

## STUDIES ON ALGONQUIN PARK

- No. 1. Report on the 1936 Lake Trout Investigation, Lake Opeongo, Ontario, by F. E. J. Fry and W. A. Kennedy. University of Toronto Studies, Biol. 42. Pub. Ont. Fish. Res. Lab., 54, 1937.
- No. 2. Birds of Algonquin Provincial Park, Ontario, by D. A. MacLulich. Contributions of the Royal Ontario Museum of Zoology, no. 13, 1938.
- No. 3. A Comparative Study of Lake Trout Fisheries in Algonquin Park, Ontario, by F. E. J. Fry. University of Toronto Studies, Biol. 46. Pub. Ont. Fish. Res. Lab., 58, 1939.
- No. 4. Quantitative Determination of the Insect Fauna of Rapid Water, by F. P. Ide, University of Toronto Studies, Biol. 47. Pub. Ont. Fish. Res. Lab., 59, 1940.
- No. 5. A Contribution to the Ecology of the Chironomidae of Costello Lake, Algonquin Park, Ontario, by Richard B. Miller. University of Toronto Studies, Biol. 49. Pub. Ont. Fish. Res. Lab., 60, 1941.
- No. 6. The Whitefish, *Coregonus clupeaformis* (Mitchill), of Lake Opeongo, Algonquin Park, Ontario, by W. A. Kennedy. University of Toronto Studies, Biol. 51. Pub. Ont. Fish. Res. Lab., 62, 1943.
- No. 7. Some Lethal Temperature Relations of Algonquin Park Fishes, by J. R. Brett. University of Toronto Studies, Biol. 52. Pub. Ont. Fish. Res. Lab., 63, 1944.
- No. 8. Parasites of Fish of Algonquin Park Lakes, by Ralph V. Bangham and Carl E. Venard. University of Toronto Studies, Biol. 53. Pub. Ont. Fish. Res. Lab., 65, 1945.

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## PARASITES OF FISH OF ALGONQUIN PARK LAKES

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# PARASITES OF FISH OF ALGONQUIN PARK LAKES

## II. DISTRIBUTION STUDIES<sup>1</sup>

### ABSTRACT

The present report contains results of a study of distribution of fish parasites of Algonquin Park lakes. A large proportion of the fish examined for parasites were obtained from lakes where fish had not been examined in the previous report by Bangham (1941). The 676 fish reported here belong to 22 species and 510 or 75.8 per cent carried at least one species of parasite. Of the 374 fish belonging to the family Cyprinidae only 217 or 58 per cent were infected. Parasites are listed under the name of each species of fish according to their frequency of occurrence. A check-list of the 75 species found during the survey is included.

In 1939 a preliminary survey was conducted on the parasitism of fish from lakes in the vicinity of the Ontario Fisheries Research Laboratory located on Opeongo lake. During the latter part of August, 1940, it was again possible to visit the laboratory and 183 fish were examined. These fish were obtained from Opeongo, Costello, Galeairy, Sproule, Amikeus, Sunday, and Eucalia lakes, all of which are in the Madawaska river drainage. A few specimens were examined from Smoke lake which flows into the Muskoka river. Many of these fish were obtained by workers in the physiology laboratory and were studied for parasites after the experiments in physiology were completed.

In July and August of 1942, 493 fish were examined for parasites, chiefly from lakes in the Petawawa river drainage. Most of the lakes visited were a considerable distance from the laboratory. Travel was by canoe and the amount of equipment carried was small due to several portages in the areas visited. Most of the dissections for internal parasites were made without the aid of a dissecting microscope. After the viscera were opened any large parasites were picked out and all the viscera from a fish were shaken vigorously in a container with an approximately 0.7 per cent solution of sodium bicarbonate. Then the viscera were removed, the solution poured

<sup>1</sup>This paper is a joint contribution from the Ontario Fisheries Research Laboratory, the Department of Biology, College of Wooster, and the Department of Zoology and Entomology, Ohio State University.

off, obvious debris discarded, and the sediment containing any parasites present was preserved in 2.5 per cent formalin.

Some collections of gill flukes were submitted to Dr. J. D. Mizelle and a report on these Gyrodactyloidea has been published (Mizelle and Donahue, 1944). They report eighteen species nine of which are described as new.

