Janay Martinez

From: Donald,David [Reg] <David.Donald@EC.GC.CA>
Sent: Friday, March 21, 2014 9:54 AM
To: Ramlal, Patricia
Subject: FW: FW: DAVID DONALD ADDRESS
Attachments: May22Report 1 on Devil lake fish parasite study.doc; May22RR fish parasite appendices May 22 07.xls

-----Original Message-----
From: Terry Dick [mailto:tadick@cc.umanitoba.ca]
Sent: May 22, 2007 11:45 AM
To: Donald,David [Reg]
Subject: Re: FW: DAVID DONALD ADDRESS

Hi:

Thanks, the first time I did not receive it as I file all your emails for posterity. We can only hope that is somewhere in the ether of the internet.

Attached is the report plus the appendices. If you see typos etc. set let me know and I will correct. Since some of the appendices are folded I will send a hard copy by surface mail.

Cheers
Terry
At 11:11 AM 5/22/2007 -0600, you wrote:

>Second time.
>David
>
>_____
>From: Donald,David [Reg]
>Sent: Friday, May 18, 2007 11:54 AM
>To: 'Terry Dick'
>Subject: DAVID DONALD ADDRESS
>
>David Donald
>Environment Canada
>Room 300, Park Plaza
>2365 Albert Street
>Regina, SASK
>S4P 4K1

Red River Delta Fish Parasite Results

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Summary

- **Twenty-six species of parasites were recovered from nine species of fish hosts.**
- **To date none of the fish parasites identified as potential pathogens to Lake Winnipeg fish by Williamson et al (2005) have been found in the Red River delta fish samples.**
- **Two new parasites species know to be pathogenic in fish were discovered in the samples i e. *Bothriocephalus acheilognathi* and *Sanginicola occidentalis*.**
- **The time of invasion by these two parasite species into The Hudson Bay drainage is unknown**
- ***Bothriocephalus acheilognathi* was widely distributed being present in six species of fish and found in the south and north basins of Lake Winnipeg.**
- ***Bothriocephalus acheilognathi* most frequently infected (prevalence of 74%) the cyprinid fish host, *Notropis atherinoides* (Emerald shiner).**
- ***Bothriocephalus acheilognathi* was found exclusively in young of the year emerald shiners.**
- ***Bothriocephalus acheilognathi* was recovered from the intestine of older and and larger pike (*Esox lucius*), walleye (*Sander vitreum*), sauger (*Sander canadensis*) white bass (*Merone chrysops*), goldeye (*Hiodon alosoides*).**
- **The Myxozoan occurred on the gills of emerald shiner, occasionally causing severe pathology.**

Report on Red River Delta Fish Parasite Study

Introduction

Warming trends in the world have led to numerous projections of alien species invasions with the concomitant adverse affects on the local biota. The Garrison diversion project in North Dakota led to a flurry of research activities over a decade ago on potential problems of biota transfer. Until the Devil's Lake project was proposed and the actual transfer of water was imminent there was little interest in the potential threats to Canadian waters. The last major update of parasites and pathogens of the Hudson Bay drainage was discussed by Dick et al (2001) but even this review found that there was little detailed information on parasites of fishes of the Red River and Lake Winnipeg. Considering the number of potential routes for alien species invasions into Lake Winnipeg, from the west and the south, and the proposed transfer of water from Devils Lake, North Dakota it is surprising that the recommendations of Dick et al (2001) to collect long term baseline data on potential biota transfers across the United States-Canada boundary was ignored until 2006.

The objective of this study was to 1) determine the parasite community in, pike, walleye, sauger, yellow perch, goldeye, white bass, emerald shiners, fathead minnows and brook stickleback.

Considering the lack of efforts to collect historical and contemporary baseline data and no sustained monitoring of biota across the Canadian-United States border it was not surprising that two recent alien parasite species have been discovered by this preliminary study. The implications of the Asian tapeworm, *Bothriocephalus acheilognathi* and the blood dwelling trematode,

Sanguincola occidentalis, **on the commercial fishery of Lake Winnipeg are unknown at this time. Perhaps *B. acheilognathi* could impact the food web, by causing mortality in young of the year emerald shiner (*Notropis atherinoides)* which is one of the most important prey species of pike, walleye and sauger. The impacts of *B. acheilognathi* on other young-of- the- year cyprinids and the young-of-the-year commercially fished walleye, sauger, pike and goldeye is currently unknown since most of these species are new host records for this parasite.**

Materials and Methods

Sample sites: Sample locations are outlined in Figure 1, 2 and 3. Most of the locations are in the vicinity of the mouth of the Red River.

Fish samples were collected by seining and with gillnets. Each fish was placed in a separate plastic bag identified by fish species, site and date of collection.

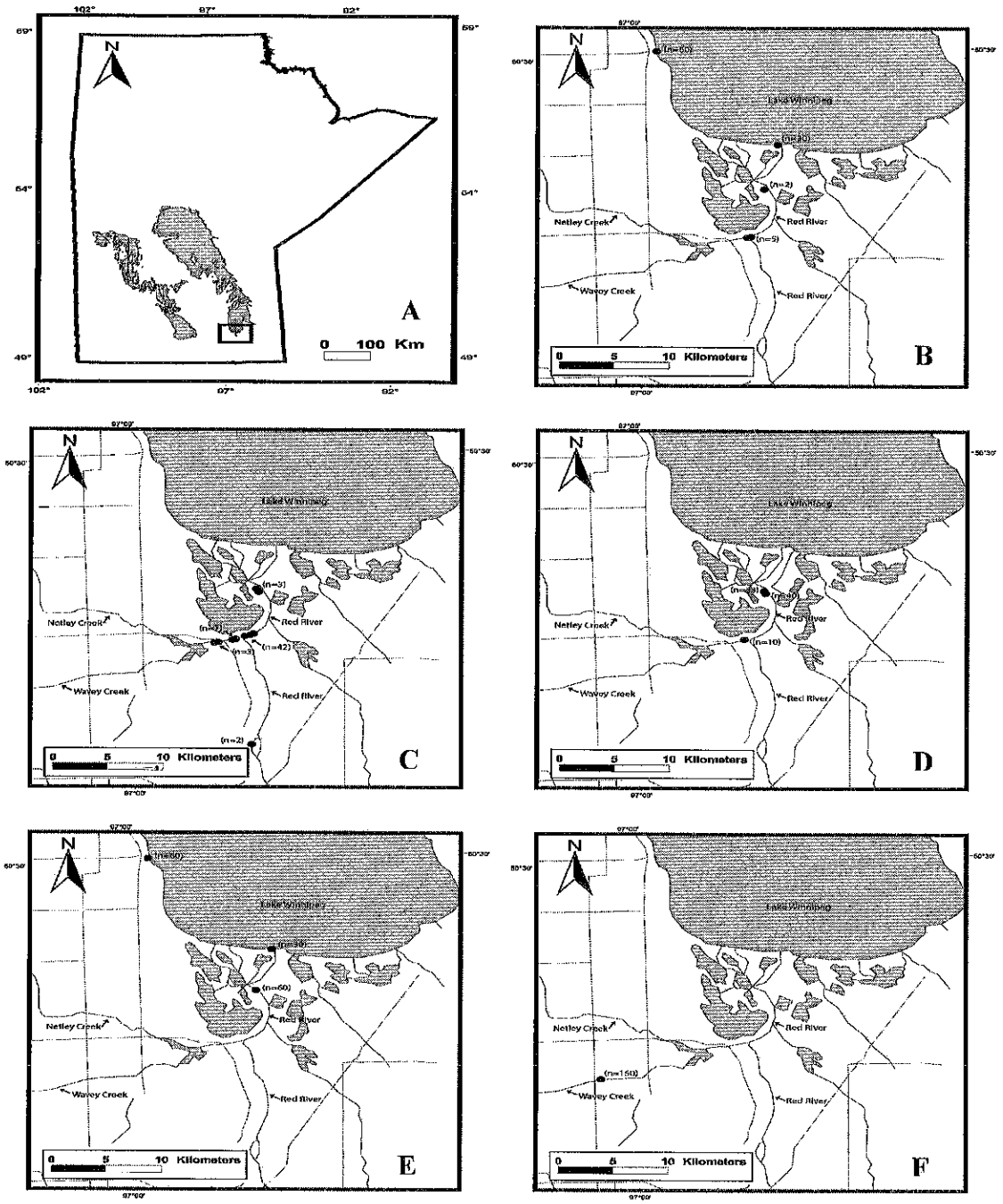

Figure 1. Sampling locations in the Red River delta area (A) for white bass (B), walleye (C), goldeye (D), emerald shiner (E) and brook stickleback (F).

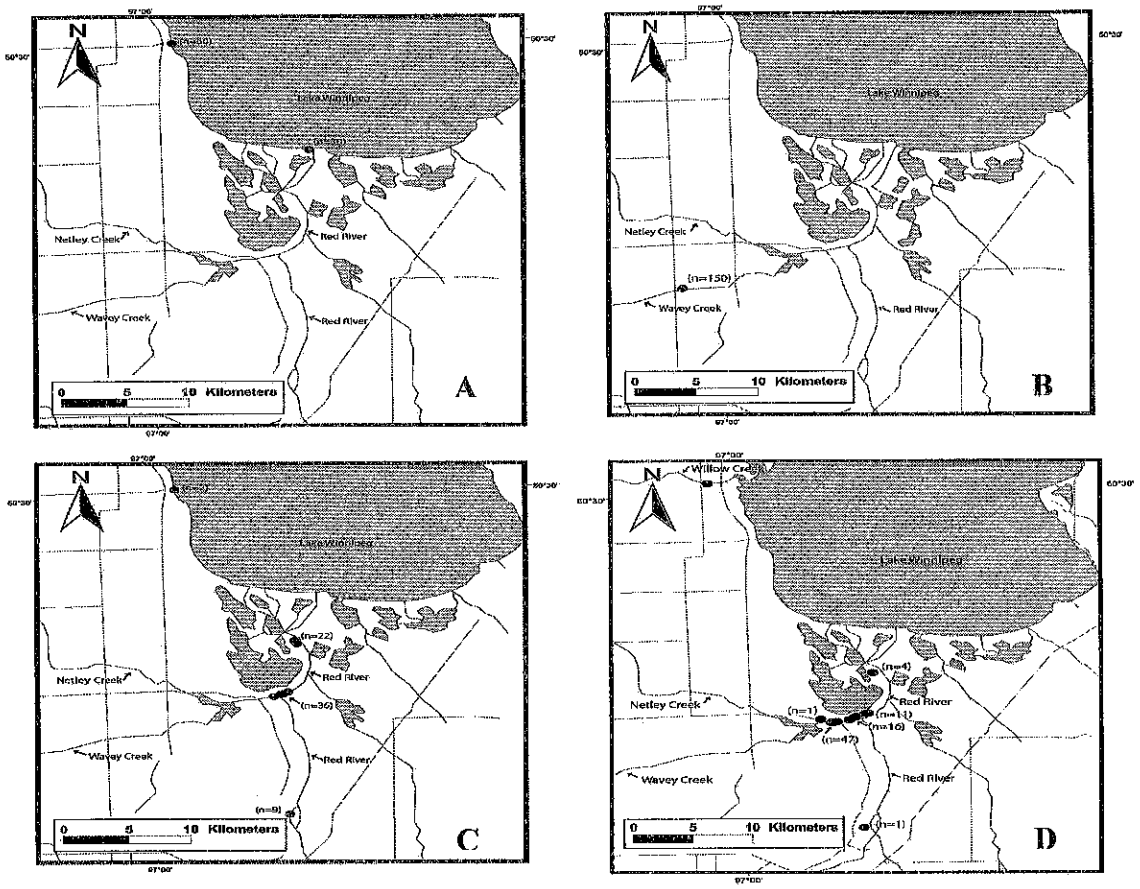

Figure 2. Sampling locations in the Red River delta area for yellow perch (A), fathead minnow (B), sauger (C) and northern pike (D).

Fish collections and data acquisition

Fish samples were collected by seining and with gillnets. Each fish was placed in a separate bag and identified by fish species, site and date of collection. The samples were frozen for full necropsies at a later date. Each fish was weighed and length (fork, total and standard) recorded, sex and state of maturity was also recorded and otoliths, opercles, cleithrum collected and used for aging. Spines were collected for aging goldeye but at the writing of this report sections were not available for counting growth rings.

Food collected from the stomach was identified and counted. Any identifiable parts of food items in the intestine were also recorded and identifiable as fish otoliths or vertebrae and insect parts (diptera eyes, wings or chironomid head capsules), etc..

Necropsies

Each fish was necropsied and the following organs checked; external body surface and gills, nares, and buccal area, gills, eyes, muscle, body cavity, esophagus, stomach, caecae, intestine, reproductive structures, heart, swim bladder, spleen and liver. Fresh tissues smears were not possible as all samples were frozen immediately after capture.

All parasites were identified to atleast genus and enumerated. Those parasite species not identified to species require freshly fixed material rather specimens from frozen samples.

The cestode *Bothriocephalus acheilognathi*

The discovery of the asian tapeworm *B. acheilognathi* in several fish hosts from the Red River delta samples led to additional sampling of emerald shiners (Figure 3). The generalized life cycle of this parasite is given in Figure 4.

All fish, food and parasite data is presented in spread sheets (Appendices 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12)

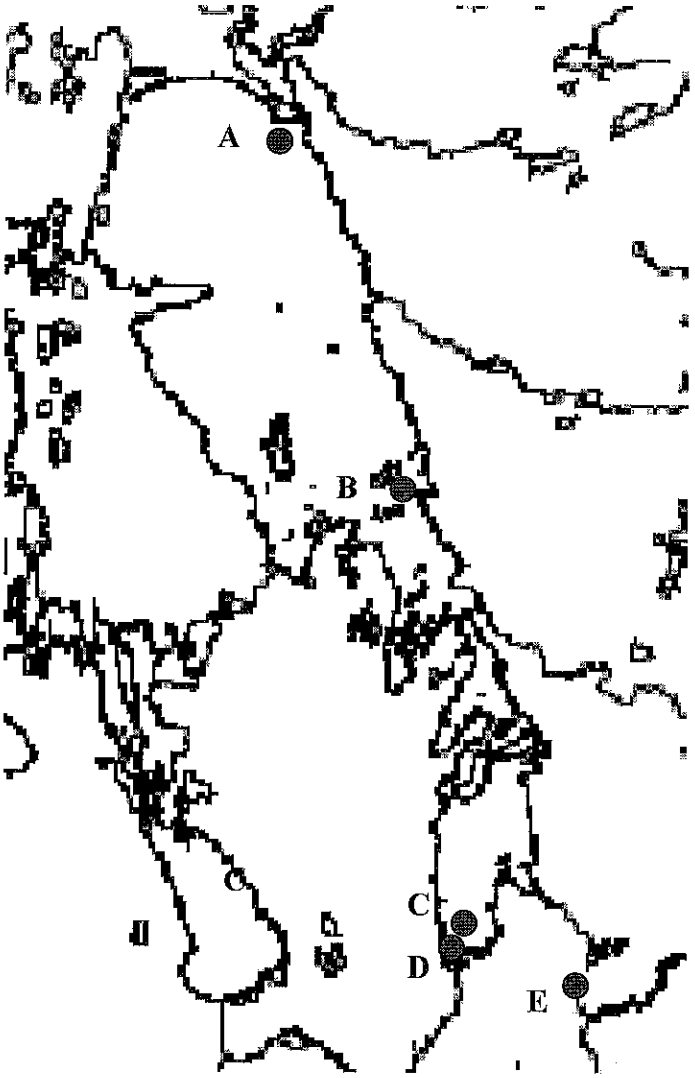

Figure 3. Emerald shiner sampling stations for 2006 were 22 (A), 16S (B), 60 (C) in Lake Winnipeg, the Red River delta (D) and Winnipeg River (E).

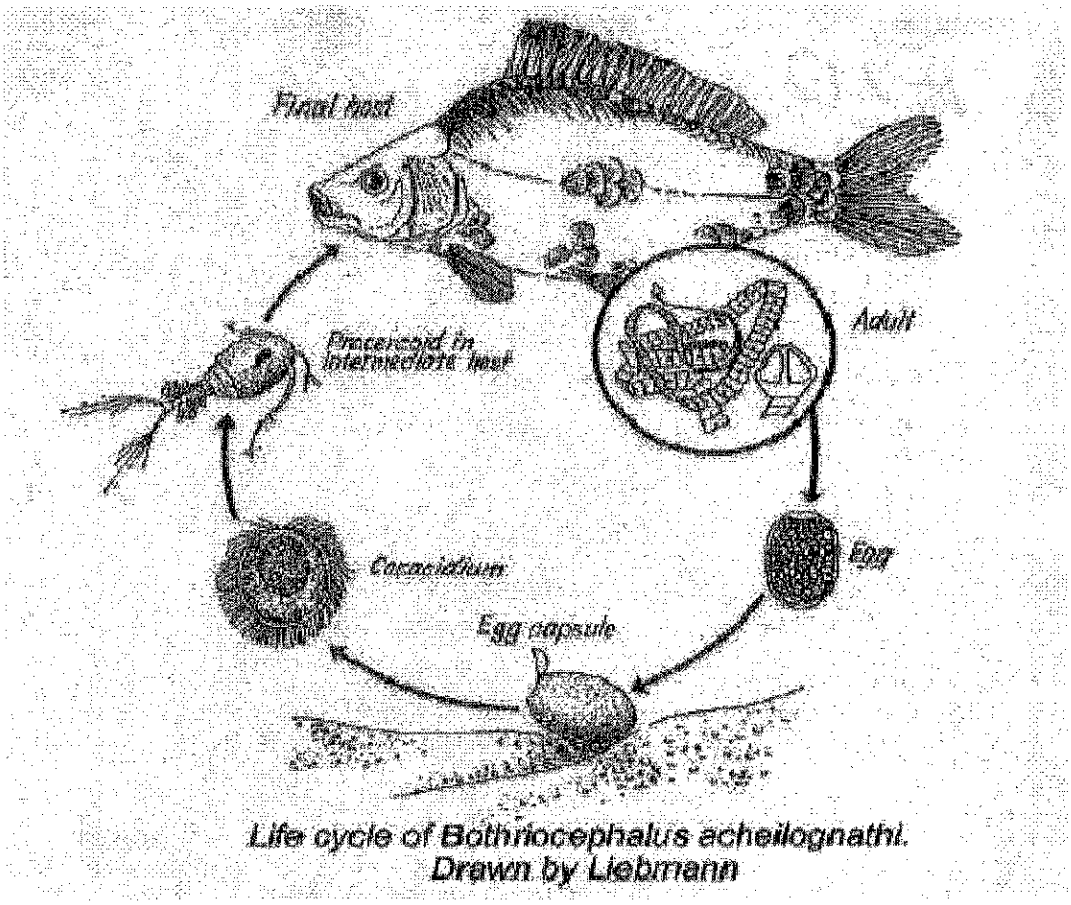

Figure 4. The life cycle of *Bothriocephalus acheilognathi* from a fish (cyprinid) and crustacea (copepod) hosts

Results

Fish data

Individual fish data is presented in Appendix 1. Additional data includes weight of soma, gonads, liver and visceral fat for each fish species.

