

**A Species of *Rictularia* (Nematoda : Rictulariidae)
from the Field Mouse, *Apodemus speciosus*,
in Niigata Prefecture, Japan**

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In order to investigate various zoonotic infections due to spirurid nematodes, the author and co-workers have examined their intermediate and final hosts. Among these surveys, a species belonging to the genus *Rictularia* Froelich, 1802 (Nematoda : Rictulariidae), was found in the small intestine of the field mouse, *Apodemus speciosus*, at three different localities in Niigata Prefecture, Japan. Of total 40 worms collected, only two were males. The incidence and intensity of infection are shown in Table 1.

Because of no report on the aboriginal species of *Rictularia* from rodents in Japan proper, the author would like to describe this species and compare with the other known species.

Description

Host : *Apodemus speciosus* (Temminck et Schlegel)

Habitat : Small intestine

Localities in Niigata Prefecture, Japan :
Kamikawa Village, Higashi-Kanbara District ;
Asahi Village, Iwafune District ;
Itoigawa City

Body slender anteriorly, pale rose in color when alive. Two ventrolateral rows of cuticular combs beginning immediately behind the level of buccal capsule. Reniform mouth opens dorsally, almost transverse. Buccal capsule heavily sclerotized and anterior wall is thicker than posterior one. Margin of mouth armed with teeth which are larger in both median parts of anterior and posterior borders than in the corner parts. Number of these teeth is about 35-40 in females but fewer in male. One esophageal tooth protruded on the bottom of buccal capsule. Cephalic papillae arranged in two circles : outer circle of eight papillae, dorsolateral and ventrolateral quadrants, two by two ; inner circle of six papillae, one in each lateral, two ventral and two dorsal, almost apical. Cervical papillae present. Esophagus divided into two parts, anterior muscular and posterior glandular, but conjunction between them is not always seen clearly.

Males (Based on two specimens but one of them decomposed. The following data are mainly from the complete one and data from the decomposed worm are stated in parentheses). Body length 4.40 (3.55) mm,

Table 1 Incidence of infection with *Rictularia* in Niigata Prefecture

Locality	No. of field mouse examined	No. of <i>Rictularia</i> recovered	Incidence of infection	Intensity of infection	Date
Kamikawa	4	6	100%	1-2	May, 1974
Asahi	12	25	67	1-8	July, 1973
Itoigawa	12	9	35	1-5	Nov., 1975