The copepods were studied by Dr. W. M. Tidd and one new species was found.

In this paper the data for both 1940 and 1942 are included. The 676 fish belong to 22 species and 510 or 75.8 per cent carried at least one species of parasite. In the 1939 survey (Bangham, 1941), 84.3 per cent were parasitized. The chief reason for this difference is the large number of minnows examined in 1942. Of the 374 fish belonging in the family Cyprinidae, only 217 or 58 per cent were infected whereas 96.3 per cent of the remaining fish were parasitized.

The assistance of Dr. F. E. J. Fry, Dr. F. P. Ide, and Professor W. J. K. Harkness in making arrangements and providing facilities for this investigation are gratefully acknowledged.

#### DISTRIBUTION OF PARASITES IN SPECIES OF FISH

The species of fish are arranged according to the check-list of Jordan, Evermann, and Clark (1930). A list of the parasites of each fish arranged according to their frequency of occurrence is given under each name. The number following the name of the parasite indicates the number of times the parasite was found. The presence of an asterisk before the name of a parasite indicates a larval form and two asterisks indicate that the parasite is an immature adult too juvenile for positive identification.

##### 1. Lake trout. *Cristivomer namaycush* (Walbaum)

(Examined 22; infected 22)

<i>Proteocephalus parallacticus</i> .....	21
<i>Eubothrium salvelini</i> .....	20
<i>Crepidostomum farionis</i> .....	2
* <i>Apophallus</i> sp.....	1
<i>Leptorhynchoides thecatus</i> .....	1

These trout were from Chickaree, Merchants, White Trout, Blue, Longer, Happyisle, Lavielle, and Redrock lakes. All except the single specimen from Redrock contained numerous specimens

of *P. parallacticus* which was described by MacLulich (1943 a) from lake and speckled trout of this area. All the lake trout except two of the three examined from Chickaree carried *E. salvelini*. Integumental cysts, *Apophallus* sp., were found in small numbers on one trout from Happyisle lake. One of three hosts from Chickaree and one of the two lake trout from Blue carried the intestinal fluke *C. farionis*. Thorny-headed worms were restricted to a single host from White Trout lake.

##### 2. Speckled trout. *Salvelinus fontinalis* (Mitchill)

(Examined 5; infected 5)

<i>Eubothrium salvelini</i> .....	4
<i>Proteocephalus parallacticus</i> .....	1
<i>Leptorhynchoides thecatus</i> .....	1
<i>Crepidostomum farionis</i> .....	1
<i>Hepaticola bakeri</i> .....	1
* <i>Apophallus</i> sp.....	1
<i>Contracaecum brachyurum</i> .....	1

Four speckled trout were secured from a small lake off the upper bay of Happyisle lake. These fish measured 41 to 52.5 cm. in length and all had light infections of *E. salvelini*. One fish harboured an adult *L. thecatus*. All the other parasites listed were from a single host from Redrock lake.

The parasites of lake and speckled trout were similar. MacLulich (1943 b) examined 177 lake trout and 18 speckled trout and his list of parasites includes several species found by us. He did not report *H. bakeri* and *C. brachyurum*. A comparison of the lists above with those of Lyster (1940) for the same species of fish in Quebec reveals a number of differences.

##### 3. Lake whitefish. *Coregonus clupeaformis* (Mitchill)

(Examined 17; infected 16)

<i>Proteocephalus laruei</i> .....	16
<i>Spinitectus gracilis</i> .....	4
<i>Crepidostomum cooperi</i> .....	4
<i>Eubothrium salvelini</i> .....	3
<i>Leptorhynchoides thecatus</i> .....	2
<i>Crepidostomum farionis</i> .....	1

<i>Rhabdochona</i> sp. ....	1
<i>Ergasilus caeruleus</i> .....	1
* <i>Bothriocephalus</i> sp. ....	1

Six of these fish were from Opeongo, six from Longer, and five from White Trout. *P. laruei* was carried by all infected whitefish. All other parasites listed were encountered in the Opeongo hosts except for the copepods and cysts of *Bothriocephalus* sp.