Fish food

Individual fish data is presented in Appendix 2. Appendices 4, 5, 6, 7, 8, 9, 10, 11, 12 outline the food and parasites by individual for each fish species. The brook stickleback (Appendix 4) consumed chironomids, amphipods, and a few copepods. Emerald shiner food was mostly cladocerans, copepods and insects (Appendix 5). The fathead minnow stomachs were mostly empty but cladocerans and chironomids were occasionally noted (appendix 6). Goldeye food items included cladocerans, chironomids, copepods, water boatman, coleopteran and fish including small white bass. The most common food item in the goldeye samples was water boatman (Appendix 7). The food of northern pike was mostly fish but cladocerans, chironomids and gammarids were note occasionally (Appendix 8). The food of sauger was mostly fish but occasionally Odonata and other insect parts were noted (Appendix 9). The most common food item of walleye was fish with an occasional gammarid noted (Appendix 10). The main food items found in white bass were cladocerans, gammarids, copepods and water boatman (Appendix 11). The main food recorded from yellow perch were cladocerans, chironomids, copepods, gammarids and water boatman (Appendix 12)

Parasite data

Individual data is presented in Appendix 3. Tables 1 and 2 lists prevalence, mean intensity and abundances for the parasite species recovered from the fish

samples. The brook stickleback had very few parasites (Appendix 5) and most were larval forms. The most common parasite of emerald shiner was the tapeworm, *B. acheilognathi*, in the foregut and occasionally a Myxozoan on the gills (Appendix 6). Two larval trematodes, *Ornithodiplostomum ptylochleidus* and *Bolbophorus confuses*, were common in fat head minnows. A total of five parasite species were recovered from goldeye and the trematode *Crepidostomum illinoiensis* and the tapeworm *Bothriocephalus cuspidatus* were the most common (Appendix 7). The most common parasite of pike was the tapeworm, *Proteocephalus pinguis*, but *B. acheilognathi*, *Pomphorhychus bulbicollis* and *Camallanus oxycephalus* were also noted (Appendix 8). A total of seven parasite species were recorded from sauger. The two most common parasites of sauger were the crustacean *Ergasilus luciopercarum* and the tapeworm *B. cuspidatus* (Appendix 9). *Walleye* harbored eight parasite species with the three most common species, the crustaceasn, *E. luciopercarum*, the tapeworms *B. cuspidatus* and *P. pearsei* (Appendix 10). White bass had 11 species of parasite recorded with the monogenean, *Onchcleidus chrysops*, and the two tapeworms *B. claviceps* and *B. cuspidatus* mostly frequently recorded (Appendix 11). Eight parasite species were recovered from yellow perch and of these eight the tapeworm, *P. pearsei*, was the most common (Appendix 12).

Bothriocephalus acheilognathi was found in six species of fish (Tables 3 and 4) with the most common fish host, the emerald shiner. Prevalences of *B. acheilognathi* of ~ 14 and 32 % for sauger and pike, respectively (Table 3) indicates that these two fish hosts likely play an important role in egg dissemination.

The distribution of *B. acheilognathi* in emerald shiner (Figure 5) indicates that all stages of development are present in the September sample from the Red River delta. This suggests that not only are emerald shiners an important host for the dissemination of the eggs of the gravid worms but emerald shiners continue to acquire the parasite in the fall and may be an important source of new infections the following spring. The levels of *B. acheilognathi* in emerald shiner from different sample locations around the lake indicate it is now wide spread in Lake Winnipeg

(Table 4, Figure 3). Although the samples of older emerald shiner examined for *B. acheilognathi* was small no infections were found in emerald shiners greater then 1 year old (Table 4).

Since samples of emerald shiner from the Winnipeg River were negative for *B. acheilognathi* the route of entry into Canada is still unresolved. There is an urgent need for a comprehensive study to determine 1) the route of entry into Canada of this parasite, 2) its pathogenicity in all ages of Lake Winnipeg fishes, especially the commercially fished species and 3) its transmission dynamics in a north temperate region of the world since this parasite has been largely restricted, in the past, to south temperate and tropical areas.

Table 1. Prevalence, mean intensity (± SD) and mean abundance (± SD) of parasites found in Brook stickleback, emerald shiner, fathead minnow, goldeye and northern pike collected from the Red River delta area.

	Brook stickleback			Emerald Shiner			Fathead minnow			Goldeye			Northern pike		
	Prev	Mean Int	Abund	Prev	Mean Int	Abund	Prev	Mean Int	Abund	Prev	Mean Int	Abund	Prev	Mean Int	Abund
Myxozoa															
Myxosporidia	0.0	0.00 ± 0.00	0.00 ± 0.00	13.5	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Monogenea															
Onchocleidus chrysops	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Digenea															
Crepidostemum illinoiensis	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	63.6	31.76 ± 70.43	20.21 ± 57.80	0.0	0.00 ± 0.00	0.00 ± 0.00
Bucephalis sp.	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Allacanthochasmus sp.	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Ornithodiplostemum ptychocleidus	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	83.3	7.28 ± 4.70	6.07 ± 5.09	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Bolbophorus confusus	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	43.3	1.69 ± 1.18	0.73 ± 1.14	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Apophallus brevis	0.0	0.00 ± 0.00	0.00 ± 0.00	2.7	1.00 ± 0.00	0.03 ± 0.16	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Bunoderina sacculata	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Sanguinicola occidentalis	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Trematode (unknown)	3.3	1.00 ± 0.00	0.03 ± 0.18	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	6.1	2.00 ± 0.00	0.12 ± 0.48	0.0	0.00 ± 0.00	0.00 ± 0.00
Cestoda															
Bothriocephalus cuspidatus	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	87.9	95.72 ± 118.36	84.12 ± 115.17	3.4	14.00 ± 0.00	0.48 ± 2.60
Bothriocephalus acheilognathi	0.0	0.00 ± 0.00	0.00 ± 0.00	75.7	10.32 ± 9.01	7.81 ± 9.01	0.0	0.00 ± 0.00	0.00 ± 0.00	3.0	1.00 ± 0.00	0.03 ± 0.17	31.0	3.11 ± 2.67	0.97 ± 2.04
Bothriocephalus claviceps	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Bothriocephalus spp. (immature)	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	3.4	1.00 ± 0.00	0.03 ± 0.19
Proteocephalus pearsei	0.0	0.00 ± 0.00	0.00 ± 0.00	2.7	1.00 ± 0.00	0.03 ± 0.16	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	3.4	1.00 ± 0.00	0.03 ± 0.19
Proteocephalus pinguis	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	93.1	16.07 ± 15.67	14.97 ± 15.66
Proteocephalus spp. (immature)	10.0	1.00 ± 0.00	0.10 ± 0.31	0.0	0.00 ± 0.00	0.00 ± 0.00	3.3	1.00 ± 0.00	0.03 ± 0.18	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Ligula intestinalis	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Acanthocephala															
Pomporhynchus bulbicollis	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	3.4	6.00 ± 0.00	0.21 ± 1.11
Leptorhynchoides sc.	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Nematoda															
Camallanus	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	3.0	2.00 ± 0.00	0.06 ± 0.35	20.7	2.67 ± 2.25	0.55 ± 1.45
Raphidascaris acus	3.3	1.00 ± 0.00	0.03 ± 0.18	2.7	4.00 ± 0.00	0.11 ± 0.66	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Spiruriid nematode	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	3.4	1.00 ± 0.00	0.03 ± 0.19
Contracaecum spp.	6.7	1.00 ± 0.00	0.07 ± 0.25	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Nematode (unknown)	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	21.2	2.29 ± 1.89	0.48 ± 1.25	0.0	0.00 ± 0.00	0.00 ± 0.00
Mermithids (insects)	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	12.1	3.75 ± 0.96	0.45 ± 1.28	0.0	0.00 ± 0.00	0.00 ± 0.00
Crustacea															
Ergasilis luciopercarum	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00

Table 2. Prevalence, mean intensity (± SD) and mean abundance (± SD) of parasites found in sauger, walleye, white bass and yellow perch collected from the Red River delta area.

	Sauger			Walleye			White bass			Yellow perch		
	Prev	Mean Int	Abund	Prev	Mean Int	Abund	Prev	Mean Int	Abund	Prev	Mean Int	Abund
Myxozoa												
Myxozoan	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Monogenea												
Onchocleidus chrysops	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	94.6	18.83 ± 18.40	17.81 ± 18.40	0.0	0.00 ± 0.00	0.00 ± 0.00
Digenea												
Crepidostomum illinoiensis	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Bucephalis sp.	10	16.50 ± 25.36	1.65 ± 8.64	15.2	2.40 ± 1.34	0.36 ± 0.99	16.2	53.50 ± 37.68	8.68 ± 24.43	0.0	0.00 ± 0.00	0.00 ± 0.00
Allacanthochasmus sp.	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	13.5	3.40 ± 4.83	0.46 ± 1.99	0.0	0.00 ± 0.00	0.00 ± 0.00
Ornithodiplostomum ptychocleidus	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Bolbophorus confusus	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Apophallus brevis	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Bunoderina sacculata	2.5	1.00 ± 0.00	0.03 ± 0.16	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Sanguinicola occidentalis	0	0.00 ± 0.00	0.00 ± 0.00	3.0	1.00 ± 0.00	0.03 ± 0.17	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Trematode (unknown)	10.0	2.50 ± 1.73	0.25 ± 0.90	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Cestoda												
Bothriocephalus cuspidatus	90	20.33 ± 16.79	18.30 ± 17.07	97.0	74.19 ± 63.57	71.94 ± 63.89	32.4	16.17 ± 26.00	5.24 ± 16.29	15.6	2.80 ± 4.02	0.44 ± 1.78
Bothriocephalus achellognathi	15	3.33 ± 2.73	0.50 ± 1.55	9.1	1.33 ± 0.58	0.12 ± 0.42	16.2	6.33 ± 6.15	1.03 ± 3.30	0.0	0.00 ± 0.00	0.00 ± 0.00
Bothriocephalus claviceps	0	0.00 ± 0.00	0.00 ± 0.00	3.0	2.00 ± 0.00	0.06 ± 0.35	35.1	3.38 ± 2.50	1.19 ± 2.18	3.1	1.00 ± 0.00	0.03 ± 0.18
Bothriocephalus spp. (immature)	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	18.9	6.00 ± 5.60	1.14 ± 3.30	6.3	1.00 ± 0.00	0.06 ± 0.25
Proteocephalus pearsei	32.5	2.46 ± 1.33	0.80 ± 1.38	21.2	11.71 ± 17.02	2.48 ± 8.83	10.8	5.50 ± 8.35	0.59 ± 2.97	28.1	1.44 ± 0.73	0.41 ± 0.76
Proteocephalus pinguis	0	0.00 ± 0.00	0.00 ± 0.00	3.0	9.00 ± 0.00	0.27 ± 1.57	0.0	0.00 ± 0.00	0.00 ± 0.00	3.1	3.00 ± 0.00	0.09 ± 0.53
Proteocephalus spp. (immature)	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	8.1	12.00 ± 10.15	0.97 ± 4.09	6.3	1.00 ± 0.00	0.06 ± 0.25
Ligula intestinalis	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	3.1	1.00 ± 0.00	0.03 ± 0.18
Acanthocephala												
Pomporhynchus bulbicollis	0	0.00 ± 0.00	0.00 ± 0.00	3.0	4.00 ± 0.00	0.12 ± 0.70	10.8	3.50 ± 1.73	0.38 ± 1.21	0.0	0.00 ± 0.00	0.00 ± 0.00
Leptorhynchoides	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	2.7	5.00 ± 0.00	0.14 ± 0.82	0.0	0.00 ± 0.00	0.00 ± 0.00
Nematoda												
Camallanus	37.5	5.33 ± 6.00	2.00 ± 4.44	27.3	9.67 ± 10.37	2.64 ± 6.78	21.6	2.75 ± 2.67	0.59 ± 1.71	0.0	0.00 ± 0.00	0.00 ± 0.00
Raphidascaris acus	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Spiruriid	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	5.4	69.50 ± 75.66	3.76 ± 20.32	0.0	0.00 ± 0.00	0.00 ± 0.00
Contracecum spp.	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Nematode (unknown)	0	0.00 ± 0.00	0.00 ± 0.00	6.1	1.00 ± 0.00	0.06 ± 0.24	2.7	1.00 ± 0.00	0.03 ± 0.16	0.0	0.00 ± 0.00	0.00 ± 0.00
Mermithids (from insects)	0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00	0.0	0.00 ± 0.00	0.00 ± 0.00
Crustacea												
Ergasilus luciopercarum	77.5	68.65 ± 62.53	53.20 ± 62.05	63.6	28.33 ± 46.15	18.03 ± 39.02	2.7	1.00 ± 0.00	0.03 ± 0.16	0.0	0.00 ± 0.00	0.00 ± 0.00

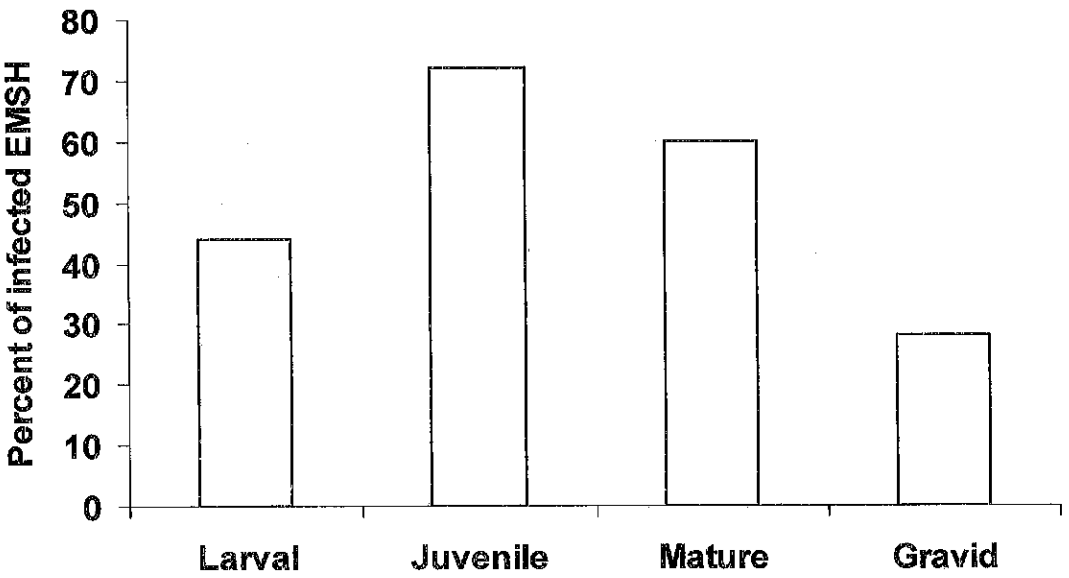

Figure 5: Distribution of larval, juvenile, sexually mature and gravid (egg producing) worms of *Bothriocephalus acheilognathi* collected from emerald shiners in Lake Winnipeg

Table 3: Prevalence and mean intensity of *Bothriocephalus acheilognathi* in selected fish species from the Red River delta

Fish species	Prevalence. %	Mean intensity
Goldeye	4.5	1.0 ± 0
Walleye	4.5	1.0 ± 0
Sauger	13.6	3.3 ± 1.5
Pike	31.8	2.9 ± 2.5
White bass†	4.5	4 ± 0
Brook stickleback*	0	0
Yellow perch†	0	0
Fathead minnow*	0	0

Table 4: Data on the distribution of *Bothriocephalus acheilognathi* in emerald shiner from selected locations in Lake Winnipeg from the 2006 pelagic samples. See Figure 3 for the sample locations. Note, sample from Winnipeg River were collected 2003. Emsh = emerald shiner; YOY = young-of-the-year

Site	Date	Number of Emsh sampled	Fish size	Prev.
WPG R. (below Seven sisters)	**July '03**	**46**	**Adult & YOY**	**0**
L. WPG North basin	**Sept. '06**	**5**	**YOY**	**80%**
L. WPG narrows	**June/ Sept. '06**	**20**	**Adult & YOY**	**20%**
L . WPG south basin (site 1)	**June/ Oct. '06**	**20**	**Adult & YOY**	**10%**
L. WPG south basin (site 2)	**Oct. '06**	**5**	**YOY**	**40%**

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APPENDICES

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
WHBS-001		White bass	26/09/2006	Red River Delta	50.39764	96.81422	11.5		96.7	89.2	78.1	1	?	Juvenile		0.13771	0.106
GLDE-002	DFO 4313	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	144.3		271	251	232		M	Mature-resting	0.101	1.50000	0.045
WLYE-003	DFO 4854	Walleye		Red River Delta			570		384	366	333	5	F	Mature-resting	1.600	8.00000	17.200
WLYE-004	DFO 4842	Walleye		Red River Delta			765		405	387	360	5	M	Mature-resting	16.700	13.10000	48.300
PIKE-005	DFO 4417	Northern pike		Red River Delta			1204		571	547	509	4	F	Mature-resting	37.900	19.20000	1.700
PIKE-006	DFO 0291	Northern pike		Red River Delta			4796		901	865	805	7	F	Mature-resting	177.800	83.00000	44.700
WHBS-007		White bass	26/09/2006	Red River Delta	50.39764	96.81422	11.5		96.3	88.6	77.7	1	?	Juvenile		0.15526	0.117
GLDE-008	DFO 4897	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	322		311	290	266		F	Mature	20.900	2.40000	8.300
GLDE-009	DFO 4311	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	266		283	267	246		F	Mature-resting	4.000	2.80000	16.800
GLDE-010	DFO 4898	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	217		277	259	235		M	Mature-resting	0.131	2.30000	6.500
PIKE-011	DFO 4406	Northern pike		Red River Delta			5631		906	870	807	8	F	Mature-resting	190.100	116.50000	28.700
WHBS-012		White bass	26/09/2006	Red River Delta	50.39764	96.81422	9.1		90.2	82.5	71.6	1	?	Juvenile		0.12249	0.093
WLYE-013	DFO 4843	Walleye		Red River Delta			669		408	387	352	?	F	Mature-resting	1.600	8.90000	15.800
WLYE-014	DFO 4841	Walleye		Red River Delta			867		439	422	386	4	F	Mature-resting	2.300	9.90000	28.000
WLYE-015	DFO 4845	Walleye		Red River Delta			2329		589	563	511	9	F	Mature-resting	190.900	62.10000	83.900
GLDE-016	DFO 4301	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	318		302	281	257		F	Mature-resting	3.300	2.50000	22.600
GLDE-017	DFO 4899	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	306		290	273	244		F	Mature-resting	5.200	3.00000	28.500
GLDE-018	DFO 4302	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	93		220	203	184		?			0.80000	1.200
WLYE-019	DFO 4855	Walleye		Red River Delta			269		296	282	250	5	F	Mature-resting	22.900	6.80000	11.100
WHBS-020		White bass	26/09/2006	Red River Delta	50.39764	96.81422	8.4		88.6	83.1	72.4	1	?	Juvenile		0.15811	0.086
WLYE-021	DFO 4840	Walleye		Red River Delta			3486		652	630	570	10	F	Mature-resting	238.900	74.40000	258.300
WLYE-022	DFO 4851	Walleye		Red River Delta			388		335	326	281		M	Mature-resting	6.800	6.20000	27.200
GLDE-023	DFO 4894	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	299		300	276	252		F	Mature-resting	1.900	3.20000	14.500
GLDE-024	DFO 4822	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	199		261	245	216		M	Mature-resting	0.300	1.30000	9.300
WLYE-025	DFO 4838	Walleye		Red River Delta			314		309	293	266	4	M	Mature-resting	5.500	8.90000	15.400
WHBS-026		White bass	26/09/2006	Red River Delta	50.39764	96.81422	4.4		69.3	64.9	57	1	?	Juvenile		0.07515	0.073
GLDE-027	DFO 4312	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	181		264	248	221		?			1.90000	6.700
PIKE-028	DFO 0284	Northern pike		Red River Delta			5278		875	848	789	6	F	Mature-resting	236.400	109.20000	7.300
WLYE-029	DFO 4853	Walleye		Red River Delta			1299		476	452	417	8	M	Mature-resting	36.500	21.40000	69.300
WLYE-030	DFO 4852	Walleye		Red River Delta			1077		450	434	394	8	M	Mature-resting	33.600	13.80000	59.000
GLDE-031	DFO 4306	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	229		281	262	239		F	Mature-resting	0.300	1.80000	9.900
GLDE-032	DFO 4310	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	237		282	265	236		?	Mature-resting		1.70000	14.000
PIKE-033	DFO 0282	Northern pike		Red River Delta			4185		816	783	729	7	F	Mature-resting	137.700	72.70000	23.400
WLYE-034	DFO 4844	Walleye		Red River Delta			516		366	357	321	5	F	Mature-resting	38.100	14.60000	19.600
WLYE-035	DFO 4831	Walleye		Red River Delta			2893		633	608	556	8	F	Mature-resting	270.400	102.50000	68.400
GLDE-036	DFO 4304	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	172		263	244	218		?	Mature-resting		1.50000	5.100
WLYE-037	DFO 4849	Walleye		Red River Delta			841		421	403	368	5	M	Mature-resting	20.400	14.90000	44.900
PIKE-038	DFO 0293	Northern pike		Red River Delta			750		487	462	427	?	M	Mature-resting	11.200	9.40000	5.400
GLDE-039	DFO 4305	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	109		234	218	195		F	Mature-resting	0.600	0.90000	2.200
WLYE-040	DFO 4830	Walleye		Red River Delta			1125		462	447	401	7	F	Mature-resting	64.000	29.10000	41.100
WLYE-041	DFO 0283	Walleye		Red River Delta			4114		831	797	734		M	Mature-resting	41.300	74.70000	62.800
GLDE-042	DFO 4893	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	150		250	232	209		?	Mature-resting		1.20000	3.900
PIKE-043	DFO 0280	Northern pike		Red River Delta			3059		751	714	672	7	F	Mature-resting	156.000	70.40000	18.400
GLDE-044	DFO 4896	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	300		302	281	252		?	Mature-resting		2.80000	25.300

