

**HELMINTHOLOGICAL INVESTIGATIONS OF FISH IN LAKE BALATON I.  
(PRELIMINARY REPORT)  
TREMATODES**

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On the request of the Biological Research Institute of the Hungarian Academy of Sciences, Tihany, the staff of parasitologists of the Zoological Department of the Hungarian Natural History Museum, Budapest, undertook the project of investigating, in 1966, the worms parasitizing fish in Lake Balaton. The aim of the research program, planned for a number of years, is to obtain further data, by the examination of a great number of fish species, on the fauna parasitizing fishes, with special regard to the distribution per hosts, their infections and seasonal fluctuations.

The present paper submits the results of investigations carried out in the past year.

Studies were cordially supported by the director of the Biological Research Institute at Tihany, Dr. J. SALÁNKI, and the Department head of Hydrobiology, Dr. J. PONYI, as well as their assistants, for whose help thanks are rendered also in this place.

**Material and methods**

In 1966, fish specimens had been collected and dissected for parasitological investigations on three occasions: 28 June—3 July, 1966; 23—31 August, 1966; and 24—29 October, 1966.

During this time, 160 fish specimens have been examined of the following species: bream (*Abramis brama*), 40 exemplars; roach (*Rutilus rutilus*), 36 ex.; carp (*Cyprinus carpio*), 18 ex.; crucian-carp (*Carassius carassius*), 1 ex.; razor-fish (*Pelecus cultratus*), 10 ex.; balin (*Aspius aspius*), 2 ex.; pike-perch (*Lucioperca lucioperca*), 15 ex.; Volga pike-perch (*Lucioperca volgensis*), 5 ex.; perch (*Perca fluviatilis*), 8 ex.; pike (*Esox lucius*), 14 ex.; European wels (*Silurus glanis*), 4 ex.; bleak (*Alburnus alburnus*), 7 ex.

The collected worms have been preserved, pending further investigations, in 70 per cent alcohol and HEIDENHAIN'S "Susa" fixative, respectively. Trematodes have been stained by alcoholic borax-carmin, and embedded in Canada balsam.

### Distribution of parasitization of the diverse fish species

Of the 160 examined fish specimens, 128 exemplars were parasitized by digenetic Trematodes, Nematodes, Cestods, or Acanthocephalae.

Total parasitization may be broken down as to species in the following pattern:

*Abramis brama*: 87.5%, *Rutilus rutilus*: 94.4%, *Cyprinus carpio*: 61.1%,  
*Pelecus cultratus*: 30%, *Lucioperca lucioperca*: 93.3%, *Lucioperca volgensis*:  
 100%, *Perca fluviatilis*: 100%, *Silurus glanis*: 50%, *Esox lucius*: 92.8%,  
*Alburnus alburnus*: 14.2%.

### Digenetic flukes

Concerning the Trematodes of the fish in Lake Balaton, the first report was given by RÁTZ (1897). JACZÓ (1941) recorded two monogenetic fluke species, and a digenetic fluke larva (1949), from Lake Balaton. Of the digenetic fluke larvae of the lake, MÖDLINGER discussed (1934) the biology of *Apophallus donicus*.

Recently, MOLNÁR (1962a, b; 1963; 1964; 1966) gave detailed accounts of the flukes occurring in fish living in the Balaton.

In the course of the present study, the following fluke species have been demonstrated:

*Subclass I*: Aspidogastrea FAUST et TANG, 1907

Family: Aspidogastridae POCHE, 1907

*Aspidogaster limacoides* DIES., 1835

Host: *Abramis brama*

Date of collection: 28 June—24 October, 1966

Localization: small intestine

Host: *Rutilus rutilus*

Date of collection: 28 June—23 August, 1966

Localization: small intestine

Host: *Cyprinus carpio*

Date of collection: 24 October, 1966

Localization: small intestine

*Subclass II*: Gasterostomata SKRJABIN et SCHULZ, 1937

Family: Bucephalidae POCHE, 1907

*Bucephalus polymorphus* BAER, 1827

Host: *Lucioperca lucioperca*

Date of collection: 28 June—24 October, 1966

Host: *Lucioperca volgensis*

Date of collection: 24 October, 1966

Localization: pyloric appendages, small intestine

*Rhipidocotyle illense* (ZIEGLER, 1883)