4. Menominee whitefish. *Prosopium quadrilaterale* (Richardson)  
(Examined 8: infected 8)

<i>Crepidostomum farionis</i> .....	8
<i>Ergasilus caeruleus</i> .....	1
<i>Spinitectus gracilis</i> .....	1

All these fish were from Opeongo lake.

5. American eel. *Anguilla rostrata* (LeSueur)  
(Examined 1: infected 1)

<i>Bothriocephalus claviceps</i> .....	1
<i>Azygia longa</i> .....	1
<i>Contracaecum brachyurum</i> .....	1
<i>Haplonema aditum</i> .....	1
<i>Proteocephalus macrocephalus</i> .....	1

This host, 103 cm. in length, was taken from a trap net in Opeongo lake.

6. Common sucker. *Catostomus commersonii* (Lacépède)  
(Examined 53: infected 52)

<i>Glaridacris laruei</i> .....	32
<i>Actinobdella triannulata</i> .....	20
<i>Pomphorynchus bulbocolli</i> .....	19
<i>Triganodistomum attenuatum</i> .....	11
<i>Octospinifer macilentus</i> .....	11
<i>Octomacrum lanceatum</i> .....	3
* <i>Eustrongylides</i> sp. ....	3
* <i>Posthodiplostomum minimum</i> .....	3
<i>Rhabdochona</i> sp. ....	3

These fish were taken from Happyisle, White Trout, Longer, Sunday, Eucalia, and Opeongo lakes, and no special distribution of

parasites was present. As many as 100 *P. bulbocolli* were found with their long, spiny proboscides deeply embedded in the intestine. These acanthocephala and the leeches which attach to the inside surface of the operculum, cause considerable damage to their hosts. The leeches, first reported from fish by Bangham (1941 a), cause damage which merits special study.

The caryophyllaeids are determined as *Glaridacris laruei* (Lamont, 1921). This species has been described in detail by Hunter (1930). Lyster (1940) described *Glaridacris intermedius* from common suckers taken from lake Commandant, Quebec. He compared his new species with *G. confusus* Hunter, 1929, and *G. laruei* and wrote: "The significance of these similarities and differences is obscure at this time, and may indicate synonymities. The present form is apparently closely related to *G. confusus* and *G. laruei*, but cannot be referred to either. It must, therefore, be assigned to a new species which has been designated *G. intermedius* sp. nov."

It was impossible to recognize *G. intermedius* and it is possible that Lyster's suggestion that *G. laruei* and *G. confusus* are identical is correct. Bangham (1941 a) referred specimens from the common sucker to *G. confusus*.

7. Northern red-bellied dace. *Chrosomus eos* Cope  
(Examined 88: infected 14)

* <i>Neascus</i> .....	6
* <i>Posthodiplostomum minimum</i> .....	6
<i>Rhabdochona cascadilla</i> .....	6
* <i>Agamonema</i> .....	1
* <i>Ligula intestinalis</i> .....	1

These dace were from lakes Chickaree, Longer, and White Trout.

8. Goldenshiner. *Notemigonus crysoleucas* (Mitchill)  
(Examined 7: infected 0)

No parasites were found in any of these fish from Smoke, Eucalia, and Longer lakes.

9. Northern dace. *Margariscus margarita nachtriebi* (Cox)  
(Examined 35: infected 27)

* <i>Neascus</i> .....	27
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<i>Octomacrum</i> sp.....	9
<i>Rhabdochona cascadilla</i> .....	2
** <i>Crepidostomum</i> sp.....	1

Three of ten dace examined from Chickaree carried cysts of *Neascus*. The other parasites listed above were obtained from twenty-five dace examined in 1940 from Costello lake. The gill flukes *Octomacrum* sp. appear to belong to an undescribed species and have been submitted to Dr. E. W. Price for study.

10. Fallfish. *Leucosomas corporalis* (Mitchill)

(Examined 67: infected 47)

<i>Rhabdochona cascadilla</i> .....	32
<i>Allocreadium lobatum</i> .....	24
* <i>Posthodiplostomum minimum</i> .....	10
<i>Ergasilus caeruleus</i> .....	4
* <i>Neascus</i> .....	2
* <i>Clinostomum marginatum</i> .....	2
* <i>Ligula intestinalis</i> .....	2

One fallfish was obtained from Smoke lake in 1940. Of the remainder six were from White Pine creek, and sixty were from below the dam where water flows from White Trout into Longer lake.

