

Norwegian Journal **fZOOLOGY**

VOL. 20, NO. 3, SEPTEMBER

REPRINT

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*On the Occurrence of the Trematode, Isoparorchis hypselobagri
(Billet 1898), in Fishes and Notes on its Life History*

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Norwegian Journal of ZOOLOGY

is a direct continuation of
Nytt Magasin for Zoologi
(1952-1970), and of
Nytt Magasin for Naturvitenskapene
(1823-1951),
which, in 1952, was divided into
two independent periodicals,
Nytt Magasin for Botanikk and
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Subscription Price

Per volume (four issues annually)
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On the Occurrence of the Trematode, *Isoparorchis hypselobagri* (Billet 1898), in Fishes and Notes on its Life History

A. K. M. BASHIRULLAH

Bashirullah, A. K. M. 1972. On the occurrence of the trematode, *Isoparorchis hypselobagri* (Billet 1898) in fishes, and notes on its life history. *Norw. J. Zool.* 20, 209-212.

The distribution and occurrence of *Isoparorchis hypselobagri* (Billet 1898) in different hosts and localities are shown. Three new hosts are recorded from Bangladesh. Notes on the life history of *I. hypselobagri* are discussed. Juvenile flukes are encysted in the muscles of different fish hosts. Immature flukes are found in the body cavities of *Wallago attu* (Bloch & Schneider) and occasionally in *Channa (Ophiocephalus) punctatus* (Bloch). There are always adults in the swimbladder of *W. attu*. Immature worms were seen to actively penetrate the gut wall and migrate into the swimbladder of siluroid fish. They may also mature in the alimentary canal of fish-eating mammals.

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Isoparorchis trisimilitubis gen. et. sp. nov. was described by Southwell (1913) from the swimbladder of siluroid fish, *Wallago attu* (Bloch & Schneider) from Bankipore, India. Kabayashi (1915) described a similar trematode as *Leptolecithum eurytremum* a new genus and species from the swimbladder of *Parasilurus asotus* in Japan. Travassos (1922) regarded *Leptolecithum* Kabayashi as synonymous with *Isoparorchis* Southwell. Bhalerao (1926) synonymised these two genera into *Isoparorchis* Southwell. Johnston (1927) described a new species, *Isoparorchis tandani* from the Australian siluroid fish, *Tandanus tandanus*. *Distomum hypselobagri* Billet, 1898 from *Macrones* sp. may also belong to *Isoparorchis* (Odhner 1927). According to Ejsmont (1932) all three genera (*Isoparorchis*, *Leptolecithum*, and *Distomum*) are one and designates *Isoparorchis hypselobagri* (Billet 1898) as type species. Yamaguti (1934) agreed with Ejsmont's view but preferred the type as *I. trisimilitubis* since *D. hypselobagri* was not fully known. Later, Yamaguti (1958) recorded *I. hypselobagri* (Billet 1898) as the type species.

The genus has been reported from India, Japan, Australia, Annam, China, Java, USSR. The present record is a new locality. Three new hosts are reported in the present studies.

MATERIAL

A survey of parasites of freshwater fishes of Bangladesh is in progress. In this, different kinds of parasites were collected along with the present species which was found in 9 % of the swimbladder of *Wallago attu* examined. Juvenile forms were collected in the lateral muscles and body cavities of siluroid and non-siluroid fishes.

DESCRIPTION

Southwell (1913), Kabayashi (1915), Johnston (1927), Bhalerao (1926) and Ejsmont (1932) have described this genotype in detail. Since there is only one species of the genus, a detailed specific description is considered unnecessary. The large adult worm from the swimbladder of *W. attu* measures 25.5 X 13.5 mm and the

Table I. Distribution of *Isoparorchis* in different hosts and localities.

