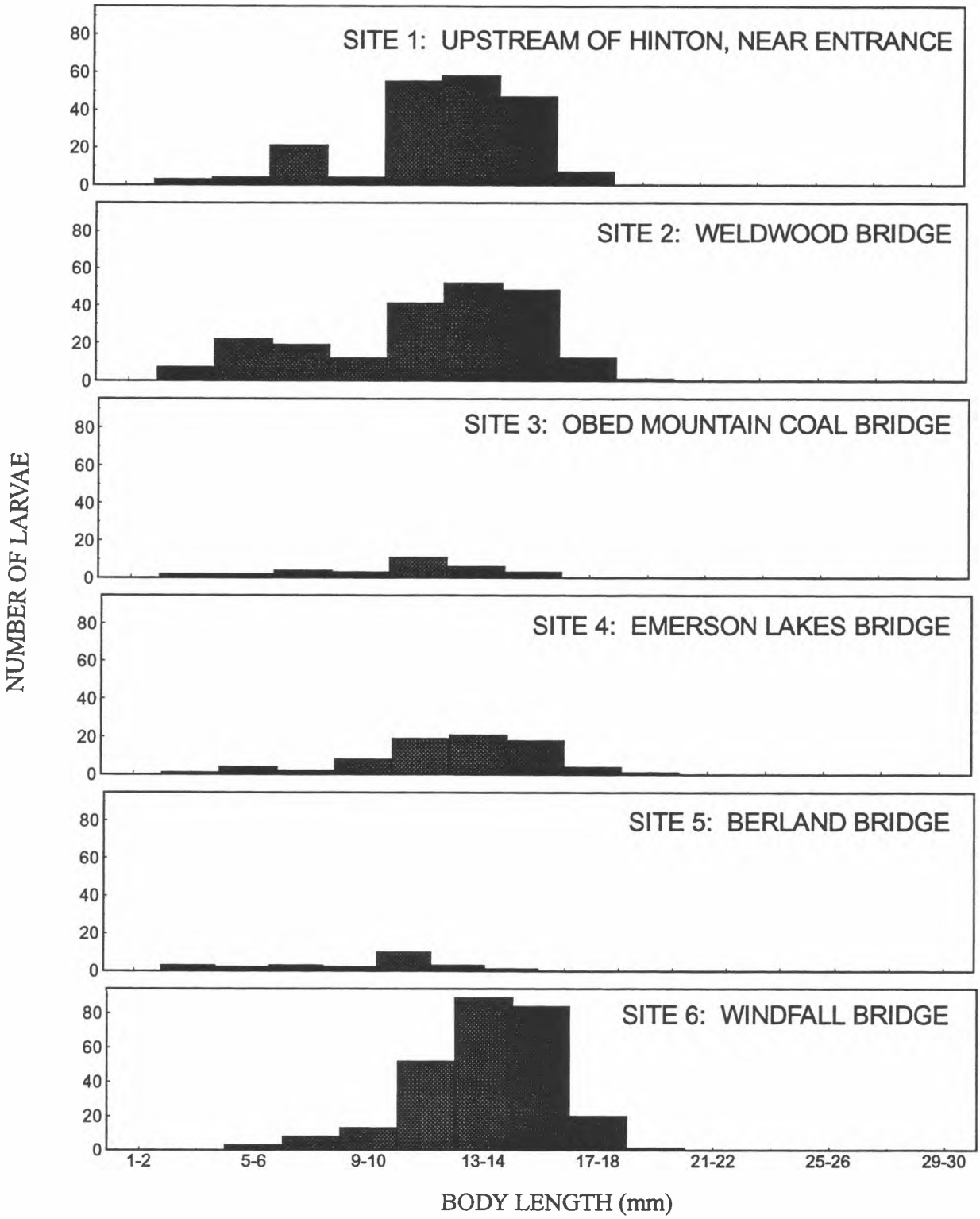



Figure 3.5 Size-frequency histograms for *Hydropsyche* sp. (Trichoptera: Hydropsychidae) in mountain whitefish stomachs of the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements of specimens that were 100% intact.

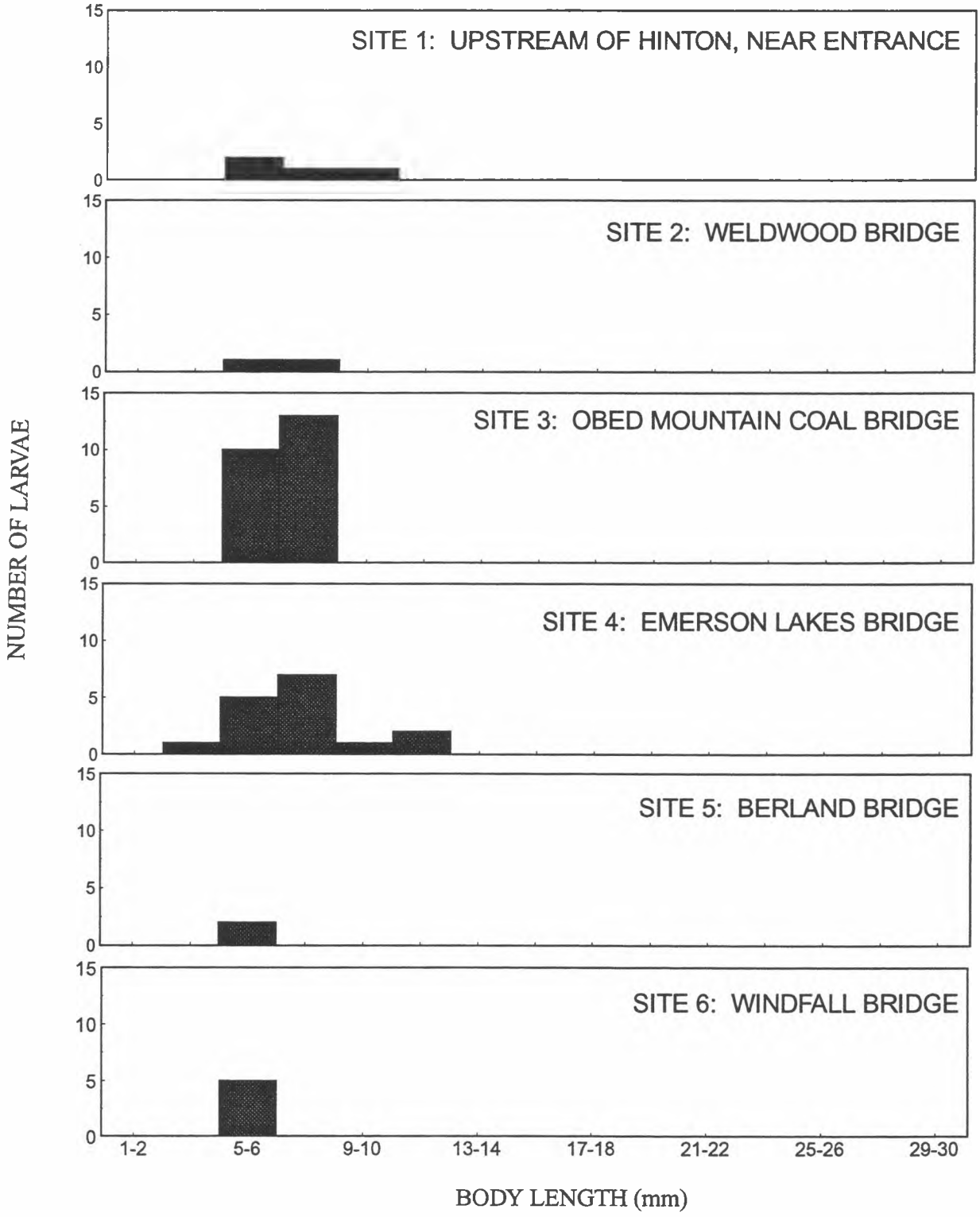



Figure 3.6 Size-frequency histograms for *Ephemerella needhami* (Ephemeroptera: Ephemerellidae) in mountain whitefish stomachs of the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements of specimens that were 100% intact.

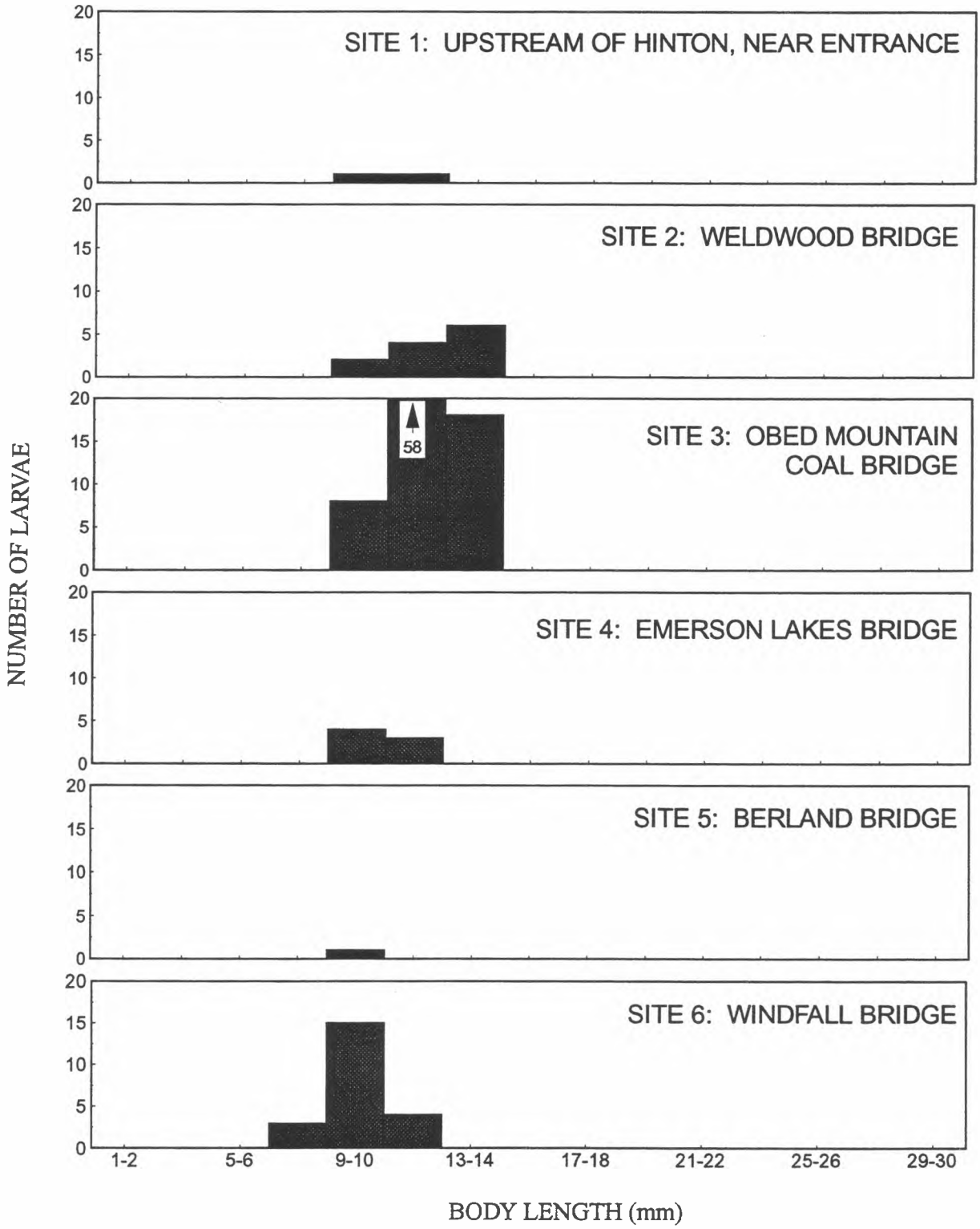



Figure 3.7 Size-frequency distograms for *Ephemerella* (*Drunella*) *doddsi* (Ephemeroptera: Ephemerellidae) in mountain whitefish stomachs of the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements of specimens that were 100% intact.

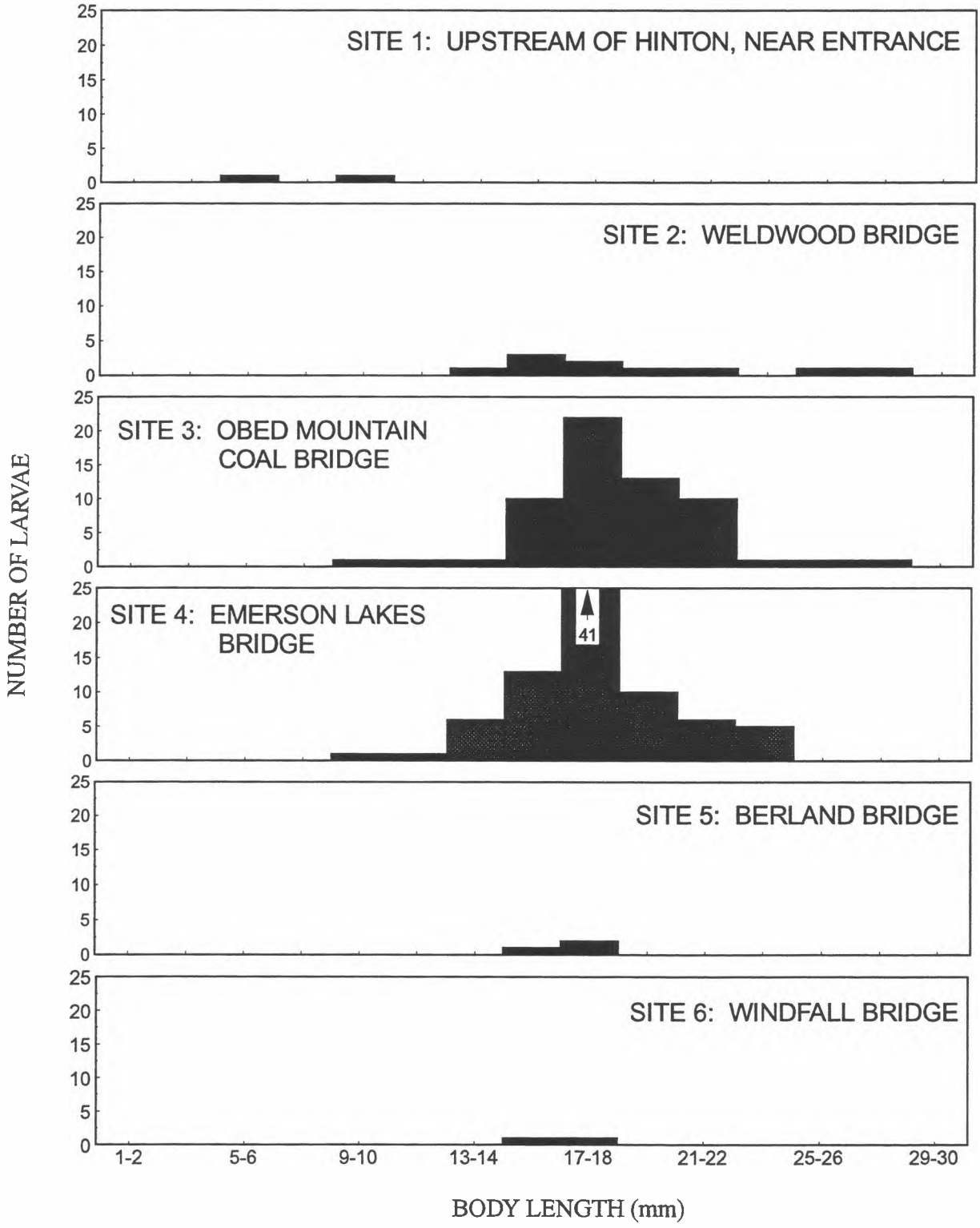



Figure 3.8 Size-frequency histograms for *Isogenoides* sp. (Plecoptera: Perlodidae) in mountain whitefish stomachs of the Athabasca River. Data were compiled from body length (less antennae and cerci) measurements of species that were 100% intact.

## 3.2 FISH FOOD HABITS

### 3.2.1 Stomach Content Samples

Tables 3.6 and 3.7 summarize identifications and enumeration of prey items in mountain whitefish and northern pike, respectively. Raw data is given in Appendix B.

**Table 3.6 Stomach contents of mountain whitefish from the Athabasca River. P=pupae, A=adult, ?=identification questionable.**

**Baetid-type = Baetidae morphology, could be: Ametropodidae, Baetidae, Ephemerellidae, Siphlonuridae. Baetis-type = Baetis morphology, could be: Baetis (Baetidae) or Ameletus (Siphlonuridae). Rhyacophilidae-type = Rhyacophilidae morphology, could be: Philopotamidae, Polycentropodidae, Psychomyiidae or Rhyacophilidae.**

**SITE 1: UPSTREAM OF HINTON, NEAR ENTRANCE**

| | REPLICATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | | |
| ARACHNOIDA | | | | | | | | | | |
| ACARI | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| INSECTA | | | | | | | | | | |
| DIPTERA | | | | | | | | | | |
| Athericidae | | | | | | | | | | |
| *Atherix* | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 |
| Blephariceridae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 1 |
| Chironomidae | 1 | 1 | 0 | 6 | 8 | 3 | 0 | 0 | 3 | 1 |
| Tipulidae | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 |
| EPHEMEROPTERA | | | | | | | | | | |
| Baetid-type | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Baetis-type | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ephemerellidae | | | | | | | | | | |
| *Ephemerella needhami* | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 |
| *E. (Drunella) doddsi* | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *E. (Drunella)* sp. | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Heptageniidae | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| PLECOPTERA | | | | | | | | | | |
| Perlidae | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Claassenia* | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 |
| Perlodidae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| *Isogenoides* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 |
| *Isoperla* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | | | | | | |
| Brachycentridae | | | | | | | | | | |
| *Brachycentrus* | | | | | | | | | | |
| *Brachycentrus* P | 2 | 22 | 0 | 0 | 8 | 0 | 0 | 0 | 57 | 0 |
| Glossosomatidae | | | | | | | | | | |
| *Glossosoma* | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| *Glossosoma* P | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Hydropsychidae | 242 | 187 | 0 | 204 | 229 | 2 | 134 | 86 | 68 | 91 |
| Hydropsychidae P | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| *Arctopsyche* | 18 | 7 | 0 | 12 | 5 | 0 | 3 | 6 | 3 | 0 |
| *Arctopsyche* PreP | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Hydropsyche* | 13 | 22 | 0 | 79 | 66 | 0 | 7 | 1 | 16 | 0 |
| Rhyacophilidae-type | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| GASTROPODA | | | | | | | | | | |
| PULMONATA | | | | | | | | | | |
| Lymnaeidae | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Valvatidae | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| VERTEBRATA | | | | | | | | | | |
| PISCES | | | | | | | | | | |
| Northern Pike? | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SAMPLE VOLUME (ml) | 8 | 20 | 13 | 11 | 18 | 5 | 6 | 19 | 17 | 7 |
| SAMPLE WEIGHT (g) | 7.6 | 9.1 | 6.8 | 7.8 | 9.8 | 2.6 | 8.2 | 14.5 | 11.6 | 2.3 |

**SITE 2: WELDWOOD BRIDGE**

| | REPLICATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | | | | |
| ARACHNOIDA | | | | | | | | | | | | |
| ACARI | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INSECTA | | | | | | | | | | | | |
| COLEOPTERA | | | | | | | | | | | | |
| Amphizoidae | | | | | | | | | | | | |
| *Amphizoa* A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| DIPTERA | | | | | | | | | | | | |
| Athericidae | | | | | | | | | | | | |
| *Atherix* | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 1 |
| Blephariceridae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Chironomidae | 3 | 5 | 0 | 0 | 2 | 0 | 24 | 8 | 0 | 0 | 5 | 0 |
| Chironomidae P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Empididae | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Tipulidae | | | | | | | | | | | | |
| *Hexatoma* | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| EPHEMEROPTERA | | | | | | | | | | | | |
| Baetid-type | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| Baetis-type | 1 | 4 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| Ephemerellidae | | | | | | | | | | | | |
| *Ephemerella needhami* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| *E. (Drunella) doddsi* | 0 | 0 | 1 | 27 | 2 | 16 | 1 | 0 | 5 | 30 | 1 | 1 |
| *E. (Drunella)* sp. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Heptageniidae | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 2 |
| PLECOPTERA | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| Chloroperlidae | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Perlidae | | | | | | | | | | | | |
| *Claassenia* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Perlodidae | | | | | | | | | | | | |
| *Isogenoides* | 0 | 0 | 0 | 29 | 0 | 39 | 0 | 0 | 2 | 6 | 0 | 2 |
| TRICHOPTERA | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brachycentridae | | | | | | | | | | | | |
| *Brachycentrus* | 0 | 0 | 0 | 0 | 20 | 0 | 1 | 0 | 7 | 1 | 1 | 4 |
| *Brachycentrus* P | 3 | 1 | 0 | 2 | 75 | 3 | 0 | 0 | 0 | 0 | 28 | 0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Glossosomatidae | | | | | | | | | | | | |
| *Glossosoma* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hydropsychidae | 113 | 334 | 0 | 12 | 6 | 3 | 220 | 58 | 28 | 28 | 20 | 1 |
| Hydropsychidae P | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 3 | 0 | 0 |
| *Arctopsyche* | 2 | 4 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 |
| *Arctopsyche* PreP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| *Hydropsyche* | 36 | 81 | 0 | 0 | 2 | 1 | 59 | 30 | 0 | 2 | 2 | 0 |
| GASTROPODA | | | | | | | | | | | | |
| PULMONATA | | | | | | | | | | | | |
| Lymnaeidae | 0 | 0 | 545 | 62 | 0 | 13 | 0 | 0 | 0 | 0 | 72 | 698 |
| TERRESTRIALS | | | | | | | | | | | | |
| HYMENOPTERA | | | | | | | | | | | | |
| Formicidae A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| SAMPLE VOLUME (ml) | 6 | 7 | 14 | 12 | 5 | 11 | 7 | 5 | 4 | 11 | 12 | 21 |
| SAMPLE WEIGHT (g) | 5.6 | 9.0 | 17.6 | 11.5 | 4.8 | 8.6 | 7.5 | 7.2 | 3.9 | 14.3 | 14.8 | 34.8 |

