

## Taxonomical Study on the Genus *Catenotaenia* Janicki, 1904 (Cestoda) from Voles in Japan

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**Abstract.** *Catenotaenia gracilae* n. sp. is described from *Eothenomys andersoni* and *E. smithi* in Japan. The reexamination of material from *Clethrionomys rufocanus bedfordiae* determined by Asakawa *et al.* (1983) as *Catenotaenia pusilla*, was carried out.

At the present time there are only sporadic reports about findings of tapeworms, the genus *Catenotaenia* Janicki, 1904, from voles (Microtinae) in Japan, although Yamaguti (1935, 1942) reported *C. pusilla* (Goeze, 1782) from *Mus wagneri* and *C. ris* Yamaguti, 1942 from *Sciurus lis*, and Hasegawa *et al.* (1990) reported *Catenotaenia* sp. from *Tokudaia osimensis muenninki*.

Asakawa *et al.* (1983) presented the finding of *C. pusilla* in *Clethrionomys rufocanus bedfordiae* (Thomas). Asakawa and Harada (1989) and Asakawa *et al.* (1992) reported more non-determined species, *Catenotaenia* sp., from *Eothenomys andersoni* (Thomas) and *E. smithi* (Thomas). In this paper, we present new information of *Catenotaenia* from the vole species in Japan.

### Materials and Methods

The materials are obtained from voles, *Eothenomys andersoni*, *E. smithi*, and *Clethrionomys rufocanus bedfordiae*, collected on Japanese Islands in 1985–1990 (Asakawa & Harada, 1989; Asakawa *et al.*, 1983, 1992, unpubl.). Cestodes were fixed in 70% ethanol or 10% formalin, stained with Delafield's haematoxylin or Semichon's aceto-carmine, and mounted with Canada balsam. All measurements are given in mm.

### Results

#### *Catenotaenia gracilae* n. sp.

(Figs. 1–6)

Hosts: *Eothenomys andersoni* and *E. smithi*.

Localities (date): Shizuku-ishi, Iwate Pref.

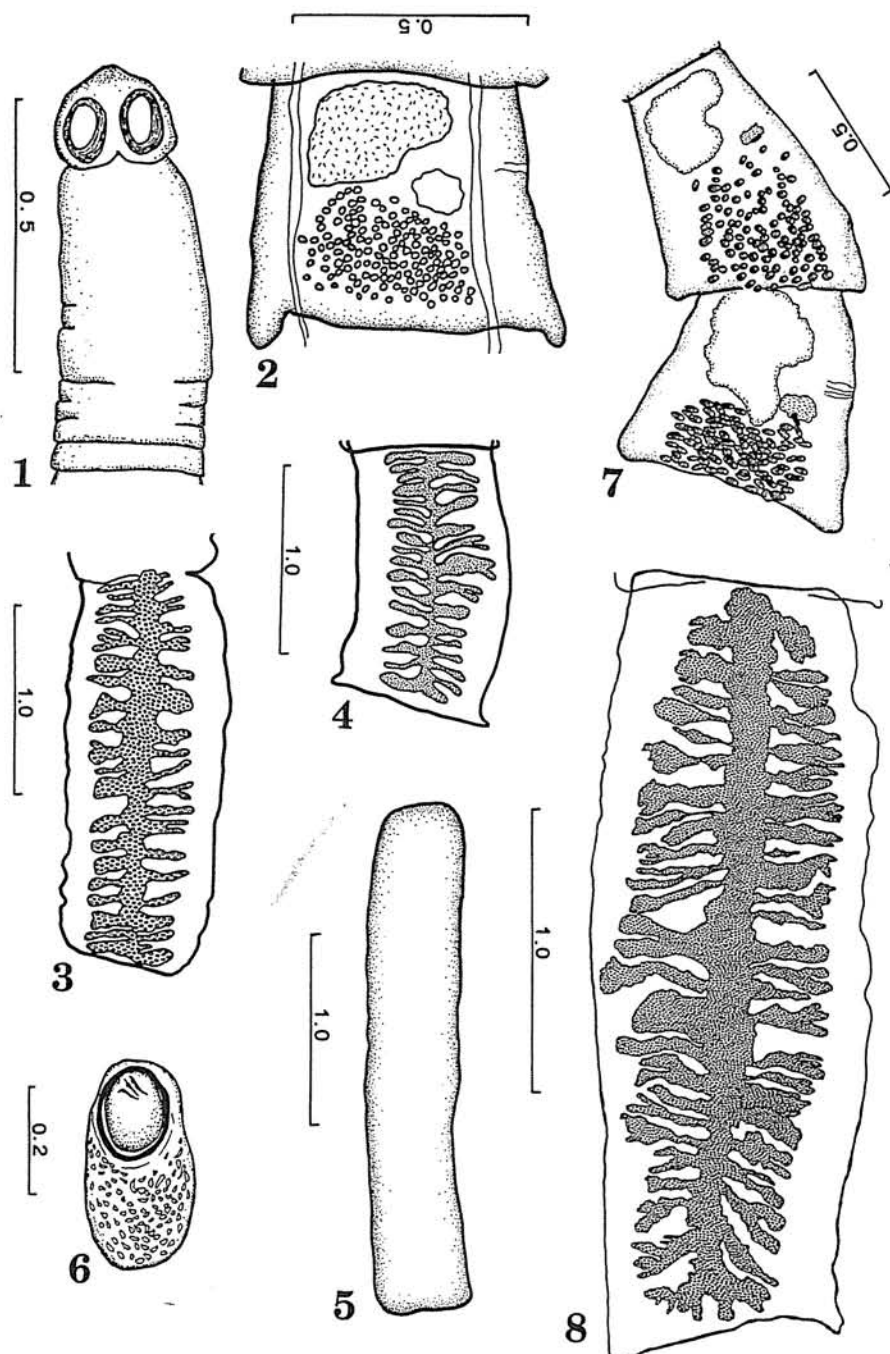
(Oct. 1985); Hongu, Wakayama Pref. (Mar.–Apr. 1986); Nachi-katsu-ura, Wakayama Pref. (Mar. 1989); Nanbu, Yamanashi Pref. (Mar. 1990); Shimo-kita-yama, Nara Pref. (Feb. 1990); Fuji-yoshida, Yamanashi Pref. (Apr. 1987); Mitsue, Nara Pref. (Mar. 1989); Kami-kita-yama, Nara Pref. (May 1987); Chigusa, Hyogo Pref. (Mar. 1989).