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
WLYE-045	DFO 4825	Walleye		Red River Delta			2093		581	565	520	7	F	Mature-resting	145.200	62.40000	176.000
PIKE-046	DFO 4443	Northern pike		Red River Delta			2998	2549	753	719	663	6	F	Mature-resting	105.100	49.90000	16.100
WLYE-047	DFO 0296	Walleye		Red River Delta			491	414	359	344	302	3	M	Mature-resting	8.900	5.40000	20.800
WLYE-048	DFO 4824	Walleye		Red River Delta			838	727	431	416	371	7	F	Mature-resting	2.000	14.50000	30.700
SAGR-049	DFO 4317	Sauger		Red River Delta			193	172	283	271	242	4	F	Mature-resting	0.500	2.70000	5.000
WLYE-050	DFO 4856	Walleye		Red River Delta			293	252	316	300	267	4	M	Mature-resting	7.300	4.60000	9.000
GLDE-051	DFO 4900	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	167	147	256	237	217		?	Mature-resting		1.80000	7.500
WLYE-052	DFO 4839	Walleye		Red River Delta			215	193	282	266	240	2	F	Mature-resting	0.500	2.50000	4.500
SAGR-053	DFO 4431	Sauger		Red River Delta			365	318	337	323	290	3	F	Mature-resting	0.900	4.40000	17.600
SAGR-054	DFO 4322	Sauger		Red River Delta			272	227	301	285	253	4	F	Mature-resting	8.300	7.10000	13.400
GLDE-055	DFO 4307	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	231	190	267	251	226		M	Mature-resting	0.125	2.60000	16.400
SAGR-056	DFO 4323	Sauger		Red River Delta			427	335	345	334	298	4	F	Mature-resting	8.400	9.20000	16.500
PIKE-057	DFO 4405	Northern pike		Red River Delta			784	714	492	468	431	3	F	Mature-resting	15.000	12.30000	3.200
PIKE-058	DFO 4801	Northern pike		Red River Delta			1371	1221	585	556	512	4	M	Mature-resting	17.400	20.00000	7.100
GLDE-059	DFO 4303	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	126	116	238	225	200		?	Mature-resting		1.20000	2.800
WLYE-060	DFO 4828	Walleye		Red River Delta			1073	944	470	456	413	8	M	Mature-resting	23.400	14.20000	38.400
GLDE-061	DFO 4892	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	226	199	276	257	235		M	Mature-resting	0.400	1.80000	12.900
SAGR-062	DFO 4320	Sauger		Red River Delta			390	345	342	323	288	6	M	Mature-resting	6.800	6.60000	13.200
PIKE-063	DFO 4807	Northern pike		Red River Delta			284	258	361	340	312	2	M	Juvenile	1.900	3.80000	1.000
GLDE-064	DFO 4314	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	162	144	254	239	216		?	Mature-resting	0.032	2.00000	6.500
PIKE-065	DFO 0292	Northern pike		Red River Delta			763	664	486	463	427	2	M	Mature-resting	13.800	9.10000	2.500
WLYE-066	DFO 4864	Walleye		Red River Delta			220	205	282	273	241	3	M	Mature-resting	1.100	1.50000	3.300
WLYE-067	DFO 4888	Walleye		Red River Delta			434	377	350	335	300	5	M	Mature-resting	8.800	3.00000	13.500
GLDE-068	DFO 4864	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	194	175	270	256	236		?			1.20000	7.300
PIKE-069	DFO 4803	Northern pike		Red River Delta			4321	3716	834	801	750	5	F	Mature-resting	178.100	80.60000	42.500
PIKE-070	DFO 4808	Northern pike		Red River Delta			4089	3527	807	780	725	5	F	Mature-resting	202.200	81.90000	49.000
FHMW-071		Fathead minnow	20/10/2006	Wavey Creek			0.72437	0.58886	41.1	39.7	34.5	1	F	Mature	0.037	0.01811	0.000
FHMW-072		Fathead minnow	20/10/2006	Wavey Creek			0.74822	0.60174	42.5	40	36.1	1	M	Mature-resting	0.001	0.01808	0.004
FHMW-073		Fathead minnow	20/10/2006	Wavey Creek			0.70936	0.61627	41.3	39	33.7	1	M	Mature-resting	0.003	0.02314	0.002
FHMW-074		Fathead minnow	20/10/2006	Wavey Creek			0.92533	0.7376	45.9	42.2	37.7	1	F	Mature-resting	0.056	0.04598	
FHMW-075		Fathead minnow	20/10/2006	Wavey Creek			0.7065	0.54171	41.8	39.4	34.8	1	F	Mature-resting	0.025	0.02512	
EMSH-076		Emerald shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.94618	0.8188	50.4	47	42	1	?			0.00513	
EMSH-077		Emerald shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.71984	0.59469	46.8	42.7	37.9	1	?			0.00388	
EMSH-078		Emerald shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.27735	1.07666	52.9	49.4	44.4	1	?			0.00874	0.007
EMSH-079		Emerald shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.66534	0.52539	?	?	37.5	1	F	Juvenile	0.001	0.00341	0.001
EMSH-080		Emerald shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.64475	54692	45.8	41.9	37.1	1	?	Unk	Unk	0.00653	0.004
YLPR-081		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	5	4.4	79.6	73.6	67.8	1	M	Juvenile	0.342	0.01913	0.038
YLPR-082		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	2.1	1.9	61.1	59.2	51.7	1	F	Juvenile	0.002	0.02126	0.003
YLPR-083		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	5.4	4.6	79.7	73.2	64.5	1	M	Juvenile	0.332	0.02916	0.003
YLPR-084		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	6.4	5.9	85.5	82.5	70.8	1	M	Juvenile	0.018	0.03970	0.012
YLPR-085		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	5.5	4.8	81.4	75.5	67.1	1	M	Juvenile	0.352	0.03109	0.001
BKSB-086		Brook stickleback	26/9/2006	Wavey Creek			0.74344	0.6111	42.2		34.9	1	M	Mature-resting	0.005	0.03362	0.001
BKSB-087		Brook stickleback	26/9/2006	Wavey Creek			1.12082	0.84664	48.1		42.2	2	M	Mature-resting	0.008	0.05254	0.001
BKSB-088		Brook stickleback	26/9/2006	Wavey Creek			1.07812	0.91968	48.7		41.7	2	M	Mature-resting	0.007	0.06245	

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
BKSB-089		Brook stickleback	26/9/2006	Wavey Creek			0.43658	0.32777	41		32.3	1	F	Mature-resting	0.012	0.02335	0.00102
BKSB-090		Brook stickleback	26/9/2006	Wavey Creek			0.580	0.47226	39.8		34.8	1	M	Mature-resting	0.009	0.02242	0.001
WLYE-091	DFO 4848	Walleye		Red River Delta			1262	1.34	472	455	411	5	F	Mature-resting	43.200	22.70000	112.200
WLYE-092	DFO 4847	Walleye		Red River Delta			729	641	416	400	361	5	M	Mature-resting	15.400	8.80000	19.300
EMSH-093		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.79552	0.63047		43.4	37.4	1	?	Juvenile	0.013	0.01273	
EMSH-094		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.06371	0.85083		48	43.4	1	F	Juvenile	0.005	0.01835	
EMSH-095		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.60387	0.48484			35.8	1	?	Juvenile		0.00339	0.005
EMSH-096		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.59182	0.46741	44.4	40	35.5	1	?	Juvenile		0.00324	0.006
EMSH-097		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.30314	1.06877	57.4	53.5	48.3	1	?	Juvenile		0.01746	0.004
EMSH-098		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.76842	0.62434			38.8	1	?	Juvenile		0.00739	0.005
EMSH-099		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.75003	0.63038	48.1	43	38.3	1	?	Juvenile		0.01335	
EMSH-100		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.80573	0.71774			39.8	1	?	Juvenile		0.00424	
EMSH-101		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.67668	0.54657	45.1	40.9	36.4	1	?	Juvenile		0.00536	0.002
EMSH-102		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.46118	0.3853	40.4	36.2	32.3	1	?	Juvenile			
EMSH-103		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.04782	0.89232	51.3	47.1	42.3	1	?	Juvenile		0.00696	0.003
EMSH-104		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.09343	0.92084	52	47.2	41.2	1	?	Juvenile		0.01817	
EMSH-105		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.74745	0.5796			36.4	1	?	Juvenile		0.00445	0.003
EMSH-106		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.16733	0.95973			44.7	1	?	Juvenile		0.01028	0.007
EMSH-107		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.93771	0.74172	48.9	44.8	39.3	1	?	Juvenile		0.00487	0.010
EMSH-108		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	1.19143	1.00331	47.7	43.7		1	?	Juvenile		0.00563	
EMSH-109		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.82416	0.68075	49	44.3	39.5	1	?	Juvenile		0.00605	0.005
EMSH-110		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.9179	0.76923	49.4	44.9	40	1	?	Juvenile		0.01560	
EMSH-111		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.69877	0.59932			36.6	1	?	Juvenile		0.00567	0.003
EMSH-112		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.37453	0.30831			32.1	1	?	Juvenile			
EMSH-113		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.6116	0.51405			34.8	1	?	Juvenile		0.00298	0.001
EMSH-114		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.9147		49.3	44.2	39	1	?	Juvenile		0.01252	0.003
EMSH-115		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.46521	0.3931		36.7	32	1	?	Juvenile		0.00375	
EMSH-116		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.77663	0.66218			38.1	1	?	Juvenile		0.00965	0.005
EMSH-117		Emerals shiner	26/9/2006	Red River Delta	50.39764	96.81422	0.60905	0.49164	42.7	40	35.4	1	?	Juvenile			
WLYE-118	DFO 04829	Walleye		Red River Delta			1466	1310	508	492	1140	9	M	Mature-resting	42.100	17.60000	19.700
PIKE-119	DFO 04806	Northern pike		Red River Delta			4403	3811	804	765	722	?	F	Mature-resting	208.700	113.30000	71.300
WHBS-120		White bass	26/09/2006	Red River Delta	50.39764	96.81422	6.1	5.2	80.7	74.2	64.3	1	?	Juvenile		0.09142	0.127
SAGR-121	DFO 4434	Sauger		Red River Delta			359	301	32.3	31.2	27.3	?	F	Mature-resting	18.000	7.50000	15.800
YLPR-122		Yellow perch	26/09/2006	Red River Delta	50.39764	96.81422	4.1	3.8	75.3	69.8	61.4	1	M	Juvenile	0.012	0.04753	0.019
YLPR-123		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	2.1	1.9	58.3	56.2	48.7	1	M	Juvenile	0.008	0.02386	0.000
YLPR-124		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	5	4.4			62.2	1	M	Juvenile	0.282	0.04564	0.017
YLPR-125		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	5.2	4.7	82	76.9	67	1	M	Juvenile	0.019	0.05530	0.030
YLPR-126		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.3	3	68.1	63.2	55.6	1	?	Juvenile		0.02256	0.013
SAGR-127	DFO 4866	Sauger		Red River Delta			340	291	322	308	279	5	M	Mature-resting	7.100	4.80000	23.700
SAGR-128	DFO 4433	Sauger		Red River Delta			327	276	310	304	271	4	M	Mature-resting	0.700	6.60000	17.300
SAGR-129	DFO 4871	Sauger		Red River Delta			415	346	340	333	298	5	F	Mature-resting	11.700	11.30000	26.600
BKSB-130		Brook stickleback	20/10/2006	Wavey Creek			1.19853	0.88726	51		46	1	F	Mature-resting	0.04156	0.06078	0.00069
BKSB-131		Brook stickleback	20/10/2006	Wavey Creek			1.70064	1.32045	55.6		48.9	1	M	Mature-resting	0.01165	0.10843	0.00660
BKSB-132		Brook stickleback	20/10/2006	Wavey Creek			0.61453	0.47761	43.4		37.9	1	F	Mature-resting	0.01604	0.02532	0.00159

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
BKSB-133		Brook stickleback	20/10/2006	Wavey Creek			0.67364	0.45142	40.1		35	1	M	Mature-resting	0.00231	0.03340	0.00271
BKSB-134		Brook stickleback	20/10/2006	Wavey Creek			0.795	0.61374	45		39.4	1	M	Mature-resting	0.00796	0.03406	0.00124
WLYE-135	DFO 4857	Walleye		Red River Delta			166	153	255	245	218	2	F	Juvenile	0.300	1.90000	2.100
PIKE-136	DFO 4811	Northern pike		Red River Delta			650	609	473	452	415	4	M	Juvenile	7.400	6.50000	0.400
WHBS-137	DFO 4436	White bass		Red River Delta			675	594	334	310	262	5	M	Mature-resting	25.500	8.80000	25.900
PIKE-138	DFO 4813	Northern pike		Red River Delta			382	353	395	379	348	5	M	Juvenile	5.500	3.30000	0.900
WHBS-139	DFO 4427	White bass		Red River Delta			974	862	Umk	360	320	10	M	Mature-resting	35.800	13.70000	34.100
WHBS-140	DFO 4881	White bass	26/9/2006	Red River Delta	50.34670	96.83948	663	490	Unk	305	269	6	M	Mature-resting	22.900	8.30000	14.400
WHBS-141	DFO 4880	White bass	26/9/2006	Red River Delta	50.34670	96.83948	891	805	377	355	301	10	M	Mature-resting	29.700	10.20000	20.600
PIKE-142	DFO 4879	Northern pike	26/9/2006	Red River Delta	50.34670	96.83948	1071	983	533	511	466	3	M	Mature-resting	23.400	10.70000	12.000
PIKE-143	DFO 4812	Northern pike		Red River Delta			544	493	430	414	382	3	M	Juvenile?	5.200	6.10000	1.400
WHBS-144	DFO 4426	White bass		Red River Delta			1028	904	393	367	323	6	M	Mature-resting	45.600	13.00000	32.900
FHMW-145		Fathead minnow	20/10/2006	Wavey Creek			0.55931	0.42059	39.9	37.1	32.3	1	F	Mature-resting	0.02702	0.01699	0.00000
FHMW-146		Fathead minnow	20/10/2006	Wavey Creek			0.89464	0.65394	45.2	41.3	36.9	1	F	Mature-resting	0.04060	0.03296	0.00975
FHMW-147		Fathead minnow	20/10/2006	Wavey Creek			0.98049	0.78915	46.4	43.1	38.1	1	M	Mature-resting	0.00349	0.03103	0.00240
FHMW-148		Fathead minnow	20/10/2006	Wavey Creek			0.94564	0.78507	46.4	43.6	39	1	M	Mature-resting	0.00242	0.03054	0.00871
FHMW-149		Fathead minnow	20/10/2006	Wavey Creek			0.80428	0.65102	43.4	40.3	35.6	1	?	Mature-resting		0.02285	0.00000
SAGR-150	DFO 4858	Sauger	28/9/2006	Red River Delta	50.34899	96.84066	401	350	339	325	295	4	F	Mature-resting	10.800	7.30000	17.900
PIKE-151	DFO 0281	Northern pike		Red River Delta			1893	1354	637	605	556	4	F	Mature-resting	47.400	27.30000	3.600
SAGR-152	DFO 4439	Sauger		Red River Delta			332	295	323	308	274	5	M	Mature-resting	4.000	4.60000	13.800
SAGR-153	DFO 4316	Sauger		Red River Delta			360	315	326	312	276	4	M	Mature-resting	7.400	4.80000	18.600
SAGR-154	DFO 4321	Sauger		Red River Delta			98.5	90.1	229	219	193	3	?	Juvenile		1.30000	3.100
SAGR-155	DFO 4319	Sauger		Red River Delta			375	336	334	323	289	5	M	Mature-resting	6.500	5.00000	11.500
SAGR-156	DFO 4324	Sauger		Red River Delta			450	381	361	350	315	4	M	Mature-resting	1.200	5.70000	29.700
WHBS-157		White bass	26/9/2006	Red River Delta	50.39764	96.81422	11.9	10.6	95.3	90.5	78	1	?	Juvenile		0.19652	0.162
WHBS-158		White bass	26/9/2006	Red River Delta	50.39764	96.81422	6.2	5.3	76.4	72.6	62.9	1	?	Juvenile		0.12876	0.084
WHBS-159		White bass	26/9/2006	Red River Delta	50.39764	96.81422	11.4	10.2	96.4	87.8	77.5	1	?	Juvenile		0.11653	0.063
WHBS-160		White bass	26/9/2006	Red River Delta	50.39764	96.81422	4	3.4		63	53.8	1	?	Juvenile		0.07585	0.051
WHBS-161		White bass	26/9/2006	Red River Delta	50.39764	96.81422	3.5	3.1	63.8	59.3	49.9	1	?	Juvenile		0.06268	0.081
SAGR-162	DFO 4318	Sauger		Red River Delta			356	305	334	320	280	5	M	Mature-resting	3.600	8.70000	13.200
SAGR-163	DFO 4875	Sauger		Red River Delta			260	216	292	279	253	4	F	Mature-resting	6.200	5.40000	14.200
SAGR-164	DFO 0234	Sauger		Red River Delta			72.1	66.8	212	200	177	2	F	Juvenile	0.200	0.80000	0.800
SAGR-165	DFO 0231	Sauger		Red River Delta			368	306	330	315	280	4	F	Juvenile	0.900	9.70000	20.900
SAGR-166	DFO 0233	Sauger		Red River Delta			73.3	65.4	211	200	176	2	F	Juvenile	0.100	1.20000	1.600
BKSB-167		Brook stickleback	20/10/2006	Wavey Creek			0.42311	0.30436	35.3		30.2	1	M	Mature-resting	0.00298	0.03082	0.00320
BKSB-168		Brook stickleback	20/10/2006	Wavey Creek			0.47432	0.34049	38.3		32.1	1	F	Mature-resting	0.01408	0.02243	0.00000
BKSB-169		Brook stickleback	20/10/2006	Wavey Creek			0.57815	0.46274	42		36.8	1	M	Mature-resting	0.00389	0.02130	0.00114
BKSB-170		Brook stickleback	20/10/2006	Wavey Creek			0.64616	0.00124	41.1		37.9	1	F	Mature-resting	0.02184	0.02475	0.00124
BKSB-171		Brook stickleback	20/10/2006	Wavey Creek			0.70512	0.57302	43.8		38.5	1	M	Mature-resting	0.00671	0.03358	0.00000
BKSB-172		Brook stickleback	20/10/2006	Wavey Creek			0.58993	0.47631	41.3		35.5	1	M	Mature-resting	0.00581	0.03178	0.00097
BKSB-173		Brook stickleback	20/10/2006	Wavey Creek			0.71674	0.56200	43.9		38.5	1	M	Mature-resting	0.00501	0.03203	0.00095
BKSB-174		Brook stickleback	20/10/2006	Wavey Creek			0.59376	0.46486	41.6		36.2	1	F	Mature-resting	0.01882	0.02715	0.00094
BKSB-175		Brook stickleback	20/10/2006	Wavey Creek			0.84806	0.66015	47.2		41.4	1	F	Mature-resting	0.02583	0.03526	0.00000