**SITE 3: OBED MOUNTAIN COAL BRIDGE**

| | REPLICATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | | |
| INSECTA | | | | | | | | | | |
| DIPTERA | | | | | | | | | | |
| Athericidae | | | | | | | | | | |
| *Atherix* | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Blephariceridae | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chironomidae | 0 | 1 | 0 | 0 | 0 | 15 | 5 | 6 | 0 | 9 |
| Chironomidae P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| Tipulidae P | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EPHEMEROPTERA | | | | | | | | | | |
| Baetid-type | 4 | 1 | 2 | 6 | 0 | 5 | 2 | 8 | 2 | 1 |
| Baetis-type | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Baetidae | | | | | | | | | | |
| *Baetis* | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 5 | 0 | 6 |
| Ephemerellidae | | | | | | | | | | |
| *Ephemerella needhami* | 1 | 1 | 1 | 0 | 0 | 9 | 14 | 0 | 0 | 4 |
| *E. (Drunella) doddsi* | 160 | 86 | 62 | 11 | 2 | 0 | 45 | 47 | 9 | 10 |
| Heptageniidae | 1 | 4 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | 6 |
| PLECOPTERA | 3 | 2 | 0 | 5 | 0 | 0 | 1 | 2 | 5 | 2 |
| Capniidae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Capniid-Chloroperlid-type | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 |
| Chloroperlidae | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Perlidae | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Claassenia* | 1 | 7 | 0 | 18 | 0 | 0 | 0 | 5 | 10 | 7 |
| Perlodidae | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| *Isogenoides* | 22 | 60 | 25 | 40 | 0 | 3 | 4 | 62 | 116 | 117 |
| *Isoperla* | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 |
| Pteronarcyidae | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Pteronarcella* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pteronarcys* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | | | | | | |
| Brachycentridae | | | | | | | | | | |
| *Brachycentrus* | 1 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 |
| *Brachycentrus* P | 1 | 1 | 0 | 2 | 0 | 20 | 9 | 0 | 2 | 0 |
| Glossosomatidae | | | | | | | | | | |
| *Glossosoma* | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Hydropsychidae | 9 | 8 | 12 | 11 | 0 | 15 | 11 | 30 | 10 | 7 |
| Hydropsychidae P | 0 | 0 | 0 | 0 | 4 | 6 | 1 | 1 | 0 | 0 |
| *Arctopsyche* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 2 | 4 |
| *Hydropsyche* | 2 | 3 | 0 | 1 | 0 | 16 | 5 | 0 | 1 | 3 |
| GASTROPODA | | | | | | | | | | |
| PULMONATA | | | | | | | | | | |
| Lymnaeidae | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TERRESTRIALS | | | | | | | | | | |
| COLEOPTERA A | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 |
| VERTEBRATA | | | | | | | | | | |
| PISCES | | | | | | | | | | |
| Burbot or Sculpin? | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SAMPLE VOLUME (ml) | 21 | 18 | 28 | 14 | 12 | 12 | 11 | 21 | 14 | 26 |
| SAMPLE WEIGHT (g) | 18.7 | 17.6 | 22.3 | 12.0 | 5.8 | 10.2 | 6.5 | 15.8 | 12.5 | 22.5 |

**SITE: 4 EMERSON LAKES BRIDGE**

| | REPLICATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | | |
| ARACHNOIDA | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| ACARI | | | | | | | | | | |
| INSECTA | | | | | | | | | | |
| DIPTERA | | | | | | | | | | |
| Athericidae | | | | | | | | | | |
| *Atherix* | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | 0 | 0 |
| Blephariceridae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Chironomidae | 7 | 2 | 5 | 38 | 1 | 5 | 9 | 3 | 4 | 3 |
| Chironomidae P | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Empididae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| EPHEMEROPTERA | | | | | | | | | | |
| Ametropodidae | | | | | | | | | | |
| *Ametropus* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Baetid-type | 1 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 2 | 1 |
| Baetis-type | 0 | 0 | 0 | 1 | 2 | 2 | 3 | 0 | 1 | 3 |
| Baetidae | | | | | | | | | | |
| *Baetis* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ephemerellidae | | | | | | | | | | |
| *Ephemerella needhami* | 1 | 5 | 3 | 9 | 10 | 2 | 7 | 3 | 0 | 1 |
| *E. (Drunella) doddsi* | 0 | 0 | 1 | 0 | 0 | 8 | 2 | 18 | 6 | 3 |
| Heptageniidae | 0 | 1 | 0 | 0 | 5 | 14 | 10 | 16 | 5 | 2 |
| PLECOPTERA | 0 | 1 | 0 | 0 | 6 | 5 | 3 | 0 | 3 | 0 |
| Chloroperlidae | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 1 | 0 | 2 |
| Perlidae | | | | | | | | | | |
| *Claassenia* | 1 | 2 | 1 | 0 | 2 | 6 | 0 | 6 | 5 | 1 |
| *Hesperoperla* | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Perlodidae | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Isogenoides* | 3 | 2 | 2 | 9 | 74 | 169 | 22 | 143 | 67 | 58 |
| *Isoperla* | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| Pteronarcyidae | | | | | | | | | | |
| *Pteronarcella* | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | | | | | | |
| Brachycentridae | | | | | | | | | | |
| *Brachycentrus* | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Brachycentrus* P | 24 | 6 | 4 | 6 | 2 | 1 | 0 | 1 | 0 | 1 |
| Hydropsychidae | 34 | 12 | 61 | 85 | 17 | 19 | 4 | 13 | 13 | 7 |
| Hydropsychidae P | 2 | 0 | 2 | 6 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Arctopsyche* | 2 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 1 | 2 |
| *Hydropsyche* | 9 | 9 | 6 | 23 | 1 | 11 | 2 | 5 | 6 | 5 |
| *Hydropsyche* PreP | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Molannidae P | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| GASTROPODA | | | | | | | | | | |
| PULMONATA | | | | | | | | | | |
| Lymnaeidae | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 1 | 0 |
| TERRESTRIALS | | | | | | | | | | |
| COLEOPTERA A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SAMPLE VOLUME (ml) | 19 | 3 | 8 | 7 | 13 | 42 | 3 | 24 | 12 | 8 |
| SAMPLE WEIGHT (g) | 20.3 | 2.3 | 6.2 | 8.6 | 12.0 | 39.5 | 4.6 | 18.2 | 9.2 | 6.3 |

**SITE 5: BERLAND BRIDGE**

| | REPLICATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | | |
| ARACHNOIDA | | | | | | | | | | |
| ACARI | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INSECTA | | | | | | | | | | |
| DIPTERA | | | | | | | | | | |
| Athericidae | | | | | | | | | | |
| *Atherix* | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Chironomidae | 1 | 4 | 4 | 0 | 0 | 3 | 7 | 0 | 0 | 1 |
| Empididae | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tipulidae P | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| EPHEMEROPTERA | | | | | | | | | | |
| Ametropodidae | | | | | | | | | | |
| *Ametropus* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Baetid-type | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Baetis-type | 2 | 6 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| Ephemerellidae | | | | | | | | | | |
| *Ephemerella needhami* | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *E. (Drunella) doddsi* | 0 | 0 | 0 | 1 | 0 | 11 | 4 | 7 | 0 | 0 |
| *E. (Drunella)* sp. | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Heptageniidae | 2 | 0 | 1 | 0 | 0 | 10 | 2 | 0 | 0 | 0 |
| PLECOPTERA | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chloroperlidae | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 | 0 | 0 |
| Perlidae | | | | | | | | | | |
| *Claassenia* | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| Perlodidae | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Isogenoides* | 0 | 1 | 1 | 11 | 0 | 21 | 2 | 1 | 0 | 0 |
| Pteronarcyidae | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | | | | | | |
| Brachycentridae | | | | | | | | | | |
| *Brachycentrus* | 3 | 6 | 228 | 0 | 3 | 7 | 22 | 2 | 0 | 0 |
| *Brachycentrus* P | 0 | 1 | 4 | 0 | 31 | 5 | 58 | 2 | 0 | 1 |
| Glossosomatidae | | | | | | | | | | |
| *Glossosoma* | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hydropsychidae | 13 | 5 | 34 | 7 | 0 | 27 | 37 | 29 | 0 | 4 |
| Hydropsychidae P | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| *Arctopsyche* | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| *Hydropsyche* | 5 | 0 | 16 | 0 | 0 | 2 | 0 | 0 | 0 | 1 |
| Leptoceridae | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GASTROPODA | | | | | | | | | | |
| PULMONATA | | | | | | | | | | |
| Lymnaeidae | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 |
| TERRESTRIALS | | | | | | | | | | |
| HYMENOPTERA | | | | | | | | | | |
| Formicidae A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| VERTEBRATA | | | | | | | | | | |
| PISCES | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SAMPLE VOLUME (ml) | 6 | 8 | 18 | 3 | 6 | 10 | 17 | 7 | <1 | 3 |
| SAMPLE WEIGHT (g) | 4.5 | 8.2 | 13.7 | 3.4 | 3.8 | 6.9 | 14.1 | 4.8 | 0.2 | 2.7 |

## SITE 6: WINDFALL BRIDGE

| | REPLICATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | | |
| INSECTA | | | | | | | | | | |
| DIPTERA | | | | | | | | | | |
| Chironomidae | 4 | 8 | 17 | 1 | 25 | 6 | 8 | 5 | 3 | 2 |
| Chironomidae P | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Empididae | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Tipulidae | | | | | | | | | | |
| EPHEMEROPTERA | | | | | | | | | | |
| Ametropodidae | | | | | | | | | | |
| *Ametropus* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Baetid-type | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Baetis-type | 0 | 6 | 3 | 2 | 8 | 2 | 2 | 1 | 8 | 3 |
| Baetidae | | | | | | | | | | |
| *Baetis* | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| Ephemerellidae | | | | | | | | | | |
| *Ephemerella needhami* | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| *E. (Drunella) doddsi* | 0 | 0 | 0 | 2 | 48 | 0 | 8 | 0 | 17 | 5 |
| Heptageniidae | 4 | 1 | 4 | 3 | 13 | 0 | 4 | 0 | 15 | 7 |
| PLECOPTERA | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Chloroperlidae | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Perlidae | | | | | | | | | | |
| *Claassenia* | 2 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 1 | 0 |
| Perlodidae | | | | | | | | | | |
| *Isogenoides* | 2 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 4 | 9 |
| Pteronarcyidae | | | | | | | | | | |
| *Pteronarcella* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| TRICHOPTERA | | | | | | | | | | |
| Brachycentridae | | | | | | | | | | |
| *Brachycentrus* | 63 | 49 | 6 | 97 | 65 | 235 | 126 | 115 | 224 | 174 |
| *Brachycentrus* P | 15 | 31 | 3 | 396 | 71 | 123 | 272 | 136 | 28 | 87 |
| Glossosomatidae | | | | | | | | | | |
| *Glossosoma* | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hydropsychidae | 17 | 40 | 35 | 19 | 216 | 6 | 348 | 73 | 445 | 68 |
| Hydropsychidae P | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| *Arctopsyche* | 6 | 1 | 1 | 0 | 19 | 1 | 22 | 3 | 38 | 3 |
| *Hydropsyche* | 8 | 20 | 69 | 6 | 42 | 1 | 42 | 13 | 46 | 23 |
| GASTROPODA | | | | | | | | | | |
| PULMONATA | | | | | | | | | | |
| Lymnaeidae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| TERRESTRIALS | | | | | | | | | | |
| COLEOPTERA A | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 1 |
| HYMENOPTERA | | | | | | | | | | |
| Formicidae A | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| SAMPLE VOLUME (ml) | 11 | 7.5 | 8 | 12 | 15 | 14 | 18 | 9 | 22 | 16 |
| SAMPLE WEIGHT (g) | 10.1 | 7.7 | 6.1 | 14.6 | 15.8 | 13.8 | 13.9 | 9.0 | 34.4 | 16.1 |

**Table 3.7 Stomach contents of northern pike from the Athabasca River. P=pupae. (No samples were available from Site 3: Obed Mountain Coal Bridge).**

**SITE 1: UPSTREAM OF HINTON, NEAR ENTRANCE**

| | REPLICATE | | | | | |
|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | |
| INSECTA | | | | | | |
| DIPTERA | | | | | | |
| Chironomidae | 0 | 4* | 0 | 0 | 0 | 0 |
| Chironomidae P | 0 | 1* | 0 | 0 | 0 | 0 |
| EPHEMEROPTERA | | | | | | |
| Ephemerellidae | | | | | | |
| *E. (Drunella) doddsi* | 0 | 2* | 0 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | | |
| Brachycentridae | | | | | | |
| *Brachycentrus* | 0 | 1* | 0 | 0 | 0 | 0 |
| Hydropsychidae | 0 | 6* | 0 | 0 | 0 | 0 |
| VERTEBRATA | | | | | | |
| PISCES | 1 | 0 | 0 | 1 | 0 | 1 |
| Mountain Whitefish | 0 | 0 | 0 | 0 | 1 | 0 |
| Rainbow or Bull Trout | 0 | 0 | 1 | 0 | 0 | 0 |
| Sculpin | 0 | 1 | 0 | 0 | 0 | 0 |
| SAMPLE VOLUME (ml) | 3 | 7 | 41 | 1.5 | 5 | 2 |
| SAMPLE WEIGHT (g) | 1.5 | 5.7 | 39.3 | 0.8 | 5.0 | 1.7 |

*Invertebrates may be incidentals (i.e., stomach contents of ingested fish).

**SITE 2: WELDWOOD BRIDGE**

| | REPLICATE | |
|---|---|---|
| VERTEBRATA | | |
| PISCES | 1 | 0 |
| Mountain Whitefish | 0 | 1 |
| SAMPLE VOLUME (ml) | 9 | 5 |
| SAMPLE WEIGHT (g) | 18.3 | 4.3 |

## SITE 4: EMERSON LAKES BRIDGE

| | REPLICATE |
|---|---|
| VERTEBRATA | |
| PISCES | |
| White Sucker | 1 |
| SAMPLE VOLUME (ml) | 128 |
| SAMPLE WEIGHT (g) | 118.2 |

## SITE 5: BERLAND BRIDGE

| | REPLICATE* | | | | | |
|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | |
| ARACHNOIDA | | | | | | |
| ACARI | 0 | 0 | 0 | 0 | 1** | 0 |
| INSECTA | | | | | | |
| DIPTERA | | | | | | |
| Chironomidae | 0 | 0 | 0 | 0 | 14** | 0 |
| Chironomidae P | 0 | 0 | 0 | 0 | 39** | 0 |
| EPHEMEROPTERA | | | | | | |
| Heptageniidae | 0 | 0 | 0 | 0 | 1** | 0 |
| VERTEBRATA | | | | | | |
| PISCES | 0 | 0 | 0 | 0 | 1 | 0 |
| Brook Stickleback | 0 | 1 | 0 | 0 | 0 | 0 |
| Fathead Chub | 0 | 0 | 0 | 0 | 0 | 1 |
| Mountain Whitefish | 0 | 0 | 0 | 0 | 1 | 0 |
| White Sucker | 1 | 0 | 1 | 0 | 0 | 0 |
| SAMPLE VOLUME (ml) | 45 | 2 | 326 | <1 | 9 | 28 |
| SAMPLE WEIGHT (g) | 51.0 | 0.6 | 292 | 0.4 | 12.3 | 38.1 |

* Replicates 1, 3, 4, and 9 were not submitted for analysis (stomachs were empty).
** Invertebrates may be incidentals (i.e., stomach contents of ingested fish).

## SITE 6: WINDFALL BRIDGE

| | REPLICATE* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ARTHROPODA | | | | | | | | | |
| INSECTA | | | | | | | | | |
| PLECOPTERA | | | | | | | | | |
| Perlidae | | | | | | | | | |
| *Claassenia* | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| TRICHOPTERA | | | | | | | | | |
| Brachycentridae | | | | | | | | | |
| *Brachycentrus* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87 |
| VERTEBRATA | | | | | | | | | |
| PISCES | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Catostomidae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Longnose Sucker | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mountain Whitefish | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SAMPLE VOLUME (ml) | <1 | 16 | 2 | 3 | 2 | 1 | 2 | 26 | 40 |
| SAMPLE WEIGHT (g) | 0.3 | 11.0 | 0.3 | 2.6 | 1.3 | 0.8 | 1.0 | 24.6 | 29.3 |

* Replicate 3 was not submitted for analysis (stomach was empty).

# 4.0 SUMMARY AND CONCLUSION

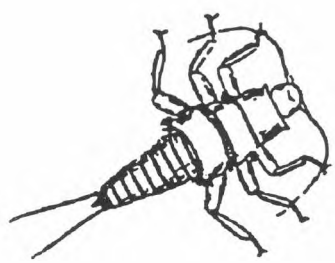
This report presents the results of analyses performed on quantitative benthic macroinvertebrate samples from the upper Athabasca River. Data were collected as part of a pilot study investigating trace contaminant migration, bioaccumulation, and biomagnification through trophic levels in the upper Athabasca River. To further assess time budgets and expenditures on future studies of this kind, estimated time used to perform various tasks is summarized in Table 4.1.

**Table 4.1 Estimated time expended to complete various tasks presented in this report. MD=man-day (8 hours).**

| PROJECT | TASK | TIME EXPENDED |
|---|---|---|
| 2521 (Species Composition) | Sorting 30 Neill Samples | 16 MD |
| | Identification/Enumeration and deformity processing of 30 Neill samples | 30 MD |
| | Wet Weight Measurements | 1 MD |
| | Size Distribution Measurements | 6-7 MD |
| | Chironomidae slide preparation for deformity analysis | 21 MD |
| | Examination of chironomid specimens for deformities | 10 MD |
| | Identification of Representative Specimens | 1 MD |
| | Data Entry | 4 MD |
| 2382 (Fish Gut Contents) | Identification, Enumeration and examination for deformities (n=86) | 19 MD |
| | Data Entry | 8 MD |
| 2521 + 2382 (Species Composition and Fish Stomach Contents) | Report Writing and Preparation | 5 MD |

The time required to process the 30 Neill samples accounted for 74% of all time expended in these studies (i.e., total of 90 man-days). Processing of fish stomach content samples took approximately 27 man-days, or 22% of the total effort.

Differences in effort between the two projects were due to the greater number of tasks involved and amount of precision required in processing the Neill samples. Processing involved sorting specimens from debris, mounting and examining chironomids for deformity analysis, identifying specimens to a lower taxonomic level, and ocular micrometer work to determine the size-class of specimens. In general, there were more taxa and greater numbers of invertebrates in the Neill samples than in the stomach content samples (compare Table 3.2 with Tables 3.6 and 3.7). It took approximately one day to identify and count one Neill sample, whereas the mean processing time for one stomach content sample was 1.72 h (S.E.=0.13h, range=0.2 - 5.0 h).



