

Helminth fauna of bats in Japan II

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On August 8, 1966, thirty-two common bats, *Rhinolophus ferrumequinum*, were collected in a basalt cavern at Hidaosaka in Gifu Prefecture by the author and were examined for the presence of parasites. Nine of these bats were infected with 1 to 15 tapeworms, and 7 of them 1 to 6 nematodes. These tapeworms were divided into two groups, large-sized and small-sized forms. From the external and internal structure of a number of unstained specimens and stained whole mounts, they were found to represent undescribed species belonging to *Vampirolepis* and *Insectivorolepis* of the family Hymenolepididae.

Vampirolepis hidaensis n. sp.

Specific diagnosis: External anatomy (From unstained specimens). Large-sized form for bat tapeworms, strobila total length 60 to 92 mm in mature specimens; strobila greatest width 1.27 to 1.39 mm, margins not serrate. Scolex (Pl. 1, Fig. 1.) 0.290 to 0.304 mm in diameter, strongly set off from neck; rostellum well developed, armed with a single row of 26 to 28 hooks (Pl. 1, Figs. 2 and 5), each measuring 0.0175 mm in length; rostellar sheath 0.083 by 0.138 to 0.166 mm; suckers discoidal, unarmed, 0.083 to 0.097 mm in diameter. Neck 0.194 to 0.235 mm in width, 0.692 to 0.829 mm in length. Genital pores unilateral, situated near middle of margin of proglottid (Pl. 1, Fig. 6).

Internal anatomy: (From stained whole mounts). (Pl. 1, Fig. 6). Cirrus sac 0.053 by 0.011 mm in mature proglottides. Three testes in a straight line, spherical, 0.074 by 0.081 mm, with two aporal and one poral. External seminal vesicle 0.043 by 0.070 mm, not reaching

on longitudinal excretory canal. Internal seminal vesicle 0.035 by 0.080 mm, located on longitudinal canal. Ovary elongated, with long axis transverse, 0.095 mm long and 0.046 mm wide, anterior to testis and on longitudinal axis of proglottid. Vitelline gland 0.014 by 0.021 mm, overlapping central testis, near posterior margin of proglottid. Seminal receptacle prominent, 0.063 to 0.077 by 0.109 to 0.116 mm. Gravid uterus extending transversely, later occupying whole proglottides (Pl. 1, Fig. 4). Egg (Pl. 1, Fig. 3) 0.035 by 0.042 mm surround by four envelopes, outermost one of which pretty thick, but rest very thin; first egg membrane, 0.021 by 0.028 mm, second one 0.025 by 0.032 mm and third one 0.028 by 0.035 mm; outermost envelope 0.0035 mm in thickness. Onchosphere (Pl. 1, Fig. 3) spherical, 0.021 by 0.025 mm and embryonic hooklet about 0.014 in length.

Discussion

Vampirolepis hidaensis n. sp. differs from all previously described species of *Vampirolepis* from bats and the other hosts (see Sawada, 1966). From the description, it appears to be closely related to *Vampirolepis fraterna* (Stile, 1906). However, it distinctly differs from *Vampirolepis fraterna* in the shape of embryonic hooklets.

Host: *Rhinolophus ferrumequinum*

Habitat: Small intestine

Locality and Date: Hidaosaka, Gifu Prefecture; August 8, 1966

Type specimen: Biological Laboratory, Nara University of Education, Nara, Japan

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Insectivorolepis yosidai n. sp.

Specific diagnosis: External anatomy (From unstained specimens). Small-sized form, strobila 15 to 18 mm long by a maximum width of 0.25 to 0.62 mm, margins not serrate. Scolex (Pl. 2, Fig. 1) clavate, 0.263 to 0.318 mm wide, passing insensibly into neck; suckers discoidal (Pl. 2, Fig. 2), unarmed, 0.097 to 0.111 mm in diameter; rostellum rudimentary, unarmed. Neck 0.194 to 0.210 mm width by 0.318 to 0.456 mm long. Genital pores unilateral, situated in anterior half of margin of proglottid.

Internal anatomy: (From stained whole mounts) (Pl. 2, Fig. 5). Testes 0.058 to 0.062 by 0.063 to 0.066 mm, with one poral and two aporal in position; arranged in a triangular position. Cirrus pouch 0.022 to 0.035 mm in length and 0.011 mm in width. External seminal vesicle 0.044 to 0.060 by 0.058 to 0.070 mm. Internal seminal vesicle 0.049 to 0.056 by 0.025 to 0.040 mm. Ovary pretty large, somewhat lobed, 0.153 to 0.200 mm wide. Vitelline gland conspicuous, situated posterior to ovary, 0.018 by 0.025 mm. Seminal receptacle small, 0.036 mm in diameter. Uterus ovoid median sac, not filling entire proglottides (Pl. 2, Fig. 3). Egg (Pl. 2, Fig. 4) spherical, 0.028 to 0.032 by 0.035 mm, surrounded by thin envelopes, outermost shell very thin, 0.002 mm in thickness. Onchosphere spherical, 0.018 to 0.021 by 0.025 mm; embryonic hooklets length about 0.014 mm.