11. Northern Creek Chub. *Semotilus atromaculatus atromaculatus* (Mitchill)

(Examined 64: infected 51)

<i>Rhabdochona cascadilla</i> .....	19
* <i>Posthodiplostomum minimum</i> .....	18
* <i>Neascus</i> .....	13
* <i>Clinostomum marginatum</i> .....	9
<i>Allocreadium lobatum</i> .....	8
<i>Neoechinorhynchus</i> sp.....	5
* <i>Proteocephalus ambloplitis</i> .....	3
<i>Octomacrum</i> sp.....	2
<i>Triganodistomum attenuatum</i> .....	1
** <i>Proteocephalus</i> sp.....	1

The creek chub were from twelve lakes: Blue 2, Redrock 1, Longer 7, Happyisle 8, Chickaree 9, Eucalia 2, Costello 4, Opeongo

1, White Trout 8, and Merchants 3, and from White Pine creek 8 and Mud creek 1.

12. Fine-scaled dace. *Pfrille neogaea* (Cope).

(Examined 11: infected 7)

* <i>Neascus</i> .....	6
* <i>Agamonema</i> .....	1

All these fish were obtained from Amikeus lake in 1940.

13. Northern common shiner. *Notropis cornutus frontalis* (Agassiz)

(Examined 20: infected 15)

<i>Rhabdochona cascadilla</i> .....	9
<i>Bunodera sacculata</i> .....	7
<i>Allocreadium lobatum</i> .....	7
* <i>Posthodiplostomum minimum</i> .....	6
* <i>Clinostomum marginatum</i> .....	3
** <i>Bothriocephalus</i> sp.....	2
* <i>Ligula intestinalis</i> .....	2
<i>Ergasilus caeruleus</i> .....	1
* <i>Neascus</i> .....	1

The fish were taken as follows: one from Sunday, four from Eucalia, two from Smoke, eleven from White Trout, and two from White Pine creek. *B. sacculata* was found only in these fish from White Trout lake. *R. cascadilla* and *A. lobatum* were from White Trout and White Pine lakes.

14. Brassy minnow. *Hybognathus hankinsoni* Hubbs.

(Examined 4: infected 1)

* <i>Neascus</i> .....	1
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All these minnows were taken in 1940 from Amikeus lake.

15. Blunt-nosed minnow. *Hyborhynchus notatus* (Rafinesque)

(Examined 16: infected 12)

* <i>Tetracotyle</i> sp.....	9
* <i>Posthodiplostomum minimum</i> .....	7
<i>Rhabdochona cascadilla</i> .....	3
* <i>Ligula intestinalis</i> .....	1

The fish were from Smoke, Happyisle, and White Trout lakes.

16. Fat-head minnow. *Pimephales promelas* Rafinesque.  
(Examined 60: infected 46)

* <i>Posthodiplostomum minimum</i> . . . . .	45
** <i>Rhabdochona</i> sp. . . . .	4
* <i>Clinostomum marginatum</i> . . . . .	1

All of forty-three fat-head minnows from Chickaree lake were infected with *P. minimum*. This is interesting because only three of ten northern dace and only one of sixty red-bellied dace from the same lake had this parasite. All the minnows were caught during an afternoon in a trap set at one location.

17. Brown bullhead. *Ameiurus nebulosus* LeSueur  
(Examined 11: infected 11)

<i>Corallobothrium fimbriatum</i> . . . . .	8
<i>Allocreadium ictaluri</i> . . . . .	2
<i>Alloglossidium geminus</i> . . . . .	2
<i>Pomphorhynchus bulbocolli</i> . . . . .	2
* <i>Proteocephalus ambloplitis</i> . . . . .	1
<i>Ergasilus</i> sp. . . . .	1
<i>Vietosoma parvum</i> . . . . .	1

The bullheads were from Opeongo, Happyisle, and Merchants lakes. The *C. fimbriatum* are very small and appear different from those taken from places farther south, but a comparison of specimens from Tennessee, Ohio, and Canada does not reveal characters sufficiently different for the erection of a new species.