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
BKSB-176		Brook stickleback	20/10/2006	Wavey Creek			0.65719	0.52912	42.3		36.8	1	F	Mature-resting	0.01339	0.03485	0.00272
BKSB-177		Brook stickleback	20/10/2006	Wavey Creek			0.28412	0.21531	32.3		27.7	1	M	Mature-resting	0.00255	0.00739	0.00000
BKSB-178		Brook stickleback	20/10/2006	Wavey Creek			0.94715	0.77731	49.6		43	2	M	Mature-resting	0.00915	0.03612	0.00289
BKSB-179		Brook stickleback	20/10/2006	Wavey Creek			0.58288	0.50864	41.1		36.3	1	M	Mature-resting	0.00415	0.01617	0.00000
BKSB-180		Brook stickleback	20/10/2006	Wavey Creek			0.48468	0.38543	38.3		33.2	1	M	Mature-resting	0.00466	0.02000	0.00000
PIKE-181	DFO 4802	Northern pike		Red River Delta			1483	1383	624	594	551	4	F	Juvenile	4.400	18.50000	3.000
PIKE-182	DFO 4442	Northern pike		Red River Delta			395	371	401	380	351	2	M	Juvenile	4.500	4.40000	1.800
SAGR-183	DFO 0246	Sauger		Red River Delta			15.2	13.9		123	110	1	?	Juvenile	0.03136	0.22019	0.066
SAGR-184	DFO 0249	Sauger		Red River Delta			19.9	17.5		134	117	2	?	Juvenile	0.02795	0.20000	0.300
SAGR-185	DFO 4870	Sauger		Red River Delta			90	82.2	224	214	190	2	?	Juvenile	0.038	1.10000	1.700
WLYE-186	DFO 4865	Walleye	10/10/2006	Red River Delta	50.34858	96.83928	841	733		409	364	5	M	Mature-resting	25.000	10.80000	32.500
WLYE-187	DFO 4837	Walleye		Red River Delta			672	600	399	386	346	4	M	Mature-resting	16.500	9.20000	22.600
SAGR-188	DFO 4872	Sauger		Red River Delta			153	134	255	246	223		M	Juvenile	1.600	1.60000	5.500
PIKE-189	DFO 4809	Northern pike		Red River Delta			337	312	394	373	343	2	M	Juvenile	4.200	3.60000	0.400
PIKE-190	DFO 4810	Northern pike		Red River Delta			344	317	383	365	332	3	M	Juvenile	1.700	3.40000	0.700
WHBS-191		White bass	26/9/2006	Red River Delta	50.39764	96.81422	5.6	4.9	75.9	71.2	61.3	1	?	Juvenile		0.09372	0.070
WHBS-192		White bass	26/9/2006	Red River Delta	50.39764	96.81422	11.8	10.6		92.5	79.3	1	?	Juvenile		0.15913	0.053
SAGR-193	DFO 0232	Sauger		Red River Delta			304	248	307	297	265	?	F	Mature-resting	18.000	6.40000	8.700
PIKE-194	DFO 0279	Northern pike		Red River Delta			1434	1342	605	578	531	6	M	Mature-resting	15.600	15.60000	6.000
WHBS-195		White bass	26/9/2006	Red River Delta	50.39764	96.81422	6.6	5.6	80.8		63	1		Juvenile		0.13034	0.137
WHBS-196		White bass	26/9/2006	Red River Delta	50.39764	96.81422	8.3	7.2	85.4	78.5	68	1		Juvenile		0.09970	0.134
WHBS-197		White bass	26/9/2006	Red River Delta	50.39764	96.81422	3.9	3.4			53.6	1		Juvenile		0.06581	0.032
PIKE-198	DFO 4404	Northern pike		Red River Delta			1680	1553	610	586	540	5	M	Mature-resting	28.800	19.30000	23.000
WHBS-199		White bass	26/9/2006	Red River Delta	50.39764	96.81422	5	4.3	72.3	68	57.6	1		Juvenile		0.10173	0.125
WHBS-200		White bass	26/9/2006	Red River Delta	50.39764	96.81422	8.4	7.4	86.1	80.7	69.6	1		Juvenile		0.13935	0.123
GLDE-201	DFO 4890	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	174	156	256	243	218		?	Mature-resting		1.50000	6.300
GLDE-202	DFO 4485	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	260	229	284	270	245		M	Mature-resting	2.300	1.80000	16.900
GLDE-203	DFO 4308	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	214	193	272	253	231		?	Mature-resting		2.00000	9.200
YLPR-204		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	4	3.5	71.3	69.3	61.4	1	M	Juvenile	0.141	0.04960	0.001
YLPR-205		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.5	3.2			57.8	1	F	Juvenile	0.009	0.05713	0.005
YLPR-206		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3	2.7	65.9	63.3	55.6	1		Juvenile		0.03783	0.008
YLPR-207		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	4.4	4.1	76.2	72.7	63.4	1	M	Juvenile	0.016	0.03401	0.004
YLPR-208		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	2.7	2.5	65.6	62.3	53.3	1		Juvenile		0.02384	0.004
YLPR-209		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	4	3.7	75.8	71.7	63	1	M	Juvenile	0.009	0.03455	0.000
YLPR-210		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.7	3.4	70.3	65.7	59	1	M	Juvenile	0.012	0.03158	0.011
YLPR-211		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	4	3.7	74.6	71.3	62.3	1	M	Juvenile	0.013	0.03801	0.044
YLPR-212		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.5	3.2	70.8	67.9	59.7	1	M	Juvenile	0.010	0.01800	0.000
YLPR-213		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.1	2.8	68.4	65.3	57.3	1		Juvenile		0.03680	0.057
WHBS-214		White bass	26/9/2006	Red River Delta	50.39764	96.81422	4.4	3.8			55.2	1		Juvenile		0.07102	0.051
WHBS-215		White bass	26/9/2006	Red River Delta	50.39764	96.81422	3.6	3.1		61.5	51.6	1		Juvenile		0.05082	0.072
GLDE-216	DFO 4889	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	282	249	289	273	250		F	Mature-resting	4.800	1.70000	14.000
GLDE-217	DFO 4891	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	234	204	272	256	232		?	Mature-resting		1.30000	18.000
GLDE-218	DFO 4309	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	23	21	144	132	120		?	Juvenile		0.19268	0.265
WHBS-219		White bass	26/9/2006	Red River Delta	50.39764	96.81422	10.7	9.2	91.9	86.1	73.2	1		Juvenile		0.19581	0.179

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
WHBS-220		White bass	26/9/2006	Red River Delta	50.39764	96.81422	4.3	3.6	68.1	64.6	64.8	1		Juvenile		0.07375	0.072
FHMW-221		Fathead minnow	20/10/2006	Wavey Creek			0.87156	0.64624	43.9	42.5	37.2	1	F	Mature-resting	0.050	0.01365	0.007
FHMW-222		Fathead minnow	20/10/2006	Wavey Creek			0.70944	0.57168		42.3	37.7	1	M	Mature-resting	0.002	0.00154	0.000
FHMW-223		Fathead minnow	20/10/2006	Wavey Creek			0.91452	0.70471	46.6	43	37.5	1	F	Mature-resting	0.074	0.00881	0.001
FHMW-224		Fathead minnow	20/10/2006	Wavey Creek			1.31137	1.02653	51.2	48.6	42.7	2	F	Mature-resting	0.007	0.05051	0.005
FHMW-225		Fathead minnow	20/10/2006	Wavey Creek			1.00772	0.78788	46.3	44.5	38.4	1		Mature-resting		0.03902	0.002
FHMW-226		Fathead minnow	20/10/2006	Wavey Creek			0.67486	0.52265	42.5	40.6	35.4	1	F	Mature-resting	0.001	0.01372	0.000
FHMW-227		Fathead minnow	20/10/2006	Wavey Creek			0.86012	0.69411	45.8	43.7	37.2	1	M	Mature-resting	0.003	0.02260	0.002
FHMW-228		Fathead minnow	20/10/2006	Wavey Creek			0.80534	0.65128	45.1	42.5	37	1	M	Mature-resting	0.001	0.02278	0.001
FHMW-229		Fathead minnow	20/10/2006	Wavey Creek			0.5235	0.39213			30.3	1	F	Mature-resting	0.034	0.00592	0.000
FHMW-230		Fathead minnow	20/10/2006	Wavey Creek			0.63705	0.48426	39	37.5	32.6	1	F	Mature-resting	0.034	0.00942	0.000
BKSB-231		Brook stickleback	20/10/2006	Wavey Creek			0.63244	0.47675	42		36.6	1	F	Mature-resting	0.017	0.03833	0.002
BKSB-232		Brook stickleback	20/10/2006	Wavey Creek			0.84874	0.70084	48		42.3	2	M	Mature-resting	0.004	0.03820	0.001
BKSB-233		Brook stickleback	20/10/2006	Wavey Creek			0.75774	0.58453	44.8		39.3	1	F	Mature-resting	0.023	0.04051	0.002
BKSB-234		Brook stickleback	20/10/2006	Wavey Creek			0.66946	0.5142	42.7		37.6	1	F	Mature-resting	0.018	0.03316	0.003
BKSB-235		Brook stickleback	20/10/2006	Wavey Creek			0.82845	0.68859	46.9		41.5	1	M	Mature-resting	0.005	0.02793	0.001
BKSB-236		Brook stickleback	20/10/2006	Wavey Creek			0.8347	0.66632	46.1		40	1	M	Mature-resting	0.009	0.03123	0.005
WHBS-237		White bass	26/9/2006	Red River Delta	50.39764	96.81422	7.2	6.3	81.4	78.2	67.1	1		Juvenile		0.17432	0.116
WHBS-238		White bass	26/9/2006	Red River Delta	50.39764	96.81422	8.9	7.7			69	1		Juvenile		0.12430	0.064
WHBS-239		White bass	26/9/2006	Red River Delta	50.39764	96.81422	21.7	19.3	116.5	110.7	93.4	1		Juvenile		0.35158	0.150
WHBS-240		White bass	26/9/2006	Red River Delta	50.39764	96.81422	13.7	12.3	103.8	96.6	83	1		Juvenile		0.17381	0.057
WHBS-241		White bass	26/9/2006	Red River Delta	50.39764	96.81422	11.6	10.1	96	90	76.7	1		Juvenile		0.17620	0.104
WHBS-242		White bass	26/9/2006	Red River Delta	50.39764	96.81422	7.6	6.5		77.4	66	1		Juvenile		0.12680	0.127
WHBS-243		White bass	26/9/2006	Red River Delta	50.39764	96.81422	14.4	13	105.4	98.6	83.8	1		Juvenile		0.19677	0.078
WHBS-244		White bass	26/9/2006	Red River Delta	50.39764	96.81422	13.4	11.7	98.7	93.8	80.6	1		Juvenile		0.24262	0.282
FHMW-245		Fathead minnow	20/10/2006	Wavey Creek			0.9118	0.72247	48.2	44.2	38.6	1	F	Mature-resting	0.045	0.01514	0.009
FHMW-246		Fathead minnow	20/10/2006	Wavey Creek			1.22836	1.0131	51	47	41.5	2	M	Mature-resting	0.008	0.03706	
FHMW-247		Fathead minnow	20/10/2006	Wavey Creek			0.99072	0.80811	48.2	45	39.5	1	M	Mature-resting	0.003	0.02759	0.024
FHMW-248		Fathead minnow	20/10/2006	Wavey Creek			0.79005	0.6332			36.5	1	M	Mature-resting	0.009	0.01907	0.004
FHMW-249		Fathead minnow	20/10/2006	Wavey Creek			0.96649	0.79166	44.9	43.1	37.9	1	M	Mature-resting	0.010	0.02222	0.004
YLPR-250		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	2.9	2.7	64.7	63.1	54.4	1	M	Juvenile	0.008	0.03679	0.004
SAGR-251		Sauger		Red River Delta			338	286	324	313	280	3	F	Mature-resting	7.700	6.70000	20.600
SAGR-252		Sauger		Red River Delta			335	298	318	307	278	4	F	Mature-resting	6.300	6.40000	13.400
FHMW-253		Fathead minnow	20/10/2006	Wavey Creek			0.86295	0.66351	45.3	41.9	36.4	1	F	Mature-resting	0.040	0.01856	0.001
FHMW-254		Fathead minnow	20/10/2006	Wavey Creek			1.02613	0.79354	47.5	45.2	39.6	2	M	Mature-resting	0.002	0.01636	0.001
FHMW-255		Fathead minnow	20/10/2006	Wavey Creek			1.93532	1.54911	58.7	55.5	47.9	2	F	Mature-resting	0.128	0.04746	0.001
FHMW-256		Fathead minnow	20/10/2006	Wavey Creek			0.77972	0.62731	44.2	41.6	36	1	F	Mature-resting	0.034	0.01334	0.001
FHMW-257		Fathead minnow	20/10/2006	Wavey Creek			1.69817	1.31215	55.6	52.1	45.4	2	F	Mature-resting	0.116	0.02082	
GLDE-258	DFO 4887	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	208	185	277	257	232		F	Mature-resting	2.300	1.80000	11.100
GLDE-259	DFO 4883	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	213	190	273	254	230		?	Mature-resting		1.90000	11.000
GLDE-260	DFO 4886	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	288	255	274	274	249		?	Mature-resting		1.70000	19.900
GLDE-261	DFO 4884	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	33.1	30.1	159	147	132		?	Juvenile		0.30000	0.800
GLDE-262	DFO 4895	Goldeye	26/9/2006	Red River Delta	50.34670	96.83948	27.2	24.5		136	119		?	Juvenile		0.30000	0.400
YLPR-263		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	6	5.5	82.1	80.6	69.4	1	M	Juvenile	0.021	0.06638	0.044

Fish ID	DFO ID	Species	Date of capture (dd/mm/yyyy)	Location (Manitoba)	N Latitude (DD)	W Longitude (DD)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)
YLPR-264		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.1	2.8	68	65.6	56.6	1	M	Juvenile	0.010	0.02955	0.023
WLYE-265	DFO 4850	Walleye		Red River Delta			1051	866	464	442	395	6	F	Mature-resting	51.900	18.80000	47.300
WLYE-266	DFO 4860	Walleye		Red River Delta			1325	1128	488	465	423	6	F	Mature-resting	5.000	17.10000	65.800
WLYE-267	DFO 4861	Walleye	26/9/2006	Red River Delta	50.34670	96.83948	1073	946	467	450	402	5	M	Mature-resting	35.300	9.20000	34.600
YLPR-268		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	4.3	3.9		72.5	62.6	1	M	Juvenile	0.015	0.05574	0.022
YLPR-269		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	6	5.1	81.9	78.6	69.3	1	M	Juvenile	0.371	0.03666	0.002
YLPR-270		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.8	3.3	70.2	68	59.3	1	M	Juvenile	0.014	0.05596	0.007
YLPR-271		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	2.7	2.4			53	1	M	Juvenile	0.006	0.01995	0.004
YLPR-272		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.1	2.8	67.4	66.1	57.8	1	M	Juvenile	0.007	0.00704	0.008
YLPR-273		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	2.8	2.4		53.6		1	M	Juvenile	0.008	0.03478	0.014
YLPR-274		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	5.2	4.6	79	75.6	67.3	1	M	Juvenile	0.025	0.04361	0.009
YLPR-275		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	3.6		71.4	68.2	59	1	M	Juvenile	0.012	0.03658	0.009
YLPR-276		Yellow perch	26/9/2006	Red River Delta	50.39764	96.81422	4.6	4.2	77.6	74.3	64	1	M	Juvenile	0.015	0.05594	0.005
PIKE-277	DFO 4804	Northern pike		Red River Delta			776	682	475	449	413	3	M	Juvenile	12.300	9.70000	3.900
PIKE-278	DFO 4805	Northern pike		Red River Delta			523	473	431	409	378	2	F	Juvenile	8.600	5.10000	0.700
PIKE-279	DFO 4440	Northern pike		Red River Delta			324	296	363	350	322	3	M	Juvenile	5.500	5.30000	3.100
WHBS-280	DFO 4423	White bass		Red River Delta			399	356	295	277	238	4	M	Mature-resting	15.000	5.60000	7.700
WHBS-282	DFO 4422	White bass		Red River Delta			887	785		350	309	7	M	Mature-resting	38.000	12.40000	28.200
SAGR-283	DFO 4878	Sauger	4/10/2006	Red River Delta	50.50296	96.96890	8.5	7.4	103	98	85	1	F	Juvenile	0.019	0.13223	0.112
SAGR-284	DFO 4438	Sauger		Red River Delta			68.5	58.9		185	168	2		Juvenile		1.10000	0.900
SAGR-285	DFO 4874	Sauger		Red River Delta			507	433	370	357	317	4	F	Mature-resting	12.000	1.70000	35.400
SAGR-286	DFO 4859	Sauger		Red River Delta			384	327	340	327	293	5	F	Mature-resting	1.100	6.00000	21.100
SAGR-287	DFO 4867	Sauger		Red River Delta			386	325	346	331	293	5	F	Mature-resting	13.100	8.40000	21.700
SAGR-288	DFO 4432	Sauger		Red River Delta			374	315	336	324	285	4	F	Mature-resting	19.000	8.20000	12.600
SAGR-289	DFO 4868	Sauger		Red River Delta			448	388	350	339	304	5	F	Mature-resting	10.600	8.10000	26.100
SAGR-290	DFO 4430	Sauger		Red River Delta			417	369	346	333	293	6	M	Mature-resting	5.300	8.20000	17.000
SAGR-291	DFO 4862	Sauger		Red River Delta			565	470	378	364	324	7	F	Mature-resting	19.700	9.70000	25.400
SAGR-292	DFO 4877	Sauger		Red River Delta			14.6	13.1			102	2	F	Juvenile	0.020	0.06880	0.104
SAGR-293	DFO 4873	Sauger		Red River Delta			325	379	328	317	281	6	F	Mature-resting	7.200	4.40000	20.600
SAGR-294	DFO 4846	Sauger		Red River Delta			101	91	227	217	193	3	F	Juvenile	0.040	1.90000	2.200
SAGR-295	DFO 4315	Sauger		Red River Delta			65.3	58.2	202	193	171	2	F	Juvenile	0.010	1.30000	1.460
EMSH-296		Emerals shiner	5/10/2006	Lake Winnipeg (stn 60B)			2.2	1.9	68.5	62.3	55.1	1	F	Mature-resting	0.011		0.000
EMSH-297		Emerals shiner	5/10/2006	Lake Winnipeg (stn 60B)			3.5	3	76.4	69.8	60.1	2	F	Mature-resting	0.089	0.07252	0.040
EMSH-298		Emerals shiner	5/10/2006	Lake Winnipeg (stn 60B)			2.5	2.3			58.1	2	?	Mature-resting			
EMSH-299		Emerals shiner	5/10/2006	Lake Winnipeg (stn 60B)			0.73151	0.67242		43.4	38.5	1	?	Juvenile			
EMSH-300		Emerals shiner		Lake Winnipeg (stn 60B)			0.58874	0.5055		43.7	39.1	1	?	Juvenile			
EMSH-301		Emerals shiner		Lake Winnipeg (stn 22)			0.59504			40.5	36.6	1	?	Juvenile			
EMSH-302		Emerals shiner		Lake Winnipeg (stn 22)			0.44161	0.37521	41	37.1	33.6	1	?	Juvenile		0.00413	