Discussion

The tapeworms belonging to *Insectivorolepis* are of very small-sized form and have been reported as the species parasitic in insectivores or rodents. The present specimen is larger than

any of the described species, but according to the external and internal structures, this specimen belongs to *Insectivorolepis*. At present, as the species of *Insectivorolepis*, five species have been described—*I. globosa* (Baer, 1931), *I. globosoides* (Soltys, 1954), *I. infirma* Zarnowski, 1955, *I. kenki* (Locker et Rausch, 1952) and *I. pulchra* (Voge, 1955). Being compared with the five above-mentioned species, this specimen is distinctly different from them in the total length of strobila and the diameter of suckers.

Host: *Rhinolophus ferrumequinum*

Habitat: Small intestine

Locality and Date: Hidaosaka, Gifu Prefecture: August 8, 1966

Type specimen: Biological Laboratory, Nara University of Education, Nara, Japan

References

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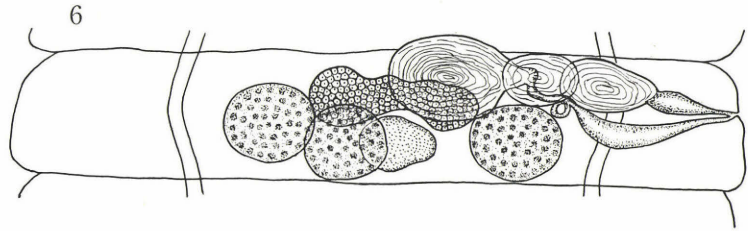
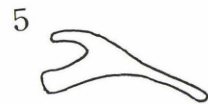
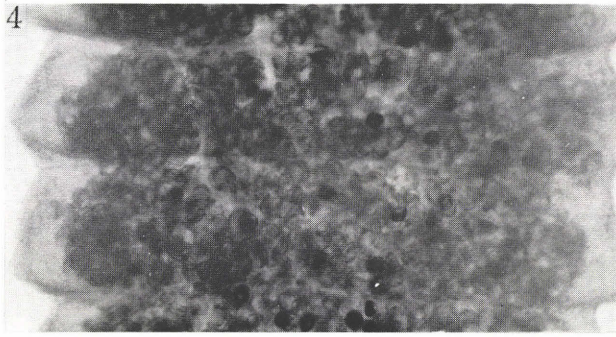
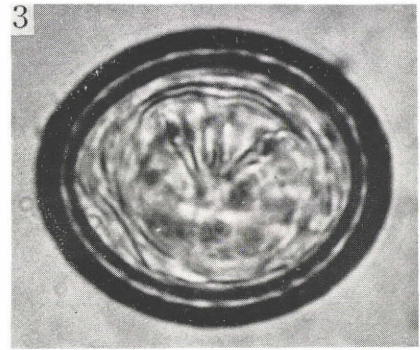
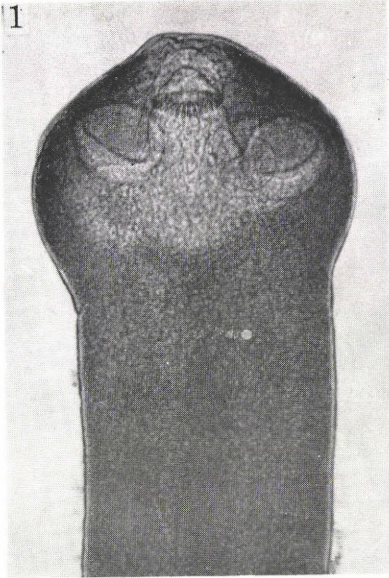
日本産コウモリの内部寄生虫相 (2)