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# APPENDIX A

## SIZE CLASS MEASUREMENTS ON SELECTED INVERTEBRATE TAXA

*Baetis* spp. body lengths (nearest 0.1 mm).

| LENGTH | NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | SITE 1 | SITE2 | SITE 3 | SITE 4 | SITE 5 | SITE 6 |
| 0.7 | 0 | 0 | 0 | 0 | 0 | 1 |
| 0.8 | 0 | 4 | 0 | 0 | 2 | 2 |
| 0.9 | 1 | 3 | 0 | 1 | 1 | 7 |
| 1.0 | 0 | 19 | 0 | 0 | 5 | 8 |
| 1.1 | 5 | 29 | 1 | 0 | 7 | 19 |
| 1.2 | 2 | 29 | 0 | 1 | 10 | 19 |
| 1.3 | 1 | 41 | 0 | 0 | 7 | 27 |
| 1.4 | 2 | 37 | 0 | 0 | 4 | 17 |
| 1.5 | 2 | 65 | 0 | 1 | 7 | 30 |
| 1.6 | 1 | 41 | 0 | 1 | 6 | 20 |
| 1.7 | 1 | 53 | 0 | 0 | 11 | 16 |
| 1.8 | 0 | 41 | 0 | 0 | 7 | 12 |
| 1.9 | 0 | 24 | 0 | 1 | 2 | 11 |
| 2.0 | 1 | 35 | 0 | 1 | 7 | 12 |
| 2.1 | 0 | 17 | 0 | 0 | 9 | 11 |
| 2.2 | 4 | 22 | 0 | 0 | 6 | 12 |
| 2.3 | 0 | 17 | 0 | 0 | 5 | 13 |
| 2.4 | 1 | 12 | 0 | 0 | 4 | 6 |
| 2.5 | 1 | 13 | 0 | 0 | 6 | 10 |
| 2.6 | 0 | 14 | 0 | 0 | 1 | 5 |
| 2.7 | 0 | 12 | 0 | 0 | 3 | 5 |
| 2.8 | 0 | 3 | 0 | 0 | 2 | 7 |
| 2.9 | 0 | 1 | 0 | 0 | 2 | 3 |
| 3.0 | 0 | 10 | 0 | 0 | 2 | 5 |
| 3.1 | 0 | 4 | 0 | 0 | 0 | 6 |
| 3.2 | 0 | 6 | 0 | 0 | 0 | 1 |
| 3.3 | 1 | 4 | 0 | 0 | 4 | 1 |
| 3.4 | 0 | 4 | 0 | 0 | 0 | 4 |
| 3.5 | 0 | 3 | 0 | 1 | 0 | 2 |
| 3.6 | 0 | 2 | 0 | 0 | 4 | 1 |
| 3.7 | 0 | 3 | 1 | 0 | 1 | 4 |
| 3.8 | 0 | 1 | 0 | 0 | 1 | 0 |
| 3.9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 4.1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4.2 | 0 | 1 | 0 | 0 | 2 | 1 |
| 4.3 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4.4 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4.5 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.9 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5.0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5.1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5.2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5.7 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5.8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5.9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6.1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6.2 | 0 | 1 | 0 | 0 | 0 | 0 |

*Ephemerella needhami* body lengths (nearest 0.1 mm).

| LENGTH | NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | SITE 1 | SITE2 | SITE 3 | SITE 4 | SITE 5 | SITE 6 |
| 0.9 | 0 | 0 | 0 | 1 | 1 | 0 |
| 1.0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 1.1 | 0 | 0 | 0 | 3 | 2 | 0 |
| 1.2 | 0 | 1 | 2 | 2 | 4 | 4 |
| 1.3 | 0 | 7 | 0 | 14 | 13 | 2 |
| 1.4 | 0 | 11 | 1 | 15 | 11 | 2 |
| 1.5 | 0 | 13 | 2 | 14 | 14 | 4 |
| 1.6 | 0 | 9 | 2 | 16 | 14 | 4 |
| 1.7 | 0 | 13 | 0 | 16 | 20 | 4 |
| 1.8 | 1 | 9 | 0 | 7 | 17 | 2 |
| 1.9 | 1 | 8 | 1 | 7 | 13 | 2 |
| 2.0 | 0 | 9 | 2 | 6 | 8 | 4 |
| 2.1 | 0 | 5 | 1 | 6 | 3 | 4 |
| 2.2 | 1 | 9 | 1 | 3 | 6 | 1 |
| 2.3 | 0 | 3 | 0 | 1 | 2 | 2 |
| 2.4 | 0 | 5 | 0 | 1 | 1 | 2 |
| 2.5 | 0 | 1 | 0 | 1 | 2 | 3 |
| 2.6 | 0 | 3 | 1 | 3 | 3 | 0 |
| 2.7 | 0 | 2 | 1 | 2 | 5 | 0 |
| 2.8 | 0 | 0 | 0 | 4 | 6 | 1 |
| 2.9 | 0 | 1 | 0 | 0 | 0 | 2 |
| 3.0 | 0 | 3 | 2 | 0 | 3 | 0 |
| 3.1 | 0 | 0 | 1 | 1 | 5 | 1 |
| 3.2 | 0 | 4 | 1 | 1 | 7 | 0 |
| 3.3 | 0 | 2 | 0 | 2 | 3 | 0 |
| 3.4 | 0 | 2 | 0 | 0 | 4 | 0 |
| 3.5 | 0 | 1 | 0 | 1 | 3 | 1 |
| 3.6 | 0 | 2 | 1 | 0 | 2 | 0 |
| 3.7 | 0 | 2 | 3 | 1 | 2 | 0 |
| 3.8 | 0 | 2 | 1 | 0 | 3 | 0 |
| 3.9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4.1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4.2 | 0 | 0 | 1 | 0 | 1 | 0 |
| 4.3 | 0 | 0 | 0 | 1 | 1 | 0 |
| 4.4 | 0 | 2 | 1 | 0 | 1 | 0 |
| 4.5 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.8 | 0 | 0 | 0 | 0 | 1 | 0 |
| 8.8 | 0 | 1 | 0 | 0 | 0 | 0 |

*Orthocladius (O.)* spp. head capsule widths (nearest 0.02 mm).

| LENGTH | NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | SITE 1 | SITE2 | SITE 3 | SITE 4 | SITE 5 | SITE 6 |
| 0.06 | 0 | 0 | 1 | 0 | 3 | 2 |
| 0.08 | 0 | 0 | 5 | 2 | 5 | 6 |
| 0.1 | 4 | 3 | 9 | 8 | 19 | 7 |
| 0.12 | 0 | 1 | 7 | 6 | 46 | 14 |
| 0.14 | 0 | 16 | 8 | 3 | 22 | 4 |
| 0.16 | 3 | 18 | 19 | 19 | 102 | 27 |
| 0.18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0.2 | 0 | 35 | 12 | 1 | 3 | 0 |
| 0.22 | 5 | 89 | 94 | 34 | 86 | 42 |
| 0.24 | 0 | 35 | 14 | 0 | 7 | 3 |
| 0.26 | 0 | 2 | 0 | 0 | 0 | 0 |

# APPENDIX B

## FISH STOMACH TALLY SHEETS

Definition of terms used:

| | |
|---|---|
| Baetid-type = | similar to Baetidae morphology, could be: Ametropodidae, Baetidae, Ephemerellidae, Siphlonuridae. |
| Baetis-type = | Similar to *Baetis* morphology, could be: *Baetis* (Baetidae) or *Ameletus* (Siphlonuridae). |
| Capniid-Chloroperlid-type = | either a Capniidae or Chloroperlidae |
| Rhyacophilidae-type = | Similar to Rhyacophilidae morphology, could be: Philopotamidae, Polycentropodidae, Psychomyiidae, or Rhyacophilidae. |

NOTE: Northern pike stomach sample numbers 1, 3, 4, and 9 at site five (Berland Bridge) were empty. Therefore, they were not submitted to R.L. & L. Environmental Services Ltd. for processing. The northern pike stomach sample number 3 at site six (Windfall Bridge) was also empty and not submitted.

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 11.5
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 8

MASS OF SAMPLE (g): 7.6

DATE COLLECTED: 17.05.92

DATE PROCESSED: 07.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively large amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS & GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* P | 10, 10 | 100% intact. Case lengths measured. |
| Chironomidae | 6 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6 | limbs and last three segments of abdomen missing. |
| Hydropsychidae | 4, 4, 20 | 100% intact. |
| Hydropsychidae | 4, 5, 6, 3, 4 | Abdomens missing. Head and Thorax measured. |
| Hydropsychidae | 11, 10 | Abdomen and meta thoraxmeasured.. |
| Hydropsychidae | 8, 18, 20 | Abdomen and meso- & metathorax measured. |
| Hydropsychidae | 10. 18. 10 | Abdomen and thorax measured. |
| Hydropsychidae - *Arctopsyche* | 5, 18, 26, 16, 12, 16, 12, 18, 18, 11, 14, 14, 13, 12, 12, 14, 24 | 100% intact. |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods in sample. 226 hydropsychid heads counted, approximately 60% *Arctopsyche* and 40% *Hydropsyche*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 1

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Hydropsychidae - *Arctopsyche* | 9 | Head and thorax measured. |
| Hydropsychidae - *Hydropsyche* | 12, 8, 7, 24, 15, 8, 12, 6, 16, 8, 15 | 100% intact. |
| Hydropsychidae - *Hydrosyche* | 3, 4 | Head and thorax measured. |
| Perlidae | 2 | Limbs missing. |
| Perlodidae - *Isoperla* | 6 | Limbs missing. |
| | | |
| | | |
| | | |
| **TOTAL NUMBERS:** | | |
| Brachycentridae - *Brachycentrus* P = 2 | | |
| Chironomidae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Hydropsychidae = 242 | | |
| Hydropsychidae - *Arctopsyche* = 18 | | |
| Hydropsyche - *Hydropsyche* = 13 | | |
| Perlidae = 1 | | |
| Perlodidae - *Isoperla* = 1 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 12.9
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 20

MASS OF SAMPLE (g): 9.1

DATE COLLECTED: 17.05.92

DATE PROCESSED: 10.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively moderate amounts of inorganic debris and little organic debris in the sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Blephariceridae | 16 | Exoskeleton remains measured (100% intact). |
| Brachycentridae - *Brachycentrus* P | 8, 8, 8, 8, 8, 8, 8, 9, 8, 9, 8, 8, 8, 10, 10, 10, 10, 10, 8, 9, 8, 10 | 100% intact. Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 6, 6, 4, 8, 8, 6 | Case lengths measured. |
| Chironomidae | 4 | Head missing. |
| Heptageniidae | 4 | Limbs missing, well decomposed. |
| Hydropsychidae | 5 | 100% intact. |
| Hydropsychidae | 20, 15, 18, 17 | Abdomen and thorax measured. |
| Hydropsychidae | 10 | Abdomen and metathorax measured. |
| Hydropsychidae | 26, 12 | Abdomen and meso- & metathorax measured. |
| Hydropsychidae | 12 | Abdomen measured. |
| Hydropsychidae - *Arctopsyche* | 16, 14, 12, 22, 22, 18, 18 | 100% intact. |
| Hydropsychidae - *Arctopsyche* PreP | 15 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods in sample. Approximately 2-4 mL of dark red tissue (stomach or liver?) in sample. 178 hydropsychid heads counted in sample (approx. 50% *Hydropsyche* and 50% *Arctopsyche*). One heptageniid head counted.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 2

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Hydropsychidae - *Hydropsyche* | 12, 12, 12, 7, 11, 8, 12, 12, 12, 12, 14, 11, 12, 7, 12, 12, 5, 12, 14, 13, 14, 7 | 100% intact. |
| Perlodidae | 7 | Limbs and last 3 abdominal segmnets missing. |
| **TOTAL NUMBERS:** | | |
| Blephariceridae = 1 | | |
| Brachycentridae - *Brachycentrus* P = 22 | | |
| Chironomidae = 1 | | |
| Heptageniidae = 2 | | |
| Hydropsychidae = 187 | | |
| Hydropsychidae - *Arctopsyche* = 7 | | |
| Hydropsychidae - *Arctopsyche* PreP = 1 | | |
| Hydropsychidae - *Hydropsyche* = 22 | | |
| Perlodidae = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 10.7
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 13

MASS OF SAMPLE (g): 6.8

DATE COLLECTED: 17.05.92

DATE PROCESSED: 07.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Gastropods well intact, not crushed, soft tissue with shells, swallowed whole. Majority of fish (possibly Northern Pike) well digested, some flesh around vetebral column. Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Gastropoda - Lymnaeidae | 9, 6, 12, 8, 8, 8, 7, 6, 5, 10, 11, 10, 10, 7, 8, 10, 8, 7, 6, 10, 8, 17, 8, 12, 12, 11, 8, 9, 11 | 100% intact. |
| Vertebrate - Fish - Northern Pike? | 45 | Total length estimated. Whole specimen well digested. |
| **TOTAL NUMBERS:** | | |
| Gastropoda - Lymnaeidae = 29 | | |
| Vertebrate - Fish - Northern Pike? = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Evidence of 1 large stonefly larva ingested (pieces of cerci and abdominal segments). Lower jaw of fish and its teeth suggest it is a Northern Pike.

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 11.8
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 11

MASS OF SAMPLE (g): 7.8

DATE COLLECTED: 17.05.92

DATE PROCESSED: 10.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 30% well digested and 70% recently ingested (fresh, whole specimens). Relatively moderate amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis*-type | 2 | Head and abdomen measured. |
| Chironomidae | 5, 4, 5, 5, 5, 4 | 100% intact. |
| Ephemerellidae - *Ephemerella* (*Drunella*) sp. | 12 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6, 7 | Limbs missing. |
| Glossosomatidae - *Glossosoma* | 8 | 100% intact. |
| Hydropsychidae | 5, 4, 5, 16 | 100% intact. |
| Hydropsychidae | 12, 12, 13 | Abdomen and metathorax measured. |
| Hydropsychidae | 10, 15, 15 | Abdomen and thorax measured. |
| Hydropsychidae | 4, 5, 3, 5, 5 | Head and thorax measured. |
| Hydropsychidae P | 12, 12 | Case length measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Evidence (peices of head, abdomen) *Ephemerella (Drunella) doddsi* in sample. 195 hydropsychid heads counted (approx. 70% of heads were *Hydropsyche* and 30% *Hydropsyche*).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 4

CONTENTS:

| TAXON NAME* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Hydropsychidae - *Arctopsyche* | 28, 20, 15, 18, 22, 12, 22, 16, 13, 18, 18, 19 | 100% intact. |
| Hydropsychidae - Hydropsyche | 16, 17, 14, 14, 16, 15, 16, 15, 7, 14, 17, 14, 12, 7, 14, 14, 16, 6, 13, 13, 13, 13, 13, 13, 18, 7, 14, 15, 14, 13, 18, 12, 12, 12, 14, 14, 14, 13, 15, 16, 14, 16, 8, 16, 12, 12, 12, 15, 13, 14, 14, 12, 11, 11, 12, 12, 18, 15, 15, 13, 13, 13, 12, 14, 16, 12, 14, 13, 16, 11, 12, 14, 15, 8, 15, 10, 14, 15, 15, 15 | 100% intact. |
| Terrestrial Coleoptera Adult | 3 | Abdomen measured. |
| | | |
| TOTAL NUMBERS: | | |
| Baetidae - *Baetis*-type = 1 | | |
| Chironomidae = 6 | | |
| Ephemerellidae - *Ephemerella (Drunella)* sp. = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 2 | | |
| Glossosomatidae - *Glossosoma* = 1 | | |
| Hydropsychidae = 204 | | |
| Hydropsychidae P = 2 | | |
| Hydropsychidae - *Arctopsyche* = 12 | | |
| Hydropsychidae - *Hydropsyche* = 79 | | |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 13.5
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 18

MASS OF SAMPLE (g): 9.8

DATE COLLECTED: 17.05.92

DATE PROCESSED: 07.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively large amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Arachnoida - Acari | 1 | 100% intact. |
| Brachycentridae - *Brachycentrus* P | 9, 10, 10, 10, 10, 9, 10, 10 | Case lengths measured. |
| Chironomidae | 5, 5, 3, 5, 6, 5 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 9, 6 | 100% intact. |
| Glossosomatidae - *Glossosoma* | 8, 8 | 100% intact. |
| Glossosomatidae - *Glossosoma* P | 5 | 100% intact. |
| Heptageniidae | 3 | Limbs missing. |
| Hydropsychidae | 4, 3, 4, 5, 5, 4, 5, 5, 4, 5, 10, 4, 5, 5, 6, 4 | Head and thorax measured. |
| Hydropsychidae | 12 | Abdomen and thorax measured. |
| Hydropsychidae | 10 | Abdomen measured. |
| Hydropsychidae | 8, 20 | Abdomen and meso- & meta thorax measured. |
| Hydropsychidae - *Arctopsyche* | 12, 24, 25, 18 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Evidence (limbs and head peices) of *Ephemerella* (*Drunella*) *doddsi* in sample. Approximately 3 ml of green (bile?) fluid in sample. Parasitic nematods in sample. 214 hydropsychid heads counted (approx. 60% *Hydropsyche* and 40% *Arctopsyche*). 2 chironomid and 1 *Ephemerella needhami* heads counted in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 5

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Hydropsychidae - *Arctopsyche* | 5 | Head and thorax measured. |
| Hydropsychidae - *Hydropsyche* | 4, 5, 4 | Head and thorax measured. |
| Hydropsychidae - *Hydropsyche* | 13, 11, 12, 11, 13, 12, 12, 12, 13, 7, 15, 14, 15, 16, 13, 14, 15, 15, 14, 15, 13, 12, 4, 15, 15, 7, 12, 12, 15, 15, 7, 7, 13, 14, 13, 12, 15, 8, 3, 6, 12, 15, 12, 7, 13, 17, 8, 13, 10, 12, 14, 13, 15, 4, 14, 15, 13, 15, 15, 14, 15, 9, 7 | 100% intact |
| Rhyacophilidae-type caddisfly L | 7, 3 | Abdomen and metathorax measured. |
| **TOTAL NUMBERS:** | | |
| Arachnoida - Acari = 1 | | |
| Brachycentridae - *Brachycentrus* P = 8 | | |
| Chironomidae = 8 | | |
| Ephemerellidae - *Ephemerella needhami* = 3 | | |
| Glossosomatidae - *Glossosoma* = 2 | | |
| Glossosomatidae - *Glossosoma* P = 1 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 229 | | |
| Hydropsychidae - *Arctopsyche* = 5 | | |
| Hydropsychidae - *Hydropsyche* = 66 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 6.2
MASS OF BAG (g): 3.6

APPROXIMATE VOLUME (ml): 5

MASS OF SAMPLE (g): 2.6

DATE COLLECTED: 17.05.92

DATE PROCESSED: 29.07.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 10% well digested and 90% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 18, 18 | 100% intact. |
| Chironomidae | 5, 5, 4 | 100% intact. |
| Hydropsychidae | 20 | Head missing. Abdomen and thorax measured. |
| Tipulidae | 10, 12, 15, 18, 20, 15, 20, 11, 12, 20, 12, 13, 16, 20, 13, 15, 16, 13, 15, 15, 13, 16 | 100% intact. |
| Tipulidae | 8, 10, 8, 10, 12 | Specimens split in half = 1/2 of specimen measured. |
| | | |
| TOTAL NUMBERS: | | |
| Athericidae - *Atherix* = 2 | | |
| Chironomidae = 3 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Two hydropsychid and 1 *Ephemerella* (*Drunella*) *doddsi* heads counted. Tipulids appear to be *Hexatoma*. Approximately 1 to 2 ml of fluid (bile?) in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Hydropsychidae = 2 | | |
| Tipulidae = 30 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 12.1
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 6

MASS OF SAMPLE (g): 8.2

DATE COLLECTED: 17.05.92

DATE PROCESSED: 10.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively large amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 8, 6 | Poor. Head and limbs missing. |
| Hydropsychidae | 13, 15, 12 | Head missing. Abdomen and thorax measured. |
| Hydropsychidae P | 12, 15 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 16, 15, 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 14, 13, 15, 12, 12, 14, 12 | 100% intact. |
| Valvatidae (Gastropoda) | 2.5 | 100% intact. Shell length measured. |
| | | |
| **TOTAL NUMBERS:** | | |
| Hydropsychidae = 134 | | |
| Hydropsychidae P = 2 | | |
| Hydropsychidae - *Arctopsyche* = 3 | | |
| Hydropsychidae - *Hydropsyche* = 7 | | |
| Perlidae - *Claassenia* = 1 | | |
| Valvatidae (Gastropoda) = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Exceptionally large amounts of inorganic material in sample. As if animal were starving and wanted to fill stomach with anything. Parasitic nematods present. 134 hydropsychid heads (approx. 60% *Arctopsyche* and 40% *Hydropsyche*) and 1 *Claassenia* head counted in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 18.3
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 19

MASS OF SAMPLE (g): 14.5

DATE COLLECTED: 17.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens).. Relatively large amounts of inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 22, 24, 15, 14, 17 | 100% intact. |
| Blephariceridae | 13, 14, 15, 15, 12, 12 | 100% intact. |
| Hydropsychidae | 16 | Abdomen and meso- & metathorax measured. Rest missing. |
| Hydropsychidae P | 10, 15 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 20, 24, 13, 16, 14, 26 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12 | 100% intact. |
| Perlidae - *Claassenia* | 6, 6 | Head and pro- & mesothorax measured. Rest missing. Limbs missing. |
| Perlodidae - *Isogenoides* | 11 | Head and thorax measured. Rest missing. Limbs missing. |
| Perlodidae - *Isogenoides* | 6 | Limbs missing. |
| Vertebrate = Fish - Burbot? | 50 | Most of head digested. Could be a sculpin. |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. 86 hydropsychid heads counted (approx. 80% *Arctopsyche* and 20% *Hydropsyche*). 14 perlodid (*Isogenoides*) heads counted.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 8

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Athericidae - *Atherix* = 5 | | |
| Blephariceridae = 6 | | |
| Hydropsychidae = 86 | | |
| Hydropsychidae P = 2 | | |
| Hydropsychidae - *Arctopsyche* = 6 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Perlidae *Claassenia* = 2 | | |
| Perlodidae *Isogenoides* = 16 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 9

MASS OF SAMPLE & BAG (g): 15.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 17

MASS OF SAMPLE (g): 11.6

DATE COLLECTED: 17.05.92

DATE PROCESSED: 10.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively large amounts of inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae-type | 5 | Limbs and antennae missing. |
| Blephariceridae | 13, 12 | Exoskeletal remains only. Last 1 and 4 abdominal segments missing, respectively. |
| Brachycentridae - *Brachycentrus* P | 7, 8, 10, 7, 8, 8, 9, 8, 7, 10, 10, 10, 8, 10, 8, 7, 7, 9, 8, 8, 6, 8, 10, 7, 8, 8, 7, 8, 8, 6, 8, 8, 8, 8, 9, 8, 10, 10, 7, 9, 7, 8, 8, 9, 9, 10, 9, 8, 10, 8, 10, 7, 8, 8, 8, 9, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 6, 6, 6, 7, 7, 8 | Case lengths measured. |
| Chironomidae | 4, 5, 6 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. 67 hydropsychid heads counted (approx. 50% *Arctopsyche* and 50% *Hydropsyche*).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 9

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 9 | Limbs missing. |
| Glossosomatidae - *Glossosoma* | 7, 8 | 100% intact. |
| Hydropsychidae | 4 | 100% intact. |
| Hydropsychidae | 10, 14 | Head missing. Abdomen and thorax measured. |
| Hydropsychidae - *Arctopsyche* | 20, 5, 8 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 16, 12, 15, 12, 13, 12, 12, 10, 11, 16, 12, 14, 14, 15, 11, 16 | 100% intact. |
| Perlidae - *Claassenia* | 10 | Head and pro- & mesothorax measured. Rest missing. |
| Perlodidae | 4 | Head and pro- & mesothorax measured. Rest missing. |
| | | |
| TOTAL NUMBERS: | | |
| Baetidae-type = 1 | | |
| Blephariceridae = 2 | | |
| Brachycentridae - *Brachycentrus* P = 57 | | |
| Chironomidae = 3 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 1 | | |
| Glossosomatidae - *Glossosoma* = 2 | | |
| Hydropsychidae = 68 | | |
| Hydropsychidae - *Arctopsyche* = 3 | | |
| Hydropsychidae - *Hydropsyche* = 16 | | |
| Perlidae - *Claassenia* =1 | | |
| Perlodidae = 1 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 6.2
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 7

