

Brachylaima ishigakiense n. sp. (Trematoda, Brachylaimidae)
from Roof Rat, *Rattus rattus* LINNAEUS

By

Haruo KAMIYA

Department of Parasitology, Faculty of Veterinary Medicine,
Hokkaido University, Sapporo

and

Masaaki MACHIDA

Department of Zoology, National Science Museum, Tokyo

Five individuals of the roof rat, *Rattus rattus* LINNAEUS, were trapped in the field of Ishigaki-jima Island, one of the southwesternmost islands of Japan. Rats were preserved in 10% formalin solution and dissected in order to detect the helminths.

Nine species of helminths obtained are shown in Table 1. Some of these could not be identified because of the insufficient number or condition of the worms. The present report deals with a new brachylaimid trematode, *Brachylaima ishigakiense*. Trematodes were stained by Delafield's hematoxylin or Semichon's carmine and mounted in balsam. Serial sections were also made and stained by hematoxylin-eosin for histological observation. Specimens are deposited in the helminthological collection of the Faculty of Veterinary Medicine, Hokkaido University, Sapporo, and the National Science Museum, Tokyo (NSMT-PI-1802).

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Brachylaima ishigakiense n. sp.

(Figs. 1-5)

Host. Roof rat, *Rattus rattus* LINNAEUS.

Habitat. Lower small intestine.

Locality. Ishigaki-jima Island, Okinawa Prefecture, Japan.

Date. March 17, 1973.

Frequency. Two of 5 hosts were infected; 10 worms in one, and ca. 750 in another host.

Description. Measurements based on 10 mature specimens fixed in formalin solu-

Table 1. Helminth parasites detected in roof rats of Ishigaki-jima Island.

Helminth parasites	Host No.				
	1	2	3	4	5
<i>Brachylaima ishigakiense</i> n. sp.	+	+	—	—	—
<i>Plagiorchis</i> sp.	—	—	+	—	—
<i>Taenia taeniaeformis</i> (BATSCH, 1786) (larva)	+	—	+	—	—
<i>Railletina</i> sp.	—	—	—	+	—
<i>Strongyloides ratti</i> SANDGROUND, 1925	+	+	+	+	+
<i>Strongyloides</i> sp. ¹⁾	+	+	+	+	+
<i>Nippostrongylus brasiliensis</i> (TRAVASSOS, 1914)	+	+	+	+	+
<i>Angiostrongylus cantonensis</i> CHEN, 1935	+	+	+	—	—
<i>Pterygodermatites</i> sp. ²⁾	+	—	—	—	—

1) Spiral ovary is observed.

2) The detailed description of this species together with other specimens collected in Ishigaki-jima Island will be published elsewhere.

tion. Body subcylindrical, stout, 2.10–3.49 mm in length, with maximum width of 0.67–1.03 mm at equatorial portion. Cuticle thick, with scale-like spines antero-ventrally. Oral sucker oval, subterminal, with wide lumen, $0.267\text{--}0.329 \times 0.119\text{--}0.274$ mm. Prepharynx unrecognized. Pharynx globular, well-developed, $0.130\text{--}0.215 \times 0.130\text{--}0.179$ mm. Esophagus unrecognized. Comparatively broad caeca undulant, reflected anteriorly to level of oral sucker before descending to near posterior extremity of body. Intestinal cells with brush border. Acetabulum globular, slightly prominent, as large as oral sucker or a little smaller, $0.215\text{--}0.320 \times 0.225\text{--}0.293$ mm, situated at about anterior end of middle third of body. Testes irregular in outline, oblique or tandem in posterior third of body; anterior testis wider than long, $0.163\text{--}0.299 \times 0.245\text{--}0.416$ mm, posterior testis generally longer than wide, $0.245\text{--}0.403 \times 0.261\text{--}0.390$ mm. Vas deferens uniting with seminal vesicle just anterior to anterior testis, dorso-sinistral to body axis. Seminal vesicle tubular, looped in median field in front of anterior testis and connecting with pars prostatica which lies just antero-sinistral to cirrus pouch. Prostatic glands well-developed. Ejaculatory duct consisting of two parts, a short proximal part lying outside cirrus pouch, and a distal part enclosed in cirrus pouch. Cirrus pouch oval, well-developed, $0.117\text{--}0.189 \times 0.082\text{--}0.104$ mm, containing convoluted ejaculatory duct and cirrus. Cirrus unarmed, $0.183\text{--}0.362$ mm long when extended. Genital pore median, at level of anterior margin of anterior testis. Ovary oval, usually wider than long, $0.098\text{--}0.163 \times 0.179\text{--}0.261$ mm, dextral to midline between two testes. Oviduct arising from right side of ovary, giving off Laurer's canal, and joining with vitelline reservoir ventral to ovary. Laurer's canal opening mid-dorsally at level of vitelline reservoir. Mehli's gland lying ventral to ovary. Seminal receptacle absent; receptaculum seminis uterinum prominent. Uterine loops intercaecal, between pharynx and anterior testis. Metraterm running along right side of cirrus pouch. Vitellaria follicular, extracaecal, extending from mid-level of acetabulum to anterior testis. Both vitelline ducts running along anterior