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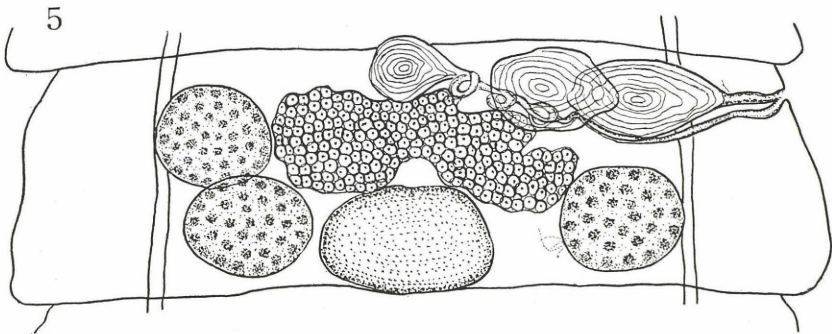
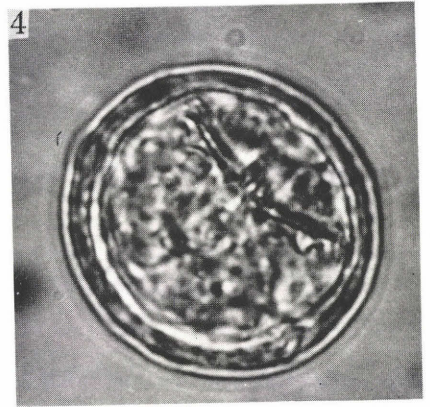
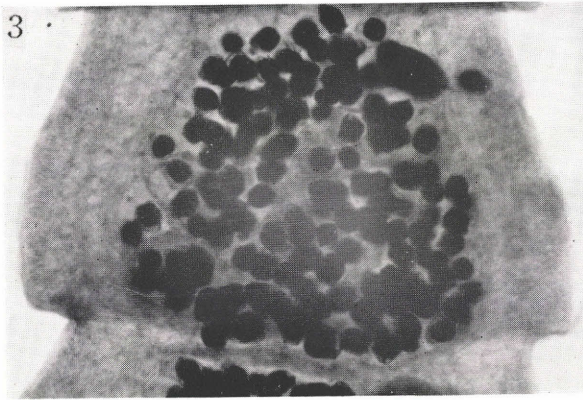
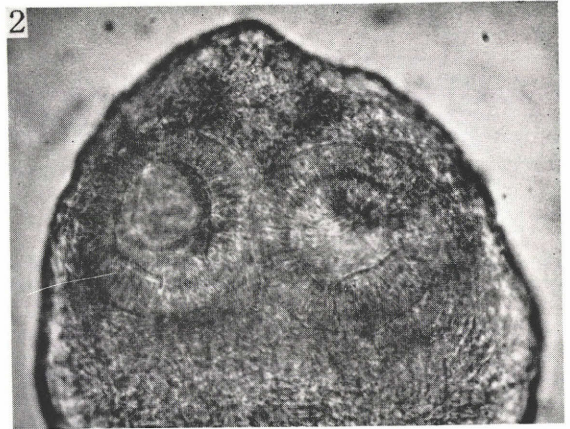
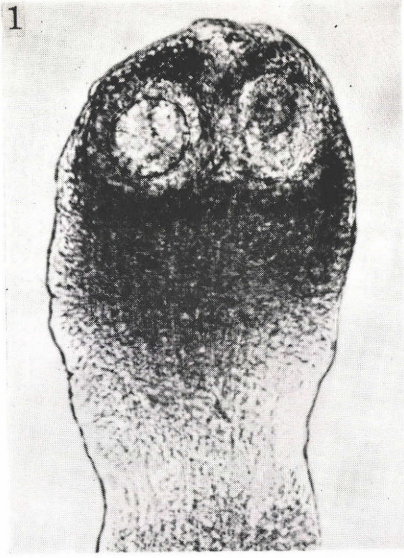
1966年8月岐阜県益田郡小坂町にある玄武岩の洞窟内に棲息していた32頭のキクガシラコウモリを採集して剖検したところ、9頭のコウモリに1~15条の条虫を、7頭から1~6双の線虫の寄生を発見した。これらの条虫類は調査の結果、大小2種にわかれ、共にヒメノレピ

ス科に属することが明らかになり、大型種は *Vampirolepis* 属、小型種は *Insectivorolepis* 属に属する新種であることが判明した。そこで、前者は対して *Vampirolepis hidaensis*、後者に対しては *Insectivorolepis yoshidai* と命名した。



Explanation of Plate

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|---------|-----------------------------------|--------------------------------|
| Plate 1 | Fig. 1. Scolex (×145) | Fig. 4. Onchosphere (×1000) |
| | Fig. 2. Rostellar hooks (×830) | Fig. 5. Rostellar hook (×1300) |
| | Fig. 3. Senile proglottides (×80) | Fig. 6. Mature proglottid |



Explanation of Plate

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|---------|--|---------------------------------------|
| Plate 2 | Fig. 1. Scolex ($\times 145$) | Fig. 4. Onchosphere ($\times 1600$) |
| | Fig. 2. Scolex, showing 4 suckers ($\times 250$) | Fig. 5. Mature proglottid |
| | Fig. 3. Senile proglottides ($\times 150$) | |