MASS OF SAMPLE (g): 2.3

DATE COLLECTED: 17.05.92

DATE PROCESSED: 29.07.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively moderate amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Blephariceridae | 10 | Exoskeletal remains only. Last 4 segments missing. |
| Chironomidae | 4 | 100% intact. |
| Hydropsychidae | 10, 13, 10, 14, 6, 14, 10, | 100% intact. |
| Hydropsychidae | 14, 22, 8 | Heads missing. |
| Hydropsychidae | 10 | Last 2 or 3 segments of abdomen missing. |
| Hydropsychidae | 5 | Head and thorax measured. Rest missing. |
| Hydropsychidae | 14 | Metathorax and abdomen measured. Rest missing. |
| Perlidae - *Claassenia* | 12 | Exoskeletal remains of abdomen only. |
| Rhyacophilidae-type caddisfly L | 7, 14 | 100% intact. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

82 hydropsychid heads counted in sample. Approximately 60 to 70% of hydropsychid heads were *Arctopsyche*, the remaining were *Hydropsyche*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Blephariceridae = 1 | | |
| Chironomidae = 1 | | |
| Hydropsychidae = 91 | | |
| Rhyacophilidae-type = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Northern Pike

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 5.4
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 3

MASS OF SAMPLE (g): 1.5

DATE COLLECTED: 17.05.92

DATE PROCESSED: 10.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish in sample. Well digested, very few bones. Opercula look like Northern Pike. Unable to estimate length of fish. No invertebrates.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Vertebrate - fish = 1 | unkown | Well digested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
Parasitic cestods in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Northern Pike

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 9.5
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 7

MASS OF SAMPLE (g): 5.7

DATE COLLECTED: 12 - 17.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish in sample, Sculpin (possibly slimy) - 76 mm total length. Viscera of fish partially digested. All invertebrate specimens well digested.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* | 8 | 100% intact. Case length measured. |
| Chironomidae | 5, 4, 5, 5 | 100% intact. |
| Chironomidae P | 8 | 100% intact. |
| Vertebrate - Fish - Sculpin | 76 | Viscera of fish digested. Above invertebrates may have come from this specimen. |
| **TOTAL NUMBERS:** | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Chironomidae = 4 | | |
| Chironomidae P = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 2 | | |
| Hydropsychidae = 6 | | |
| Vertebrate - Fish - Sculpin = 1 | | |
| | | |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

6 hydropsychid heads and 2 *Ephemerella* (*Drunella*) *doddsi* heads were counted in the sample. Some or all of the invertebrates may be incidentals - from the ingested Sculpin.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Northern Pike

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 43.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 41

MASS OF SAMPLE (g): 39.3

DATE COLLECTED: 17.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish in sample. Well digested. Spine approximately 160 mm long. Specimen is either a Bull trout or a Rainbow trout. No invertebrates in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Fish - Rainbow or Bull trout | 160 | Total length estimated. |
| **TOTAL NUMBERS:** | | |
| Vertebrate - Fish - Rainbow or Bull trout = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Northern Pike

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 4.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 1.5

MASS OF SAMPLE (g): 0.8

DATE COLLECTED: 17.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% of the sample is a red gelatinous mass (blood?, liver tissue?). Less than 6 fish bones found in sample, unable to identify fish species ingested. Total length unattainable. No invertebrates.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Vertebrate - fish = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
Parasitic nematods in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Northern Pike

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 8.8
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 5

MASS OF SAMPLE (g): 5.0

DATE COLLECTED: 17.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One Mountain Whitefish, tail portion well digested. Specimen approximately 65 mm long. No invertebrates in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Vertebrate - Fish - Mountain Whitefish = 1 | 65 | Total length estimated. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 1: Upstream of Hinton, near Entrance

FISH SPECIES: Northern Pike

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 5.5
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 2

MASS OF SAMPLE (g): 1.7

DATE COLLECTED: 17.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Remains (scales and various bones) of one fish in sample. Ingested specimen well digested, unidentifiable. Length measurement unattainable. No invertebrates.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Vertebrate - fish = 1 | unknown | Only bones. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 9.4
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 6

MASS OF SAMPLE (g): 5.6

DATE COLLECTED: 14.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% of the sample is well digested and 50% is relatively fresh - recently ingested. Relatively little inorganic and organic debris in sample except for such material associated with hydrospychid retreats.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| *Baetis*-type | 4 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* P | 10, 10, 10 | Case lengths measured. |
| Chironomidae | 4, 4, 3 | 100% intact. |
| Glossosomatidae - *Glossosoma* | 6 | 100% intact. |
| Hydropsychidae P | 10 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 15, 12 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 14, 8, 15, 14, 15, 11, 14, 14, 11, 15, 15, 13, 10, 10, 11, 12, 13, 14, 13, 8, 15, 8, 14, 12, 9, 12, 15, 16, 14, 14, 11, 12, 15, 14, 16, 15 | 100% intact. |
| Terrestrial - Coleoptera A | 3 | Abdomen and thorax measured. Head missing. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. 113 hydropsychid heads counted - approximately 70% *Hydropsyche* and 30% *Arctopsyche*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 1

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| *Baetis*-type = 1 | | |
| Brachycentridae - *Brachycentrus* P = 3 | | |
| Chironomidae = 3 | | |
| Glossosomatidae - *Glossosoma* = 1 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae = 113 | | |
| Hydropsychidae - *Arctopsyche* = 2 | | |
| Hydropsychidae - *Hydropsyche* = 36 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 12.8
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 7

MASS OF SAMPLE (g): 9.0

DATE COLLECTED: 14.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% of sample well digested and 50% relatively fresh, recently ingested. Relatively moderate amounts of inorganic debris and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Arachnoida - Acari | 1, 5 | 100% intact. |
| *Baens*-type | 3, 5, 6 | Limbs missing. |
| Brachycentridae - *Brachycentrus* P | 9 | Case length measured. |
| Chironomidae | 5, 4, 4, 4, 4 | 100% intact. |
| Hydropsychidae P | 12 | Case length measured. |
| Hydropsychidae - *Arctopsyche* | 16, 18, 12, 12 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 15, 7, 13, 8, 8, 13, 16, 12, 13, 14, 8, 15, 13, 16, 13, 10, 4, 12, 5, 13, 15, 5, 13, 4, 15, 13, 17, 5, 13, 13, 5, 13, 12, 15, 18, 13, 8, 13, 4, 15, 13, 5, 13, 5, 12, 12, 12, 14, 15, 12, 12, 12, 14, 4, 12, 14, 12, 7, 8, 12, 5, 11, 12, 12, 12, 4, 10, 14, 12, 14, 6, 13, 11, 15, 13, 12, 6, 7, 15, 16, 15 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods in sample. 334 hydropsychid heads counted - approximately 75% *Hydropsyche* and 25% *Arctopsyche*. 1 *Baetis*-type head counted.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 2

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Arachnoida - Acari = 1 | | |
| *Baetis*-type = 4 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Chironomidae = 5 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae = 334 | | |
| Hydropsychidae - *Arctopsyche* = 4 | | |
| Hydropsychidae - *Hydropsyche* = 81 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 21.4
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 14

MASS OF SAMPLE (g): 17.6

DATE COLLECTED: 14.05.92

DATE PROCESSED: 25.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Relatively little inorganic and organic debris in sample. Sample has lots of gastropods - most (at least >90%) have soft tissue in the shells. This indicates that the gastropods were recently ingested or take a long time to digest.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* Empty Cases | 8 | Case length measured. |
| Gastropoda - Lymnaeidae | 4, 6, 7, 5, 4, 8, 4, 4, 3, 4, 4, 4, 4, 4. 4, 5, 5, 4, 8, 5, 5, 4, 3, 4, 4, 5, 3. 4. 4, 10, 7, 3, 3, 4, 4, 4, 3, 7, 5, 3, 3, 6, 4, 4, 3, 4, 4, 4, 4, 5, 7, 3, 4, 3, 4, 4, 4, 4, 4, 5, 3, 4, 5, 5, 4, 4, 5, 4, 5, 4, 3, 4, 5, 3, 4 | Shell lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Plenty of hair in sample = mammal ingested? No mammalian bones or soft tissue found in sample. Evidence (limbs, abdominal terga, etc.) of stonefly and mayfly larva in sample. 470 gastropods (Lymnaeidae) counted, but not measured, in sample. One trichopteran and one *Ephemerella* (*Drunella*) *doddsi* head counted in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 1 | | |
| Gastropoda - Lymnaeidae = 545 | | |
| Trichoptera = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 15.3
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 12

MASS OF SAMPLE (g): 11.5

DATE COLLECTED: 14.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Most of sample well digested (approx. 80%). Approximately 20% of the sample was recently ingested = fresh, whole specimens. Relatively moderate amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* P | 8, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 9, 8, 8, 8, 7, 10 | Case lengths measured. |
| Chloroperlidae | 8 | Limbs missing. |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* | 13, 13 | Limbs missing. |
| Gastropoda - Lymnaeidae | 4, 4, 3, 2, 3, 5, 2, 3, 3, 4, 4, 3, 4, 4, 2, 4, 3, 2, 3, 4, 4, 4, 5, 3, 3, 4, 4, 3, 4, 3, 11, 2, 6, 8, 2, 4, 4, 4, 3, 8, 4, 7, 4, 3, 3, 4, 5, 4, 3, 4, 3, 3, 4, 3, 6, 4, 4, 4, 3, 3, 4 | Shell length measured. |
| Hydropsychidae - *Arctopsyche* | 13, 14 | 100% intact. |
| Perlidae - *Claassenia* | 15 | Limbs missing. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Baetid-type = 2, Chloroperlidae = 5, *Ephemerella (Drunella) doddsi* = 25, Hydropsychidae = 12, Perlodidae - *Isogenoides* = 22. All but 2 or 3 of the hydropsychids were *Arctopsyche*, the rest were *Hydropsyche*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 4

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Perlodidae - *Isogenoides* | 20, 26, 18 | Limbs missing. |
| Perlodidae - *Isogenoides* | 8, 10, 10, 12 | Head and thorax measured. Rest missing. |
| | | |
| TOTAL NUMBERS: | | |
| Baetid-type = 2 | | |
| Brachycentridae - *Brachycentrus* P = 2 | | |
| Chloroperlidae = 6 | | |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* = 27 | | |
| Gastropoda - Lymnaeidae = 62 | | |
| Hydropsychidae = 12 | | |
| Hydropsychidae - *Arctopsyche* = 2 | | |
| Perlidae - *Claassenia* = 1 | | |
| Perlodidae - *Isogenoides* = 29 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 5 MASS OF SAMPLE & BAG (g): 8.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 5 MASS OF SAMPLE (g): 4.8

DATE COLLECTED: 14.05.92 DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A. PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Well digested, approximately 80%. Approximately 20% of the sample was recently ingested = fresh, whole specimens. Relatively little inorganic and organic debris in the sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| *Baetis*-type | 3 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 7, 7, 7, 7, 9, 9, 8, 6, 7, 7, 6, 7, 8, 7, 8, 8, 10, 9, 7, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 9, 7, 7, 8, 7, 7, 9, 7, 6, 7, 8, 8, 7, 7, 8, 10, 7, 7, 8, 8, 8, 7, 9, 8, 9, 7, 9, 8, 8, 7, 8, 8, 8, 10, 7, 8, 7, 7, 8, 8, 8, 7, 7, 7, 9, 8, 8, 8, 10, 7, 7, 9, 8, 8, 7, 7, 8, 7, 7, 7, 8, 8, 7, 7, 9, 8, 8, 7, 9, 7, 7, 7, 8, 7 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Approximately 0.5 ml of white, gelatinous mucous in sample. Six hydropsychid heads and two *Ephemerella* (*Drunella*) *doddsi* counted.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 5

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* Empty Cases | 6, 9, 8, 7, 7, 8, 7, 7, 8, 7, 9, 9, 8, 8, 8, 7, 7, 8, 7, 7, 7, 6, 7, 6, 7, 8, 6, 8, 6, 7, 8, 7, 6, 8, 6 | Case lengths measured. |
| Chironomidae | 8, 6 | 100% intact. |
| Hydropsychidae P | 13 | Case length measured. |
| Hydropsychidae - *Hydropsyche* | 13, 13 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| *Baetis*-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 20 | | |
| Brachycentridae - *Brachycentrus* P = 75 | | |
| Chironomidae = 2 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 2 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae = 6 | | |
| Hydropsychidae - *Hydropsyche* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 12.4
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 11

MASS OF SAMPLE (g): 8.6

DATE COLLECTED: 14.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximatly 90% well digested and 10% fresh, recently ingested. Relatively moderate amounts of inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 20, 22, 21 | 100% intact. |
| *Baetis*-type | 6 | Limbs missing. |
| Brachycentridae - *Brachycentrus* P | 8, 7, 7 | Case length measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 16, 6 | Case length measured. |
| Chloroperlidae | 7 | Limbs missing. |
| Gastropoda - Lymnaeidae | 6, 3, 7, 6, 3, 4, 3, 3, 3, 4, 3, 4, 5 | Shell lengths measured. |
| Hydropsychidae P Empty Case | 16 | Case length measured. |
| Hydropsychidae - *Hydropsyche* | 13 | 100% intact. |
| Perlodidae - *Isogenoides* | 16, 14, 22, 15 | Limbs missing. |
| Perlodidae - *Isogenoides* | 9, 10, 8 | Head and thorax measured. Rest missing. |
| Tipulidae - *Hexatoma* | 22 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Baetid-type = 2, *Ephemerella* (*Drunella*) *doddsi* = 16, Heptageniidae = 1, Hydropsychidae = 3, Perlodidae - *Isogenoides* = 32, Plecoptera = 2.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Athercidae - *Atherix* = 3 | | |
| Baetid-type = 2 | | |
| *Baetis*-type = 1 | | |
| Brachycentridae - *Brachycentrus* P = 3 | | |
| Chloroperlidae = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 16 | | |
| Gastropoda - Lymnaeidae = 13 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 3 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Perlodidae - *Isogenoides* = 39 | | |
| Plecoptera = 2 | | |
| Tipulidae - *Hexatoma* = 1 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 11.3
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 7

MASS OF SAMPLE (g): 7.5

DATE COLLECTED: 14.05.92

DATE PROCESSED: 25.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 60% of the sample was well digested and 40% was fresh, whole specimens. Relatively moderate amounts of inorganic debris and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| *Baetis*-type | 2 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 12 | Case length measured. |
| Chironomidae | 5, 6, 5, 5, 6, 5, 5, 5, 5, 6, 6, 6, 5, 5, 3, 5, 5, 5, 5, 5, 5, 5 | 100% intact. |
| Empididae | 12, 3 | 100% intact. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 14 | Limbs missing. |
| Hydropsychidae P | 10, 12. 12, 12, | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 18, 20 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 13, 5, 15, 13, 5, 5, 15, 16, 18, 5, 16, 15, 6, 12, 6, 15, 15, 16, 15, 8, 16, 16, 15, 15, 17, 16, 9, 11, 11, 5, 14, 16, 17, 5, 18, 16, 16, 14, 12, 8, 15, 13, 4, 12, 13, 6. 16, 18, 11, 17, 7, 17, 15, 12, 10, 6. 18, 6, 16 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Approximately 1 ml of white, gelatinous mucous in sample. 220 hydropsychid (approx. 90% *Hydropsyche* and 10% *Arctopsyche*) heads and 2 chironomid heads counted.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| *Baetis*-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Chironomidae = 24 | | |
| Empididae = 2 | | |
| Ephemerellidae - *Ephemerella* {*Drunella*} *doddsi* = 1 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae = 220 | | |
| Hydropsychidae - *Arctopsyche* = 2 | | |
| Hydropsychidae - *Hydropsyche* = 59 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 11.0
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 5

MASS OF SAMPLE (g): 7.2

DATE COLLECTED: 14.05.92

DATE PROCESSED: 25.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 20% of the sample was well digested and 80% recently ingested - relatively fresh, whole specimens. Relatively large amounts of inorganic debris, associated with hydropsychid retreat material, in sample and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* Empty Cases | 9, 9 | Case length measured. |
| Chironomidae | 6, 5, 5, 4, 5, 4, 7 | 100% intact. |
| Hydropsychidae P | 11, 12, 11, 11, 12, 12, 12, 11, 12 | Case lengths measured. |
| Hydropsychidae - *Hydropsyche* | 7, 15, 17, 14, 9, 15, 14, 17, 14, 13, 6, 16, 7, 15, 6, 12, 10, 8, 13, 13, 8, 8, 12, 9, 4, 13, 11, 12, 11, 12 | 100% intact. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. 2 fish scales present. 58 hydropsychid heads counted, all *Hydropsyche*. Other heads counted: Baetid-type = 1, *Baetis*-type = 1, Chironomidae = 1, Perlidae - *Claassenia* = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 8

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Baetid-type = 1 | | |
| *Baetis*-type = 1 | | |
| Chironomidae = 8 | | |
| Hydropsychidae P = 9 | | |
| Hydropsychidae - *Hydropsyche* = 30 | | |
| Hydropsychidae = 58 | | |
| Perlidae - *Claassenia* = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 9

MASS OF SAMPLE & BAG (g): 7.7
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 4

MASS OF SAMPLE (g): 3.9

DATE COLLECTED: 14.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% fresh, whole specimens - recently ingested. Relatively large amount of inorganic debris and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Blephariceridae | 13 | 100% intact. |
| Brachycentridae - *Brachycentrus* | 9, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 9, 10, 6, 11, 11, 10, 11 | Case lengths measured. |
| Hydropsychidae - *Arctopsyche* | 25 | 100% intact. |
| Terrestrial - Hymenoptera - Formicidae A | 7 | 100% intact. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Brachycentridae - *Brachycentrus* = 5, *Ephemerella* (*Drunella*) *doddsi* = 5, Hydropsychidae = 28, Perlodidae - *Isogenoides* = 2, Plecoptera = 1. Approximately 90% of hydropsychid heads were *Hydropsyche* and 10% were *Actopsyche*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Welwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 9

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Blephariceridae = 1 | | |
| Brachycentridae - *Brachycentrus* = 7 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 5 | | |
| Hydropsychidae = 28 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Perlodidae - *Isogenoides* = 2 | | |
| Plecoptera = 1 | | |
| Terrestrial Hymenoptera - Formicidae Adult = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 18.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 11

MASS OF SAMPLE (g): 14.3

DATE COLLECTED: 14.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% of the sample was well digested and 20% was recently ingested - fresh, whole specimens. Relatively large amounts of inorganic and organic debris in the sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 20 | 100% intact. |
| Brachycentridae - *Brachycentrus* | 6 | Case length measured. |
| Ephemerellidae - *Ephemerella* (*Drunella*) sp. | 13 | Some limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 10, 12, 11, 13, 11, 14, 10, 12 | Limbs missing on most specimens. |
| Heptageniidae | 4 | Limbs missing. |
| Hydropsychidae P | 11, 10, 10 | Case lengths measured. |
| Hydropsychidae - *Arctopsyche* PreP | 12 | Case length measured. |
| Hydropsychidae - *Hydropsyche* | 10, 10 | 100% intact. |
| Perlodidae - *Isogenoides* | 16 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

2 Fish scales present. Heads counted: *Ephemerella* (*Drunella*) *doddsi* = 22, Heptageniidae = 2, Hydropsychidae = 28, Perlodidae - *Isogenoides* = 5. Approximately 70% of the hydropsychid heads were *Hydropsyche* and 30% were *Arctopsyche*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Athericidae - *Atherix* = 1 | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) sp. = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 30 | | |
| Heptageniidae = 3 | | |
| Hydropsychidae P = 3 | | |
| Hydropsychidae = 28 | | |
| Hydropsychidae - *Arctopsyche* PreP = 1 | | |
| Hydropsychidae - *Hydropsyche* = 2 | | |
| Perlodidae - *Isogenoides* = 6 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 11

MASS OF SAMPLE & BAG (g): 18.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 12

MASS OF SAMPLE (g): 14.8

DATE COLLECTED: 14.05.92

DATE PROCESSED: 25.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 90% of the sample was well digested and 10% recently ingested - fresh, whole specimens. Sample had relatively large amounts of inorganic debris and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Amphizoidae - *Amphizoa* A | 3 | 100% intact. |
| Athericidae - *Atherix* | 13 | 100% intact. |
| *Baetis*-type | 3 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 8, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 7, 10, 9, 11, 10, 10, 10, 10, 9, 8, 8, 9, 10, 9, 9, 8, 10, 7, 7, 9, 10, 9, 7, 9, 12, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 9, 8, 9, 9, 8, 9, 10, 7, 8, 10, 10, 9, 8, 8, 8, 9, 9, 10, 8, 7, 10, 7, 9, 11, 7, 10, 8, 8, 11, 7, 11, 10, 11, 10, 8, 10, 10, 10, 9, 8, 10, 8, 8, 6, 10, 9, 9, 10, 7, 10, 7, 10, 10, 12, 7, 6, 9, 10, 10, 7, 8, 7, 10, 7, 8, 8, 7, 8, 10, 8, 8, 7, 10, 7, 8, 8, 7, 11, 8, 8, 8, 9, 9, 9, 7, 11, 8, 10, 8, 8, 5, 9, 9 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Approximately 1 ml of white, gelatinous mucous in sample. Heads counted: Chironomidae = 1, *Ephemerella* (*Drunella*) *doddsi* = 1, Hyropsychidae = 20.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 11

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 4, 5, 5, 5 | 100% intact. |
| Chironomidae P | 3 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6 | Limbs missing. |
| Gastropoda - Lymnaeidae | 4, 3, 3, 7, 5, 3, 3, 5, 4, 4, 4, 3, 4, 4, 5, 4, 3, 2, 5, 4, 3, 3, 4, 5, 4, 3, 3, 3, 4, 4, 3, 5, 3, 3, 3, 3, 4, 3, 4, 3, 3, 4, 3, 3, 3, 3, 3, 4, 4, 3, 3, 3, 3, 5, 2, 3, 3, 4, 3, 4, 4, 3, 3, 3, 3, 3, 4, 4, 3, 4 | Shell length measured. |
| Hydropsychidae - *Hydropsyche* | 12, 20 | 100% intact. |
| **TOTAL NUMBERS:** | | |
| Amphizoidae - *Amphizoa* A = 1 | | |
| Athericidae - *Atherix* = 1 | | |
| *Baetis*-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Brachycentridae - *Brachycentrus* P = 28 | | |
| Chironomidae = 5 | | |
| Chironomidae P = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 1 | | |
| Gastropoda - Lymnaeidae = 72 | | |
| Hydropsychidae = 20 | | |
| Hydropsychidae - *Hydropsyche* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 12