With the exception of *C. fimbriatum* all the parasites listed were obtained from seven bullheads in Opeongo lake.

18. Ling or burbot. *Lota maculosa* (LeSueur)  
(Examined 15: infected 15)

<i>Abothrium crassum</i> . . . . .	15
<i>Contracaecum brachyurum</i> . . . . .	6
<i>Leptorhynchoides thecatus</i> . . . . .	5
<i>Ergasilus caeruleus</i> . . . . .	5
<i>Haplonema hammulatum</i> . . . . .	5
<i>Hepaticola bakeri</i> . . . . .	5
** <i>Proteocephalus</i> sp. . . . .	2
<i>Ergasilus osburni</i> . . . . .	1

Ten fish were taken from Opeongo in 1940 and single specimens from Sproule, White Trout, Longer, Blue, and Chickaree lakes in 1942. *Ergasilus osburni* is a new species and a description of it by Tidd and Bangham will appear in the forthcoming issue of the *Transactions of the American Microscopical Society*.

19. Stickleback. *Eucalia inconstans* (Kirtland)  
(Examined 7: infected 0)

The sticklebacks were obtained in 1940 from a small lake, called Eucalia by the investigators at the laboratory, located by the park highway near the Opeongo lake road.

20. Yellow perch. *Perca flavescens* (Mitchill)  
(Examined 84: infected 81)

* <i>Neascus</i> . . . . .	47
<i>Proteocephalus pearsei</i> . . . . .	28
<i>Bunodera sacculata</i> . . . . .	20
<i>Crepidostomum cooperi</i> . . . . .	19
* <i>Proteocephalus ambloplitis</i> . . . . .	16
<i>Spinitectus gracilis</i> . . . . .	8
** <i>Bothriocephalus</i> sp. . . . .	4
* <i>Posthodiplostomum minimum</i> . . . . .	4
<i>Dichelyne cotylophora</i> . . . . .	3
* <i>Clinostomum marginatum</i> . . . . .	3
<i>Illinobdella</i> sp. . . . .	3
* <i>Ligula intestinalis</i> . . . . .	2
* <i>Leptorhynchoides thecatus</i> . . . . .	2
* <i>Agamonema</i> . . . . .	1
** <i>Azygia angusticauda</i> . . . . .	1

The perch were from White Pine creek (2) and the following lakes: Blue 6, Galeairy 3, Happyisle 10, Longer 4, Merchants 7, Opeongo 25, Redrock 3, Shiner 3, Sunday 1, and White Trout 20. Those from Longer and Blue lakes and from White Pine creek carried only cysts of *Neascus* and *P. pearsei*.

21. Small mouth black bass, *Micropterus dolomieu* Lacépède  
(Examined 46: Infected 46)

* <i>Proteocephalus ambloplitis</i> . . . . .	43
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<i>Proteocephalus fluviatilis</i> .....	16
* <i>Uvulifer ambloplitis</i> .....	14
<i>Spinitectus carolini</i> .....	12
* <i>Clinostomum marginatum</i> .....	11
<i>Crepidostomum cornutum</i> .....	7
<i>Proteocephalus ambloplitis</i> .....	6
<i>Leptorhynchoides thecatus</i> .....	6
<i>Azygia angusticauda</i> .....	3
<i>Rhabdochona cascadilla</i> .....	2
<i>Rhipidocotyle papillosum</i> .....	2
<i>Neoechinorhynchus cylindricus</i> .....	1
* <i>Posthodiplostomum minimum</i> .....	1

The bass were from Galeairy 14, Happyisle 27, and Opeongo 5.

The amazing infections of Opeongo bass with larval *P. ambloplitis* have been pointed out (Bangham, 1941 a). The biology of this parasite in this area deserves special study. The bass from Galeairy and Happyisle were not nearly as heavily infected as the bass from Opeongo. *P. fluviatilis*, reported by Bangham (1941 a) for the first time from bass living in lakes, was found in all three lakes.