Host	Location	Locality and Authors
<i>Wallago attu</i> (Bloch & Schneider)	Swimbladder	Bankipore (Southwell, 1913)
<i>Wallago attu</i> (Bloch & Schneider)	Liver	Patna (Chauhan 1947)
<i>Barbus for</i> (Bloch)	Muscles	Poona (Parker 1910)*
<i>Channa (Ophiocephalus) striatus</i>	Lateral muscles	Khulna (Southwell & Prashad 1918)
<i>C. (0) striatus</i> (Bloch)	Muscles and body cavity	
<i>C. (0) marulius</i> (Ham.)	Muscles	Nagpur (Bhalerao 1936)
<i>C. (0) punctatus</i> (Bloch)	Muscles	Hyderabad (Chauhan 1954)
<i>C. (0) gachua</i> (Bleek.)	Muscles	Hyderabad (Chauhan 1954)
<i>Gobius giuris</i> (Ham.)	Muscles	Hyderabad (Chauhan 1954)
<i>Mastacembalus armatus</i> (Lacepede)	Muscles	Hyderabad (Chauhan 1954)
<i>Notopterus notopterus</i> (Pall.)	Mesentery and liver	Hyderabad (Chauhan 1954)
<i>Ambassis nama</i> (Ham.)	Liver, body cavities and subcutaneous tissues	Hyderabad (Chauhan 1954)
<i>Parasilurus asotus</i> (Linn.)	Swimbladder	Poona (Chauhan 1954)
<i>Pseudobagrus auratiacus</i> (Bleek.)	Swimbladder	Japan (Kobayashi 1915)
<i>Hypomesus olidus</i> (Pal.)	Swimbladder	Japan (Kobayashi 1921)
<i>Richardsonius kakonensis</i>	Swimbladder	Japan (Kobayashi 1921)
<i>Tandanus tandanus</i> Mitchell	Swimbladder	Japan (Kobayashi 1921)
<i>Macrones</i> sp.	Swimbladder	Australia (Johnston 1927)
<i>Wallago attu</i>	Swimbladder	Annam (Odhner 1927)
<i>Macrones numurus</i>	Swimbladder	Java (Bovien 1927)
<i>Parasilurus asotus</i> (Linn.)	Encysted in ovary, kidney, etc.	Java (Bovien 1927)
<i>Liocassis ussuriensis</i> (Dyb.)	Body cavity	Amur, USSR (Zmееv 1936)
<i>L. brazhnikowi</i> (Berg)	Body cavity	Amur, USSR (Zmееv 1936)
<i>Mesocottus naitiei</i> Grac.	Body cavity	Amur, USSR (Zmееv 1936)
<i>Crocodile</i>	Body cavity	Amur, USSR (Zmееv 1936)
Man	Stomach	Assam (Bhalerao 1932)
Man	Stool	Calcutta (Chandler 1926)
Whale (suckers of the worm obliterated, identification doubtful)	Stool	China (Faust 1929)
	Body cavity	USSR (Zmееv 1936)
Findings of the present author:		
<i>Kallago attu</i>	Swimbladder and body cavity	
<i>Channa (Ophiocephalus) striatus</i>	Lateral muscles in cyst	Dacca, Bangladesh
<i>C. (0) nzarulus</i>	Lateral muscles in cyst	Dacca, Bangladesh
<i>C. (0) punctatus</i>	Lateral muscles in cyst and body cavity	Dacca, Bangladesh
<i>Nandus nandus</i> (Ham.)	Lateral muscles in cyst	Dacca, Bangladesh
<i>Mystus aor</i> (Ham.)	Swimbladder	Dacca, Bangladesh
<i>Mystus cavassius</i> (Ham.)	Swimbladder	Dacca, Bangladesh

* Parker is quoted from Southwell 1913.

diameters of oral and ventral suckers are 1.03 x 1.15 mm and 1.95 x 1.9 mm, respectively.

LIFE HISTORY

The encysted juvenile *Isoparorchis* are found in the lateral muscles of the different species of *Channa* Scopoli and several other siluroid

and non-siluroid fishes (Table I). The cyst in the muscles is always heavily pigmented. The fluke became active when released from the cyst. There is always one fluke per cyst.

The fluke is invariably immature and small, measuring about 4.58 x 1.25 mm on average. The sex organ is very feebly developed. The digestive organs are seen distinctly. The immature flukes are found in the body cavities

of *Wallago attu* and occasionally in *Channa* (*Ophiocephalus punctatus*), and measure about 8.4-12.04 mm X 4.22-4.96 mm. The testes and uterus are distinctive in these flukes. Flukes of variable sizes are found in the swimbladder of *W. attu* but no eggs were distinctly visible in the uterus. The worms in the swimbladder vary between 14.0 and 25.5 mm in length by 6.5-13.5 mm in width.

It is presumed from the foregoing evidence that the young parasites, which penetrate and become encysted in the lateral muscles of siluroid and non-siluroid fishes of wide ranges, serve as naratonic hosts. This fluke seems to infect siluroid fishes when they feed on infected paratonic hosts and subsequently enter the swimbladder by penetrating the intestinal wall. It is not yet known whether the fluke matures in the swimbladder or not. If so, it leaves behind some unsolved questions such as: Does *Isoparorchis* not reproduce in the swimbladder of *Wallago attu*? It matures in siluroid fishes and reproduces in fish-eating mammals or birds. Transference of swimbladder worms has been tried on dogs, cats, ducks and fowl by an oral dose but was not successful as all the worms were digested in about 30 minutes. However, worms were successfully placed in female duck (*Anser* sp.) through the anus, but no results were arrived at as all the experimental animals were lost during the disturbances in March, 1971. This needs further investigation before conclusive results can be reached.

DISCUSSION

Southwell & Prasad (1918). Bhalerao (1932, 1936) and Chauhan (1954) reported the immature *Isoparorchis* from different siluroid and non-siluroid hosts in India. Bhalerao (1932) found this fluke in the stomach of a crocodile which had devoured some siluroid fishes. He also stated that any animal eating the infected siluroid fish was exposed to infection with *Isoparorchis*. He believed that man could also be infected with this fluke. Chandler (1926) and Faust (1929) reported *Isoparorchis* from the stool of man. It is believed from the above

evidence that man and fish-eating mammals may serve as the final host.

The occurrence of young fluke in the muscles and body cavities of siluroid and non-siluroid fishes may suggest that the parasites bored their way in. Southwell (1913) doubtfully stated that the fluke penetrates the tissues. Zmeev (1936) categorically stated that the parasites penetrate the intestinal wall and migrate into the swimbladder. He found fresh bore marks in the intestinal wall of the host. Adams (1969) showed that the Juvenile *Philonema* migrates from the alimentary canal into the swimbladder of young salmon by actively penetrating the gut wall. The author seems

to believe that the *Isoparorchis hypselobagri* actively penetrate the gut wall and migrate into the swimbladder of siluroid fish.

ACKNOWLEDGEMENTS

The author is grateful to Dr. Shafique Haider Chowdhury, Department of Zoology, University of Dacca for making available the Russian literature and for reviewing the manuscript.

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Received 25 March 1972

Published September 1972

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