MASS OF SAMPLE & BAG (g): 38.7
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 21

MASS OF SAMPLE (g): 34.8

DATE COLLECTED: 14.05.92

DATE PROCESSED: 25.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Relatively fresh specimens in sample. Sample was virtually all gastropods with soft tissue. Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 17 | 100% intact. |
| Brachycentridae - *Brachycentrus* | 8, 7, 8, 8 | Case lengths measured. |
| Ephemerellidae - *Ephemerella needhami* | 7 | Limbs missing. |
| Gastropoda - Lymnaeidae | 6, 3, 5, 2, 3, 3, 5, 3, 6, 10, 10, 2, 3, 4, 3, 3, 3, 2, 3, 2, 3, 3, 3, 5, 3, 6, 8, 3, 5, 3, 10, 3, 10, 4, 3, 2, 5, 10, 7, 4, 4, 5, 2, 2, 3, 3, 2, 3, 4, 3, 4, 4, 8, 3, 7, 3, 6, 5, 3, 2, 3, 2, 3, 7, 6, 3, 3, 2, 4, 3, 4, 3, 3, 4, 6, 3, 4, 7, 4, 2, 5, 4, 3, 6, 3, 2, 3, 2, 4 | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Two fish scales present. 609 lymnaeids counted but not meausured. Heads counted: Heptageniidae = 1, *Ephemerella* (*Drunella*) *doddsi* = 1, Hydropsychidae = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 2: Weldwood Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 12

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Heptageniidae | 8 | Limbs missing. |
| Perlidae - *Claassenia* | 22 | 100% intact. |
| Perlodidae - *Isogenoides* | 28, 18 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Athericidae - *Atherix* = 1 | | |
| Brachycentridae - *Brachycentrus* = 4 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 1 | | |
| Gastropoda - Lymnaeidae = 698 | | |
| Heptageniidae = 2 | | |
| Hydropsychidae = 1 | | |
| Perlidae - *Claassenia* = 1 | | |
| Perlodidae - *Isogenoides* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Northern Pike

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 22.2
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 9

MASS OF SAMPLE (g): 18.3

DATE COLLECTED: 14.05.92

DATE PROCESSED: 23.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One unidentifiable (well digested) fish in sample. Greater than 50% of the sample is a gelatinous grey mass.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - fish | 92 | Length of vertebrae measured. Head not measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 2: Weldwood Bridge

FISH SPECIES: Northern Pike

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 8.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 5

MASS OF SAMPLE (g): 4.3

DATE COLLECTED: 14.05.92

DATE PROCESSED: 23.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One Mountain Whitefish in sample, approximately 65 mm total length. Recently ingested fish, fresh & whole.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Mountain Whitefish | 65 | Total length. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 22.5
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 21

MASS OF SAMPLE (g): 18.7

DATE COLLECTED: 15.05.92

DATE PROCESSED: 17.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively moderate amounts of organic debris and little inorganic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 7, 7 | Limbs missing. |
| Blephariceridae | 16, 13, 13, 11, 12, 14 | 100% intact. |
| Brachycentridae - *Brachycentrus* | 8 | Case length measured. |
| Brachycentridae - *Brachycentrus* P | 7 | Case length measured. |
| Chloroperlidae | 7 | Some limbs missing. |
| Ephemerellidae - *Ephemerella needhami* | 7 | limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 12, 12, 11, 12, 11, 11, 10, 11, 12, 13, 12, 12, 11, 11, 14, 12, 11, 11, 11, 14, 13, 13, 10, 11, 11, 12, 11, 12, 11, 12, 11, 12, 12, 12, 11 | Limbs missing on most specimens. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 1 to 2 ml of white, gelatinous mucous in sample. Heads counted: Baetid-type = 4, Capniid-Chloroperlid-type = 2, *Ephemerella* (*Drunella*) *doddsi* = 125, Heptageniidae = 1, Hydropsychidae = 9, Perlodidae - *Isogenoides* = 19, Plecoptera = 3.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 1

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Hydropsychidae - *Hydropsyche* | 10, 11 | 100% intact. |
| Perlidae - *Claassenia* | 5 | 100% intact. |
| Perlodidae - *Isogenoides* | 16, 22, 20, 16 | Limbs may be missing. |
| Perlodidae - *Isogenoides* | 11, 13, 10 | Head and thorax measured. Limbs and abdomen missing. |
| Pteronarcyidae - *Pteronarcella* | 18 | Limbs missing. |
| Pteronarcyidae - *Pteronarcys* | 17 | Limbs missing. |
| Tipulidae P | 5 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 2 | | |
| Baetid-type = 4 | | |
| Blephariceridae = 6 | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Capniid-Chloroperlid-type = 2 | | |
| Chloroperlidae = 7 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* = 160 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 9 | | |
| Hydropsychidae - *Hydropsyche* = 2 | | |
| Perlidae - *Claassenia* = 1 | | |
| Perlodidae - *Isogenoides* = 22 | | |
| Plecoptera = 3 | | |
| Pteronarcyidae - *Pteronarcella* = 1 | | |
| Pteronarcyidae - *Pteronarcys* = 1 | | |
| Tipulidae P = 1 | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 21.5
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 18

MASS OF SAMPLE (g): 17.6

DATE COLLECTED: 15.05.92

DATE PROCESSED: 14.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A. PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 4 | Limbs missing. |
| Brachycentridae - *Brachycentrus* P | 9 | Case length measured. |
| Chironomidae | 7 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 7 | Limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 11, 13, 9, 10, 12, 13, 13, 12, 12, 12, 12, 11 | Limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 7, 6, 7, 8, 8, 7 | Head and thorax measured. Rest missing. Limbs missing. |
| Heptageniidae | 8, 14 | Limbs missing. |
| Hydropsychidae - *Hydropsyche* | 15, 11, 13 | 100% intact. |
| Perlidae - *Claassenia* | 8 | 100% intact. |
| Perlodidae - *Isogenoides* | 18, 17, 22, 22, 20, 24, 17, 22 | 100% intact. |
| Perlodidae - *Isogenoides* | 12, 11, 10, 8, 7, 8 | Head and thorax measured. Abdomen and limbs missing. |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 5 ml of thick, grey tissue in sample (stomach tissue?). Heads counted: Baetid-type = 1, *Ephemerella* (*Drunella*) *doddsi* = 68, Heptageniidae = 2, Hydropsychidae = 8, Perlidae - *Claassenia* = 6, Perlodidae - *Isogenoides* = 46, Plecoptera = 2.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 2

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Baetidae - *Baetis* = 1 | | |
| Baetid-type = 1 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Chironomidae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella {Drunella} doddsi* = 86 | | |
| Heptageniidae = 4 | | |
| Hydropsychidae = 8 | | |
| Hydropsychidae - *Hydropsyche* = 3 | | |
| Perlidae - *Claassema* = 7 | | |
| Perlodidae - *Isogenoides* = 60 | | |
| Plecoptera = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 26.2
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 28

MASS OF SAMPLE (g): 22.3

DATE COLLECTED: 15.05.92

DATE PROCESSED: 13.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A. PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 20, 25 | 100% intact. |
| Baetid-type | 4, 4 | Limbs and antenna missing. |
| Brachycentridae - *Brachycentrus* Empty Cases | 9, 7, 9, 10, 8, 7, 9, 7 | Empty case length measured. |
| Ephemerellidae - *Ephemerella needhami* | 7 | Limbs missing. |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* | 14, 11, 14, 12, 12, 13, 13, 12, 12, 12, 12, 13, 14 | Some or all limbs missing from most specimens. |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* | 7 | Head and thorax measured. Rest missing. |
| Gastropoda - Lymnaeidae | 13, 5 | Shell length measured. |
| Glossosomatidae - *Glossosoma* Empty Case | 12 | Case length measured. |
| Hydropsychidae | 20 | 100% intact. |
| Perlodidae | 4 | 100% intact. |
| Perlodidae - *Isogenoides* | 20, 17, 12 | 100% intact. |
| Perlodidae - *Isogenoides* | 15, 11, 12, 12 | Head and thorax measured. Abdomen and limbs missing. |
| Pteronarcyidae | 11 | Head and last 3 abdominal segments missing. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: *Ephemerella (Drunella) doddsi* = 48, Heptageniidae = 1, Hydropsychidae = 11, Perlodidae - *Isogenoides* = 18.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Athericidae - *Atherix* = 2 | | |
| Baetid-type = 2 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 62 | | |
| Gastropoda - Lymnaeidae = 2 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 12 | | |
| Perlodidae = 1 | | |
| Perlodidae - *Isogenoides* = 25 | | |
| Pteronarcyidae = 1 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 4 MASS OF SAMPLE & BAG (g): 15.8
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 14 MASS OF SAMPLE (g): 12.0

DATE COLLECTED: 15.05.92 DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A. PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetid-type | 6, 5, 7, 5, 5 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* P | 8, 9 | Case lengths measured. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 14, 12, 13, 12, 13 | Some or all limbs missing from most specimens. |
| Heptageniidae | 10 | Limbs and last 5 abdominal segments missing. |
| Hydropsychidae - *Arctopsyche* | 22 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 14 | 100% intact. |
| Perlidae - *Claassenia* | 24, 14, 18, 9 | Limbs missing. |
| Perlidae - *Claassenia* | 20 | Head missing. Thorax and abdomen measured. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Baetid-type = 1, *Ephemerella* (*Drunella*) *doddsi* = 7, Hydropsychidae = 11 (approx. 70% *Arctopsyche* and 30% *Hydropsyche*), Perlidae = 4, Perlidae - *Claassenia* = 14, Perlodidae - *Isogenoides* = 30, Plecoptera = 5.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 4

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Baetid-type = 6 | | |
| Brachycentridae - *Brachycentrus* P = 2 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 11 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 11 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Perlidae = 4 | | |
| Perlidae - *Claassenia* = 18 | | |
| Perlodidae - *Isogenoides* = 40 | | |
| Plecoptera = 5 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 9.8
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 12

MASS OF SAMPLE (g): 5.8

DATE COLLECTED: 15.05.92

DATE PROCESSED: 17.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* P | 9, 8, 8, 9 | Case length measured. |
| Chloroperlidae | 5 | Head and thorax measured. Abdomen and limbs missing. |
| Terrestrial - Coleoptera A | 4, 5, | Abdomen measured. Head and thorax missing. |
| | | |
| **TOTAL NUMBERS:** | | |
| Brachycentridae - *Brachycentrus* P = 4 | | |
| Chloroperlidae = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 2 | | |
| Terrestrial - Coleoptera A = 26 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Evidence (pieces of heads, limbs and abdomen) of many, noncountable *Ephemerella* (*Drunella*) *doddsi* and *Isogenoides* in sample. Approximately 1 ml of white, gelatinous slime in sample. Heads counted: *Ephemerella* (*Drunella*) *doddsi* = 2, Terrestrial Coleoptera A = 26.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 14.3
MASS OF BAG (g): 4.1

APPROXIMATE VOLUME (ml): 12

MASS OF SAMPLE (g): 10.2

DATE COLLECTED: 15.05.92

DATE PROCESSED: 14.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively moderate amounts of inorganic debris and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Beatis* | 7 | Limbs missing. |
| Baetid-type | 7, 7 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* | 8, 8, 7, 10, 6 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 10, 10, 9, 7, 10, 10, 8, 8, 8, 9, 8, 8, 11, 7, 10, 9, 8, 8, 9, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 7, 7, 7, 8, 7, 7, 8, 9, 6, 10, 9, 10, 6, 10, 8, 10, 8, 11, 8, 7, 10, 8, 9, 10, 8, 9, 8, 10, 8, 5, 7, 8, 9, 12, 8, 7, 7 | Case lengths measured. |
| Chironomidae | 5, 6, 5, 5, 5, 6, 5, 5, 5, 5, 5, 5, 5 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 2 ml of white, gelatinous mucous present. Parasitic nematods present. Two fish scales present. Heads counted: Baetid-type = 3, Chironomidae = 2, *Ephemerella needhami* = 1, Hydropsychidae = 15, Perlodidae - *Isogenoides* = 3, Perlodidae - *Isoperla* = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Ephemerellidae - *Ephemerella needhami* | 7, 7, 5, 6, 6, 8, 6, 8 | Some or all limbs missing from most specimens. |
| Glossosomatidae - *Glossosoma* | 11 | Case length measured. Specimen well digested. |
| Hydropsychidae P | 12, 10, 10, 12, 11, 10 | Case lengths measured. |
| Hydropsychidae - *Hydropsyche* | 13, 11, 12, 10, 14, 12, 4, 11, 11, 12, 5, 7, 11, 13, 4, 14 | 100% intact. |
| Perlodidae - *Isoperla* | 4 | Limbs missing. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 1 | | |
| Baetid-type = 5 | | |
| Brachycentridae - *Brachycentrus* = 5 | | |
| Brachycentridae - *Brachycentrus* P = 20 | | |
| Chironomidae = 15 | | |
| Ephemerellidae - *Ephemerella needhami* = 9 | | |
| Glossosomatidae - *Glossosoma* = 1 | | |
| Hydropsychidae P = 6 | | |
| Hydropsychidae = 15 | | |
| Hydropsychidae - *Hydropsyche* = 16 | | |
| Perlodidae - *Isogenoides* = 3 | | |
| Perlodidae - *Isoperla* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 10.4
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 11

MASS OF SAMPLE (g): 6.5

DATE COLLECTED: 15.05.92

DATE PROCESSED: 14.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole spcimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 6, 5 | Limbs missing. |
| Baetis-type | 7 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 10 | Case length measured. |
| Brachycentridae - *Brachycentrus* P | 10, 10, 9, 7, 10, 10, 10, 10, 9 | Case length measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 10, 8 | Case length measured. |
| Capniid-Chloroperlid-type | 5 | Limbs missing. |
| Chironomidae | 5, 5, 5, 6, 6 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 8, 8, 5, 5, 8, 5, 6, 7, 5, 7 | Some or all limbs missing on most specimens. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 11, 10, 12, 9, 12, 11, 12 | Some or all limb missing on most specimens. |
| Hydropsychidae P | 8 | Case length measured. |
| Hydropsychidae - *Hydropsyche* | 15, 8, 6, 12, 10 | 100% intact. |
| Perlodidae - *Isogenoides* | 15 | Head missing. Thorax and abdomen measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 2 ml of white, gelatinous mucous in sample. Heads counted: Baetid-type = 2, *Ephemerella needhami* = 4, *Ephemerella* (*Drunella*) *doddsi* = 38, Hydropsychidae = 11, Perlodidae - *Isogenoides* = 4, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Baetidae - *Baetis* = 2 | | |
| Baetid-type = 2 | | |
| Baetis-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Brachycentridae - *Brachycentrus* P = 9 | | |
| Capniid-Chloroperlid-type = 1 | | |
| Chironomidae = 5 | | |
| Ephemerellidae - *Ephemerella needhami* = 14 | | |
| Ephemerellidae - *Ephemeralla (Drunella) doddsi* = 45 | | |
| Hydropsychidae = 11 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae - *Hydropsyche* = 5 | | |
| Perlodidae - *Isogenoides* = 4 | | |
| Plecoptera = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 19.8
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 21

MASS OF SAMPLE (g): 15.8

DATE COLLECTED: 15.05.92

DATE PROCESSED: 12.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 9, 5, 4, 4, 6 | Some limbs missing on some specimens. |
| Baetid-type | 7, 7, 4 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* P | 9, 10, 8, 9 | Case length measured. |
| Capniidae | 8 | 100% intact. |
| Chironomidae | 6, 5, 6, 6, 7, 9 | 100% intact. |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* | 10, 12, 12, 13, 14 | Some or all limbs missing on most specimens. |
| Hydropsychidae P | 10 | Case length measured. |
| Hydropsychidae - *Arctopsyche* | 20, 26, 20, 17 | 100% intact. |
| Perlidae - *Claassenia* | 12 | 100% intact. |
| Perlidae - *Claassenia* | 10 | Head and thorax measured. Abdomen and limbs missing. |
| Perlodidae | 15 | Limbs and last 5 segments of abdomen missing. |
| Perlodidae | 10, 11, 10, 10, 10 | Head and thorax measured. Abdomen and limbs missing. |
| Perlodidae - *Isogenoides* | 18, 19, 18, 17, 18, 19, 18, 18, 17, 18, 15, 22, 19, 16, 17, 15 | Some or all limbs missing from most specimens. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Baetid-type = 5, *Ephemerella (Drunella) doddsi* = 42, Heptageniidae = 1, Hydropsychidae = 30 (approx. 50% *Arctopsyche* and 50% *Hydrpsyche*), Perlidae - *Claassenia* = 3, Perlodidae - *Isogenoides* = 46.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 8

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 5 | | |
| Baetid-type = 8 | | |
| Brachycentridae - *Brachycentrus* P = 4 | | |
| Capniidae = 1 | | |
| Chironomidae = 6 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 47 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 30 | | |
| Hydropsychidae - *Arctopsyche* = 4 | | |
| Hydropsychidae P = 1 | | |
| Perlidae - *Claassenia* = 5 | | |
| Perlodidae = 6 | | |
| Perlodidae - *Isogenoides* = 62 | | |
| Plecoptera = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 9

MASS OF SAMPLE & BAG (g): 16.3
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 14

MASS OF SAMPLE (g): 12.5

DATE COLLECTED: 15.05.92

DATE PROCESSED: 14.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 75% well digested and 25% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* P | 8, 10 | Case length measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 10, 10 | Case length measured. |
| Chironomidae | 6 | 100% intact. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 11, 11 | Limbs missing. |
| Hydropsychidae - *Artopsyche* | 22, 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 8 | 100% intact. |
| Perlidae - *Claassenia* | 16, 12 | Limbs missing. |
| Perlidae - *Claassenia* | 12 | Head and pro- & mesothorax measured. Rest missing. |
| Perlodidae - *Isogenoides* | 22, 18, 16, 22, 17 | Some or all limbs missing from all specimens. |
| Perlodidae - *Isogenoides* | 10, 12, 9, 10, 10 | Head and thorax measured. Abdomen and limbs missing. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods in sample. Two to four fish scales in sample. Heads counted: Baetid-type = 2, *Ephemerella* (*Drunella*) *doddsi* = 7, Heptageniidae = 2, Hydropsychidae = 10, Perlidae - *Claassenia* = 7, Perlodidae - *Isogenoides* = 106, Plecoptera = 5.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 9

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Baetid-type = 2 | | |
| Brachycentridae - *Brachycentrus* P = 2 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 9 | | |
| Heptageniidae = 2 | | |
| Hydropsychidae = 10 | | |
| Hydropsychidae - *Arctopsyche* = 2 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Perlidae - *Claassenia* = 10 | | |
| Perlodidae - *Isogenoides* = 116 | | |
| Plecoptera = 5 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 26.4
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 26

MASS OF SAMPLE (g): 22.5

DATE COLLECTED: 15.05.92

DATE PROCESSED: 13.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 6, 6, 5, 5 | 100% intact. |
| Baetid-type | 4 | Limbs missing. |
| Brachycentridae - *Brachycentrus* Empty Cases | 10 | Case length measured. |
| Capniid-Chloroperlid-type | 6, 4, 6, 6, 6, 5 | Some or all limbs missing from most specimens. |
| Capniid-Chloroperlid-type | 3 | Head and thorax measured. Abdomen and limbs missing. |
| Chironomidae | 7, 8, 5, 6, 5, 7, 5, 5, 6 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6, 8 | Limbs missing. |
| Ehpemerellidae - *Ephemerella (Drunella) doddsi* | 14, 10, 12, 12, 12 | Some or all limbs missing from most specimens. |
| Heptageniidae | 10, 7, 10 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 10, 16, 15, 20 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 11, 15, 8 | 100% intact. |
| Perlidae - *Claassenia* | 9, 29, 16, 13 | 100% intact. |
| Perlodidae - *Isogenoides* | 20, 16, 16, 18, 18, 10, 20, 17, 15, 18, 18, 13, 20, 16, 20 22, 22, 22, 20, 18, 18, 20, 20 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Remains of One fish (approx. 60 mm total length) in sample = either a burbot or sculpin. Parasitic nematods present. *Isogenoides* count underestimated because pieces of head parts (eyes, antennae, gena, etc.) observed in sample but not counted. Heads counted: Baetidae - *Baetis* = 2, *Ephemerella needhami* = 2, *Ephemerella* (*Drunella*) *doddsi* = 5, Heptageniidae = 3, Hydropsychidae = 7, Perlidae - *Claassenia* = 3, Perlodidae - *Isogenoides* = 95, Perlodidae - *Isoperla* = 2, Pteronarcyidae = 2, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 3: Obed Mountain Coal Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Perlodidae - *Isogenoides* | 11, 10, 10, 9, 9, 12, 11, 9, 10, 12, 12, 12, 8, 12 | Head and thorax measured. Abdomen and limbs missing. |
| Perlodidae - *Isoperla* | 8, 12, 7, 7 | 100% intact. |
| Plecoptera | 18 | Exoskeletal remains only, limbs missing. |
| Pteronarcyidae | 18 | Limbs and gills missing. |
| Vertebrate - fish - Burbot or Sculpin | 60 | Well digested. Total length estimated. |
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 6 | | |
| Baetid-type = 1 | | |
| Capniid-Chloroperlid-type = 7 | | |
| Chironomidae = 9 | | |
| Ephemerellidae - *Ephemerella needhami* = 4 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 10 | | |
| Heptageniidae = 6 | | |
| Hydropsychidae = 7 | | |
| Hydropsychidae - *Arctopsyche* = 4 | | |
| Hydropsychidae - *Hydropsyche* = 3 | | |
| Perlidae - *Claassenia* = 7 | | |
| Perlodidae - *Isogenoides* = 117 | | |
| Perlodidae - *Isoperla* = 6 | | |
| Plecoptera = 2 | | |
| Pteronarcyidae = 3 | | |
| Vertebrate - fish - Burbot or Sculpin = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 24.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 19