## 22. Common sunfish. *Lepomis gibbosus* (Linnaeus)

(Examined 35: infected 35)

* <i>Posthodiplostomum minimum</i> .....	13
* <i>Clinostomum marginatum</i> .....	11
* <i>Leptorhynchoides thecatus</i> .....	9
* <i>Uvulifer ambloplitis</i> .....	9
<i>Crepidostomum cornutum</i> .....	8
* <i>Hymenolepis</i> sp.....	7
<i>Crepidostomum cooperi</i> .....	5
* <i>Proteocephalus ambloplitis</i> .....	4
** <i>Proteocephalus pearsei</i> .....	4
<i>Spinitectus gracilis</i> .....	4
<i>Bothriocephalus claviceps</i> .....	4
* <i>Azygia angusticauda</i> .....	3
<i>Rhabdochona</i> sp.....	3
* <i>Agamonema</i> .....	3
<i>Spinitectus carolini</i> .....	2
<i>Leptorhynchoides thecatus</i> .....	1

The sunfish were from seven lakes as follows: Galeairy 2, Happyisle 1, Longer 5, Merchants 5, Opeongo 8, Shiner 2, and White Trout 12.

The common sunfish from Longer carried only strigeid cysts. Two fish from Opeongo, three from White Trout, and one from Shiner lake bore cysts which contained a cestode larva with invaginated rostellar hooks. A similar form was recorded and figured by Van Cleave and Mueller (1934). They found a single larva in the digestive tract of *Micropterus salmoides*.

A related or identical species was found by Bangham (1941 b) encysted in the long-nosed killifish, banded topminnow, golden topminnow, flagfish, and mosquito-fish of southern Florida.

## CHECK-LIST OF PARASITES

The parasites are arranged in their systematic order. The list includes the monogenetic trematodes which were identified by Mizelle and Donahue (1944). These authors described nine new species and made many comments on the distribution of gyrodactylids.

## TREMATODA

<i>Cleidodiscus banghami</i> (Mueller, 1936)
<i>Cleidodiscus pricei</i> Mueller, 1936
<i>Cleidodiscus</i> sp.
<i>Actinocleidus oculatus</i> (Mueller, 1934)
<i>Actinocleidus incus</i> Mizelle and Donahue, 1944
<i>Actinocleidus recurvatus</i> Mizelle and Donahue, 1944
<i>Actinocleidus gibbosus</i> Mizelle and Donahue, 1944
<i>Actinocleidus scapularis</i> Mizelle and Donahue, 1944
<i>Actinocleidus sigmoideus</i> Mizelle and Donahue, 1944
<i>Urocleidus adspetus</i> Mueller, 1936
<i>Urocleidus dispar</i> (Mueller, 1936)
<i>Urocleidus ferox</i> (Mueller, 1934)
<i>Urocleidus procax</i> Mizelle and Donahue, 1944
<i>Dactylogyrus banghami</i> Mizelle and Donahue, 1944
<i>Dactylogyrus bulbosus</i> Mueller, 1938
<i>Dactylogyrus bullosus</i> Mizelle and Donahue, 1944
<i>Dactylogyrus cornutus</i> Mueller, 1938
<i>Dactylogyrus perlus</i> Mueller, 1938

- Dactylogyrus pollex* Mizelle and Donahue, 1944  
*Octomacrum lanceatum* Müller, 1934  
*Octomacrum* sp.  
*Rhipidocotyle papillosum* (Woodhead, 1929)  
*Vietosoma parvum* Van Cleave and Mueller, 1932  
*Allocreadium ictaluri* Pearse, 1924  
*Allocreadium lobatum* Wallin, 1909  
*Crepidostomum cornutum* (Osborn, 1903)  
*Crepidostomum cooperi* Hopkins, 1931  
*Crepidostomum farionis* (O. F. Müller, 1784)  
*Crepidostomum* sp.  
*Bunodera sacculata* Van Cleave and Mueller, 1932  
*Triganodistomum attenuatum* Mueller and Van Cleave, 1932  
*Alloglossidium geminus* (Mueller, 1930)  
*Apophallus* sp.  
*Clinostomum marginatum* (Rudolphi, 1819)  
*Tetracotyle* sp.  
*Posthodiplostomum minimum* (MacCallum, 1921)  
*Neascus* Hughes, 1927  
*Uvulifer ambloplitis* (Hughes, 1927)  
*Azygia longa* (Leidy, 1851)  
*Azygia angusticauda* (Stafford, 1904)