Fish ID	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Crustacean count	Stomach: Caddisfly larve count	Stomach: Water boatman count	Stomach: White bass count	Stomach: Odonata count	Stomach: Insect pupae count	Stomach: Coleoptera (lady bug) count	Stomach: Frog count	Stomach: Bullhead count	Stomach: Walleye count	Stomach: Mooneye count	Stomach: Yellow perch count	Stomach: Emerald shiner count	Stomach: Crappie count	Stomach: Fish remains (Y or N)	Stomach: Water boatman (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested cladocera (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Digested diptera (Y or N)	Stomach: Digested gamarid (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)
WHBS-001	400+	1	1	3			2																				N
GLDE-002							300+																				N
WLYE-003																			Y								N
WLYE-004																			Y								N
PIKE-005								3											Y								N
PIKE-006																											Y
WHBS-007			16				5												Y								N
GLDE-008																			Y								Y
GLDE-009										1																	N
GLDE-010							200+																				N
PIKE-011												1															N
WHBS-012	19																									Y	N
WLYE-013																											Y
WLYE-014																			Y								N
WLYE-015																											Y
GLDE-016																											Y
GLDE-017							100+																				N
GLDE-018	800+										1																N
WLYE-019																			Y								N
WHBS-020	10		1																								N
WLYE-021													1						Y								N
WLYE-022																			Y								N
GLDE-023	30+						20+																				N
GLDE-024				2			50+																				N
WLYE-025																			Y								N
WHBS-026	250+	1	1	8																							N
GLDE-027																											Y
PIKE-028																											Y
WLYE-029																			Y								N
WLYE-030																											Y
GLDE-031											1									Y						Y	N
GLDE-032																			Y	Y							N
PIKE-033														1					Y								N
WLYE-034																			Y								N
WLYE-035																			Y								N
GLDE-036											1												Y				N
WLYE-037																			Y								N
PIKE-038																									Y		N
GLDE-039		1		9			50																				N
WLYE-040													5														N
WLYE-041																											Y
GLDE-042	150			2			10																				N
PIKE-043																											Y
GLDE-044							25+																				N
WLYE-045																											Y
PIKE-046															1												N
WLYE-047			1																Y								N
WLYE-048																			Y								N
SAGR-049																			Y								N
WLYE-050																			Y								N
GLDE-051							200																				N
WLYE-052																											Y
SAGR-053																			Y								N
SAGR-054																			Y								N
GLDE-055							1				1								Y								N
SAGR-056																	35										N
PIKE-057																			Y								N
PIKE-058								1								1			Y								N
GLDE-059																				Y							N
WLYE-060																			Y								N
GLDE-061	1																										N
SAGR-062																											Y
PIKE-063																1											N
GLDE-064							25+																				N

Fish ID	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Crustacean count	Stomach: Caddisfly larve count	Stomach: Water boatman count	Stomach: White bass count	Stomach: Odonata count	Stomach: Insect pupae count	Stomach: Coleoptera (lady bug) count	Stomach: Frog count	Stomach: Bullhead count	Stomach: Walleye count	Stomach: Mooneye count	Stomach: Yellow perch count	Stomach: Emerald shiner count	Stomach: Crappie count	Stomach: Fish remains (Y or N)	Stomach: Water boatman (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested cladocera (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Digested diptera (Y or N)	Stomach: Digested gamarid (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)
PIKE-065	2																		Y								N
WLYE-066																			N		Y						N
WLYE-067																			Y								N
GLDE-068				10			25																				Y
PIKE-069																					Y						Y
PIKE-070																			Y		Y						N
FHMW-071																			N		Y						Y
FHMW-072																			N		Y						Y
FHMW-073																			N		Y						N
FHMW-074																			N		Y						N
FHMW-075																			N		Y						N
EMSH-076																			N		Y						N
EMSH-077																					Y						N
EMSH-078																					Y		Y				N
EMSH-079																											Y
EMSH-080																											N
YLPR-081	25						1													Y							N
YLPR-082	78						1														Y		Y				N
YLPR-083		2																									Y
YLPR-084				1			8																				N
YLPR-085							3													Y						Y	N
BKSB-086			6																								N
BKSB-087																											Y
BKSB-088		1	1	1																							N
BKSB-089		2	2																								N
BKSB-090			2																								N
WLYE-091			2																Y								N
WLYE-092																			Y								N
EMSH-093																					Y						N
EMSH-094	3				1																						N
EMSH-095																					Y						N
EMSH-096																					Y						N
EMSH-097	2																				Y						N
EMSH-098																					Y		Y				N
EMSH-099																					Y						N
EMSH-100																											Y
EMSH-101																											Y
EMSH-102																											Y
EMSH-103																											Y
EMSH-104																							Y				N
EMSH-105																											Y
EMSH-106																											Y
EMSH-107																											Y
EMSH-108																											Y
EMSH-109																											Y
EMSH-110																											Y
EMSH-111																											Y
EMSH-112																											Y
EMSH-113																											Y
EMSH-114																											Y
EMSH-115																											Y
EMSH-116																											Y
EMSH-117																											Y
WLYE-118													1						Y								N
PIKE-119																			Y		Y						N
WHBS-120	200		1																								N
SAGR-121																					Y						Y
YLPR-122	18																										N
YLPR-123	58			3																							N
YLPR-124																											N
YLPR-125		1	16																								N
YLPR-126	13																										N
SAGR-127																3											N

Fish ID	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Crustacean count	Stomach: Caddisfly larve count	Stomach: Water boatman count	Stomach: White bass count	Stomach: Odonata count	Stomach: Insect pupae count	Stomach: Coleoptera (lady bug) count	Stomach: Frog count	Stomach: Bullhead count	Stomach: Walleye count	Stomach: Mooneye count	Stomach: Yellow perch count	Stomach: Emerald shiner count	Stomach: Crappie count	Stomach: Fish remains (Y or N)	Stomach: Water boatman (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested cladocera (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Digested diptera (Y or N)	Stomach: Digested gamarid (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)
SAGR-128																		Y				1					N
SAGR-129																											Y
BKSB-130			4																								N
BKSB-131			3	1																							N
BKSB-132																							Y				Y
BKSB-133																							Y				Y
BKSB-134																											Y
WLYE-135																											Y
PIKE-136																											Y
WHBS-137																											Y
PIKE-138			1													1											N
WHBS-139																											Y
WHBS-140																		Y									N
WHBS-141																											Y
PIKE-142																											Y
PIKE-143																2		Y									N
WHBS-144																											Y
FHMW-145																					Y						N
FHMW-146																					Y						N
FHMW-147																					Y						N
FHMW-148																					Y						N
FHMW-149																					Y						N
SAGR-150																											Y
PIKE-151														1				Y									N
SAGR-152																											Y
SAGR-153																		Y									N
SAGR-154																											Y
SAGR-155																		Y									N
SAGR-156																		Y									N
WHBS-157	200+		3				1																				N
WHBS-158	100+			1			1																				N
WHBS-159	500+						2																				N
WHBS-160	300+																										N
WHBS-161	250+			2																							N
SAGR-162																		Y									N
SAGR-163								1									1	Y								Y	N
SAGR-164																											Y
SAGR-165																		Y									N
SAGR-166																		Y									N
BKSB-167																										Y	N
BKSB-168			2																								N
BKSB-169			1																								N
BKSB-170																											Y
BKSB-171			1																								N
BKSB-172			2	4						1																Y	N
BKSB-173		4	1																								N
BKSB-174																											Y
BKSB-175			1																								N
BKSB-176			3	1																							N
BKSB-177			4	1																							N
BKSB-178																											Y
BKSB-179		1	1	1																							N
BKSB-180			1	1																							N
PIKE-181																		Y									N
PIKE-182																											Y
SAGR-183																		Y									N
SAGR-184									5									Y									N
SAGR-185																											Y
WLYE-186																	4	Y									N
WLYE-187																											Y
SAGR-188																											Y
PIKE-189			1													1		Y									N
PIKE-190		1						1								1		Y									N
WHBS-191	150+		1																								N

Fish ID	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Crustacean count	Stomach: Caddisfly larve count	Stomach: Water boatman count	Stomach: White bass count	Stomach: Odonata count	Stomach: Insect pupae count	Stomach: Coleoptera (lady bug) count	Stomach: Frog count	Stomach: Bullhead count	Stomach: Walleye count	Stomach: Mooneye count	Stomach: Yellow perch count	Stomach: Emerald shiner count	Stomach: Crappie count	Stomach: Fish remains (Y or N)	Stomach: Water boatman (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested cladocera (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Digested diptera (Y or N)	Stomach: Digested gammarid (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)
WHBS-192	200+		1	1			1																				N
SAGR-193																			Y								N
PIKE-194																											Y
WHBS-195	200+			1																							N
WHBS-196	150+		1																								N
WHBS-197	300+		1	2																							N
PIKE-198																											Y
WHBS-199	125+																										N
WHBS-200	200+			50+			1																				N
GLDE-201							50																				N
GLDE-202																				Y							N
GLDE-203							5																				N
YLPR-204			44																								N
YLPR-205	30	2	11				1																				N
YLPR-206	20			2																							N
YLPR-207	30						1																				N
YLPR-208																											Y
YLPR-209			11				6																				N
YLPR-210																											Y
YLPR-211	4																										N
YLPR-212			1				12																				N
YLPR-213	10																										N
WHBS-214	300+			6																							N
WHBS-215	150+			8																							N
GLDE-216							600+																				N
GLDE-217																				Y							N
GLDE-218	500+																										N
WHBS-219	100+			2																							N
WHBS-220	250+																										N
FHMW-221																						Y					N
FHMW-222																											Y
FHMW-223																											Y
FHMW-224																											Y
FHMW-225																											Y
FHMW-226		2																									N
FHMW-227																						Y					N
FHMW-228																						Y					N
FHMW-229																											Y
FHMW-230																						Y					N
BKSB-231				2																							N
BKSB-232			1																								N
BKSB-233		2																									N
BKSB-234			1																								N
BKSB-235			2	2																							N
BKSB-236																											Y
WHBS-237	250+			3			1																				N
WHBS-238	350+		1	1			1																				N
WHBS-239			1																Y								N
WHBS-240	300																								Y		N
WHBS-241	200																				Y						N
WHBS-242	100		4																								N
WHBS-243	100			2			4																				N
WHBS-244	150		1				5																				N
FHMW-245																						Y					N
FHMW-246																											Y
FHMW-247																											Y
FHMW-248																						Y					N
FHMW-249	125																					Y					Y
YLPR-250																											N
SAGR-251																2											N
SAGR-252																											Y
FHMW-253																											Y
FHMW-254																											Y
FHMW-255																											Y

Fish ID	Stomach: Cladocera count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Crustacean count	Stomach: Caddisfly larve count	Stomach: Water boatman count	Stomach: White bass count	Stomach: Odonata count	Stomach: insect pupae count	Stomach: Coleoptera (lady bug) count	Stomach: Frog count	Stomach: Bullhead count	Stomach: Walleye count	Stomach: Mooneye count	Stomach: Yellow perch count	Stomach: Emerald shiner count	Stomach: Crappie count	Stomach: Fish remains (Y or N)	Stomach: Water boatman (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested cladocera (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Digested diptera (Y or N)	Stomach: Digested gamarid (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)
FHMW-256																											Y
FHMW-257																										Y	Y
GLDE-258																							Y				N
GLDE-259																											N
GLDE-260																											N
GLDE-261	100			20				20																			N
GLDE-262	300																										N
YLPR-263																										Y	N
YLPR-264																								Y			N
WLYE-265													2														N
WLYE-266													1						Y								N
WLYE-267																											N
YLPR-268																					Y						Y
YLPR-269																								Y			N
YLPR-270																							Y	Y			N
YLPR-271	100			22																							N
YLPR-272																											Y
YLPR-273																							Y	Y			N
YLPR-274																								Y			N
YLPR-275																											Y
YLPR-276																				10							N
PIKE-277								3																			N
PIKE-278																3											N
PIKE-279																											Y
WHBS-280																											N
WHBS-282																											Y
SAGR-283																	1										N
SAGR-284																			Y								N
SAGR-285																											Y
SAGR-286																			Y								N
SAGR-287																			Y								N
SAGR-288																			Y								N
SAGR-289																											Y
SAGR-290																			Y								N
SAGR-291																2			Y								N
SAGR-292																											Y
SAGR-293																			Y								N
SAGR-294																											Y
SAGR-295																			Y								N
EMSH-296																											Y
EMSH-297																											Y
EMSH-298																											Y
EMSH-299																											Y
EMSH-300																											Y
EMSH-301																											Y
EMSH-302																											Y

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp spp	Midgut: Bothriocephalus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephalus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocleidus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
WHBS-001	64																								2																																																		
GLDE-002							3								4											132																																															
WLYE-003								1							3																																		1																						
WLYE-004															259											16																																																	
PIKE-005																												40																								1					5															
PIKE-006																												67																							9																					
WHBS-007	15													1											1																																																
GLDE-008															3											28															3																																
GLDE-009				5				2							22											214															8				1																										
GLDE-010								1							22											31																																																	
PIKE-011																												30																							1								1													
WHBS-012	21													5											3																																																
WLYE-013		11		8											123							2				2															1						1					1																			
WLYE-014		25													23											2															1																																
WLYE-015															64											1																							1									7													
GLDE-016				3				1	1						25											266															1															22														
GLDE-017								1							31											464					217						4				1				37											44														
GLDE-018															4											3					1																																								
WLYE-019				1											22											3																																																	
WHBS-020	28																																																									1													
WLYE-021				1											23																																																										
WLYE-022		21		1											32																																																										
GLDE-023								1							52											170															1				10											12														
GLDE-024																																																																								
WLYE-025		85		1											99											3															1																																
WHBS-026	7													1											3														1																																		
GLDE-027								4							19											44											1																																		
PIKE-028																												15																																		1												
WLYE-029		1													73											35							1								1																																
WLYE-030		1		5						2					39							1				2																					1																								
GLDE-031				1				1							10											14																																																	
GLDE-032				1	1																					27																			18											34														
PIKE-033																								1				19																							1																					
WLYE-034		12		2											40											2																																																	
WLYE-035															27		1	1											1								1	1													12									4													
GLDE-036							3								8					1						140																			2											2														
WLYE-037		8		14											73																																																									
PIKE-038																																																																								
GLDE-039											2									1						5					6														4											3														
WLYE-040		14				2									107			40											2														1											4																	

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp	Midgut: Bothriocephaus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephaus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocleidus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
WLYE-041																												8																						1																					
GLDE-042				4											23									65																												2													
PIKE-043																												23														1														1													
GLDE-044																									18					3				4						2																															
WLYE-045		18														31			7																																																					
PIKE-046																												1																																											
WLYE-047		22		4												14																																																						
WLYE-048		200		1												200											14			1																																										
SAGR-049		71														6																												1														1													
WLYE-050		15		1												24			1				1																				1																														
GLDE-051																4										14																			14												10													
WLYE-052		3														69						2				1							1								1																														
SAGR-053		78														9																																																								
SAGR-054		11		1												56						10																																																	
GLDE-055																1					2			1			1									1																								3													
SAGR-056		101		26	2	1										19													2														1	1	1																												
PIKE-057																												1	16																																											
PIKE-058																												2	15														2										1																					
GLDE-059																6										12					2																3													1													
WLYE-060		2		1												79										5																																												
GLDE-061								5								131					101						53					37														8												17													
SAGR-062		59		2												3		2																																								1													
PIKE-063																												6														1																													
GLDE-064																45										2																															1													
PIKE-065																												4																						3												3													
WLYE-066		1														3																																											3													
WLYE-067		73				1										75			10																																																					
GLDE-068																																																													2													
PIKE-069																											5	24														1										1																					
PIKE-070																												10																																2													
FHMW-071																																																																									
FHMW-072																																																																4										
FHMW-073																																																																9										
FHMW-074																																																																9	1		2							
FHMW-075																																																																13			1							
EMSH-076				11																							1																																					1								
EMSH-077																																																																									
EMSH-078				1																																																																					
EMSH-079				34																																																																					
EMSH-080				9																							4																																														