Types: Holotype; May 1989, Kami-kita-yama, Nara Pref., Japan (from *Eothenomys smithi*), M. Asakawa & M. Harada leg. (M.P.M. Coll. No. 19572). Paratype; Mar. 1989, Nachi-katsu-ura, Wakayama Pref., Japan (from *E. andersoni*), M. Asakawa & M. Harada leg. (M.P.M. Coll. No. 19573)

Site: Small intestine.

Type depository: The holotype and paratype are deposited in the Meguro Parasitological Museum, Tokyo, Japan (M.P.M.)

Description: Length of strobila almost 25, maximal width in gravid segments 0.7. Premature and mature segments mostly wider than longer, the relative length of segments increasing posteriorly. Anterior end of segments narrower than posterior end (Fig. 2; Table 1). Scolex irregularly oval, 0.166–0.215 × 0.127 in size (Fig. 1). Suckers 0.076–0.100 in diameter. Apical organ absent. Genital pores irregularly alternating, opening of genital pores slightly anterior to middle of segments. Cirrus without spines, ovary asymmetrical, situated in anterior half of segment, between ventral excretory canals, maximal width of ovary 0.245–0.480, length in poral side 0.096–0.137, in aporal side 0.120–0.372. Vitellaria size 0.048–0.120 × 0.078–0.336. Number of testes almost 150. Gravid segments with 13–25 × 2 primary



Figs. 1-5. *Catenotaenia gracilae* n. sp. from *Eothenomys smithi* (Figs. 1-3, 5 & 6) and *E. andersoni* (Fig. 4).—1: Soclex. 2: Mature segment. 3 & 4: Gravid segment. 5: Full gravid segment. 6: Egg. Figs. 7 & 8. *Catenotaenia* sp. from *Clethrionomys rufocanus bedfordiae*. 7: Mature segments. 8: Gravid segment. All in mm.

Table 1. Some metric data of segments of *Catenotaenia gracilae* n. sp. and *Catenotaenia* sp. (in mm)

		<i>Catenotaenia gracilae</i> n. sp.		<i>Catenotaenia</i> sp.	
PREM	A	0.096–0.624	(0.2945±0.14777, n=57)*	0.096–0.360	(0.2073±0.07610, n=11)
	B	0.096–0.432	(0.2549±0.08606, n=57)	0.168–0.600	(0.3033±0.14050, n=11)
	C	0.120–0.768	(0.3724±0.17513, n=57)	0.168–0.552	(0.3207±0.12940, n=11)
MAT	A	0.264–0.768	(0.4843±0.13896, n=84)	0.408–0.699	(0.5472±0.09979, n=10)
	B	0.216–0.816	(0.4300±0.15037, n=84)	0.480–1.680	(1.0056±0.40987, n=10)
	C	0.264–0.912	(0.6034±0.16401, n=84)	0.552–0.864	(0.7248±0.10295, n=10)
GRAV	A	0.384–0.792	(0.5550±0.11657, n=24)	0.312–0.768	(0.5340±0.17964, n=12)
	B	0.744–1.680	(1.1550±0.28855, n=24)	1.584–3.840	(2.5620±0.03595, n=12)
	C	0.550–0.912	(0.7070±0.10872, n=24)	0.360–1.008	(0.6380±0.19777, n=12)
FGR	A	0.360–0.624	(0.4762±0.07643, n=19)	0.240–0.672	(0.4000±0.12869, n=9)
	B	1.224–2.736	(1.6712±0.51226, n=19)	1.968–4.320	(3.0027±0.82079, n=9)
	C	0.264–0.816	(0.5912±0.11790, n=19)	0.144–0.792	(0.4640±0.19864, n=9)