MASS OF SAMPLE (g): 20.3

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 18.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively large amounts (approx. 90% by volume) of inorganic debris in sample and little organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* | 7, 7 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* | 8, 8, 9, 7, 8, 8, 6, 10, 11, 9, 8, 7, 9, 8, 8, 10, 10, 8, 7, 10, 10, 9, 9, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 6, 5, 9, 7, 10 | Case lengths measured. |
| Chironomidae | 5, 5, 5, 4, 5, 6, 5 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 4 | Head and thorax measured. Abdomen and limbs missing. |
| Hydropsychidae - *Arctopsyche* | 7, 24 | Head and thorax measured. Abdomen and limbs missing. |
| Hydropsychidae - *Hydropsyche* | 15, 13, 13, 5, 10, 10, 12, 8, 5 | 100% intact. |
| Hydropsychidae - *Hydropsyche* PreP | 13 | 100% intact. |
| Hydropsychidae P | 6, 6 | Head and thorax measured. Abdomen missing. |
| Hydropsychidae P | 12 | Case length measured. |
| Perlidae - *Claassenia* | 12 | Limbs missing. |
| Perlodidae | 9 | Limbs missing. Looks like *Isoperla*. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Fish scales present. Parasitic nematods present. Heads counted: Baetid-type = 1, Hydropsychidae = 34, Perlodidae - *Isogenoides* = 3.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 1

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Baetid-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 2 | | |
| Brachycentridae - *Brachycentrus* P = 24 | | |
| Chironomidae = 7 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Hydropsychidae - *Arctopsyche* = 2 | | |
| Hydropsychidae - *Hydropsyche* = 9 | | |
| Hydropsychidae - *Hydropsyche* PreP = 1 | | |
| Hydropsychidae = 34 | | |
| Hydropsychidae P = 2 | | |
| Perlidae - *Claassenia* = 1 | | |
| Perlodidae = 1 | | |
| Perlodidae - *Isogenoides* = 3 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 6.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 3

MASS OF SAMPLE (g): 2.3

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 18.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Arachnoida - Acari | 1 | 100% intact. |
| Brachycentridae - *Brachycentrus* P | 9, 7, 8, 9, 8, 10 | Case lengths measured. |
| Chironomidae | 5, 4 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6, 8 | Limbs missing. |
| Heptageniidae | 13 | Limbs missing. |
| Hydropsychidae - *Hydropsyche* | 13, 14, 15, 14, 12, 13, 14, 14, 13 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Arachnoida - Acari = 1 | | |
| Brachycentridae - *Brachycentrus* P = 6 | | |
| Chironomidae = 2 | | |
| Ephemerellidae - *Ephemerella needhami* = 5 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 12 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Heads counted: *Epemerella needhami* = 3, Hydropsychidae = 12 (at least 90% *Hydropsyche* the remaining were *Arctopsyche*), Perlidae - *Claassenia* = 2, Perlodidae - *Isogenoides* = 2, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 2

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Hydropsychidae - *Hydropsyche* = 9 | | |
| Perlidae - *Claassenia* = 2 | | |
| Perlodidae - *Isogenoides* = 2 | | |
| Plecoptera = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 10.0
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 8

MASS OF SAMPLE (g): 6.2

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 19.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively large amounts of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Ametropodidae - *Ametropus* | 14 | 4 limbs missing. |
| Athericidae - *Atherix* | 6 | 100% intact. |
| Brachycentridae - *Brachycentrus* P | 7, 8, 9, 9, 8, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 9, 7, 7, 7 | Case lengths measured. |
| Chironomidae | 5, 6, 5, 5, 5 | 100% intact. |
| Chloroperlidae | 5 | Limbs missing. |
| Ephemerellidae - *Ephemerella needhami* | 12, 7, 6 | Limbs missing. |
| Hydropsychidae - *Hydropsyche* | 16, 5, 12, 10, 11, 13 | 100% intact. |
| Hydropsychidae P | 7, 8 | Case lengths measured. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematodes present. Heads counted: *Ephemerlla* (*Drunella*) *doddsi* = 1, Hydropsychidae = 61 (approx. 90% *Hydropsyche* and 10% *Artopsyche*), Perlidae - *Claassenia* = 1, Perlodidae - *Isogenoides* = 2.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Ametropodidae - *Ametropus* = 1 | | |
| Athericidae - *Atherix* = 1 | | |
| Brachycentridae - *Brachycentrus* P = 4 | | |
| Chironomidae = 5 | | |
| Chloroperlidae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 3 | | |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* = 1 | | |
| Hydropsychidae = 61 | | |
| Hydropsychidae - *Hydropsyche* = 6 | | |
| Hydropsychidae P = 2 | | |
| Perlidae - *Claassenia* = 1 | | |
| Perlodidae - *Isogenoides* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 12.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 7

MASS OF SAMPLE (g): 8.6

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 19.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Arachnoida - Acari | 3 | 100% intact. |
| Baetis-type | 8 | Limbs missing. |
| Brachycentridae - *Brachycentrus* P | 10 | Case length measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 10, 7, 7, 5, 6 | Case lengths measured. |
| Chironomidae | 7, 6, 6, 6, 5, 6, 6, 5, 6, 7, 7, 6, 6, 6, 6, 5, 5, 5, 5, 6, 6, 5, 6, 5, 6, 5, 6, 5, 6, 6, 5, 6, 6, 6, | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 5, 7 | Limbs missing. |
| Gastropoda - Lymnaeidae | 5, 4 | Shell lengths measured. |
| Hydropsychidae - *Hydropsyche* | 12, 14, 10, 9, 16, 15, 15, 17, 16, 18, 14, 15, 10, 12, 15, 18, 18, 13, 15, 15, 16, 13, 16 | 100% intact. |
| Hydropsychidae P | 16, 12, 16, 12, 10, 10 | Case lengths measured. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods presnet. Heads counted: Chironomidae = 4, Hydropsychidae = 85 (approx. 100% *Hydropsyche*), *Ephemerella needhami* = 7, Perlodidae - *Isogenoides* = 9.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 4

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Arachnoida - Acari = 1 | | |
| Baetis-type = 1 | | |
| Brachycentridae - *Brachycentrus* P = 6 | | |
| Chironomidae = 38 | | |
| Ephemerellidae - *Ephemerella needhami* = 9 | | |
| Gastropoda - Lymnaeidae = 2 | | |
| Hydropsychidae - *Hydropsyche* = 23 | | |
| Hydropsychidae = 85 | | |
| Hydropsychidae P = 6 | | |
| Perlodidae - *Isogenoides* = 9 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 15.8
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 13

MASS OF SAMPLE (g): 12.0

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 18.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 22, 24, 23 | 100% intact. |
| Brachycentridae - *Brachycentrus* P | 8, 7 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 9, 9, 7, 8, 7, 10, 8 | Case lengths measured. |
| Chironomidae | 10 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 10 | Abdomen and thorax mesured. Head and limbs missing. |
| Gastropoda - Lymnaeidae | 4 | Shell length mesured. |
| Gastropoda - Lymnaeidae | 6 | Shell broken. Approx. 1/2 of specimen measured. |
| Hydropsychidae - *Arctopsyche* | 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12 | 100% intact. |
| Molannidae P | 8 | Case length measured. |
| Perlidae - *Claassenia* | 24 | Limbs missing. |
| Perlodidae - *Isogenoides* | 17, 16, 18 | Limbs missing from all specimens. |
| Perlodidae - *Isogenoides* | 9, 11, 9, 11, 11, 10, 10, 11 | Head and thorax measured. Abdomen and limbs missing. |
| Perlodidae - *Isoperla* | 7 | Limbs missing. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

2 to 3 Fish scales present. Heads counted: Baetis-type = 2, *Ephemerella needhami* = 10, Heptageniidae = 5, Hydropsychidae = 17, Perlidae - *Claassenia* = 1, Perlodidae - *Isogenoides* = 63, Plecoptera = 6.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 5

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Athericidae - *Atherix* = 3 | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* P = 2 | | |
| Chironomidae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 10 | | |
| Gastropoda - Lymnaeidae = 2 | | |
| Heptageniidae = 5 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Hydropsychidae = 17 | | |
| Molannidae P = 1 | | |
| Perlidae - *Claassenia* = 2 | | |
| Perlodidae - *Isogenoides* = 74 | | |
| Perlodidae - *Isoperla* = 1 | | |
| Plecoptera = 6 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 43.4
MASS OF BAG (g): 3.9
MASS OF SAMPLE (g): 39.5

APPROXIMATE VOLUME (ml): 42

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 18.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 75% well digested and 25% recently ingested (freshe, whole specimens). Relatively moderate amounts of inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 7, 6, 5 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 9 | Case length measured. |
| Brachycentridae - *Brachycentrus* P | 8 | Case length measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8 | Case length measured. |
| Chironomidae | 4, 7, 5 | 100% intact. |
| Ephemerellidae - *Ephemrerella needhami* | 7, 6 | 100% intact. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 11, 12 | Limbs missing. |
| Heptageniidae | 8, 10, 7, 8 | Some or all limbs missing from most specimens. |
| Heptageniidae | 6 | Head and thorax measured. Abdomen and limbs missing. |
| Hydropsychidae - *Arctopsyche* | 20, 22, 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12, 11, 16, 13, 12, 8, 13, 14, 12, 11, 14 | 100% intact. |
| Hydropsychidae P | 11 | Case length measured. |
| Perlidae - *Claassenia* | 15, 6, 10, 13, 15 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Six fish(?) eggs (approx. 4 mm dia.) in sample. Heads counted: Baetid-type = 8, Baetis type = 2, Chironomidae = 2, *Ephemerella* (*Drunella*) *doddsi* = 6, Heptageniidae = 9, Hydropsychidae = 19, Perlidae - *Claassenia* = 1, Perlodidae - *Isogenoides* = 119, Plecoptera = 5.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Perlidae - *Claassenia* | 15, 7 | Head and thorax measured. Abdomen and limbs missing. |
| Perlidae - *Hesperoperla* | 11 | 100% intact. |
| Perlodidae - *Isogenoides* | 21, 17, 22, 20, 24, 18, 17, 23, 17, 17, 17, 18, 18, 19, 18, 17, 15, 14, 18, 13, 16, 18, 17, 19, 17, 19, 22, 18, 19, 19, 18, 18, 21, 16, 23 | Some or all limbs missing from most specimens. |
| Perlodidae - *Isogenoides* | 14, 10, 12, 11, 12, 11, 11, 10, 10, 10, 11, 10, 11, 10, 11 | Head and thorax mesured. Abdomen and limbs missing. |
| Perlodidae - *Isoperla* | 8 | Limbs missing. |
| Perlodidae | 8 | Some limbs missing. |
| Pteronarcyidae - *Pteronarcella* | 18 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetid-type = 8 | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* = 1 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Chironomidae = 5 | | |
| Ephemerellidae - *Ephemerella needhami* = 2 | | |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* = 8 | | |
| Heptageniidae = 14 | | |
| Hydropsychidae - *Arctopsyche* = 3 | | |
| Hydropsychidae - *Hydropsyche* = 11 | | |
| Hydropsychidae = 19 | | |
| Hydropsychidae P = 1 | | |
| Perlidae - *Claassenia* = 6 | | |
| Perlidae - *Hesperoperla* = 1 | | |
| Perlodidae = 1 | | |
| Perlodidae - *Isogenoides* = 169 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Perlodidae - *Isoperla* = 1 | | |
| Pteronarcyidae - *Pteronarcella* = 1 | | |
| Plecoptera = 5 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 8.4
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 3

MASS OF SAMPLE (g): 4.6

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 19.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30 recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 6, 8, 5, 5, 4, 6, 6 | 100% intact. |
| Chironomidae P | 4 | 100% intact. |
| Chloroperlidae | 7, 7, 9, 6, 6 | Some or all limbs missing from all specimens. |
| Ephemerellidae - *Ephemerella needhami* | 7, 12, 10, 6, 6, 4 | Some or all limbs missing from most specimens. |
| Gastropoda - Lymnaeidae | 3 | Shell length measured. |
| Heptageniidae | 7, 12, 6, 8 | Limbs missing from all specimens. |
| Hydropsychidae - *Arctopsyche* | 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 9, 16 | 100% intact. |
| Perlodidae - *Isogenoides* | 18, 10, 16, 20 | Some or all limbs missing on all specimens. |
| Perlodidae - *Isogenoides* | 9, 10, 11 | Head and thorax measured. Abdomen and limbs missing. |
| Perlodidae - *Isoperla* | 8 | Limbs missing. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 1/2 ml of white, gelatinous mucous in sample. Heads counted: Baetid-type = 1, Baetis-type = 3, Chironomidae = 2, Chloroperlidae = 2, *Ephemerella needhami* = 4, *Ephemerella* (*Drunella*) *doddsi* = 2, Heptageniidae = 6, Hydropsychidae = 4, Perlodidae - *Isogenoides* = 15, Plecoptera = 3.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Baetid-type = 1 | | |
| Baetis-type = 3 | | |
| Chironomidae = 9 | | |
| Chironomidae P = 1 | | |
| Chloroperlidae = 7 | | |
| Ephemerellidae - *Ephemerella needhami* = 7 | | |
| Ephemerellidae - *Ephemerella {Drunella} doddsi* = 2 | | |
| Gastropoda - Lymnaeidae = 1 | | |
| Heptageniidae = 10 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 2 | | |
| Hydropsychidae = 4 | | |
| Perlodidae - *Isogenoides* = 22 | | |
| Perlodidae - *Isoperla* = 1 | | |
| Plecoptera = 3 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 22.0
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 24

MASS OF SAMPLE (g): 18.2

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 17.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested. Relatively little inorganic and organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 13 | 100% intact. |
| Baetidae - *Baetis* | 7 | 100% intact. |
| Blephariceridae | 11 | 100% intact. |
| Brachycentridae - *Brachycentrus* P | 9 | Case length measured. |
| Chironomidae | 7, 6 | 100% intact. |
| Chloroperlidae | 8 | Limbs missing. |
| Ephemerellidae - *Ephemerella needhami* | 4 | Head and thorax measured. Abdomen and limbs missing. |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* | 10, 12, 10 | 100% intact. |
| Heptageniidae | 10 | Limbs missing. |
| Hydropsychidae - *Hydropsyche* | 12, 20, 14, 12, 16 | 100% intact. |
| Perlidae - *Claassenia* | 12, 12 | 100% intact. |
| Perlodidae - *Isogenoides* | 17, 17, 17, 17, 18, 16, 18, 17, 17, 17, 15, 20, 13, 22, 20, 17, 17, 15, 18, 16, 24, 18, 14, 16, 17, 13, 24, 15 | Some or all limbs missing from most specimens. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

One fish scale found in sample. Heads counted: Chironomidae = 1, *Ephemerella needhami* = 2, *Ephemerella (Drunella) doddsi* = 15, Heptageniidae = 15, Hydropsychidae = 13, Perlidae - *Claassenia* = 4, Perlodidae - *Isogenoides* = 101.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 8

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Perlodidae - *Isogenoides* | 10, 10, 10, 11, 12, 10, 10, 11, 10, 9, 10, 11, 10, 8 | Head and thorax measured. Abdomen and limbs missing. |
| Perlodidae - *Isoperla* | 7 | 100% intact. |
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| TOTAL NUMBERS: | | |
| Athericidae - *Atherix* = 1 | | |
| Baetidae - *Baetis* = 1 | | |
| Blephariceridae = 1 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Chironomidae = 3 | | |
| Chloroperlidae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 3 | | |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* = 18 | | |
| Heptageniidae = 16 | | |
| Hydropsychidae - *Hydropsyche* = 5 | | |
| Hydropsychidae = 13 | | |
| Perlidae - *Claassenia* = 6 | | |
| Perlodidae - *Isogenoides* = 143 | | |
| Perlodidae - *Isoperla* =1 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 10.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 8

MASS OF SAMPLE (g): 6.3

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 17.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested. Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 6 | Limbs missing. |
| Baetid-type | 5 | Limbs missing. |
| Brachycentridae - *Brachycentrus* P | 10 | Case length measured. |
| Chironomidae | 5, 5 | 100% intact. |
| Chloroperlidae | 6 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 7 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 13, 19 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 5, 11, 12, 12, 15 | 100% intact. |
| Perlidae - *Claassenia* | 11 | 100% intact. |
| Perlodidae - *Isogenoides* | 12, 13, 19, 17, 17, 17, 16, 17 | Some or all limbs missing from most specimens. |
| Perlodidae - *Isogenoides* | 9, 9, 10, 9, 10, 10, 10 | Head and thorax measured. Abdomen and limbs missing. |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Two fish scales in sample. Heads counted: Baetis-type = 3, Chironomidae = 1, Chloroperlidae = 1, *Ephemerella* (*Drunella*) *doddsi* = 3, Heptageniidae = 2, Hydropsychidae = 7, Perlodidae - *Isogenoides* = 43, Terrestrial - Coleoptera A = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 4: Emerson Lakes Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 1 | | |
| Baetid-type = 1 | | |
| Baetis-type = 3 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Chironomidae = 3 | | |
| Chloroperlidae = 2 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 3 | | |
| Heptageniidae = 2 | | |
| Hydropsychidae - *Arctopsyche* = 2 | | |
| Hydropsychidae - *Hydropsyche* = 5 | | |
| Hydropsychidae = 7 | | |
| Perlidae - *Claassenia* = 1 | | |
| Perlodidae - *Isogenoides* = 58 | | |
| Terrestrial - Coleoptera A = 1 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 4: Emerson Lakes Bridge

FISH SPECIES: Northern Pike

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 122.0
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 128

MASS OF SAMPLE (g): 118.2

DATE COLLECTED: 16 & 18.05.92

DATE PROCESSED: 18.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish (White Sucker) in sample. No invertebrates. Head of fish well digested.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Fish - White Sucker | 220 | Total length estimated. Head well digested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 8.5
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 6

MASS OF SAMPLE (g): 4.6

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 28.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively large amount of inorganic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 20, 17 | 100% of exoskeleton intact. |
| Baetis-type | 5 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 3, 8, 10 | Case lengths measured. |
| Chironomidae | 5 | 100% intact. |
| Glossosomatidae - *Glossosoma* | 7, 7, 7, 7, 7, 6, 6 | 100% intact. |
| Heptageniidae | 5 | Head and thorax measured. Abdomen and limbs missing. |
| Hydropsychidae - *Hydropsyche* | 11, 14, 6, 11, 5 | 100% intact. |
| Plecoptera | 4, 4, 3 | Limbs missing, specimens in poor condition. |
| TOTAL NUMBERS: | | |
| Athericidae - *Atherix* = 2 | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* = 3 | | |
| Chironomidae = 1 | | |
| Glossosomatidae - *Glossosoma* = 7 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Baetis-type = 1, Heptageniidae = 1, Hydropsychidae = 13.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 5: Berland Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 1

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Heptageniidae = 2 | | |
| Hydropsychidae = 13 | | |
| Hydropsychidae - *Hydropsyche* = 5 | | |
| Plecoptera = 3 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 12.0
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 8

MASS OF SAMPLE (g): 8.2

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 01.09.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 60% well digested and 40% recently ingested (fresh, whole specimens). Relatively moderate amounts of organic debris and little inorganic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 6, 6, 7 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 10, 12, 8, 10, 8, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 9 | Case length measured. |
| Chironomidae | 4 | 100% intact. |
| Empididae | 5 | 100% intact. |
| Perlodidae - *Isogenoides* | 11 | Head and thorax measured. Abdomen and limbs missing. |
| Vertebrate - fish | 30, 40 | Well digested. Unidentifiable. Total lengths estimated. |
| TOTAL NUMBERS: | | |
| Baetis-type = 6 | | |
| Brachycentridae - *Brachycentrus* = 6 | | |
| Brachycentridae - *Brachycentrus* P = 1 | | |
| Chironomidae = 4 | | |
| Empididae = 1 | | |
| Hydropsychidae = 5 | | |
| Perlodidae - *Isogenoides* = 1 | | |
| Plecoptera = 2 | | |
| Vertebrate - fish = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Heads counted: Baetis-type = 3, Hydropsychidae = 5, Plecoptera = 2. Remains of two fish (approx. 30 and 40 mm total length) in sample. Fish unidentifiable, well digested = only pieces of flesh on bone.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 17.4
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 18

MASS OF SAMPLE (g): 13.7

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Ametropodidae - *Ametropus* | 18 | 100% intact. |
| Arachnoida - Acari | 1 | 100% intact. |
| Athericidae - *Atherix* | 18 | 100% intact. |
| Brachycentridae - *Brachycentrus* | 8, 8, 9, 8, 8, 8, 9, 8, 9, 9, 8, 8, 9, 9, 9, 6, 9, 9, 8, 10, 8, 8, 8, 8, 9, 8, 8, 10, 9, 7, 8, 7, 8, 10, 9, 10, 8, 9, 9, 9, 8, 8, 7, 10, 9, 7, 8, 9, 8, 9, 9, 8, 7, 7, 8, 9, 8, 9, 9, 8, 8, 9, 8, 8 | Case lengths mesured. |
| Brachycentridae - *Brachycentrus* P | 9, 10, 10, 11 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 8, 7, 7, 10, 10, 7, 7, 8, 10 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Three fish scales in sample. Parasitic nematods in sample. Heads counted: Baetis-type = 1, Brachycentridae - *Brachycentrus* = 164, *Ephemerella* (*Drunella*) sp. = 1, Heptageniidae = 1, Hydropsychidae = 34, Perlodidae - *Isogenoides* = 1, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 5: Berland Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 4, 5, 5, 4 | 100% intact. |
| Chloroperlidae | 4 | Limbs missing. |
| Empididae | 7, 5, 5 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6, 5 | Limbs missing. |
| Glossosomatidae - *Glossosoma* | 7 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12, 10, 9, 11, 4, 4, 7, 11, 11, 12, 14, 8, 3, 15, 11, 8 | 100% intact. |
| Leptoceridae - Oecetis/Ceraclea-type | 7, 7 | Case lengths measured. |
| Perlodidae | 10 | Limbs missing. |
| Pteronarcyidae | 6, 20 | Some limbs and gills missing. |
| Tipulidae P | 5 | 100% intact. |
| TOTAL NUMBERS: | | |
| Ametropodidae - *Ametropus* = 1 | | |
| Arachnoida - Acari = 1 | | |
| Athericidae - *Atherix* = 1 | | |
| Baetis-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 228 | | |
| Brachycentridae - *Brachycentrus* P = 4 | | |
| Chironomidae = 4 | | |
| Chloroperlidae = 1 | | |
| Empididae = 3 | | |
| Ephemerellidae - *Ephemerella needhami* = 2 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) sp. = 1 | | |
| Glossomatidae - *Glossosoma* = 1 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 34 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 16 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 5: Berland Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Leptoceridae - Oecetis/Ceraclea-type = 2 | | |
| Perlodidae = 1 | | |
| Perlodidae - *Isogenoides* = 1 | | |
| Plecoptera = 1 | | |
| Pteronarcyidae = 3 | | |
| Tipulidae P = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 7.2
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 3

MASS OF SAMPLE (g): 3.4

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 30.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 90% well digested and 10% recently ingested (fresh, whole specimens). Relatively moderate amounts of organic debris and little inorganic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Perlodidae - *Isogenoides* | 17, 16 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 1 | | |
| Hydropsychidae = 7 | | |
| Perlodidae - *Isogenoides* = 11 | | |
| Pteronarcyidae = 1 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 1 ml of yellow fluid in sample. Heads counted: *Ephemerella* (*Drunella*) *doddsi* = 1, Hydropsychidae = 7, Perlodidae - *Isogenoides* = 9, Pteronarcyidae = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 7.5
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 6

MASS OF SAMPLE (g): 3.8

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 30.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 75% well digested and 25% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample. However, all specimens have cases.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* | 8, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 10, 8, 8, 8, 10, 10, 9, 10, 7, 10, 10, 10, 10, 10, 11, 11, 10, 10, 10, 10, 10, 8, 8, 10, 8, 8, 8, 10, 8, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 10, 9, 9, 6, 8, 8, 8, 9, 8, 10, 8, 11, 11, 8, 11, 8, 8, 8, 10, 8, 8, 9, 8, 8, 9 | Case lengths measured. |
| | | |
| **TOTAL NUMBERS:** | | |
| Brachycentridae - *Brachycentrus* = 3 | | |
| Brachycentridae - *Brachycentrus* P = 31 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 10.6
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 10

MASS OF SAMPLE (g): 6.9

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 28.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively large amounts of inorganic debris and little organic debris. However, sample was relativel oily (digestive juices?).

