

**A New Metacercaria of Digenetic Trematode (Probably
Achillurbainiidae) Parasitic in the Freshwater Crab,
Geothelphusa dehaani, in Japan**

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A metacercaria of digenetic trematode was found in the freshwater crab, *Geothelphusa dehaani* (White) (Potamonidae), collected in a brook at Midori, Iiyama City, Nagao Prefecture, Japan. It proved to be a new metacercaria possibly representing an undescribed species of the family Achillurbainiidae Dollfus, 1939.

A total of 18 specimens of the metacercaria were obtained from 221 crabs (11 to 28 mm in carapace width) examined in May and October 1977. Of them, seven were fixed in 70% ethanol or Schaudinn's solution under cover glass pressure, stained with alum carmine or Heidenhain's iron haematoxylin, and mounted in Canada balsam. The rest were fed orally with minced pork to an adult dog, which was autopsied about one month later. At autopsy, the sites possibly to harbour parasites, especially the nasal cavity, the trachea and the bronchi, were carefully examined, but no trematodes could be recovered.

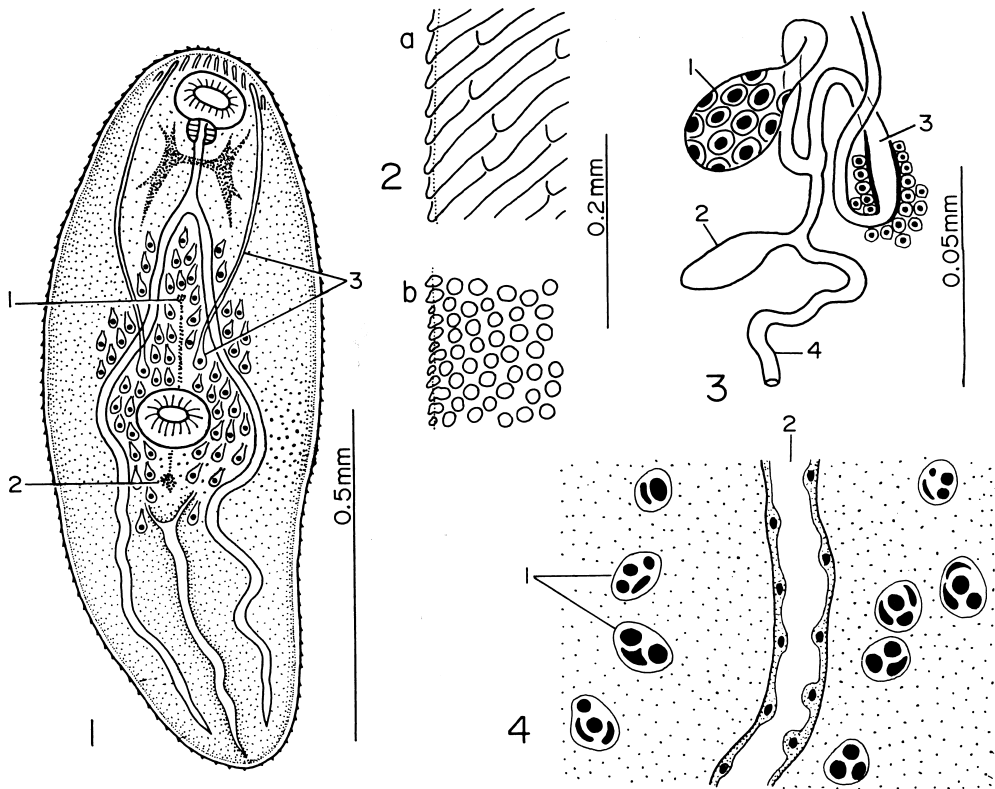
The following description is based on the seven whole-mounted specimens mentioned above. The specimens are deposited in the collection of the National Science Museum, Tokyo (NSMT-PI-1897~1903).

Description

(Figs. 1-4)

Habitat not yet determined. Cyst unknown, most presumably lacking.

Body elongate-linguiform, strongly dorso-ventrally flattened, translucent in life, 1.105-2.125 mm long by 0.370-0.450 mm wide; forebody 0.552-0.892 mm long. Cuticle heavily scaly; scales oblong, like plates, lying diagonally in anterior parts of body, and discal in posterior. Oral sucker rounded, subterminal, 0.080-0.114 mm long by 0.100-0.114 mm wide. Ventral sucker spheroidal, embedded half in body parenchyma, a little behind mid-level of body, 0.093-0.144 mm long by 0.104-0.140 mm wide, accompanying many papillae encircling its aperture; ratio of width of oral sucker to that of ventral sucker 1: 1.0-1.2. Prepharynx absent. Pharynx globular, 0.039-0.055 mm long by 0.038-0.057 mm wide. Oesophagus short, 0.068-0.119 mm long, bifurcating into intestinal caeca at anterior third of length from oral sucker to ventral; caeca narrow, undulating, terminating blindly near posterior end of body. Nerve commissure posterior to pharynx. Many large gland cells measuring about 0.02 mm in diameter present in mid-region of body, particularly in intercaecal field between intestinal bifurcation and excretory bladder, each with a fine duct opening near anterior end of body. Ovary ellipsoidal, submedian, midway between ventral sucker and excretory bladder, about 0.02 by 0.03 mm. Seminal receptacle post-ovarian, submedian. Laurer's canal winding, median, between seminal recepta-



Figs. 1-4 A new metacercaria of digenetic trematode found in the freshwater crab, *Geothelphusa dehaani* (White), in Japan.