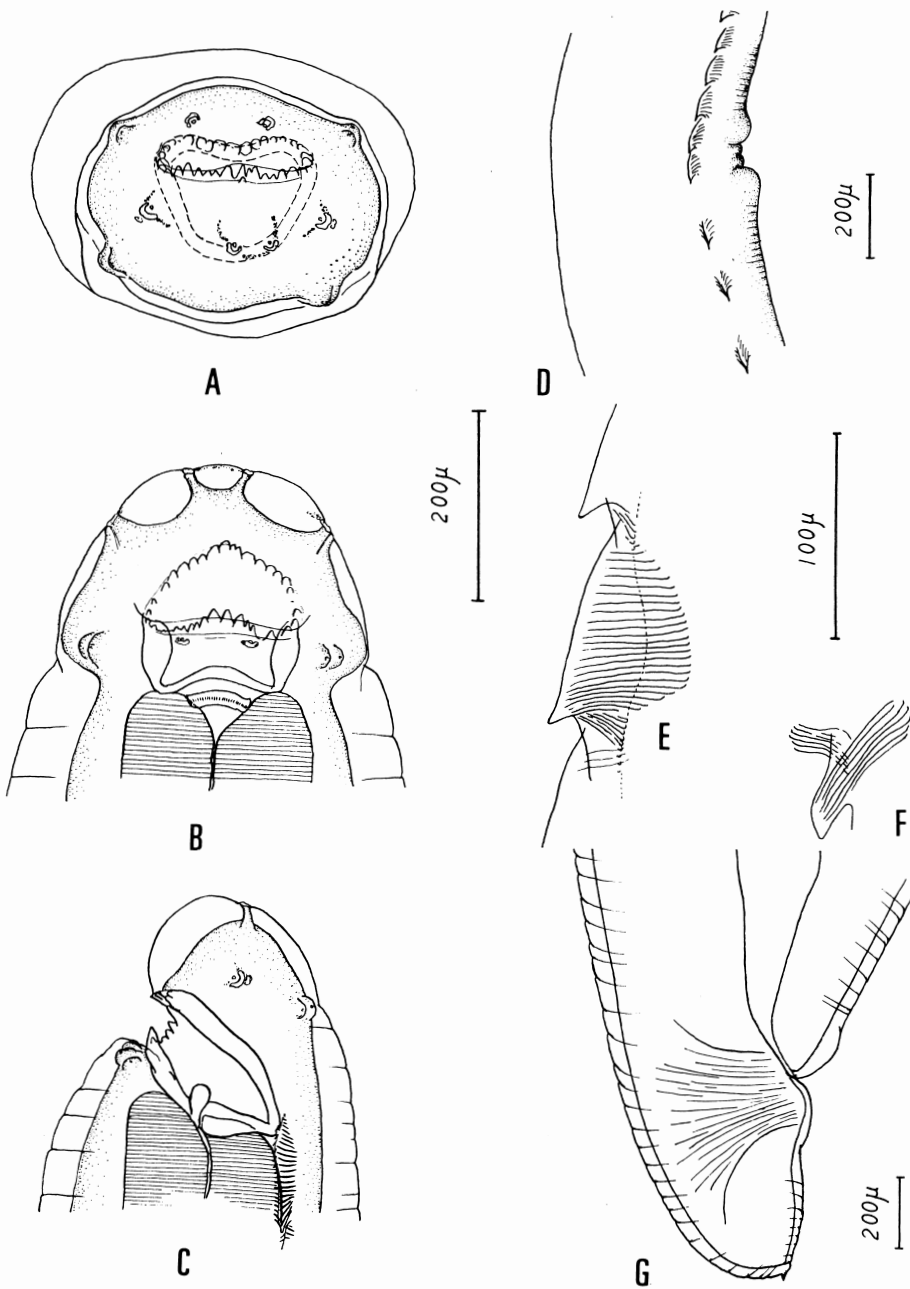


Fig. 1 Female *Rictularia* from the field mouse in Niigata Prefecture.
 (A) Apical, (B) dorsal and (C) lateral views of head. (D) Vulval region,
 (E) 20th and (F) 43rd ventrolateral cuticular combs in lateral view.
 (G) Tail.

maximum width $329\ \mu$. Distance from cephalic apex to the bottom of buccal capsule $56\ \mu$, to nerve ring $237\ \mu$, to excretory pore

$326\ \mu$ and to cervical papillae $370\ \mu$. Muscular esophagus $260\ \mu$ long and glandular esophagus $660\ \mu$ long. Anal papillae as follows: two

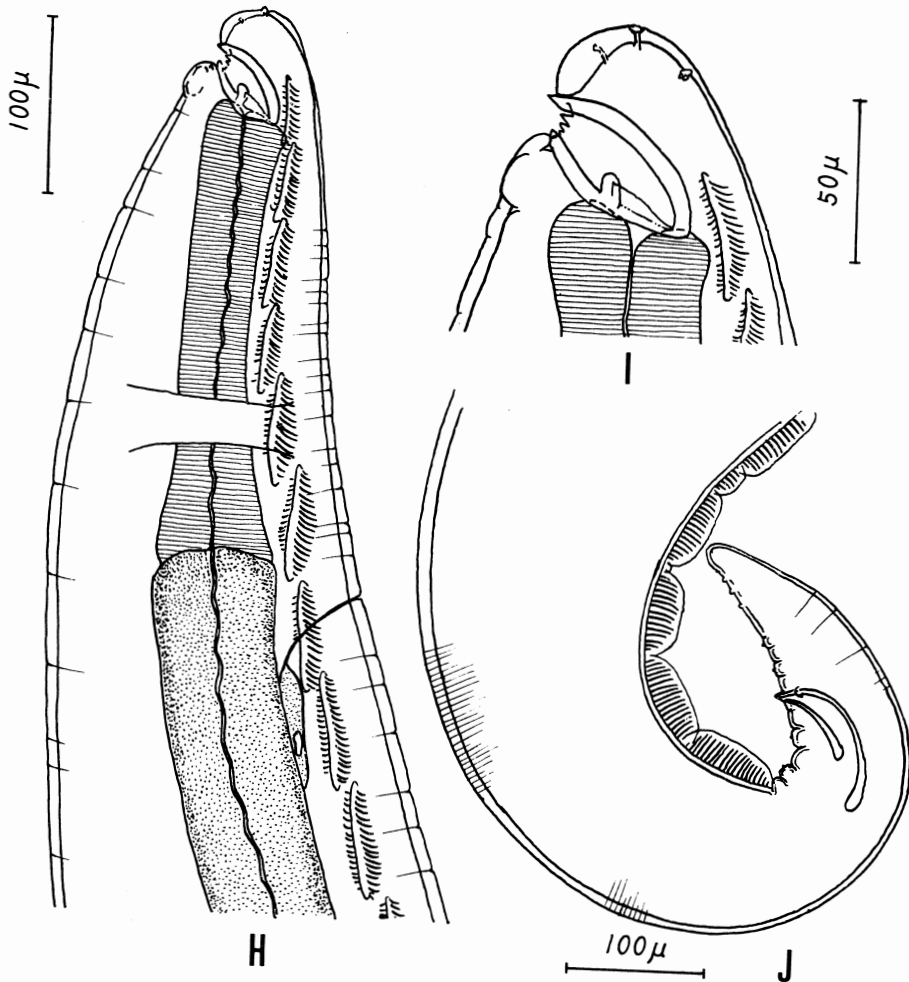


Fig. 2 Male *Rictularia* from the field mouse in Niigata Prefecture.
(H) Anterior part of body, (I) head and (J) tail in lateral view.

pairs preanal, one pair adanal and at least five pairs postanal. Five (six) median preanal fans present. Anus opens 107 (107) μ from tail tip. Two spicules unequal in size: right 44 (52) μ , left 110 (111) μ long. Number of the ventrolateral comb pairs 40 (36) and last pair is situated 0.69 mm from tail tip.