Fish ID	YLPR-081	YLPR-082	YLPR-083	YLPR-084	YLPR-085	BKSB-086	BKSB-087	BKSB-088	BKSB-089	BKSB-090	WLYE-091	WLYE-092	EMSH-093	EMSH-094	EMSH-095	EMSH-096	EMSH-097	EMSH-098	EMSH-099	EMSH-100	EMSH-101	EMSH-102	EMSH-103	EMSH-104	EMSH-105	EMSH-106	EMSH-107	EMSH-108	EMSH-109	EMSH-110	EMSH-111	EMSH-112	EMSH-113	EMSH-114	EMSH-115	EMSH-116	EMSH-117	WLYE-118	PIKE-119	WHBS-120
Gills: Onchocleidus chrysops																																							2
Gills: Ergasilus luciopercarum											9	9																									1		
Gills: Myxozoan													Y																										
Stomach: Bothriocephalus cuspidatus																1		2							Y						Y	Y	Y						
Stomach: Bothriocephalus acheilognathi																		1																					
Stomach: Proteocephalus pearsei																																							
Stomach: Mermithids																																							
Stomach: Nematode																																							
Stomach: Crepidostomum illinoiensis																																							
Stomach: Bucephalis spp																																							
Stomach: Trematode																																							
Stomach: Bunoderina sacculata																																							
Stomach: Pomporhynchus bulbicollis																																							
Caecae: Bothriocephalus claviceps																																							2
Caecae: Bothriocephalus cuspidatus											111	23																									113		
Caecae: Bothriocephalus spp.			1																																			
Caecae: Bothriocephalus acheilognathi																																							
Caecae: Proteocephalus pearsei				1																																			
Caecae: Proteocephalus spp																																							
Caecae: Crepidostomum illinoiensis																																							
Caecae: Allacanthochasmus spp																																							
Caecae: Bucephalis spp																																							
Caecae: Trematode																																							
Foregut: Bothriocephalus spp.																																							
Foregut: Bothriocephalus claviceps										2																													
Foregut: Bothriocephalus cuspidatus			1																																				
Foregut: Bothriocephalus acheilognathi												15					1		25	15	4		2	11	14	3	6	7	32	8	23	2	11	12	4	8	7		20	
Foregut: Proteocephalus pinguis																																							
Foregut: Proteocephalus pearsei																																							
Foregut: Proteocephalus spp																																							
Foregut: Crepidostomum illinoiensis																																							
Foregut: Allacanthochasmus spp																																							
Foregut: Bucephalis spp																																							
Foregut: Trematode																																							
Foregut: Mermithids																																							
Foregut: Spiruriid																																							
Foregut: Nematode																																							
Foregut: Camallanus oxycephalus																																							
Foregut: Leptorhynchoides spp																																							
Midgut: Bothriocephaus spp.																																							
Midgut: Bothriocephalus cuspidatus																																							
Midgut: Bothriocephalus acheilognathi																																							
Midgut: Proteocephalus pearsei																																							
Midgut: Proteocephalus spp																																							
Midgut: Crepidostomum illinoiensis																																							
Midgut: Allacanthochasmus spp																																							
Midgut: Bucephalis spp																																							
Midgut: Spirurid																																							
Midgut: Camallanus oxycephalus																																							
Midgut: Proteocephalus pinguis																																							
Midgut: Pomporhynchus bulbicollis																																							
Hindgut: Bothriocephaus cuspidatus																																							
Hindgut: Bothriocephalus acheilognathi																																							
Hindgut: Proteocephalus pearsei																																							
Hindgut: Proteocephalus spp																																							
Hindgut: Pomporhynchus bulbicollis																																							
Hindgut: Crepidostomum illinoiensis																																							
Hindgut: Camallanus oxycephalus																																							
Hindgut: Spiruriid																																							
Hindgut: Raphidascaris acus																																							
Hindgut: Bucephalis spp																																							
Brain: Ornithodiplostomum ptychocleidus																																							
Brain: Bolbophorus confusus																																							
Brain: Apophallus brevis																																							
Muscle tissue: Bolbophorus confusus																																							
Body cavity: Ligula intestinalis																																							
Body cavity: Larval ascarid (Contracecum)																																							
Heart: Sanguinicola occidentalis																																							
Heart: Trematode spp																																							
Liver: Raphidascaris																																							
Spleen: Ascarid																																							

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp	Midgut: Bothriocephaus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephaus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocleidus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
SAGR-121		10													13		3												3																													1													
YLPR-122																																																																							
YLPR-123																																																																							
YLPR-124																																																																							
YLPR-125																																																																							
YLPR-126																																																																							
SAGR-127		13		2											7											3																																													
SAGR-128		76													56			2								2																																													
SAGR-129		54													19																												2																												
BKSB-130																																																																							
BKSB-131																																																																							1
BKSB-132																																																																							
BKSB-133																																																																							
BKSB-134																																																																							
WLYE-135															51																																																									
PIKE-136																												7																																												
WHBS-137	1									1				9		6						57												18																																						
PIKE-138					4																							7																																												
WHBS-139	23																	1				13												8																																						
WHBS-140	82													2	24		1								2	4	3																																													
WHBS-141	24	1											2									15												15																							2		1													
PIKE-142																												11																						1																					
PIKE-143																												9															1																													
WHBS-144																						4												24																									2													
FHMW-145																																																															2									
FHMW-146																																																															10	-1		3						
FHMW-147																																																															5			1						
FHMW-148																																																															11	1								
FHMW-149																																																															16			4						
SAGR-150		121													29																												2															2													
PIKE-151																												14																																												
SAGR-152															6																																																									
SAGR-153		65		1		3									33														1														1																													
SAGR-154		21		1											6											1																																													
SAGR-155		44													20														3																																										
SAGR-156		200													31											1																																													
WHBS-157	65														2																																																									
WHBS-158	2																																																																							
WHBS-159	10													1			6				1						2																																													
WHBS-160	13																																																																						

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp	Midgut: Bothriocephaus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephaus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocheidus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
WHBS-161	14														2																																				1																				
SAGR-162		109			1					1	1	1			18			1											1																													2													
SAGR-163		20													3																																																								
SAGR-164																																																																							
SAGR-165		53													67																																											2													
SAGR-166					1												7																																																						
BKSB-167																																																																							
BKSB-168																																																																								
BKSB-169																														1																																									
BKSB-170																																																																			1				
BKSB-171																																																																							
BKSB-172																																																																							
BKSB-173																																																																							
BKSB-174																																																																							
BKSB-175																																																																							
BKSB-176																																		1																																					
BKSB-177																														1																																									
BKSB-178																																																																							
BKSB-179																																																																							
BKSB-180																																																																							
PIKE-181																												34																																											
PIKE-182																												6										1																																	
SAGR-183															1																																																								
SAGR-184		3													3																																																								
SAGR-185		19													10											1			1				1										3											1																	
WLYE-186		64		5		9									80			1								1	1		1																								1					33										1			
WLYE-187															164		1									30																										2						2													
SAGR-188		272													13																																											2													
PIKE-189																												6															1																												
PIKE-190																																																					1																		
WHBS-191	7																																																									1													
WHBS-192	2																							11						14		7											13			5								5																	
SAGR-193		27													44											1																																1													
PIKE-194																												5																																											
WHBS-195	3																																																																						
WHBS-196	18															16											3					1																						1																	
WHBS-197	6															1																																																							
PIKE-198																												3														7								1																					
WHBS-199	22															3								1																																		1													
WHBS-200	9														6												4																																												

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp	Midgut: Bothriocephalus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephalus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocheilus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
GLDE-201															31					2						265																			1												5														
GLDE-202				1											5					2						5					1																																								
GLDE-203															10											2																			7												5														
YLPR-204															1																																																								
YLPR-205																													1																																										
YLPR-206															1																																																								
YLPR-207																													1																																										
YLPR-208																													1																									1																	
YLPR-209																																																																							
YLPR-210																													1																									2																	
YLPR-211																													1																																										
YLPR-212																																																																						
YLPR-213																																																						1																	
WHBS-214	11															1																																																							
WHBS-215	7														1																																																								
GLDE-216															49											77																																													
GLDE-217															11											27															2																5														
GLDE-218																										1																																													
WHBS-219	6													3	2											3																												2																	
WHBS-220	8																																																																					
FHMW-221																																																													7			1						
FHMW-222																																																													2									
FHMW-223																																																													4									
FHMW-224																																																													4									
FHMW-225																																																													3									
FHMW-226																																																																							
FHMW-227																																																													1			1						
FHMW-228																																																													14									
FHMW-229																																																													9			1						
FHMW-230																																																																							
BKSB-231																																																							1																
BKSB-232																																																																							
BKSB-233																																																																							
BKSB-234																																																																							
BKSB-235																																																																							
BKSB-236																																																																							
WHBS-237	29														3																																																								
WHBS-238	31																																																																						
WHBS-239	25													4	13																																										2													
WHBS-240	6															3									1														1																																

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode
WHBS-241	26													2	6						2		
WHBS-242	20												2										
WHBS-243	25							1						2	2								
WHBS-244	16													2									
FHMW-245																							
FHMW-246																							
FHMW-247																							
FHMW-248																							
FHMW-249																							
YLPR-250	29														10								
SAGR-251																							
SAGR-252		49								1					26							26	
FHMW-253																							
FHMW-254																							
FHMW-255																							
FHMW-256																							
FHMW-257																							
GLDE-258															18					2			
GLDE-259									2						12					8			
GLDE-260															27								
GLDE-261																							
GLDE-262																							
YLPR-263																							
YLPR-264																							
WLYE-265													4		18								
WLYE-266				18											12								
WLYE-267				1											98								
YLPR-268																							
YLPR-269																							
YLPR-270																							
YLPR-271																							
YLPR-272																1							
YLPR-273																							
YLPR-274																							
YLPR-275																			1				
YLPR-276																							
PIKE-277																							
PIKE-278																							
PIKE-279																							
WHBS-280	11														73				1			31	

Fish ID	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp	Midgut: Bothriocephaus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis
WHBS-241																												
WHBS-242																												2
WHBS-243			2						1																			
WHBS-244																												
FHMW-245																												
FHMW-246																												
FHMW-247																												
FHMW-248																												
FHMW-249																												
YLPR-250																												
SAGR-251																												
SAGR-252										25														2				
FHMW-253																												
FHMW-254																												
FHMW-255							1																					
FHMW-256																												
FHMW-257																												
GLDE-258			2																			6						
GLDE-259			4															3				1						
GLDE-260			81																									
GLDE-261																												
GLDE-262																												
YLPR-263					2																						1	
YLPR-264																												
WLYE-265																												
WLYE-266																												
WLYE-267			5																									
YLPR-268																												
YLPR-269																												
YLPR-270																												
YLPR-271							1																					
YLPR-272																												
YLPR-273																												
YLPR-274																												
YLPR-275			1																									
YLPR-276																												
PIKE-277			14		1																						2	
PIKE-278					5																							
PIKE-279					7																						14	
WHBS-280			19	1						55			11											2	3			

Fish ID	Hindgut: Bothriocephaus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocheidus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
WHBS-241																				
WHBS-242					1															
WHBS-243																				
WHBS-244																				
FHMW-245											10			1						
FHMW-246											10	1		1						
FHMW-247												1								
FHMW-248											3									
FHMW-249														1						
YLPR-250																				
SAGR-251																				
SAGR-252							3													
FHMW-253											2									
FHMW-254											17									
FHMW-255											2									
FHMW-256											5									
FHMW-257											10									
GLDE-258																				
GLDE-259																				
GLDE-260																				
GLDE-261																				
GLDE-262																				
YLPR-263																				
YLPR-264																				
WLYE-265																				
WLYE-266							12													
WLYE-267							10													
YLPR-268																				
YLPR-269																				
YLPR-270									1											
YLPR-271																				
YLPR-272																				
YLPR-273																				
YLPR-274																				
YLPR-275									1											
YLPR-276																				
PIKE-277							5													
PIKE-278																				
PIKE-279																				
WHBS-280							9	2		31										

Fish ID	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Gills: Myxozoan	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Crepidostomum illinoiensis	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Caecae: Trematode	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Foregut: Crepidostomum illinoiensis	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Trematode	Foregut: Mermithids	Foregut: Spirurid	Foregut: Nematode	Foregut: Camallanus oxycephalus	Foregut: Leptorhynchoides spp	Midgut: Bothriocephaus spp.	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Crepidostomum illinoiensis	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephaus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Proteocephalus spp	Hindgut: Pomporhynchus bulbicollis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Raphidascaris acus	Hindgut: Bucephalis spp	Brain: Ornithodiplostomum ptychocheidus	Brain: Bolbophorus confusus	Brain: Apophallus brevis	Muscle tissue: Bolbophorus confusus	Body cavity: Ligula intestinalis	Body cavity: Larval ascarid (Contracecum)	Heart: Sanguinicola occidentalis	Heart: Trematode spp	Liver: Raphidascaris	Spleen: Ascarid
WHBS-282															16		1		1			8				2	12						26			1					13	4		20			12	120	1			1	1					4	2		1										
SAGR-283																																																																							
SAGR-284		28													15																																																								
SAGR-285		160		11		1									11																												2															11													
SAGR-286		168													13														1																																										
SAGR-287		48													17																																											8											5		
SAGR-288		56													17											3																										1						5													
SAGR-289		88		1											20																																																						2		
SAGR-290															24		1	1																																																					
SAGR-291															10																																											15													
SAGR-292		8													1																																																						2		
SAGR-293															6																																											21													
SAGR-294		88													32																																																								
SAGR-295		8													9																																											5													
EMSH-296					4																						1																																												
EMSH-297																																																																							
EMSH-298																																																																							
EMSH-299																																																																							
EMSH-300																																																																							
EMSH-301																											2																																												
EMSH-302					6																						6																																												

Brook stickleback

Location: Wavey Creek
Capture date: 20/10/2006
MR= mature resting, Juv= juvenile

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: insect pupae count	Stomach: digested insects (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)	Foregut: Proteocephalus spp	Foregut: Trematode	Hindgut: Proteocephalus spp	Body cavity: Larval ascarid (Contracecum)	Liver: Raphidascaris	Spleen: Ascarid (Contracecum)
BKSB-086	0.74344	0.6111	42.2	34.9	1	M	MR	0.005	0.03362	0.001		6					N						
BKSB-087	1.12082	0.84664	48.1	42.2	2	M	MR	0.008	0.05254	0.001							Y						
BKSB-088	1.07812	0.91968	48.7	41.7	2	M	MR	0.007	0.06245		1	1	1				N						
BKSB-089	0.43658	0.32777	41	32.3	1	F	MR	0.012	0.02335	0.00102	2	2					N					1	
BKSB-090	0.580	0.47226	39.8	34.8	1	M	MR	0.009	0.02242	0.001		2					N						
BKSB-130	1.19853	0.88726	51	45	2	F	MR	0.04156	0.06078	0.00069		4					N						
BKSB-131	1.70064	1.32045	55.6	48.9	2	M	MR	0.01165	0.10843	0.00660		3	1				N						1
BKSB-132	0.61453	0.47761	43.4	37.9	1	F	MR	0.01604	0.02532	0.00159					Y		Y						
BKSB-133	0.57364	0.45142	40.1	35	1	M	MR	0.00231	0.03340	0.00271					Y		Y						
BKSB-134	0.795	0.61374	45	39.4	1	M	MR	0.00796	0.03406	0.00124							Y						
BKSB-167	0.42311	0.30436	35.3	30.2	1	M	MR	0.00298	0.03062	0.00320						Y	N						
BKSB-168	0.47432	0.34049	38.3	32.1	1	F	MR	0.01408	0.02243	0.00000		2					N						
BKSB-169	0.57815	0.46274	42	36.8	1	M	MR	0.00389	0.02130	0.00114		1					N	1					
BKSB-170	0.64616	0.00124	41.1	37.9	1	F	MR	0.02184	0.02475	0.00124							Y				1		
BKSB-171	0.70512	0.57302	43.8	38.5	1	M	MR	0.00671	0.03358	0.00000		1					N						
BKSB-172	0.58993	0.47631	41.3	35.5	1	M	MR	0.00581	0.03178	0.00097		2	4	1		Y	N						
BKSB-173	0.71674	0.56200	43.9	38.5	1	M	MR	0.00501	0.03203	0.00095	4	1					N						
BKSB-174	0.59376	0.46486	41.6	36.2	1	F	MR	0.01882	0.02715	0.00094							Y						
BKSB-175	0.84806	0.66016	47.2	41.4	1	F	MR	0.02583	0.03526	0.00000		1					N						
BKSB-176	0.65719	0.52912	42.3	36.8	1	F	MR	0.01339	0.03485	0.00272		3	1				N		1				
BKSB-177	0.28412	0.21531	32.3	27.7	1	M	MR	0.00255	0.00739	0.00000		4	1				N	1					
BKSB-178	0.94715	0.77731	49.6	43	2	M	MR	0.00915	0.03612	0.00289							Y						
BKSB-179	0.58288	0.50864	41.1	36.3	1	M	MR	0.00415	0.01617	0.00000	1	1	1				N						
BKSB-180	0.48468	0.38543	38.3	33.2	1	M	MR	0.00466	0.02000	0.00000		1	1				N						
BKSB-231	0.63244	0.47675	42	36.6	1	F	MR	0.017	0.03833	0.002			2				N			1			
BKSB-232	0.84874	0.70084	48	42.3	2	M	MR	0.004	0.03820	0.001		1					N						
BKSB-233	0.75774	0.58453	44.8	39.3	1	F	MR	0.023	0.04051	0.002	2						N						
BKSB-234	0.66946	0.5142	42.7	37.6	1	F	MR	0.018	0.03316	0.003		1					N						
BKSB-235	0.82845	0.68859	46.9	41.5	1	M	MR	0.005	0.02793	0.001		2	2				N						
BKSB-236	0.8347	0.66632	46.1	40	1	M	MR	0.009	0.03123	0.005							Y						

Emerald Shiner

Location: RR: Red River
Location: LW: Lake Winnipeg
Capture date RR=26/9/2006
Capture date LW= 5/10/2006
MR= mature-resting, Juv= juvenile