Host: *Lucioperca lucioperca*

Date of collection: 28 June—24 October, 1966

Host: *Lucioperca volgensis*

Date of collection: 24 October, 1966

Localization: pyloric appendages, small intestine

*Subclass III: Prosostomata* ODHNER, 1905

Family: Azygiidae ODHNER, 1911

*Azygia lucii* (MÜLLER, 1776)Host: *Esox lucius*

Date of collection: 28 June—24 October, 1966

Localization: gaster, intestine

Host: *Perca fluviatilis*

Date of collection: 24 October, 1966

Localization: gaster

Family: Monorchidae ODHNER, 1911

*Asymphyiodora imitans* (MÜHLING, 1898)Host: *Abramis brama*

Date of collection: 28 June—23 August, 24 October, 1966

Localization: intestine

Family: Opecoelidae OZAKI, 1925

*Crowcrocoecum skrjabini* (IWANITZKY, 1928)Host: *Pelecus cultratus*

Date of collection: 28 June, 1966

Localization: intestine

Host: *Lucioperca lucioperca*

Date of collection: 24 October, 1966

Host: *Lucioperca volgensis*

Date of collection: 24 October, 1966

Localization: pyloric appendages

Family: Diplostomatidae Poirier, 1886

*Diplostomum spathaceum* (RUD., 1819), *metacercaria*Host: *Abramis brama*

Date of collection: 28 June—24 October, 1966

Host: *Rutilus rutilus*

Date of collection: 28 June—23 August—24 October, 1966

Host: *Cyprinus carpio*

Date of collection: 23 August—24 October, 1966

Host: *Carassius carassius*

Date of collection: 28 June, 1966

Localization: crystalline lens of eye

*Tylodelphis conifera* (MEHLIS, 1864), *metacercaria*Host: *Abramis brama*

Date of collection: 24 October, 1966

Host: *Rutilus rutilus*

Date of collection: 23 August—24 October, 1966

Localization: eye—vitreous body

**Summary**

The present paper discusses the results of the helminthological examination of 160 specimens of 12 fish species of Lake Balaton, as well as the extensity of parasitization per fish species and the collected digenetic Trematode taxa.

## REFERENCES

- АГАРОВА, А. И. (1966): Агапова, А. И.: Паразиты рыб водоемов Казахстана. — *Издательство «Наука» Казахской ССР, Алма-Ата.*
- ВУКHOVCKY, В. Е. (1962) Быховский, Б. Е.: Определитель паразитов пресноводных рыб СССР. — *Издательство Акад. Наук СССР, Москва—Ленинград.*
- EDELÉNYI B. (1963): Belsőélsőködő laposférgek hazai halainkból. — *Az Egri Tanárképző Főiskola Tud. Közl.* **9**, 301—322.
- JACZÓ I. (1941): Parazitológiai jegyzetek. I. — *Magy. Biol. Kut. Munk.* **13**, 277—289.
- JACZÓ I. (1949): Parazitológiai jegyzetek. III. — *Hidrol. Közl.* **29**, 100—102.
- МАРКЕВИЧ, А. Р. (1963) Маркевич, А. П.: Паразитофауна пресноводных рыб УССР. — *Издательство Акад. Наук УССР, Киев.*
- MOLNÁR K. (1962a): Halparaziták a Balatonból és tógazdaságokból. — *Annal. Biol. Tihany* **29**, 117—127.
- MOLNÁR, K., I. NÉMETH (1962b): Beiträge zur Kenntnis der Fischparasiten in Ungarn. — *Acta Vet. Acad. Sci. Hung.* **12**, 249—255.
- MOLNÁR K. (1963): Mono- és digenetikus mótelyek halakból. — *Állattani Közlemények* **1**, 103—107.
- MOLNÁR, K. (1964): Über die Parasitenfauna der Fische in Ungarn. — *Acta Vet. Acad. Sci. Hung.* **14**, 455—467.
- MOLNÁR, K. (1966): Untersuchungen über die Jahreszeitliches Schwankungen in der Parasitenfauna des Kaulbarsches und des Zanders im Balaton mit besonderer Berücksichtigung der Gattung Proteocephalus. — *Angew. Par.* **7**, 65—77.
- MÖDLINGER, G. (1934): Beiträge zur Biologie von *Apophallus donicus*. — *Arbeiten der I. Abt. des Ung. Biol. Forschungsinstitutes* **7**, 60—65.
- RÁTZ I. (1897): A halakban élősködő férgek. *A Balaton tudományos tanulmányozásának eredményei* II. 1, 141—150.
- СКРЯБИН, К. И. (1955, 1958) Скрыбин, К. И.: Трематоды животных и человека. — *Изд. Акад. Наук СССР, Москва.*
- YAMAGUTI, S. (1958): Systema Helminthum. — *Interscience Publishers, New-York—London.*

## A BALATONI HALAK HELMINTOLÓGIAI VIZSGÁLATA. I

(Előzetes közlemény)

Trematodák

Matskási István

## Összefoglalás

A szerző előzetes közleményben ismerteti 12 fajhoz tartozó 160 db balatoni hal helmintológiai vizsgálatának eredményét, a fertőzőtttség extenzitását halfajok szerint, valamint a talált digenetikus Trematoda fajokat.

ГЕЛЬМИНТОЛОГИЧЕСКОЕ ИССЛЕДОВАНИЕ БАЛАТОНСКИХ РЫБ. I  
(ПРЕДВАРИТЕЛЬНОЕ СООБЩЕНИЕ)

Иштван Мачкаши

Автор предварительно сообщает результаты гельминтологического исследования 160 балатонских рыб, относящихся к 12 видам, по экстенции зараженности отдельных видов а также описывает обнаруженный digenetический вид трематода.