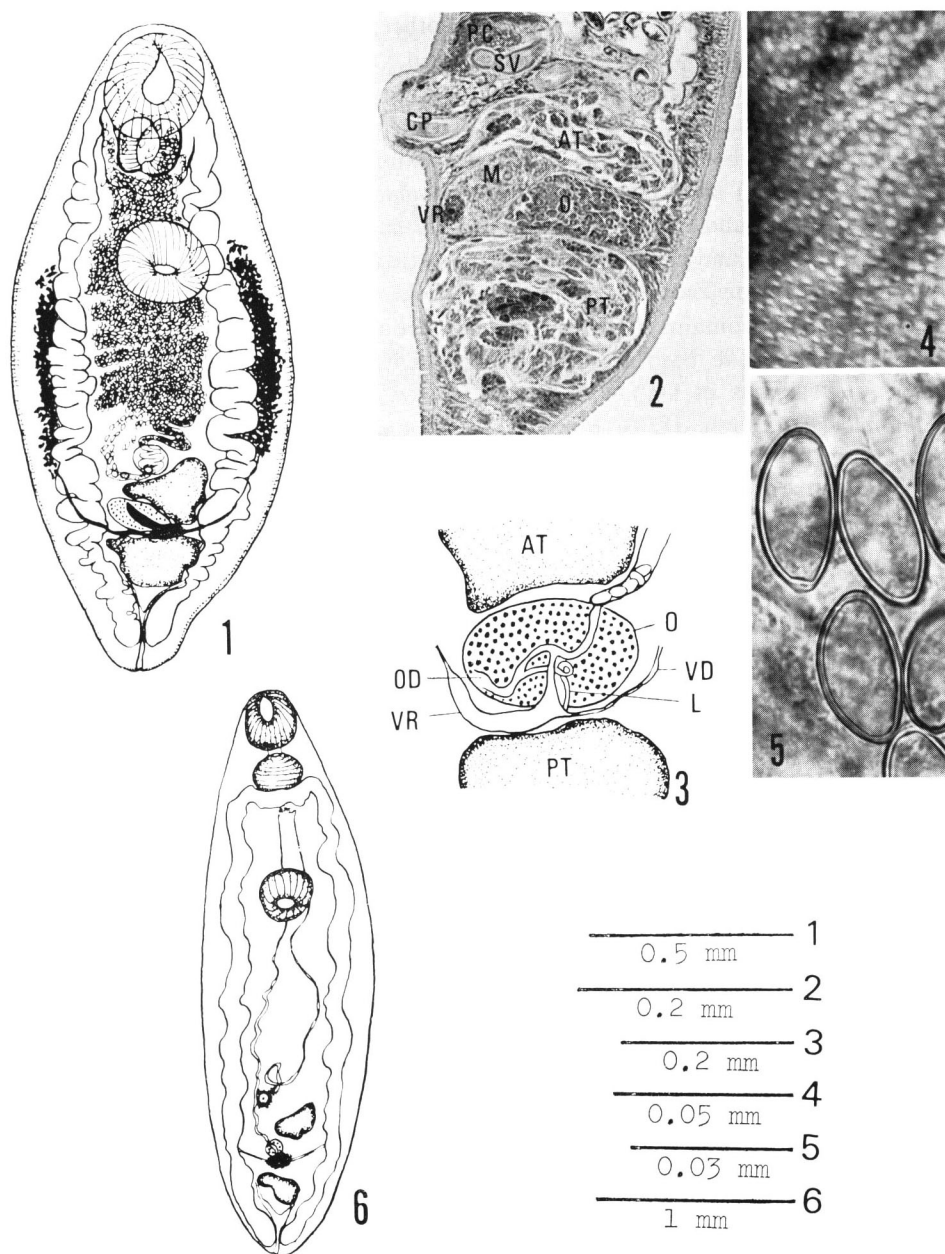


Fig. 1-6. — 1-5. *Brachylaima ishigakiense* n. sp. from roof rat. — 1. Entire worm, ventral view. — 2. Sagittal section of hindbody. — 3. Ovarian complex, ventral view. — 4. Body spines at ventral surface of forebody. — 5. Eggs. AT, anterior testis; CP, cirrus pouch; L, Laurer's canal; M, Mehli's gland; O, ovary; OD, oviduct; PC, prostatic cell; PT, posterior testis; SV, seminal vesicle; VD, vitelline duct; VR, vitelline reservoir. — 6. Brachylaimid metacercaria from terrestrial snail, *Acusta despecta*; ventral view.

margin of posterior testis, uniting with each other to form vitelline reservoir, ventral to ovary. Eggs deep-yellowish, asymmetrical, thick-shelled, $0.028-0.033 \times 0.016-0.019$ mm. Excretory vesicle tubular, bifurcating posterior to posterior testis. Excretory pore terminal.

Discussion. There are some different spellings of *Brachylaima*: *Brachylaemus* by DOLLFUS (1934) and BAER (1971), *Brachylaime* by KRUIDENIER and GALLICCHIO (1959) and PEISLEY and HOWELL (1975), *Brachylaema* by YAMAGUTI (1958), and *Brachylaima* by UBELAKER and DAILEY (1966) and YAMAGUTI (1971). In this paper, *Brachylaima* is accepted following YAMAGUTI's opinion (1971).

Brachylaima contains numerous species from birds and mammals. Fourteen species of them have been reported from rodents: *B. migrans* DUJARDIN, 1845, *B. chiapense* UBELAKER et DAILEY, 1966, *B. microti* KRUIDENIER et GALLICCHIO, 1959, *B. musculi* (RUDOLPHI, 1819), *B. musculi* TOKOBAEV, 1962 (homonym of *B. musculi* (RUDOLPHI, 1819)), *B. pellucidum* (WERBY, 1928), *B. ratti* BAUGH, 1962, *B. rauschi* McINTOSH, 1950, *B. suis* BALOZET, 1936, *B. thompsoni* (SINITZIN, 1931), *B. eburneense* BAER, 1971, *B. apodemi* NADTOCHII, 1970, *B. bravoae* CABALLERO, 1970, and *Brachylaima* sp. of TADA, 1975. The last one was discovered in the brown rat, *Rattus norvegicus*, of Japan.

The present species differs from any of them in having undulant caeca, oral sucker being as large as or a little larger than acetabulum, well-developed cirrus pouch and asymmetrical egg with thick shell.