Fish ID	Location (Manitoba)	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Cladocara count	Stomach: Crustacean count	Stomach: Digested insects (Y or N)	Stomach: Empty? (Y or N)	Gills: Myxozoan	Stomach: Bothriocephalus acheilognathi	Foregut: Bothriocephalus acheilognathi	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Brain: Apophallus brevis	Liver: Raphidascaris
EMSH-076	RR	0.94618	0.8188	50.4	47	42	1	Unk			0.00513					N		11	1			1	
EMSH-077	RR	0.71984	0.59469	46.8	42.7	37.9	1	Unk			0.00388					N							
EMSH-078	RR	1.27735	1.07666	52.9	49.4	44.4	1	Unk			0.00874	0.007			Y	N		1					
EMSH-079	RR	0.66534	0.52539			37.5	1	F	Juv	0.001	0.00341	0.001				Y		34					
EMSH-080	RR	0.64475	54692	45.8	41.9	37.1	1	Unk			0.00653	0.004				N		9	4				
EMSH-093	RR	0.79552	0.63047		43.4	37.4	1	Unk	Juv	0.013	0.01273					N	Y		15				4
EMSH-094	RR	1.06371	0.85083		48	43.4	1	F	Juv	0.005	0.01835		3	1		N							
EMSH-095	RR	0.60387	0.48484			35.8	1	Unk	Juv		0.00339	0.005				N							
EMSH-096	RR	0.59182	0.46741	44.4	40	35.5	1	Unk	Juv		0.00324	0.006				N		1					
EMSH-097	RR	1.30314	1.06877	57.4	53.5	48.3	1	Unk	Juv		0.01746	0.004	2			N							
EMSH-098	RR	0.76842	0.62434			38.8	1	Unk	Juv		0.00739	0.005			Y	N		2	1				
EMSH-099	RR	0.75003	0.63038	48.1	43	38.3	1	Unk	Juv		0.01335					N		1					
EMSH-100	RR	0.80573	0.71774			39.8	1	Unk	Juv		0.00424					Y			25				
EMSH-101	RR	0.67668	0.54657	45.1	40.9	36.4	1	Unk	Juv		0.00536	0.002				Y			15				
EMSH-102	RR	0.46118	0.3853	40.4	36.2	32.3	1	Unk	Juv							Y			4				
EMSH-103	RR	1.04782	0.89232	51.3	47.1	42.3	1	Unk	Juv		0.00696	0.003				Y					1		
EMSH-104	RR	1.09343	0.92084	52	47.2	41.2	1	Unk	Juv		0.01817				Y	N			2				
EMSH-105	RR	0.74745	0.5796			36.4	1	Unk	Juv		0.00445	0.003				Y	Y		11				
EMSH-106	RR	1.16733	0.95973			44.7	1	Unk	Juv		0.01028	0.007				Y			14				
EMSH-107	RR	0.93771	0.74172	48.9	44.8	39.3	1	Unk	Juv		0.00487	0.010				Y			3				
EMSH-108	RR	1.19143	1.00331	47.7	43.7		1	Unk	Juv		0.00563					Y			6				
EMSH-109	RR	0.82416	0.68075	49	44.3	39.5	1	Unk	Juv		0.00605	0.005				Y			7	3			
EMSH-110	RR	0.9179	0.76923	49.4	44.9	40	1	Unk	Juv		0.01560					Y			32				
EMSH-111	RR	0.69877	0.59932			36.6	1	Unk	Juv		0.00567	0.003				Y	Y		8				
EMSH-112	RR	0.37453	0.30831			32.1	1	Unk	Juv							Y	Y		23				
EMSH-113	RR	0.6116	0.51405			34.8	1	Unk	Juv		0.00298	0.001				Y	Y		2				
EMSH-114	RR	0.9147		49.3	44.2	39	1	Unk	Juv		0.01252	0.003				Y			11				
EMSH-115	RR	0..46521	0.3931		36.7	32	1	Unk	Juv		0.00375					Y			12				
EMSH-116	RR	0.77663	0.66218			38.1	1	Unk	Juv		0.00965	0.005				Y			4				
EMSH-117	RR	0.60905	0.49164	42.7	40	35.4	1	Unk	Juv							Y			8				
EMSH-296	LW (stn 60B)	2.2	1.9	68.5	62.3	55.1	2	F	MR	0.011		0.000				Y		4	1				
EMSH-297	LW (stn 60B)	3.5	3	76.4	69.8	60.1	2	F	MR	0.089	0.07252	0.040				Y							
EMSH-298	LW (stn 60B)	2.5	2.3			58.1	1	Unk	MR							Y							
EMSH-299	LW (stn 60B)	0.73151	0.67242		43.4	38.5	1	Unk	Juv							Y							
EMSH-300	LW (stn 60B)	0.58874	0.5055		43.7	39.1	1	Unk	Juv							Y							
EMSH-301	LW (stn 22)	0.59504			40.5	36.6	1	Unk	Juv							Y			2				
EMSH-302	LW (stn 22)	0.44161	0.37521	41	37.1	33.6	1	Unk	Juv		0.00413					Y		6	6				

Fathead minnow

Location: Wavey Creek
Capture date: 20/10/2006
MR= mature resting

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Mucous (Y or N)	Stomach: Digested cladocera (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)	Foregut: Proteocephalus spp	Brain: Ornithodiplostomum ptychocleidus	Brain: Bulbophorous confusus	Muscle tissue: Bulbophorous confusus
FHMW-071	0.72437	0.58886	41.1	39.7	34.5	1	F	MR	0.037	0.01811	0.000			Y			Y				
FHMW-072	0.74822	0.60174	42.5	40	36.1	1	M	MR	0.001	0.01808	0.004			Y			Y		4		
FHMW-073	0.70936	0.61627	41.3	39	33.7	1	M	MR	0.003	0.02314	0.002			Y			N		9		
FHMW-074	0.92533	0.7376	45.9	42.2	37.7	1	F	MR	0.056	0.04598				Y			N		9	1	2
FHMW-075	0.7065	0.54171	41.8	39.4	34.8	1	F	MR	0.025	0.02512				Y			N		13		1
FHMW-145	0.55931	0.42059	39.9	37.1	32.3	1	F	MR	0.02702	0.01599	0.00000			Y			N		2		
FHMW-146	0.89464	0.65394	45.2	41.3	36.9	1	F	MR	0.04060	0.03296	0.00975			Y			N		10	1	3
FHMW-147	0.98049	0.78915	46.4	43.1	38.1	1	M	MR	0.00349	0.03103	0.00240			Y			N		5		1
FHMW-148	0.94564	0.78507	46.4	43.6	39	1	M	MR	0.00242	0.03054	0.00871			Y			N		11	1	
FHMW-149	0.80428	0.65102	43.4	40.3	35.6	1	Unk	MR		0.02285	0.00000			Y			N		16		4
FHMW-221	0.87156	0.64624	43.9	42.5	37.2	1	F	MR	0.050	0.01365	0.007				Y		N		7		1
FHMW-222	0.70944	0.57168		42.3	37.7	1	M	MR	0.002	0.00154	0.000						Y		2		
FHMW-223	0.91452	0.70471	46.6	43	37.5	1	F	MR	0.074	0.00881	0.001						Y		4		
FHMW-224	1.31137	1.02653	51.2	48.6	42.7	2	F	MR	0.007	0.05051	0.005						Y		4		
FHMW-225	1.00772	0.78788	46.3	44.5	38.4	1		MR		0.03902	0.002						Y		3		
FHMW-226	0.67486	0.52265	42.5	40.6	35.4	1	F	MR	0.001	0.01372	0.000		2				N				
FHMW-227	0.86012	0.69411	45.8	43.7	37.2	1	M	MR	0.003	0.02260	0.002				Y		N		1		1
FHMW-228	0.80534	0.65128	45.1	42.5	37	1	M	MR	0.001	0.02278	0.001				Y		N		14		
FHMW-229	0.5235	0.39213			30.3	1	F	MR	0.034	0.00592	0.000						Y		9		1
FHMW-230	0.63705	0.48426	39	37.5	32.6	1	F	MR	0.034	0.00942	0.000				Y		N				
FHMW-245	0.9118	0.72247	48.2	44.2	38.6	1	F	MR	0.045	0.01514	0.009				Y		N		10		1
FHMW-246	1.22836	1.0131	51	47	41.5	2	M	MR	0.008	0.03706							Y		10	1	1
FHMW-247	0.99072	0.80811	48.2	45	39.5	1	M	MR	0.003	0.02759	0.024						Y			1	
FHMW-248	0.79005	0.6332			36.5	1	M	MR	0.009	0.01907	0.004				Y		N		3		
FHMW-249	0.96649	0.79166	44.9	43.1	37.9	1	M	MR	0.010	0.02222	0.004	125			Y		Y				1
FHMW-253	0.86295	0.66351	45.3	41.9	36.4	1	F	MR	0.040	0.01856	0.001						Y		2		
FHMW-254	1.02613	0.79354	47.5	45.2	39.6	2	M	MR	0.002	0.01636	0.001						Y		17		
FHMW-255	1.93532	1.54911	58.7	55.5	47.9	2	F	MR	0.128	0.04746	0.001						Y	1	2		
FHMW-256	0.77972	0.62731	44.2	41.6	36	1	F	MR	0.034	0.01334	0.001						Y		5		
FHMW-257	1.69817	1.31215	55.6	52.1	45.4	2	F	MR	0.116	0.02082						Y	Y		10		

Goldeye

All ageing will be done by DFO

Location: Red River Delta
Capture date: 26/9/2006
M= mature, MR= mature resting, Juv= juvenile

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Copepoda count	Stomach: Water boatman count	Stomach: White bass count	Stomach: Insect pupae count	Stomach: Coleoptera (lady bug) count	Stomach: Fish remains (Y or N)	Stomach: Water boatman (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Mermithids	Stomach: Nematode	Stomach: Crepidostomum illinoiensis	Stomach: Trematode	Caecae: Bothriocephalus cuspidatus	Caecae: Crepidostomum illinoiensis	Caecae: Trematode	Foregut: Bothriocephalus cuspidatus	Foregut: Crepidostomum illinoiensis	Foregut: Trematode	Foregut: Mermithids	Foregut: Nematode	Midgut: Bothriocephalus cuspidatus	Midgut: Crepidostomum illinoiensis	Hindgut: Crepidostomum illinoiensis	Hindgut: Camallanus oxycephalus
GLDE-002	144.3		271	251	232	M	MR	0.10	1.6	0.045				300+								N			3			4			132								
GLDE-008	322		311	290	266	F	M	20.90	2.4	8.300								Y				Y						3			28					3			
GLDE-009	266		283	267	246	F	MR	4.00	2.8	16.800						1						N	5			2		22			214					8	1		
GLDE-010	217		277	259	235	M	MR	0.13	2.3	6.500				200+								N				1		22			31								
GLDE-016	318		302	281	257	F	MR	3.30	2.5	22.500												Y	3			1	1	25			266				1		22		
GLDE-017	306		290	273	244	F	MR	5.20	3.0	28.500				100+								N				1		31			464	217		4	1	37	44		
GLDE-018	93		220	203	184				0.8	1.200	800+						1					N						4			3	1							
GLDE-023	299		300	276	252	F	MR	1.90	3.2	14.500	30+			20+								N				1		52			170				1	10	12	
GLDE-024	199		261	245	216	M	MR	0.30	1.3	9.300			2	50+								N																	
GLDE-027	181		264	248	221				1.9	6.700												Y				4		19			44				1				
GLDE-031	229		281	262	239	F	MR	0.30	1.8	9.900							1		Y		Y	N	1			1		10			14								
GLDE-032	237		282	265	236		MR		1.7	14.000								Y	Y			N	1	1							27					18	34		
GLDE-036	172		263	244	218		MR		1.5	5.100							1			Y		N			3			8	1		140					2	2		
GLDE-039	109		234	218	195	F	MR	0.60	0.9	2.200		1	9	50								N					2		1	5	6						4	3		
GLDE-042	150		250	232	209		MR		1.2	3.900	150		2	10								N	4					23			65						2		
GLDE-044	300		302	281	252		MR		2.8	25.300				25+								N									18	3		4		2			
GLDE-051	167	147	256	237	217		MR		1.8	7.500				200								N						4			14					14	10		
GLDE-055	231	190	267	251	226	M	MR	0.12	2.6	15.400				1			1	Y				N						1	2	1	1		1				3		
GLDE-059	126	116	238	225	200		MR		1.2	2.800									Y			N						6			12	2				3	1		
GLDE-061	226	199	276	257	235	M	MR	0.40	1.8	12.900	1											N			5			131	101		53	37				8	17		
GLDE-064	162	144	254	239	216		MR	0.03	2.0	6.500				25+								N						45			2						1		
GLDE-068	194	175	270	256	236				1.2	7.300			10	25								Y																	2	
GLDE-201	174	156	256	243	218		MR		1.5	6.300				50								N						31	2		265					1	5		
GLDE-202	260	229	284	270	245	M	MR	2.30	1.8	16.900									Y			N	1					5	2		5	1							
GLDE-203	214	193	272	253	231		MR		2.0	9.200				5								N						10			2					7	5		
GLDE-216	282	249	289	273	250	F	MR	4.80	1.7	14.000				600+								N						49			77								
GLDE-217	234	204	272	256	232		MR		1.3	18.000									Y			N						11			27				2		5		
GLDE-218	23	21	144	132	120		Juv		0.2	0.265	500+											N									1								
GLDE-258	208	185	277	257	232	F	MR	2.30	1.8	11.100										Y		N						18	2		2					6			
GLDE-259	213	190	273	254	230		MR		1.9	11.000												N				2		12	8		4				3	1			
GLDE-260	288	255	274	274	249		MR		1.7	19.900												N						27			81								
GLDE-261	33.1	30.1	159	147	132		Juv		0.3	0.800	100		20		20							N																	
GLDE-262	27.2	24.5		136	119		Juv		0.3	0.400	300											N																	

Northern pike

Location: Red River Delta
MR= mature resting, Juv= juvenile

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: White bass count	Stomach: Frog count	Stomach: Walleye count	Stomach: Mooneye count	Stomach: Yellow perch count	Stomach: Fish remains (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested gamarid (Y or N)	Stomach: Empty? (Y or N)	Stomach: Bothriocephalus acheilognathi	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pinguis	Foregut: Camallanus oxycephalus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Midgut: Pomphorhynchus bulbicollis	Hindgut: Bothriocephalus acheilognathi	Hindgut: Pomphorhynchus bulbicollis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid
PIKE-005	1204		571	547	509	4	F	MR	37.9	19.2	1.7				3					Y			N					40							1				
PIKE-006	4796		901	865	805	7	F	MR	177.8	83.0	44.7												Y					67					9					
PIKE-011	5631		906	870	807	8	F	MR	190.1	116.5	28.7					1							N					30					1				1	
PIKE-028	5278		875	848	789	6	F	MR	236.4	109.2	7.3												Y					15										1
PIKE-033	4185		816	783	729	7	F	MR	137.7	72.7	23.4						1			Y			N		1			19					1					
PIKE-038	750		487	462	427	?	M	MR	11.2	9.4	5.4											Y	N															
PIKE-043	3059		751	714	672	7	F	MR	156.0	70.4	18.4												Y					23		1						1		
PIKE-046	2996	2549	753	719	663	6	F	MR	105.1	49.9	16.1							1					N					1										
PIKE-057	784	714	492	468	431	3	F	MR	15.0	12.3	3.2									Y			N				1	16										
PIKE-058	1371	1221	585	556	512	4	M	MR	17.4	20.0	7.1				1				1	Y			N				2	15		2				1			
PIKE-063	284	258	361	340	312	2	M	Juv	1.9	3.8	1.0								1				N					6		1								
PIKE-065	763	664	486	463	427	2	M	MR	13.8	9.1	2.5	2								Y			N					4				3				3		
PIKE-069	4321	3716	834	801	750	5	F	MR	178.1	80.6	42.5										Y		Y				5	24		1				1			
PIKE-070	4089	3527	807	780	725	5	F	MR	202.2	81.9	49.0									Y	Y		N					10								2	
PIKE-119	4403	3811	804	765	722	?	F	MR	208.7	113.3	71.3									Y	Y		N					20									
PIKE-136	650	609	473	452	415	4	M	Juv	7.4	6.5	0.4												Y					7									
PIKE-138	382	353	395	379	348	5	M	Juv	5.5	3.3	0.9				1				1				N	4				7									
PIKE-142	1071	983	533	511	466	3	M	MR	23.4	10.7	12.0												Y					11					1				
PIKE-143	544	493	430	414	382	3	M	Juv?	5.2	6.1	1.4								2	Y			N					9		1							
PIKE-151	1893	1354	637	605	556	4	F	MR	47.4	27.3	3.6						1			Y			N					14									
PIKE-181	1483	1383	624	594	551	4	F	Juv	4.4	18.5	3.0									Y			N					34									
PIKE-182	395	371	401	380	351	2	M	Juv	4.5	4.4	1.8												Y					6	1								
PIKE-189	337	312	394	373	343	2	M	Juv	4.2	3.6	0.4			1					1	Y			N					6				1					
PIKE-190	344	317	383	365	332	3	M	Juv	1.7	3.4	0.7		1		1				1	Y			N												1		
PIKE-194	1434	1342	605	578	531	6	M	MR	15.6	15.6	6.0												Y					5									
PIKE-198	1680	1553	610	586	540	5	M	MR	28.8	19.3	23.0												Y					3		7			1				
PIKE-277	776	682	475	449	413	3	M	Juv	12.3	9.7	3.9				3								N				14	1				2			5		
PIKE-278	523	473	431	409	378	2	F	Juv	8.6	5.1	0.7								3				N					5									
PIKE-279	324	296	363	350	322	3	M	Juv	5.5	5.3	3.1												Y					7					14				

Sauger

Location: Red River Delta
Capture date: SAGR-150= 28/9/06
SAGR-283= 4/10/06
MR= mature resting, Juv= juvenile

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: White bass count	Stomach: Odonata count	Stomach: Yellow perch count	Stomach: Emerald shiner count	Stomach: Fish remains (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)	Gills: Ergasilus luciopercarum	Stomach: Bothriocephalus cuspidatus	Stomach: Bothriocephalus acheilognathi	Stomach: Proteocephalus pearsei	Stomach: Bucephalis spp	Stomach: Trematode	Stomach: Bunoderina sacculata	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Bucephalis spp	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus pearsei	Foregut: Bucephalis spp	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Bucephalis spp	Hindgut: Bothriocephalus cuspidatus	Hindgut: Proteocephalus pearsei	Hindgut: Camallanus oxycephalus	Heart: Trematode spp
SAGR-049	193	172	283	271	242	4	F	MR	0.5	2.7	5.0					Y				N	71						6								1				1		
SAGR-053	365	318	337	323	290	3	F	MR	0.9	4.4	17.6					Y				N	78						9														
SAGR-054	272	227	301	285	253	4	F	MR	8.3	7.1	13.4					Y				N	11	1					56			10											
SAGR-056	427	335	345	334	298	4	F	MR	8.4	9.2	16.5				35					N	101	26	2	1			19					2			1	1	1				
SAGR-062	390	345	342	323	288	6	M	MR	6.8	6.6	13.2									Y	59	2					3	2													
SAGR-121	359	301	32.3	31.2	27.3	?	F	MR	18.0	7.5	15.8						Y			Y	10						13	3					3							1	
SAGR-127	340	291	322	308	279	5	M	MR	7.1	4.8	23.7			3						N	13	2					7				3									1	
SAGR-128	327	276	310	304	271	4	M	MR	0.7	6.6	17.3					Y		1		N	76						56		2		2										
SAGR-129	415	346	340	333	298	5	F	MR	11.7	11.3	26.6									Y	54						19								2						
SAGR-150	401	350	339	325	295	4	F	MR	10.8	7.3	17.9									Y	121						29								2				2		
SAGR-152	332	295	323	308	274	5	M	MR	4.0	4.6	13.8									Y							6														
SAGR-153	360	315	325	312	276	4	M	MR	7.4	4.8	18.6					Y				N	65	1		3			33						1			1					
SAGR-154	98.5	90.1	229	219	193	3		Juv		1.3	3.1									Y	21	1					6				1										
SAGR-155	375	336	334	323	289	5	M	MR	6.5	5.0	11.5					Y				N	44						20						3								
SAGR-156	450	381	361	350	315	4	M	MR	1.2	5.7	29.7					Y				N	200						31				1										
SAGR-162	356	305	334	320	280	5	M	MR	3.6	8.7	13.2					Y				N	109		1		1	1	1	18		1				1							2	
SAGR-163	260	216	292	279	253	4	F	MR	6.2	5.4	14.2	1			1	Y			Y	N	20						3														
SAGR-164	72.1	66.8	212	200	177	2	F	Juv	0.2	0.8	0.8									Y																						
SAGR-165	368	306	330	315	280	4	F	Juv	0.9	9.7	20.9					Y				N	53						67													2	
SAGR-166	73.3	65.4	211	200	176	2	F	Juv	0.1	1.2	1.6					Y				N			1					7													
SAGR-183	15.2	13.9		123	110	1		Juv	0.03	0.22	0.07					Y				N							1														
SAGR-184	19.9	17.5		134	117	2		Juv	0.03	0.20	0.30		5			Y				N	3						3														
SAGR-185	90	82.2	224	214	190	2		Juv	0.04	1.1	1.7									Y	19						10				1		1	1		3			1		
SAGR-188	153	134	255	246	223		M	Juv	1.6	1.6	5.5									Y	272						13													2	
SAGR-193	304	248	307	297	265	?	F	MR	18.0	6.4	8.7					Y				N	27						44				1									1	
SAGR-251	338	286	324	313	280	3	F	MR	7.7	6.7	20.6			2						N																					
SAGR-252	335	298	318	307	278	4	F	MR	6.3	6.4	13.4									Y	49				1		26			26					25			2		3	
SAGR-283	8.5	7.4	103	98	85	1	F	Juv	0.0	0.1	0.1				1					N																					
SAGR-284	68.5	58.9		185	168	2		Juv		1.1	0.9					Y				N	28						15														
SAGR-285	507	433	370	357	317	4	F	MR	12.0	1.7	35.4									Y	160	11		1			11								2				11		
SAGR-286	384	327	340	327	293	5	F	MR	1.1	6.0	21.1					Y				N	168						13						1								
SAGR-287	386	325	346	331	293	5	F	MR	13.1	8.4	21.7					Y				N	48						17													8	5
SAGR-288	374	315	336	324	285	4	F	MR	19.0	8.2	12.6					Y				N	56						17				3						1		5	
SAGR-289	448	388	350	339	304	5	F	MR	10.6	8.1	28.1									Y	88	1					20														2
SAGR-290	417	369	346	333	293	6	M	MR	5.3	8.2	17.0					Y				N							24	1	1													
SAGR-291	565	470	378	364	324	7	F	MR	19.7	9.7	25.4			2		Y				N							10													15	
SAGR-292	14.6	13.1			102	2	F	Juv	0.02	0.07	0.10									Y	8						1														2
SAGR-293	325	379	328	317	281	6	F	MR	7.2	4.4	20.6					Y				N							6													21	
SAGR-294	101	91	227	217	193	3	F	Juv	0.040	1.9	2.2									Y	88						32														
SAGR-295	65.3	58.2	202	193	171	2	F	Juv	0.010	1.3	1.5					Y				N	8						9													5	