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Athericidae - *Atherix* | 20 | 100% intact. |
| Brachycentridae - *Brachycentrus* | 11, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 13, 11, 12, 11, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 11, 9, 10, 10, 10 | Case lengths measured. |
| Chironomidae | 5, 5, 4 | 100% intact. |
| Chloroperlidae | 12, 10 | 100% intact. |
| Chloroperlidae | 5, 5 | Head and thorax measured. Abdomen and limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 10 | Limbs missing. |
| Heptageniidae | 10 | Limbs missing. |
| Hydropsychidae P | 8 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 26 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12, 13 | 100% intact. |
| Perlodidae - *Isogenoides* | 18 | Limbs missing. |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Filamentous blue-green algae in sample. Heads counted: Baetid-type = 13, *Brachycentrus* = 5, Chloroperlidae = 4, *Ephemerella* (*Drunella*) *doddsi* = 10, Heptageniidae = 9, Hydropsychidae = 27, Perlidae - *Claassenia* = 4, Perlodidae - *Isogenoides* = 20.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 5: Berland Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Athericidae - *Atherix* = 1 | | |
| Baetid-type = 13 | | |
| Brachycentridae - *Brachycentrus* = 7 | | |
| Brachycentridae - *Brachycentrus* P = 5 | | |
| Chironomidae = 3 | | |
| Chloroperlidae = 9 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 11 | | |
| Heptageniidae = 10 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae = 27 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 2 | | |
| Perlidae - *Claassenia* = 4 | | |
| Perlodidae - *Isogenoides* = 21 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 17.8
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 17

MASS OF SAMPLE (g): 14.1

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 29.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 75% well digested and 25% recently ingested (fresh, whole specimens). Relatively large amounts of organic debris and moderate amounts of inorganic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 4, 7 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 8, 10, 10, 7, 10, 10, 8, 8, 8, 8, 8, 10, 7, 8, 10, 10, 9, 11 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 8, 8, 8, 10, 11, 10, 10, 10, 10, 8, 8, 9, 12, 11, 10, 10, 10, 11, 10, 9, 10, 11, 9, 12, 8, 11, 9, 9, 9, 8, 9, 8, 10, 8, 11, 11, 10, 8, 11, 8, 12, 10, 8, 11, 10, 11, 10, 10, 11, 11, 8, 11, 8, 8, 11, 12, 9 | Case lengths mesured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 1 to 2 ml of white, gelatinous mucous in sample. parasitic nematods present. Heads counted: *Brachycentus* = 4, Chironomidae = 2, *Ephemerella* (*Drunella*) *doddsi* = 4, Heptageniidae = 2, Hydropsychidae = 37, Perlodidae - *Isogenoides* = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 5: Berland Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 5, 5, 6, 6, 5 | 100% intact. |
| Gastropoda - Lymnaeidae | 6, 6, 5, 6, 5, 5 | Shell length measured. |
| Hydropsychidae P | 8, 8 | Case lengths measrued. |
| Hydropsychidae - *Arctopsyche* | 20 | 100% intact. |
| Perlodidae - *Isogenoides* | 11 | Head and thorax measured. Abdomen and limbs missing. |
| | | |
| TOTAL NUMBERS: | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* = 22 | | |
| Brachycentridae - *Brachycentrus* P = 58 | | |
| Chironomidae = 7 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 4 | | |
| Gastropoda - Lymnaeidae = 6 | | |
| Heptageniidae = 2 | | |
| Hyropsychidae = 37 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae P = 2 | | |
| Perlodidae - *Isogenoides* = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 8.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 7

MASS OF SAMPLE (g): 4.8

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 80% well digested and 20% recently ingested (fresh, whole specimens). Relatively large amounts of organic debris and little inorganic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* | 7, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 10 | Case lengths measured. |
| | | |
| TOTAL NUMBERS: | | |
| Brachycentridae - *Brachycentrus* = 2 | | |
| Brachycentridae - *Brachycentrus* P = 2 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 7 | | |
| Hydropsychidae = 29 | | |
| Perlodidae - *Isogenoides* = 1 | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Two fish scales in sample. Extraordinary amounts of vegetable material (macrophytes and blue-green algae) in sample. Heads counted: *Ephemerella* (*Drunella*) *doddsi* = 7, Hydropsychidae = 29, Perlodidae - *Isogenoides* = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 9

MASS OF SAMPLE & BAG (g): 3.8
MASS OF BAG (g): 3.6

APPROXIMATE VOLUME (ml): <1

MASS OF SAMPLE (g): 0.2

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% of sample = filamentous blue-green algae and other organic debris. Approximately 50% of sample = orange-yellow gelatinous mucous. No invertebrates found.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
Empty, no animals in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 6.5
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 3

MASS OF SAMPLE (g): 2.7

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 31.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 90% well digested and 10% recently ingested (fresh, whole specimens). Relatively large amounts of organic debris and little inorganic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 5 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* P | 8 | Case length measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 10, 8, 10 | Case length measured. |
| Chironomidae | 7 | 100% intact. |
| Gastropoda - Lymnaeidae | 5 | Shell length measured. |
| Hydropsychidae - *Hydropsyche* | 12 | 100% intact. |
| Terrrestrial - Hymenoptera - Formicidae A | 15 | 100% intact. Winged. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentus* P = 1 | | |
| Chironomidae = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Large amounts of filamentous blue-green algae in sample. Heads counted: Baetis-type = 1, Hydropsychidae = 4, Terrestrial - Formicidae = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 5: Berland Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Gastropoda - Lymnaeidae = 1 | | |
| Hydropsychidae = 4 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Terrestrial - Hymenoptera - Formicidae A = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Northern Pike

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 54.7
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 45

MASS OF SAMPLE (g): 51.0

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 27.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish in sample. No invertebrates. Specimen was most proabably a White Sucker. The head was digested. The specimen was approximately 177 mm total length in size.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Fish - White Sucker | 177 | Head digested. Total length estimated. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Northern Pike

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 4.1
MASS OF BAG (g): 3.5

APPROXIMATE VOLUME (ml): 2

MASS OF SAMPLE (g): 0.6

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 26.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One Brook Stickleback in sample. No invertebrates. Specimen was recently ingested, it was complete and whole. The specimen was 42 mm total length in size.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - fish - Brook Stickleback | 42 | Complete, whole - recently ingested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Northern Pike

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 295.9
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 326

MASS OF SAMPLE (g): 292.0

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One White Sucker in sample. No invertebrates. Head partially digested. Specimen approximately 334 mm total length in size.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - fish - White Sucker | 334 | Head partially digested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Northern Pike

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 4.2
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): <1

MASS OF SAMPLE (g): 0.4

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

No animals in sample. Sample consists of a green and red gelatinous mass.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Northern Pike

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 16.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 9

MASS OF SAMPLE (g): 12.3

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One unidentifiable fish in sample, approximately 52 mm total length in size. One Mt. Whitefish in sample (head partially digested), approximately 77 mm total length in size. Invertebrates in sample were in relatively good shape = recently ingested. However, they may have been incidentals = contents of ingested fish.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Arachnoida - Acari | 2 | 100% intact. |
| Chironomidae | 7, 7, 7, 6 | 100% intact. |
| Chironomidae P | 4, 4, 4, 4, 5, 6, 4, 4 | 100% intact. |
| Vertebrate - Fish - unidentifiable | 52 | Well digested. Total length estimated. |
| Vertebrate - Fish - Mt. Whitefish | 77 | Head partially digested. Viscera partially digested. Total length estimated. |
| | | |
| TOTAL NUMBERS: | | |
| Arachnoida - Acari = 1 | | |
| Chironomidae = 14 | | |
| Chironomidae P = 39 | | |
| Heptageniidae = 1 | | |
| Vertebrate - Fish - unidentifiable = 1 | | |
| Vertebrate - fish - Mt. Whitefish = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Macroinvertebrates in sample may have been incidentals = possibly contents of fish prey items. Heads counted: Chironomidae = 10, Chironomidae P = 31, Heptageniidae = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 5: Berland Bridge

FISH SPECIES: Northern Pike

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 42.0
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 28

MASS OF SAMPLE (g): 38.1

DATE COLLECTED: 8 & 10.05.92

DATE PROCESSED: 24.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One Fathead Chub in sample. No invertebrates. Specimen recently ingested = no part of specimen digested. Specimen approximately 134 mm total length in size.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Fish - Fathead Chub | 134 | Recently ingested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH GUT CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 13.9
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 11

MASS OF SAMPLE (g): 10.1

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 31.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 6, 7 | Some limbs missing. |
| Brachycentridae - *Brachycentrus* | 6, 8, 8, 8, 8, 10, 8, 8, 8, 8, 9, 8, 7, 8, 8, 12, 7, 10, 10, 8, 8, 8, 8, 7, 7, 8, 8, 8, 8, 7, 8, 8, 8, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 6, 8, 7, 10, 8, 11, 9, 8, 10, 7, 8, 8, 8, 8, 10 | Case lengths mesured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 6, 8, 6, 6, 8, 6, 6, 8, 7, 6, 8, 7, 8, 7, 8, 8, 7, 8, 10, 8, 9, 8, 8, 8, 8, 8, 10, 6, 8, 6, 6, 8, 6, 8, 8, 6, 6, 8 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

At least 8 otoliths and various other fish bones in sample. Parasitic nematods in sample. Heads counted: *Brachycentrus* = 28, Chironomidae = 2, Heptageniidae = 1, Hydropsychidae = 17, Perlodidae - *Isogenoides* = 2.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 1

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 4, 5 | 100% intact. |
| Chloroperlidae | 3 | Head and thorax measured. Abdomen and limbs missing. |
| Heptageniidae | 4, 10, 3 | Limbs missing. |
| Hydropsychidae P | 14 | Case length measured. |
| Hydropsychidae - *Arctopsyche* | 16, 24, 16, 24, 20, 22 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 14, 13, 11, 16, 13, 14, 13, 14 | 100% intact. |
| Perlidae - *Claassenia* | 9 | Head and thorax measured. Abdomen and limbs missing. |
| Perlidae - *Claassenia* | 11 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 2 | | |
| Brachycentridae - *Brachycentrus* = 63 | | |
| Brachycentridae - *Brachycentrus* P = 15 | | |
| Chironomidae = 4 | | |
| Chloroperlidae = 1 | | |
| Heptageniidae = 4 | | |
| Hydropsychidae P = 1 | | |
| Hydropsychidae = 17 | | |
| Hydropsychidae - *Arctopsyche* = 6 | | |
| Hydropsychidae - *Hydropsyche* = 8 | | |
| Perlidae - *Claassenia* = 2 | | |
| Perlodidae - *Isogenoides* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 11.5
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 7.5

MASS OF SAMPLE (g): 7.7

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 31.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* | 10, 10, 8, 8, 10, 8, 8, 8, 10, 8, 8, 8, 6, 7, 9, 8, 10, 8, 10, 8, 6, 8, 10, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 6, 10, 8, 8, 8, 8, 8, 8, 6, 7, 8, 8, 10, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 10, 8, 8, 8, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 10, 8, 7, 6, 6, 8, 8, 8, 8, 8, 8, 8, 8, 10, 8, 10, 10, 8, 8, 6, 8, 8, 8, 8, 6, 8, 8, 8, 10, 10, 11, 8, 8, 10, 10, 8, 8, 8, 8, 10, 8, 8, 8, 8, 8, 8, 8, 8, 6, 8, 8, 8, 8, 8, 8, 8, 9, 9, 8, 8, 8, 6 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Heads counted: Baetis-type = 2, *Brachycentrus* = 24, *Brachycentrus* P = 2, Hydropsychidae = 40, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 2

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 6, 4, 7, 5 | Some or all limbs missing from most specimens. |
| Chironomidae | 5, 6, 5, 6, 5, 4, 6, 5 | 100% intact. |
| Chironomidae P | 3 | 100% intact. |
| Ephemerellidae - *Ephmerella needhami* | 6, 6 | Limbs missing. |
| Glossosomatidae - *Glossosoma* | 6, 10 | 100% intact. |
| Heptageniidae | 4 | Limbs missing. |
| Hydropsychidae - *Arctopsyche* | 24 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12, 15, 15, 15, 10, 6, 14, 15, 14, 15, 7, 14, 16, 12, 15, 7, 6, 14, 14, 14 | 100% intact. |
| Hydropsychidae P | 12 | Case length measured. |
| **TOTAL NUMBERS:** | | |
| Brachycentridae - *Brachycentrus* = 49 | | |
| Brachycentridae - *Brachycentrus* P = 31 | | |
| Baetis-type = 6 | | |
| Chironomidae = 8 | | |
| Chironomidae P = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 2 | | |
| Glossosomatidae - *Glossosoma* = 2 | | |
| Heptageniidae = 1 | | |
| Hydropsychidae = 40 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 20 | | |
| Hydropsychidae P = 1 | | |
| Plecoptera = 1 | | |
| | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 3

MASS OF SAMPLE & BAG (g): 9.9
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 8

MASS OF SAMPLE (g): 6.1

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 28.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample. This sample was relatively oily (gastric juices?).

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 5, 5, 6 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* | 8, 10, 10, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 11, 10, 10 | Case lengths measured. |
| Chironomidae | 3, 5, 4, 7, 5, 3, 4, 5, 6, 6, 6, 4, 6 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6 | Limbs missing. |
| Heptageniidae | 10 | Limbs missing. |
| Hydropsychidae - *Arctopsyche* | 17 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 18, 14, 15, 15, 18, 19, 12, 15, 15, 15, 11, 16, 13, 13, 14, 15, 17, 13, 17, 15, 15, 17, 11, 17, 13, 18, 15, 13, 13, 14, 14, 14, 12, 15, 12, 13, 8, 10, 14, 11, 13, 14, 16, 18, 14, 13, 15, 11, 14, 11, 10, 12, 17, 12, 13, 13, 16, 14, 13, 16, 16, 12, 16, 16, 14, 18, 14, 13, 17 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 2 ml of white, gelatinous mucous in sample. Parasitic nematods in sample. Heads counted: Baetid-type = 4, Baetis-type = 6, *Brachycentrus* = 2, Chironomidae = 4, Heptageniidae = 3, Hydropsychidae = 35, Perlodidae - *Isogenoides* = 2.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 3

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS: | | |
| Baetid-type = 4 | | |
| Baetis-type = 3 | | |
| Brachycentridae - *Brachycentrus* = 6 | | |
| Brachycentridae - *Brachycentrus* P = 3 | | |
| Chironomidae = 17 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Heptageniidae = 4 | | |
| Hydropsychidae = 35 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 69 | | |
| Perlodidae - *Isogenoides* = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 18.3
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 12

MASS OF SAMPLE (g): 14.6

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 30.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 8, 7 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 9, 10, 8, 10, 7, 8, 8, 7, 8, 10, 8, 10, 8, 7, 8, 8, 8, 6, 9, 8, 10, 8, 8, 7, 10, 8, 10, 7, 7, 7, 8, 8, 7, 10, 8, 8, 8, 8, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 11, 10, 8, 8, 8, 10, 10, 9, 10, 10, 10, 8, 8, 8, 10, 8, 8, 8, 8, 7, 10, 8, 10, 8, 8, 8, 8, 8, 9, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 6, 8, 9, 10, 8, 11, 8, 10, 6, 7, 7, 8, 8, 8, 10, 9, 8, 8, 7, 10, 8, 10, 8, 8, 10, 8, 8, 8, 8, 6, 8, 6, 6, 6, 8, 8, 6, 7, 6, 8, 8, 8, 8, 7, 8, 7, 6, 8, 8, 7, 6, 8, 7, 9, 9, 10, 8, 8, 7, 8, 8, 9, 10, 10, 8 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Atypically, most *Brachycentrus* pupae were not in their cases (were specemens ingested during emergence period?). Heads counted: *Brachycentrus* = 58, *Brachycentrus* P = 365, *Ephemerella* (*Drunella*) *doddsi* = 1, Heptageniidae = 1, Hydropsychidae = 19, Perlidae - *Claassenia* = 3, Terrestrial - Coleopter A = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 4

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 6 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 6 | Limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 10 | Limbs missing. |
| Heptageniidae | 8, 7 | Limbs missing. |
| Hydropsychidae - *Hydropsyche* | 14, 12, 13, 12, 12, 12 | 100% intact. |
| Terrestrial - Coleoptera A | 6 | 100% intact. |
| | | |
| TOTAL NUMBERS: | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* = 97 | | |
| Brachycentridae - *Brachycentrus* P = 396 | | |
| Chironomidae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 2 | | |
| Heptageniidae = 3 | | |
| Hydropsychidae = 19 | | |
| Hydropsychidae - *Hydropsyche* = 6 | | |
| Perlidae - *Claassenia* = 3 | | |
| Terrestrial - Coleoptera A = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 19.6
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 15

MASS OF SAMPLE (g): 15.8

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 30.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 6, 6, 5, 6 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 10, 8, 8, 8, 10, 10, 8, 10, 10, 10, 8, 9, 8, 8, 9, 8, 9, 10, 10, 10, 8, 7, 10, 8, 8, 7, 10, 10, 8, 8, 7, 7, 8, 10, 10, 11, 7, 10, 8, 8, 8, 10, 10, 8, 8, 8, 8, 10, 10, 9, 10, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 8, 10, 10, 8, 10, 8, 8, 12, 9, 10, 8, 8, 10, 8, 11, 8, 8, 8, 10, 10, 10, 7, 9, 8, 8, 9, 10, 8, 8, 10, 7, 9, 7, 10, 11, 8, 8, 7, 12, 10, 10, 10, 8, 10, 9, 12, 8, 8, 8, 8, 11, 8, 8, 9, 11 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 11, 7, 10, 8, 6, 8, 7, 7, 8, 7, 10, 7, 10, 10, 8, 8, 10, 8, 8, 8, 10, 8, 10, 10, 10, 10, 10, 8, 8, 8, 10, 8, 7, 8, 10, 8, 8, 10, 8, 11, 10, 10, 8, 8, 8, 7, 9, 9, 7, 8, 10, 10, 8, 6, 8, 8, 7, 7 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Fish scale in sample. Heads counted: Baetis-type = 4, *Brachycentrus* = 13, *Brachycentrus* P = 15, Chironomidae = 4, *Ephemerella* (*Drunella*) *doddsi* = 37, Heptageniidae = 8, Hydropsychidae = 216 (approx. 60% *Hydropsyche* and 40% *Arctopsyche*), Perlodidae - *Isogenoides* = 3.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 5