## Cestoda

- Glaridacris laruei* (Lamont, 1921)  
*Ligula intestinalis* (Linnaeus, 1758)  
*Bothriocephalus claviceps* (Goeze, 1782)  
*Bothriocephalus* sp.  
*Abothrium crassum* (Bloch, 1779)  
*Eubothrium salvelini* (Schränk, 1781)  
*Proteocephalus embloplitis* (Leidy, 1887)  
*Proteocephalus fluvialtilis* Bangham, 1925  
*Proteocephalus laruei* Faust, 1919  
*Proteocephalus macrocephalus* (Creplin, 1825)  
*Proteocephalus parallacticus* MacLulich, 1943  
*Proteocephalus pearsei* La Rue, 1919  
*Proteocephalus* sp.  
*Corallobothrium fimbriatum* Essex, 1927  
*Hymenolepsis* sp.

## Nematoda

- Agamonema* Diesing, 1851  
*Hepaticola bakeri* Mueller and Van Cleave, 1932  
*Contracaecum brachyurum* (Ward and Magath, 1917)  
*Eustrongylides* sp.  
*Spinitectus carolini* Holl, 1928  
*Spinitectus gracilis* Ward and Magath, 1917  
*Rhabdochona cascadilla* Wigdor, 1918  
*Rhabdochona* sp.  
*Dichelyne cotylophora* (Ward and Magath, 1917)  
*Haplonema aditum* Mueller, 1934  
*Haplonema hamulatum* Moulton, 1931

## Acanthocephala

- Neoechinorhynchus cylindratus* (Van Cleave, 1913)  
*Neoechinorhynchus* sp.  
*Octospinifer macilentus* Van Cleave, 1919  
*Leptorhynchoides thecatus* (Linton, 1891)  
*Pomphorhynchus bulbocolli* Linkins, in Van Cleave 1919

## Copepoda

- Ergasilus caeruleus* Wilson, 1919  
*Ergasilus osburni* Tidd and Bangham (manuscript)

## Hirudinea

- Actinobdella triannulata* Moore, 1905  
*Illinobdella* sp.



## LITERATURE CITED

- BANGHAM, R. V. 1941 a. Parasites of fish of Algonquin Park lakes. *Trans. Amer. Fish. Soc.*, vol. 70, 161-171.
- 1941 b. Parasites of fresh-water fish of southern Florida. *Proc. Fla. Acad. Sci.*, vol. 5, 289-307.
- HUNTER, G. W. III. 1930. Studies on the Caryophyllaeidae of North America. *Ill. Biol. Monog.*, vol. 11, 1-186.
- JORDAN, D. S., B. W. EVERMANN, and H. W. CLARK. 1930. Checklist of fishes and fishlike vertebrates of North and Middle America north of the northern boundary of Venezuela and Colombia. *Rept. U.S. Commissioner of Fisheries for 1928, part II*, 1-670.
- LYSTER, L. L. 1940. Parasites of freshwater fish. II. Parasitism of speckled and lake trout and the fish found associated with them in lake Commandant Quebec. *Can. Jour. Research, section D*, vol. 18, 66-78.
- MACLULICH, D. A. 1943 a. *Proteocephalus parallacticus*, a new species of tapeworm from lake trout, *Cristivomer mamaycush*. *Can. Jour. Research, section D*, vol. 21, 145-149.
- 1943 b. Parasites of trout in Algonquin Provincial Park Ontario. *Can. Jour. Research, section D*, vol. 21, 405-412.
- MIZELLE, J. D. and M. A. DONAHUE, 1944. Studies on monogenetic trematodes XI. Dactylogyridae from Algonquin Park fishes. *Amer. Midl. Nat.*, vol. 31, 600-624.
- VAN CLEAVE, H. J. and J. F. MUELLER. 1934. Parasites of Oneida lake fishes. Part III. A biological and ecological survey of the worm parasites. *Roosevelt Wildlife Annals*, vol. 3, 161-334.

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