Walleye

Location: Red River Delta
Capture date: WLYE-186= 10/10/06
WLYE-267= 26/9/06
MR= mature resting, Juv= juvenile

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Gammarid count	Stomach: Bullhead count	Stomach: Emerald shiner count	Stomach: Fish remains (Y or N)	Stomach: Mucous (Y or N)	Stomach: Empty? (Y or N)	Gills: Ergasilus luciopercarum	Stomach: Bothriocephalus cuspidatus	Stomach: Proteocephalus pearsei	Stomach: Nematode	Stomach: Bucephalis spp	Stomach: Pomphorhynchus bulbicollis	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus achellognathi	Caecae: Proteocephalus pearsei	Caecae: Bucephalis spp	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus achellognathi	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Bucephalis spp	Foregut: Nematode	Foregut: Camallanus oxycephalus	Midgut: Bothriocephalus cuspidatus	Midgut: Proteocephalus pearsei	Midgut: Bucephalis spp	Midgut: Camallanus oxycephalus	Midgut: Proteocephalus pinguis	Hindgut: Bothriocephalus cuspidatus	Hindgut: Bothriocephalus achellognathi	Hindgut: Proteocephalus pearsei	Hindgut: Camallanus oxycephalus	Heart: Sanguinicola occidentalis
WLYE-003	570		384	366	333	5	F	MR	1.6	8.0	17.2				Y		N				1			3											1								
WLYE-004	765		405	387	360	5	M	MR	16.7	13.1	48.3				Y		N							259					16														
WLYE-013	669		408	387	352	?	F	MR	1.6	8.9	15.8						Y	11	8					123			2		2					1	1			1				
WLYE-014	867		439	422	386	4	F	MR	2.3	9.9	28.0				Y		N	25						23					2														
WLYE-015	2329		589	563	511	9	F	MR	190.9	62.1	83.9						Y							64					1							1						7	
WLYE-019	269		296	282	250	5	F	MR	22.9	6.8	11.1				Y		N		1					22					3														
WLYE-021	3486		652	630	570	10	F	MR	238.9	74.4	258.3		1		Y		N		1					23																			
WLYE-022	388		335	326	281		M	MR	6.8	6.2	27.2				Y		N	21	1					32																			
WLYE-025	314		309	293	266	4	M	MR	5.5	8.9	15.4				Y		N	85	1					99					3						1								
WLYE-029	1299		476	452	417	8	M	MR	36.5	21.4	69.3				Y		N	1						73					35				1										
WLYE-030	1077		450	434	394	8	M	MR	33.6	13.8	59.0						Y	1	5			2		39			1		2						1							
WLYE-034	516		366	357	321	5	F	MR	38.1	14.6	19.6				Y		N	12	2					40					2								1						
WLYE-035	2893		633	608	556	8	F	MR	270.4	102.5	68.4				Y		N							27	1	1																4
WLYE-037	841		421	403	368	5	M	MR	20.4	14.9	44.9				Y		N	8	14					73									1		1	1		12					
WLYE-040	1125		462	447	401	7	F	MR	64.0	29.1	41.1		5				N	14		2				107		40							2								4	
WLYE-041	4114		831	797	734		M	MR	41.3	74.7	62.8						Y																				1					
WLYE-045	2093		581	565	520	7	F	MR	145.2	62.4	176.0						Y	18						31		7						8										
WLYE-047	491	414	359	344	302	3	M	MR	8.9	5.4	20.8	1			Y		N	22	4					14																		
WLYE-048	838	727	431	416	371	7	F	MR	2.0	14.5	30.7				Y		N	200	1					200					14				1									
WLYE-050	293	252	316	300	267	4	M	MR	7.3	4.6	9.0				Y		N	15	1					24		1	1									1						
WLYE-052	215	193	282	266	240	2	F	MR	0.5	2.5	4.5						Y	3						69			2		1				1								
WLYE-060	1073	944	470	456	413	8	M	MR	23.4	14.2	38.4				Y		N	2	1					79					5												
WLYE-066	220	205	282	273	241	3	M	MR	1.1	1.5	3.3				N	Y	N	1						3																	3
WLYE-067	434	377	350	335	300	5	M	MR	8.8	3.0	13.5				Y		N	73			1			75		10															
WLYE-091	1262	1.34	472	455	411	5	F	MR	43.2	22.7	112.2	2			Y		N	9						111				2													
WLYE-092	729	641	416	400	361	5	M	MR	15.4	8.8	19.3				Y		N	9						23																	1
WLYE-118	1466	1310	508	492	1140	9	M	MR	42.1	17.6	19.7		1		Y		N	1						113					7											
WLYE-135	166	153	255	245	218	2	F	Juv	0.3	1.9	2.1						Y							51																	
WLYE-186	841	733		409	364	5	M	MR	25.0	10.8	32.5			4	Y		N	64	5	9				80		1			1	1		1						1		33	1
WLYE-187	672	600	399	386	346	4	M	MR	16.5	9.2	22.6						Y							164	1				30								2			2	
WLYE-265	1051	866	464	442	385	6	F	MR	51.9	18.8	47.3		2				N						4	18																	12
WLYE-266	1325	1128	488	465	423	6	F	MR	5.0	17.1	65.8		1		Y		N		18					12																	10
WLYE-267	1073	946	467	450	402	5	M	MR	35.3	9.2	34.6						N		1					98					5											

Location: Red River Delta
Capture date: 26/9/06
MR= mature resting, Juv= juvenile

White bass

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Water boatman count	Stomach: Fish remains (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested gamarid (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)	Gills: Onchocleidus chrysops	Gills: Ergasilus luciopercarum	Stomach: Nematode	Stomach: Bucephalis spp	Stomach: Pomporhynchus bulbicollis	Caecae: Bothriocephalus claviceps	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Bothriocephalus acheilognathi	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Caecae: Allacanthochasmus spp	Caecae: Bucephalis spp	Foregut: Bothriocephalus spp.	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Bothriocephalus acheilognathi	Foregut: Proteocephalus spp	Foregut: Allacanthochasmus spp	Foregut: Bucephalis spp	Foregut: Spirurid	Foregut: Leptorhynchoides spp	Midgut: Bothriocephalus cuspidatus	Midgut: Bothriocephalus acheilognathi	Midgut: Proteocephalus pearsei	Midgut: Proteocephalus spp	Midgut: Allacanthochasmus spp	Midgut: Bucephalis spp	Midgut: Spirurid	Midgut: Camallanus oxycephalus	Midgut: Pomporhynchus bulbicollis	Hindgut: Bothriocephalus cuspidatus	Hindgut: Bothriocephalus acheilognathi	Hindgut: Proteocephalus pearsei	Hindgut: Pomporhynchus bulbicollis	Hindgut: Camallanus oxycephalus	Hindgut: Spirurid	Hindgut: Bucephalis spp
WHBS-001	11.5		96.7	89.2	78.1	1		Juv		0.138	0.106	400+	1	1	3	2					N	64														2																							
WHBS-007	11.5		96.3	88.6	77.7	1		Juv		0.155	0.117			16		5	Y				N	15					1									1																							
WHBS-012	9.1		90.2	82.5	71.6	1		Juv		0.122	0.093	19								Y	N	21					5									3																							
WHBS-020	8.4		88.6	83.1	72.4	1		Juv		0.158	0.086	10		1							N	28																																			1		
WHBS-026	4.4		69.3	64.9	57	1		Juv		0.075	0.073	250+	1	1	8						N	7					1									3							1																
WHBS-120	6.1	5.2	80.7	74.2	64.3	1		Juv		0.091	0.127	200		1							N	2				2																														2			
WHBS-137	675	594	334	310	262	5	M	MR	25.5	8.8	25.9										Y	1			1		9		6					57							18																		
WHBS-139	974	862		360	320	10	M	MR	35.8	13.7	34.1										Y	23									1			13							8																		
WHBS-140	563	490		305	269	6	M	MR	22.9	8.3	14.4						Y				N	82					2	24		1						2	4	3																					
WHBS-141	891	805	377	355	301	10	M	MR	29.7	10.2	20.6										Y	24	1			2								15							15															2	1		
WHBS-144	1028	904	393	367	323	6	M	MR	45.6	13.0	32.9										Y													4							24																2		
WHBS-157	11.9	10.6	95.3	90.5	78	1		Juv		0.197	0.162	200+		3		1					N	65						2																															
WHBS-158	6.2	5.3	76.4	72.6	62.9	1		Juv		0.129	0.084	100+			1	1					N	2																																					
WHBS-159	11.4	10.2	96.4	87.8	77.5	1		Juv		0.117	0.063	500+				2					N	10					1			6			1					2																					
WHBS-160	4	3.4		63	53.8	1		Juv		0.076	0.051	300+									N	13																																					
WHBS-161	3.5	3.1	63.8	59.3	49.9	1		Juv		0.063	0.081	250+			2						N	14						2																								1							
WHBS-191	5.6	4.9	75.9	71.2	61.3	1		Juv		0.094	0.070	150+		1							N	7																																			1		
WHBS-192	11.8	10.6		92.5	79.3	1		Juv		0.159	0.053	200+		1	1	1					N	2													11				14	7						13		5							5				
WHBS-195	6.6	5.6	80.8		63	1		Juv		0.130	0.137	200+			1						N	3																																					
WHBS-196	8.3	7.2	85.4	78.5	68	1		Juv		0.100	0.134	150+		1							N	18							16									3		1															1				
WHBS-197	3.9	3.4			53.6	1		Juv		0.066	0.032	300+		1	2						N	6							1																														
WHBS-199	5	4.3	72.3	68	57.6	1		Juv		0.102	0.125	125+									N	22							3						1																						1		
WHBS-200	8.4	7.4	86.1	80.7	69.6	1		Juv		0.139	0.123	200+			50+	1					N	9						6										4																					
WHBS-214	4.4	3.8			55.2	1		Juv		0.071	0.051	300+			6						N	11							1																														
WHBS-215	3.6	3.1		61.5	51.6	1		Juv		0.051	0.072	150+			8						N	7						1																															
WHBS-219	10.7	9.2	91.9	86.1	73.2	1		Juv		0.196	0.179	100+			2						N	6					3	2									3																		2				
WHBS-220	4.3	3.6	68.1	64.6	54.8	1		Juv		0.074	0.072	250+									N	8																																					
WHBS-237	7.2	6.3	81.4	78.2	67.1	1		Juv		0.174	0.116	250+			3	1					N	29						3																															
WHBS-238	8.9	7.7			69	1		Juv		0.124	0.064	350+		1	1	1					N	31																																					
WHBS-239	21.7	19.3	116.5	110.7	93.4	1		Juv		0.352	0.150			1			Y				N	25					4	13																													2		
WHBS-240	13.7	12.3	103.8	96.6	83	1		Juv		0.174	0.057	300							Y		N	6							3							1							1																
WHBS-241	11.6	10.1	96	90	76.7	1		Juv		0.176	0.104	200						Y			N	26					2	6					2																										
WHBS-242	7.6	6.5		77.4	66	1		Juv		0.127	0.127	100		4							N	20				2																										2				1			
WHBS-243	14.4	13	105.4	98.6	83.8	1		Juv		0.197	0.078	100			2	4					N	25		1			2	2									2			1																			
WHBS-244	13.4	11.7	98.7	93.8	80.6	1		Juv		0.243	0.282	150		1		5					N	16					2																																
WHBS-280	399	356	295	277	238	4	M	MR	15.0	5.6	7.7										N	11						73				1		31			19	1			55	11							2	3							9	2	31
WHBS-282	887	785		350	309	7	M	MR	38.0	12.4	28.2										Y							16		1		1		8			2	12			26	1		13	4		20		12	120	1		1	1			4	2	1

Yellow perch

Location: Red River Delta
Capture date: 26/9/06
Juv= juvenile

Fish ID	Total weight (g)	Soma weight (g)	Total length (mm)	Fork length (mm)	Standard length (mm)	Age	Sex	Maturity	Gonad weight (g)	Liver weight (g)	Visceral fat weight (g)	Stomach: Cladocara count	Stomach: Chironomid count	Stomach: Gammarid count	Stomach: Copepoda count	Stomach: Water boatman count	Stomach: Water boatman (Y or N)	Stomach: Mucous (Y or N)	Stomach: Digested insects (Y or N)	Stomach: Digested diptera (Y or N)	Stomach: Macrophytes (Y or N)	Stomach: Empty? (Y or N)	Caecae: Bothriocephalus cuspidatus	Caecae: Bothriocephalus spp.	Caecae: Proteocephalus pearsei	Caecae: Proteocephalus spp	Foregut: Bothriocephalus claviceps	Foregut: Bothriocephalus cuspidatus	Foregut: Proteocephalus pinguis	Foregut: Proteocephalus pearsei	Foregut: Proteocephalus spp	Midgut: Proteocephalus pinguis	Midgut: Pomphorhynchus bulbicollis	Hindgut: Proteocephalus pearsei	Hindgut: Raphidascaris acus	Body cavity: Ligula intestinalis
YLPR-081	5	4.4	79.6	73.6	67.8	1	M	Juv	0.342	0.019	0.038	25				1	Y					N											1		
YLPR-082	2.1	1.9	61.1	59.2	51.7	1	F	Juv	0.002	0.021	0.003	78				1		Y	Y			N			1		1						1		1
YLPR-083	5.4	4.6	79.7	73.2	64.5	1	M	Juv	0.332	0.029	0.003		2									Y		1									1		
YLPR-084	6.4	5.9	85.5	82.5	70.8	1	M	Juv	0.018	0.040	0.012				1	8						N													
YLPR-085	5.5	4.8	81.4	75.5	67.1	1	M	Juv	0.352	0.031	0.001					3	Y				Y	N													
YLPR-122	4.1	3.8	75.3	69.8	61.4	1	M	Juv	0.012	0.048	0.019	18										N													
YLPR-123	2.1	1.9	58.3	56.2	48.7	1	M	Juv	0.008	0.024	0.000	58			3							N													
YLPR-124	5	4.4			62.2	1	M	Juv	0.282	0.046	0.017											N													
YLPR-125	5.2	4.7	82	76.9	67	1	M	Juv	0.019	0.055	0.030		1	16								N													
YLPR-126	3.3	3	68.1	63.2	55.6	1		Juv		0.023	0.013	13										N	1												
YLPR-204	4	3.5	71.3	69.3	61.4	1	M	Juv	0.141	0.050	0.001			44								N							1						
YLPR-205	3.5	3.2			57.8	1	F	Juv	0.009	0.057	0.005	30	2	11		1						N	1												
YLPR-206	3	2.7	65.9	63.3	55.6	1		Juv		0.038	0.008	20			2							N								1					
YLPR-207	4.4	4.1	76.2	72.7	63.4	1	M	Juv	0.016	0.034	0.004	30				1						N								1					
YLPR-208	2.7	2.5	65.6	62.3	53.3	1		Juv		0.024	0.004											Y								1			1		
YLPR-209	4	3.7	75.8	71.7	63	1	M	Juv	0.009	0.035	0.000			11		6						N													
YLPR-210	3.7	3.4	70.3	65.7	59	1	M	Juv	0.012	0.032	0.011											Y								1			2		
YLPR-211	4	3.7	74.6	71.3	62.3	1	M	Juv	0.013	0.038	0.044	4										N								1					
YLPR-212	3.5	3.2	70.8	67.9	59.7	1	M	Juv	0.010	0.018	0.000			1		12						N													
YLPR-213	3.1	2.8	68.4	65.3	57.3	1		Juv		0.037	0.057	10										N	10											1	
YLPR-250	2.9	2.7	64.7	63.1	54.4	1	M	Juv	0.008	0.037	0.004										Y	N							2			1			
YLPR-263	6	5.5	82.1	80.6	69.4	1	M	Juv	0.021	0.066	0.044								Y			N													
YLPR-264	3.1	2.8	68	65.6	56.6	1	M	Juv	0.010	0.030	0.023							Y				Y													
YLPR-268	4.3	3.9		72.5	62.6	1	M	Juv	0.015	0.056	0.022								Y			N													
YLPR-269	6	5.1	81.9	78.6	69.3	1	M	Juv	0.371	0.037	0.002									Y	Y	N												1	
YLPR-270	3.8	3.3	70.2	68	59.3	1	M	Juv	0.014	0.056	0.007											N										1			
YLPR-271	2.7	2.4			53	1	M	Juv	0.006	0.020	0.004	100			22							Y		1											
YLPR-272	3.1	2.8	67.4	66.1	57.8	1	M	Juv	0.007	0.007	0.008									Y	Y	N													
YLPR-273	2.8	2.4		53.6		1	M	Juv	0.008	0.035	0.014										Y	N													
YLPR-274	5.2	4.6	79	75.6	67.3	1	M	Juv	0.025	0.044	0.009											Y				1		1						1	
YLPR-275	3.6		71.4	68.2	59	1	M	Juv	0.012	0.037	0.009											N													
YLPR-276	4.6	4.2	77.6	74.3	64	1	M	Juv	0.015	0.056	0.005						10																		