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 5, 6, 5, 6, 5, 6, 5, 5, 5, 5, 6, 5, 6, 5, 5, 6, 5, 5, 5, 6, 5 | 100% intact. |
| Empididae | 4 | 100% intact. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 9, 10, 10, 8, 10, 10, 8, 8, 9, 10, 10 | Some or all limbs missing from most specimens. |
| Heptageniidae | 11, 10, 10, 8, 8 | Some or all limbs missing from most specimens. |
| Hydropsychidae - *Arctopsyche* | 12, 16, 17, 15, 15, 14, 16, 14, 15, 16, 22, 16, 17, 14, 14, 14, 20, 16, 12 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 16, 14, 12, 15, 15, 12, 15, 15, 13, 13, 6, 12, 12, 10, 13, 15, 7, 12, 17, 16, 15, 15, 10, 16, 15, 14, 16, 8, 13, 14, 11, 14, 12, 15, 12, 14, 10, 15, 14, 14, 12, 10 | 100% intact. |
| Perlodidae - *Isogenoides* | 15 | Limbs missing. |
| Perlodidae - *Isogenoides* | 11, 16 | Head and thorax measured. Abdomen and limbs missing. |
| Terrestrial - Coleoptera A | 5 | 100% intact. |
| Terrestrial - Hymenoptera - Formicidae A | 9 | Winged. 100% intact. |
| **TOTAL NUMBERS:** | | |
| Baetis-type = 8 | | |
| Brachycentridae - *Brachycentrus* = 65 | | |
| Brachycentridae - *Brachycentrus* P = 71 | | |
| Chironomidae = 25 | | |
| Empididae = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 5

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Ephemerellidae - *Ephemerella* (*Drunellla*) *doddsi* = 48 | | |
| Heptageniidae = 13 | | |
| Hydropsychidae = 216 | | |
| Hydropsychidae - *Arctopsyche* = 19 | | |
| Hydropsychidae - *Hydropsyche* = 42 | | |
| Perlodidae - *Isogenoides* = 6 | | |
| Terrestrial - Coleoptera A = 1 | | |
| Terrestrial - Hymenoptera - Formicidae A = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 17.5
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 14

MASS OF SAMPLE (g): 13.8

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 28.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 3 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 10, 8, 8, 8, 8, 8, 8, 8, 7, 8, 8, 8, 8, 7, 9, 8, 8, 8, 10, 9, 7, 8, 9, 8, 9, 7, 7, 7, 8, 8, 10, 10, 10, 9, 9, 8, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 11, 8, 8, 10, 8, 8, 9, 10, 9, 10, 8, 8, 10, 8, 8, 8, 9, 8, 8, 9, 8, 9, 9, 10, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 7, 8, 11, 10, 11, 8, 10, 8, 8, 7, 10, 10, 10, 9, 8, 8, 8, 8, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 7, 6, 8, 7, 8, 8, 8, 8, 8, 9, 7, 7, 6, 7, 8, 8, 7, 7, 8, 6, 8, 9, 9, 8, 8, 6, 8, 7, 8, 10, 8, 8, 7 | Case lengths measured. |
| Chironomidae | 5, 4, 5, 8, 5 | 100% intact. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Fish scales in sample. Heads counted: Baetid-type = 1, Baetis-type = 2, *Brachycentrus* = 178, *Brachecentrus* P = 69, Chironomidae = 1, Hydropsychidae = 6, Perlidae - *Claassenia* = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 6

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Hydropsychidae - *Arctopsyche* | 20 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12 | 100% intact. |
| Perlidae - *Claassenia* | 25 | Limbs missing. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 1 | | |
| Baetid-type = 1 | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* = 235 | | |
| Brachycentridae - *Brachycentrus* P = 123 | | |
| Chironomidae = 6 | | |
| Hydropsychidae = 6 | | |
| Hydropsychidae - *Arctopsyche* = 1 | | |
| Hydropsychidae - *Hydropsyche* = 1 | | |
| Perlidae - *Claassenia* = 2 | | |
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 17.6
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 18

MASS OF SAMPLE (g): 13.9

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 27.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively little inorganic debris and little to moderate amounts of organic debris.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetidae - *Baetis* | 4, 4 | Limbs missing. |
| Baetis-type | 4, 6 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 7, 10, 10, 7, 8, 10, 8, 8, 10, 8, 11, 8, 11, 8, 8, 8, 9, 9, 10, 10, 8, 11, 7, 8, 6, 8, 8, 10, 8, 8, 10, 8, 10, 8, 10, 8, 8, 8, 7, 8, 6, 8, 8, 10, 6, 7, 8, 8, 8, 10, 8, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 9, 7, 8, 10, 10, 10, 9, 10, 10, 9, 9, 9, 8, 9, 8, 9, 8, 9, 9, 10, 10, 6, 8, 9, 10, 10, 10, 10, 10, 8 | Case lengths mesured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 9, 5, 7, 6, 8, 6, 8, 5, 8, 6, 7, 10, 8, 10, 8, 7, 7, 7, 7, 7, 7, 8, 10, 10, 8, 10 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Six fish scales in sample. Majority of *Brachycentrus* P caseless (emerging?). Heads counted: *Brachycentrus* = 73, *Brachycentrus* P = 242, *Ephemerella* (*Drunella*) *doddsi* = 6, Heptageniidae = 3, Hydropsychidae = 348 (approx. 50% *Arctopsyche* and 50% *Hydropsyche*).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 5, 6, 5, 5, 5, 6, 5, 5 | 100% intact. |
| Chironomidae P | 4 | 100% intact. |
| Empididae | 5 | 100% intact. |
| Ephemerellidae - *Ephemerella needhami* | 5 | Limbs missing. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 10, 10 | Limbs missing. |
| Heptageniidae | 11 | Limbs missing. |
| Hydropsychidae - *Arctopsyche* | 24, 22, 20, 25, 22, 24, 22, 26, 17, 18, 20, 16, 15, 24, 20, 26, 22, 17, 17, 22, 24, 18 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 14, 15, 14, 14, 14, 15, 14, 16, 15, 14, 13, 16, 17, 15, 17, 15, 15, 17, 12, 13, 15, 15, 11, 15, 12, 15, 16, 15, 12, 11, 15, 14, 18, 14, 15, 14, 11, 12, 15, 12, 12, 15 | 100% intact. |
| **TOTAL NUMBERS:** | | |
| Baetidae - *Baetis* = 2 | | |
| Baetis-type = 2 | | |
| Brachycentridae - *Brachycentrus* = 126 | | |
| Brachycentridae - *Brachycentrus* P = 272 | | |
| Chironomidae = 8 | | |
| Chironomidae P = 1 | | |
| Empididae = 1 | | |
| Ephemerellidae - *Ephemerella needhami* = 1 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 8 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 7

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| TOTAL NUMBERS CONTINUED: | | |
| Heptageniidae = 4 | | |
| Hydropsychidae = 348 | | |
| Hydropsychidae - *Arctopsyche* = 22 | | |
| Hydropsychidae - *Hydropsyche* = 42 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 12.7
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 9

MASS OF SAMPLE (g): 9.0

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 31.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 75% well digested and 25% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 5 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 10, 8, 8, 10, 8, 8, 10, 10, 8, 11, 10, 7, 8, 8, 8, 9, 11, 8, 8, 8, 10, 8, 8, 8, 8, 10, 8, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 10, 8, 9, 8, 8, 8, 8, 9, 9, 9, 10, 8, 8, 8, 8, 8, 7, 8, 9, 8, 8, 8, 8, 9, 9, 8, 8, 8, 8, 8, 9 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 9, 8, 8, 7, 8, 8, 10, 7, 8, 8, 8, 9, 8, 6, 11, 10, 8, 8, 7, 7, 8, 10, 8, 8, 8, 7, 8, 9, 8, 8, 8, 8, 8, 8, 8, 7, 8, 8, 8, 10, 8, 8, 9, 8, 10, 10, 8, 8, 10, 8, 8, 10, 8, 6, 8, 8, 7, 8, 8, 7, 7, 8, 7, 8, 6, 7, 8, 7, 10, 10, 9, 6, 6, 10, 7, 6, 8, 7, 8, 7, 8, 10, 7, 10, 6 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods present. Heads counted: *Brachycentrus* = 87, *Brachycentrus* P =32, Hydropsychidae = 73 (approx. 60% *Hydropsyche* and 40% *Arctopsyche*), Terrestrial - Coleoptera A = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 8

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 4, 5, 4, 5, 5 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 26, 21, 13 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 12, 14, 14, 8, 14, 12, 16, 15, 16, 14, 12, 16, 17 | 100% intact. |
| Hydropsychidae P | 8 | Case length measured. |
| Pteronarcyidae - *Pteronarcella* | 13 | 100% intact. |
| Terrestrial - Hymenoptera - Formicidae A | 9 | Winged. 100% intact. |
| | | |
| TOTAL NUMBERS: | | |
| Baetis-type = 1 | | |
| Brachycentridae - *Brachycentrus* = 115 | | |
| Brachycentridae - *Brachycentrus* P = 136 | | |
| Chironomidae = 5 | | |
| Hydropsychidae = 73 | | |
| Hydropsychidae - *Arctopsyche* = 3 | | |
| Hydropsychidae - *Hydropsyche* = 13 | | |
| Hydropsychidae P = 1 | | |
| Pteronarcyidae - *Pteronarcella* = 1 | | |
| Terrestrial - Coleoptera A = 1 | | |
| Terrestrial - Hymenoptera - Formicidae A = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 9

MASS OF SAMPLE & BAG (g): 38.2
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 22

MASS OF SAMPLE (g): 34.4

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 30.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 50% well digested and 50% recently ingested (fresh, whole specimens). Relatively moderate amounts of organic debris and little organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Baetis-type | 5, 6 | Limbs missing. |
| Brachycentridae - *Brachycentrus* | 8, 10, 10, 8, 8, 10, 7, 8, 8, 7, 8, 8, 6, 10, 10, 10, 8, 8, 8, 7, 8, 10, 8, 9, 6, 8, 8, 7, 8, 7, 7, 8, 8, 9, 7, 8, 6, 10, 10, 8, 10, 7, 8, 8, 9, 8, 8, 7, 7, 7, 10, 7, 8, 8, 7, 10, 6, 7, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 8, 10, 9, 9, 7, 9, 8, 10, 8, 8, 8, 7, 8, 9, 8, 8, 8, 9, 10, 9, 10 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 6, 6, 7, 9, 8, 7, 8, 8, 7, 8, 8, 10, 7, 8, 8, 8, 8, 8, 8, 8, 8, 6, 10, 7, 8, 8, 8, 8, 10, 10, 10, 8, 10, 6, 6, 8, 8, 10, 8, 8, 7, 7, 7, 7, 7, 7, 7, 7, 8, 9, 8, 6, 7, 6, 8, 6, 6, 6, 7, 7, 6, 7 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Approximately 2 ml of white, gelatinous mucous in sample. Parasitic nematods present. Heads counted: Baetis-type = 6, *Brachycentrus* = 165, *Brachycentrus* P = 6, *Ephemerella* (*Drunella*) *doddsi* = 11, Heptageniidae = 11, Hydropsychidae = 445 (approx. 50% *Arctopsyche* and 50% *Hydropsyche*), Perlidae - *Claassenia* = 1, Perlodidae - *Isogenoides* = 4, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 9

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Chironomidae | 7, 6, 6 | 100% intact. |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* | 11, 11, 10, 11, 9, 9 | Some or all limbs missing from most specimens. |
| Gastropoda - Lymnaeidae | 4, 3, 4 | Shell lengths measured. |
| Heptageniidae | 11, 11, 9, 8 | Limbs missing on all specimens. |
| Hydropsychidae - *Arctopsyche* | 18, 14, 15, 23, 16, 13, 14, 14, 15, 16, 20, 20, 20, 16, 20, 17, 16, 22, 16, 20, 20, 20, 25, 18, 20, 24, 20, 20, 15, 20, 23, 22, 18, 26, 20, 20, 24, 17 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 15, 10, 10, 13, 12, 12, 13, 14, 11, 16, 10, 16, 16, 12, 10, 11, 14, 13, 12, 14, 14, 14, 15, 14, 15, 11, 15, 16, 13, 13, 14, 15, 15, 16, 17, 15, 15, 13, 17, 14, 10, 13, 16, 15, 16, 14 | 100% intact. |
| | | |
| **TOTAL NUMBERS:** | | |
| Baetis-type = 8 | | |
| Brachycentridae - *Brachycentrus* = 224 | | |
| Brachycentridae - *Brachycentrus* P = 28 | | |
| Chironomidae = 3 | | |
| Ephemerellidae - *Ephemerella (Drunella) doddsi* = 17 | | |
| Gastropoda - Lymnaeidae = 3 | | |
| Heptageniidae = 15 | | |
| Hydropsychidae = 445 | | |
| Hydropsychidae - *Arctopsyche* = 38 | | |
| Hydropsychidae - *Hydropsyche* = 46 | | |
| Perlidae - *Claassenia* = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 9

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| **Perlodidae - *Isogenoides* = 4** | | |
| Plecoptera = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Mt. Whitefish

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 19.9
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 16

MASS OF SAMPLE (g): 16.1

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 29.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Approximately 70% well digested and 30% recently ingested (fresh, whole specimens). Relatively little inorganic and organic debris in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Ametropodidae - *Ametropus* | 6 | Head and thorax measured. Abdomen and limbs missing. |
| Baetis-type | 7 | Limbs and antennae missing. |
| Brachycentridae - *Brachycentrus* | 7, 10, 8, 8, 10, 9, 8, 10, 11, 7, 8, 10, 10, 8, 7, 7, 11, 12, 10, 7, 8, 8, 9, 8, 9, 8, 9, 8, 8, 9, 10, 9, 7, 8, 9, 10, 8, 8, 9, 9, 7, 7, 7, 10, 8, 8, 10, 8, 10, 7, 8, 8, 8, 8, 8, 8, 10, 7, 8 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* P | 8, 12, 8, 10, 10, 10, 10, 12, 8, 10, 10, 8, 8, 8, 10, 9, 9, 9, 9, 8, 10, 8, 8, 8, 9, 8, 7, 8, 9, 8, 9, 9, 10, 9, 8, 7, 9, 8, 10, 10, 8, 7, 10, 11, 10, 10, 8, 9, 8, 9, 10, 8, 8, 10, 7, 9, 8, 9 | Case lengths measured. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Two fish scales in sample. Parasitic nematods in sample. Heads counted: Baetis-type = 2, *Brachycentrus* = 115, *Brachycentrus* P = 29, *Ephemerella* (*Drunella*) *doddsi* = 3, Heptageniidae = 7, Hydropsychidae = 68 (approx. 70% *Hydropsyche* and 30% *Arctopsyche*), Perlodidae - *Isogenoides* = 7, Plecoptera = 1.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* Empty Cases | 8, 8, 7, 7, 8, 8, 8, 8, 9, 7, 8, 8, 10, 7, 8, 8, 8, 10, 8, 11, 8, 8, 8, 9, 7, 8, 7, 9, 8, 8, 8, 10, 8, 8, 10, 8, 8, 11, 8, 8, 7, 7, 8, 8, 8, 8, 8, 8, 8, 8, 10, 8, 7, 7, 10, 10, 8, 8 | Case lengths measured. |
| Chironomidae | 6, 5 | 100% intact. |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* | 12, 10 | 100% intact. |
| Hydropsychidae - *Arctopsyche* | 14, 24, 13 | 100% intact. |
| Hydropsychidae - *Hydropsyche* | 16, 14, 12, 12, 16, 15, 11, 8, 13, 15, 10, 13, 14, 13, 13, 15, 12, 12, 18, 7, 14, 16, 15, 14 | 100% intact. |
| Perlodidae - *Isogenoides* | 18 | 100% intact. |
| Perlodidae - *Isogenoides* | 10 | Head and thorax measured. Abdomen and limbs missing. |
| Terrestrial - Coleoptera A | 8 | 100% intact. |
| Terrestrial - Coleoptera A | 5, 6, 7, 6, 6, 5, 6 | Abdomen measured. Head, abdomen and limbs missing. |
| Terrestrial - Hymenoptera - Formicidae A | 10, 10 | Winged. 100 intact. |
| **TOTAL NUMBERS:** | | |
| Ametropodidae - *Ametropus* = 1 | | |
| Baetis-type = 3 | | |
| Brachycentridae - *Brachycentrus* = 174 | | |
| Brachycentridae - *Brachycentrus* P = 87 | | |
| Chironomidae = 2 | | |
| Ephemerellidae - *Ephemerella* (*Drunella*) *doddsi* = 5 | | |
| Heptageniidae = 7 | | |
| Hydropsychidae = 68 | | |
| Hydropsychidae - *Arctopsyche* = 3 | | |
| Hydropsychidae - *Hydropsyche* = 23 | | |
| Perlodidae - *Isogenoides* = 9 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Mt. Whitefish

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS CONTINUED:** | | |
| Terrestrial - Coleoptera A = 1 | | |
| Terrestrial - Hymenoptera - Formicidae A = 2 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.

** Estimate to nearest mm (less antennae and cerci).

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 1

MASS OF SAMPLE & BAG (g): 4.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): <1

MASS OF SAMPLE (g): 0.3

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Sample consists of a green/yellow mucous with a few fish bones (1 rib & 1 head bone). No invertebrates in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 2

MASS OF SAMPLE & BAG (g): 14.7
MASS OF BAG (g): 3.7

APPROXIMATE VOLUME (ml): 16

MASS OF SAMPLE (g): 11.0

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Two fish in sample. One fish had head and viscera digested and the other had its caudal half digested. No invertebrates identified.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Fish - Longnose Sucker | 33 | Total length estimated. Caudal half of specimen digested. |
| Vertebrate - Fish - Catostomidae | 45 | Total length estimated. Possibly a Longnose Sucker. Head and viscera digested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic cestods in sample. Evidence (cerci and abdominal terga) of stonefly larvae in sample. 24 (1.5 mm dia.) fish(?) eggs (opaque white) in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 4

MASS OF SAMPLE & BAG (g): 4.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 2

MASS OF SAMPLE (g): 0.3

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Sample consists of a black mass surrounded by a green mucous. No animals found in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 5

MASS OF SAMPLE & BAG (g): 6.4
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 3

MASS OF SAMPLE (g): 2.6

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Well digested. No invertebrates in sample. Many small fish bones present. Probably one fish (unidentifiable) in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 6

MASS OF SAMPLE & BAG (g): 5.1
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 2

MASS OF SAMPLE (g): 1.3

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Well digested. A few fish bones present but fish unidentifiable. Sample is mostly a brown/green gelatinous mass.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Perlidae - *Claassenia* = 1 | | |
| Vertebrate - Fish - Unidentifiable = 1? | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

Parasitic nematods in sample. Heads counted: Perlidae - *Claassenia*.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 7

MASS OF SAMPLE & BAG (g): 4.4
MASS OF BAG (g): 3.6

APPROXIMATE VOLUME (ml): 1

MASS OF SAMPLE (g): 0.8

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Well digested. One fish bone (gill raker) in sample. Evidence of invertebrates (pieces of cerci, antennae and abdominal tergites) in sample - possibly one stonefly.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
Nothing identifiable in sample.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 8

MASS OF SAMPLE & BAG (g): 4.8
MASS OF BAG (g): 3.8

APPROXIMATE VOLUME (ml): 2

MASS OF SAMPLE (g): 1.0

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

Sample consists of yellowish mucous and some dark brown tissue (coagulated blood or liver?). No animals found in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
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* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 9

MASS OF SAMPLE & BAG (g): 28.5
MASS OF BAG (g): 3.9

APPROXIMATE VOLUME (ml): 26

MASS OF SAMPLE (g): 24.6

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish in sample. Head and viscera digested. No invertebrates in sample.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Vertebrate - Fish - Catostomidae | 150 | Total length estimated. Head and viscera disgested. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:

None.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca

SITE 6: Windfall Bridge

FISH SPECIES: Northern Pike

REPLICATE: 10

MASS OF SAMPLE & BAG (g): 33.7
MASS OF BAG (g): 4.4

APPROXIMATE VOLUME (ml): 40

MASS OF SAMPLE (g): 29.3

DATE COLLECTED: 7 & 9.05.92

DATE PROCESSED: 11.08.92

COLLECTED BY: Barton, Bjornson & Egan of E.M.A.

PROCESSED BY: Dunnigan of R.L. & L.

GENERAL CONDITION/DECOMPOSITION OF SAMPLE:

One fish in sample - well digested (only bones remain). Invertebrates recently ingested - fresh and whole.

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| Brachycentridae - *Brachycentrus* | 7, 10, 8, 8, 7, 7, 6, 6, 7, 10, 10, 10, 7, 9, 7, 8, 10, 7, 7, 7, 8, 9, 8, 8, 7, 10, 8, 9, 9, 8, 8, 9, 6, 9, 9, 9, 7, 10, 8, 7, 7, 8, 7, 8, 8, 6, 9, 10, 10, 8, 7, 10, 9, 8, 8, 10, 8, 8, 8, 7, 9, 9, 10, 7, 8, 8, 7, 8, 7, 8, 7, 7, 7, 8, 8, 8, 7, 8, 7, 7, 7, 7 | Case lengths measured. |
| Brachycentridae - *Brachycentrus* Empty Cases | 7, 8, 6, 6, 8, 7, 10, 9, 7, 9, 10, 8, 6, 8, 7, 8, 8, 6, 8, 9, 6, 7, 6, 7, 10, 8, 10, 10, 8, 10, 9, 8, 6, 9, 6, 9, 7, 9, 6, 9, 7 | Case lengths mesured. |
| Vertebrate - Fish - Mt. Whitefish | 200 to 250 | Only skeletal remains found. Total length estimated from size of Cliethrium bone. Identifiction made from bones & scale shape. |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

OTHER PERTINENT INFORMATION:
Heads counted: *Brachycentrus* = 5.

# FISH STOMACH CONTENTS
# TALLY SHEET



RIVER: Athabasca SITE 6: Windfall Bridge FISH SPECIES: Northern Pike

REPLICATE: 10

CONTENTS:

| TAXON* | SIZE CLASS** (mm) | CONDITION OF SPECIMENS AND GENERAL COMMENTS |
|---|---|---|
| **TOTAL NUMBERS:** | | |
| Brachycentridae - *Brachycentrus* = 87 | | |
| Vertebrate - Fish - Mt. Whitefish = 1 | | |

* Unless otherwise noted, specimens are larvae. A=adult, P=pupae.
** Estimate to nearest mm (less antennae and cerci).

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