PREM, premature segments; MAT, mature segments; GRAV, gravid segments; FGR, full gravid segments; A, anterior width of segments; B, length of segments; C, posterior width of segments. \*: Parentheses indicated mean ± standard deviation.

uterine branches, eggs occupy entire parenchyme (Figs. 3 & 4). Eggs elongated, oval, with three envelopes (Fig. 6), 0.017–0.019×0.033–0.039 in size.

Remarks: *Catenotaenia gracilae* n. sp. is most closely related to *C. henttoneni* Haukisalmi *et* Tenora, 1992 and *C. pusilla* (Goeze, 1782) (Tenora *et al.*, 1980, 1992). From both species *C. gracilae* differs in having shorter strobila and smaller segments. From *C. pusilla* it differs in having no semioval form of gravid segments. From both *C. gracilae* differs with the relative number of uterine branches; viz. 7–13×2 in *C. pusilla* and 18–22×2 in *C. henttoneni*; and with the number of testes; viz. 70–150 in *C. pusilla* and 76–110 in *C. henttoneni*.

#### *Catenotaenia* sp.

(Figs. 7 & 8)

Syn.: *Catenotaenia pusilla* (Goeze, 1782) *sensu* Asakawa *et al.*, 1983

Host: *Clethrionomys rufocanus bedfordiae*

Localities (date): Nopporo, Abashiri and Tokoro, Hokkaido (May 1988–Aug. 1990).

Site: Small intestine.

Description: Body length 23–30, maximal width in gravid segments 1.01. Scolex 0.586–0.796×0.246–0.312 in size. Rostellum absent. Strobila craspedont. Anterior part of segments relatively narrow, and posterior part of segment

relatively wide (Fig. 7; Table 1). Genital pores irregularly alternating. Maximal width of ovary 0.96, length in poral side 0.196–0.600, in aporal side 0.656. Vitellaria size 0.069–0.240×0.088–0.294. Number of testes 60–100, arranged in one field. Gravid segments with 14–34×2 primary uterine branches (Fig. 8), but the number 14×2 uterine branches only in very young gravid segments. Eggs elongated oval, 0.012–0.016×0.024–0.040 in size.

Remarks: The material which was determined as *C. pusilla* by Asakawa *et al.* (1983) and further material from *Cl. rufocanus bedfordiae* were investigated. We found, however, that the materials do not belong to the species, *C. pusilla*. It distinguishes from *C. pusilla* with a form of segments and the number of uterine branches. The present species, *Catenotaenia* sp., is closely resembling *C. henttoneni* rather than *C. pusilla* (Tenora *et al.*, 1980, 1992). However, the precise determination of species will be possible with new materials.

#### Acknowledgements

The authors thank to both Rakuno Gakuen University and University of Agriculture for support of Asakawa's stay at Institute of Zoology and Bee-Keeping, University of Agriculture in Brno, in October, 1991, and to Hokkaido University for support of F. Tenora's stay at

Department of Parasitology, Hokkaido University in Sapporo, from May to July, 1992, to finish this work. We also wish to thank Prof. I. Sawada, Nara Sangyo University, and Ass. Prof. S.-I. Fukumoto, Rakuno Gakuen University, for critical reading of the manuscript. This work was supported in part by the Rakuno Gakuen Daigaku Kyoudo Kenkyu Jyosei, 1990.

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### 日本産ヤチネズミ類から検出された条虫 *Catenotaenia* 属の分類学的検討

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日本各地で採集されたハタネズミ亜科動物のヤチネズミ *Eothenomys andersoni*, スミスネズミ *E. smithi* およびエゾヤチネズミ *Clethrionomys rufocanus bedfordiae* の小腸に寄生していた条虫類 *Catenotaenia* 属2種について分類学的な検討をおこなった。ヤチネズミとスミスネズミから検出された種はストロピラが短く片節が小さいこと、子宮の幹からの分岐している子宮の枝数が13-25×2であること、精巢が約150個あること、老熟片節が非卵円型であることなどから、新種 *Catenotaenia gracilae* n. sp. として記載された。また Asakawa *et al.* (1983) が *C. pusilla* とした標本と北海道産エゾヤチネズミから新たに検出された材料について形態学的に再検討した。その結果、本種の片節の形と子宮の枝数から *C. pusilla* ではなく、*C. henttoneni* (最近ヨーロッパで発見された種) に近似の未記載種と目される種であることが判明した。しかし標本数が不十分なので種名の決定は保留した。

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