1. Entire worm, ventral view. 1: terminal genitalia, 2: ovarian complex, 3: gland cell and its duct.
2. Cuticular scales in the anterior (a) and the posterior (b) parts of the body.
3. Ovarian complex, ventral view. The common vitelline duct could not be identified. 1: ovary, 2: seminal receptacle, 3: Laurer's canal.
4. Small compact masses of cells (1) in the hindbody, distributed on each side of the intestinal caecum (2), probably representing developing testicular follicles.

cle and excretory bladder, opening on dorsal surface of body. Ootype opposite ovary, posteriorly directed, provided with Mehlis' gland free in parenchyma. Uterus running forward along median line of body. Testes not as yet identified; small compact masses of cells scattered in nearly whole of hindbody, with a diameter of about 0.01 mm, probably representing developing follicular testes. Seminal vesicle external, slender, anterior to ventral sucker, running along uterus. Terminal genitalia indistinctly seen at some distance behind intestinal bifurca-

tion on median line. Vitelline gland not seen. Excretory bladder tubular, extending to anterior fourth of hindbody, with dorso-terminal pore. Collecting tubes and tubules, and flame-cells not worked out.

Discussion

This metacercaria is similar in general morphology to the families Orchipediidae Skrjabin, 1924 and Achillurbainiidae Dollfus, 1939. In this worm, the follicular testes, the extent of which is of great taxonomic

importance, have not as yet been identified. However, the cellular masses in the hind-body are most likely to be developing testes; their extent in both median and lateral fields of the hindbody suggests that this parasite is nearer to the latter family. This suggestion may be supported by the tubular excretory bladder and the sinuous intestinal caeca. Therefore, it seems probable that this metacercaria belongs to the Achillurbainiidae containing trematodes known in their adult forms as parasites of the nasal cavity, the trachea, the bronchi or the subcutaneous tissue of mammals including man.

This metacercaria has the body covered with the cuticular scales; the scales are certain to be retained in its adult stage. The scaly body may readily separate this trematode from all the hitherto described members of the Achillurbainiidae: *Achillurbainia noveli* Dollfus, 1939; *A. recondita* Travassos, 1942; *A. ratti* Miyazaki et Kwo, 1969; *Poikilorchis congolensis* Fain et Vandepitte, 1957; and an unidentified *Achillurbainia* sp. metacercaria, closely resembling *A. ratti*, reported by Miyazaki and Kannangara (1970) from the crab, *Parathelphusa rugosa*, in Ceylon. Consequently, it is possible that this metacercaria may be that of an undescribed species of the family. This parasite, however, remains to be identified to species until its adult stage with fully-developed genitalia becomes available.

As previously referred to, a feeding experiment of the metacercariae in a dog was attempted to obtain adults but resulted in failure. A wild female adult of the weasel, *Mustela sibirica itatsi* Temminck, a possible final host for this trematode, caught near the same brook at Midori in December 1977, did not harbour any worms similar to this parasite (the author's unpublished data).

This new metacercaria is the eighth species to develop in *G. dehaani* in Japan. Others have been reviewed by Komiya (1965).

Summary

A new metacercaria of digenetic trematode is described from the freshwater crab, *Geothelphusa dehaani* (White) (Potamonidae), taken at Midori, Iiyama City, Nagano Prefecture, Japan, in 1977. The metacercaria probably belongs to the family Achillurbainiidae Dollfus, 1939, possibly representing an undescribed species of the family. A feeding experiment of the metacercariae in a dog proved unsuccessful.

Part of this work has been presented in a preliminary note (Shimazu, 1978).

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日本産サワガニ *Geothelphusa dehaani* から見出した、恐らく
Achillurbainiidae 科に属する新しい吸虫メタセルカリア

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1977年に、長野県飯山市大字緑で採集したサワガニ *Geothelphusa dehaani* (White) (Potamonidae) から新しい吸虫メタセルカリアを1種見出し、その形態を記載した。本メタセルカリアは科 Achillurbainiidae

Dollfus, 1939 に所属すべき未記載種のものと考えられた。成虫期を欠くので、最終的な種の同定は保留した。本メタセルカリアの犬への感染実験を試みたが、成虫を与えることはできなかった。