Females (Based on 20 gravid specimens) Body length 14.4 to 67.2 mm, maximum width 0.45 to 1.94 mm. Distance from cephalic apex to the bottom of buccal capsule 0.104 to 0.218 mm, to nerve ring 0.24 to 0.46 mm, to excretory pore 0.31 to 0.68 mm and to cervical papillae 0.34 to 0.70 mm. Mus-

cular esophagus 0.38 to 0.71 mm long and glandular esophagus 1.82 to 4.10 mm long. The ventrolateral combs are gradually transformed into spines behind the vulval region. Number of pairs of these combs and spines 32 to 34 prevulval and only 10 to 15 postvulval. Postvulval pairs are decreasing in number in larger specimens. Vulva situated in a large depression and encircled by large lips at 2.23 to 4.25 mm from cephalic apex. Length of tail 0.20 to 0.57 mm. A spine-like process at tail tip. Eggs with thick shell, elliptical shape and embryonated at deposition. Dimensions of eggs 44-52 \times 26-33 μ .

Discussion

Quentin (1969), based on the number of the esophageal teeth and other characteristics, divided the genus *Rictularia* into two genera, *Rictularia* Froelich, 1802, and *Pterygodermatites* Wedle, 1861. The present specimens have one esophageal tooth and two ventrolateral membranous structures attached to it. These membranous structures are sometimes mistaken for the esophageal teeth in small specimens, especially in male. But unlike the esophageal tooth, they do not become sclerotic in larger worms. Therefore, our specimens belong to the genus *Rictularia* which possesses only one esophageal tooth according to the classification proposed by Quentin.

The present specimens bear many close resemblances with *R. amurensis* Schulz, 1927, *R. cristata* Froelich, 1802, *R. oligopectinea* Wu et Hu, 1938, *R. proni* Seurat, 1915, and *R. strumica* Dimitrova *et al.*, 1963. Nevertheless, the present worms differ from *R. strumica* in having a reniform mouth with rounded corners whereas the latter has a crescent mouth with sharpened corners and in having teeth on the margin of mouth more than four times as many as in *R. strumica*. *R. oligopectinea* differs from the present ones in having two esophageal teeth and smaller egg size. The present specimens are also distinguishable from *R. proni* in lacking longitudinal striations in the pre-cloacal region of male (Seurat, 1916) and in having larger egg size. Among the prior mentioned species, *R. amurensis* is most related. Although the present worms, compared to *R. amurensis*, have somewhat fewer teeth on the mouth margin and shorter muscular esophagus, these differences are considered to be minute for separating the present ones from *R. amurensis*. It is also noticeable that *R. amurensis* was recorded from *Apodemus speciosus*, the same host species as in our cases, in the Maritime Territory of USSR. Quentin (1969) regarded *R. amurensis* as the synonym of *R. cristata*, the type species of this genus with in-

adequate description. Although the author feels that the bases of this combination are somewhat insufficient, it may be valid to identify the specimens under discussion with *R. cristata* at present.

From Japanese territory, several *Rictularia* species have been already found in rodents of outlying islands (Kamiya *et al.*, 1968) and on the ocean liners (Miyata, 1960; Kumada *et al.*, 1971; Kumada, 1975). But all of them, having three esophageal teeth, belong to the genus *Pterygodermatites* after the classification of Quentin. Although Kagei and Sawada (1976) recently recovered *R. rhinolophi* from a Japanese chiropteran, *R. cristata* is the only one aboriginal *Rictularia* parasitic to rodents in Japan proper at present time.

It is of interest that Kenny *et al.* (1975) reported one case of human infection with *Rictularia*, but any knowledge has not yet been obtained about pathogenicity of the present parasite.

Summary

A nematode species of the genus *Rictularia* from the field mouse, *Apodemus speciosus*, in mountainous areas of Niigata Prefecture is described.

This species is identified with *R. cristata* Froelich, 1802 on the morphological characteristics at present.

This is the first report of aboriginal species of *Rictularia* parasitic to rodents in Japan proper.

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Abstract of this study was presented at the 35th East Japan Regional Meeting of the Japanese Society of Parasitology in Tokyo, 1975. Some of the morphometric data are corrected in this

paper by re-measurement.

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新潟県産アカネズミ *Apodemus speciosus* より得た *Rictularia* 属線虫 (Rictulariidae)

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新潟県の山地で捕獲したアカネズミ *Apodemus speciosus* より得た *Rictularia* 属線虫を記載した。
本種は形態の特徴から, *R. cristata* Froelich, 1802

と同定された。

本種は齧歯類寄生で日本本土に土着の認められた最初の *Rictularia* 属線虫である。