The authors had an opportunity to examine another specimen of the present species which was obtained from the roof rat of Ishigaki-jima Island in August, 1972 (M. KAMIYA; unpublished data). The specimen was flattened when the worm was alive, but it also has an undulant caeca. Therefore, the undulant caeca of the present species cannot be attributed to the contraction of the worm body by formalin fixation.

Appendix. In March, 1973, the terrestrial snail, *Acusta despecta* (SOWERBY), was collected in Iriomote-jima Island, near Ishigaki-jima Island, for the epidemiological survey of *Angiostrongylus cantonensis* larvae. From this survey, one metacercaria belonging to the family Brachylaimidae (Fig. 6) was detected in one snail out of 37. Morphological characteristics of this metacercaria are as follows:

Body sole-shaped, 2.860×0.813 mm. Cuticle finely spinose, with minute papilla-like projections ventrally. Oral sucker oval, subterminal, 0.300×0.267 mm. Prepharynx scarcely visible. Pharynx oval, 0.173×0.212 mm. Esophagus unrecognizable. Caeca broad, showing undulant appearance, terminating near posterior extremity of body. Acetabulum globular, prominent, as large as oral sucker, 0.267 mm in diameter, situated at anterior end of middle third of body. Testes irregular in outline, diagonal in posterior half of hindbody; anterior testis 0.130×0.238 mm, posterior testis 0.225×0.147 mm. Genital pore lying antero-dextral to anterior testis. Undeveloped cirrus pouch is observed. Ovary globular, 0.098 mm in diameter, situated on right side between two testes. Mehlis' gland on midline between ovary and posterior

testis. Both vitelline ducts running between ovary and posterior testis and uniting at Mehlis' gland. Uterus slightly winding, extending from ovary to caecal bifurcation.

This metacercaria is closely related to *B. ishigakiense* n. sp., so that the snail, *A. despecta*, may play a part of intermediate host of this trematode.

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