

Two New Species of *Raillietina* (Cestoda: Davaineidae) from Columbiformes of Beppu City, Japan

GIITI KUGI

(Accepted for publication; July 8, 1992)

Abstract

Six and twelve cestode specimens were obtained from the small intestine of the pigeons, *Columba livia domestica* captured at Beppu City, on January 10 and 24, 1992. The former and the latter cestodes were identified as *R. (R.) kyushuensis* n. sp. and *R. (R.) japonensis* n. sp., respectively. Thirty six species of the subgenus *Raillietina* of the genus *Raillietina* have been reported from the pigeon.

The former new species closely resembles *Raillietina (Raillietina) flaminata* Meggitt, 1931, but it differs from that by the smaller size of scolex, the larger size of rostellar hooks, the larger number of testes, the location of cirrus pouch and the larger number of egg capsules.

The latter new species closely resembles *R. (R.) tokyoensis* Sawada, 1960, but it can be discriminated from that by the larger size of neck, the larger size of scolex, the larger size of sucker, the smaller number of acetabular hooklets row, and the larger size of rostellar hooks.

Key words: avian cestode, *Raillietina (Raillietina) kyushuensis*, *R. (R.) japonensis*, pigeon, morphology

Introduction

Thirty six specimens of the subgenus *Raillietina* Stiles et Orleman, 1926 of the genus *Raillietina* Fuhrmann, 1920 have been recorded from the pigeon. In Japan, *R. (R.) taiwanensis* Yamaguti, 1935, *R. (R.) tokyoensis* Sawada 1960, *R. (R.) kunisakiensis* Sawada and Kugi, 1979, *R. (R.) bungoensis* Sawada and Kugi, 1986, and *R. (R.) beppuensis* Kugi, 1992 have been reported. The present paper deals with the morphology of the two new species of the subgenus *Raillietina* of the genus *Raillietina*.

Materials and Methods

Six and twelve cestode specimens were obtained from the small intestines of two pigeons (*Columba livia domestica*) at Beppu City, on January 10 and 24, 1992, respectively. The specimens were fixed in 70% alcohol after pressed between two slides, stained with Heidenhain's hematoxylin, dehydrated in graded series of

ethanol, cleared in xylene, and mounted in Canada balsam. All measurements are given in millimeters.

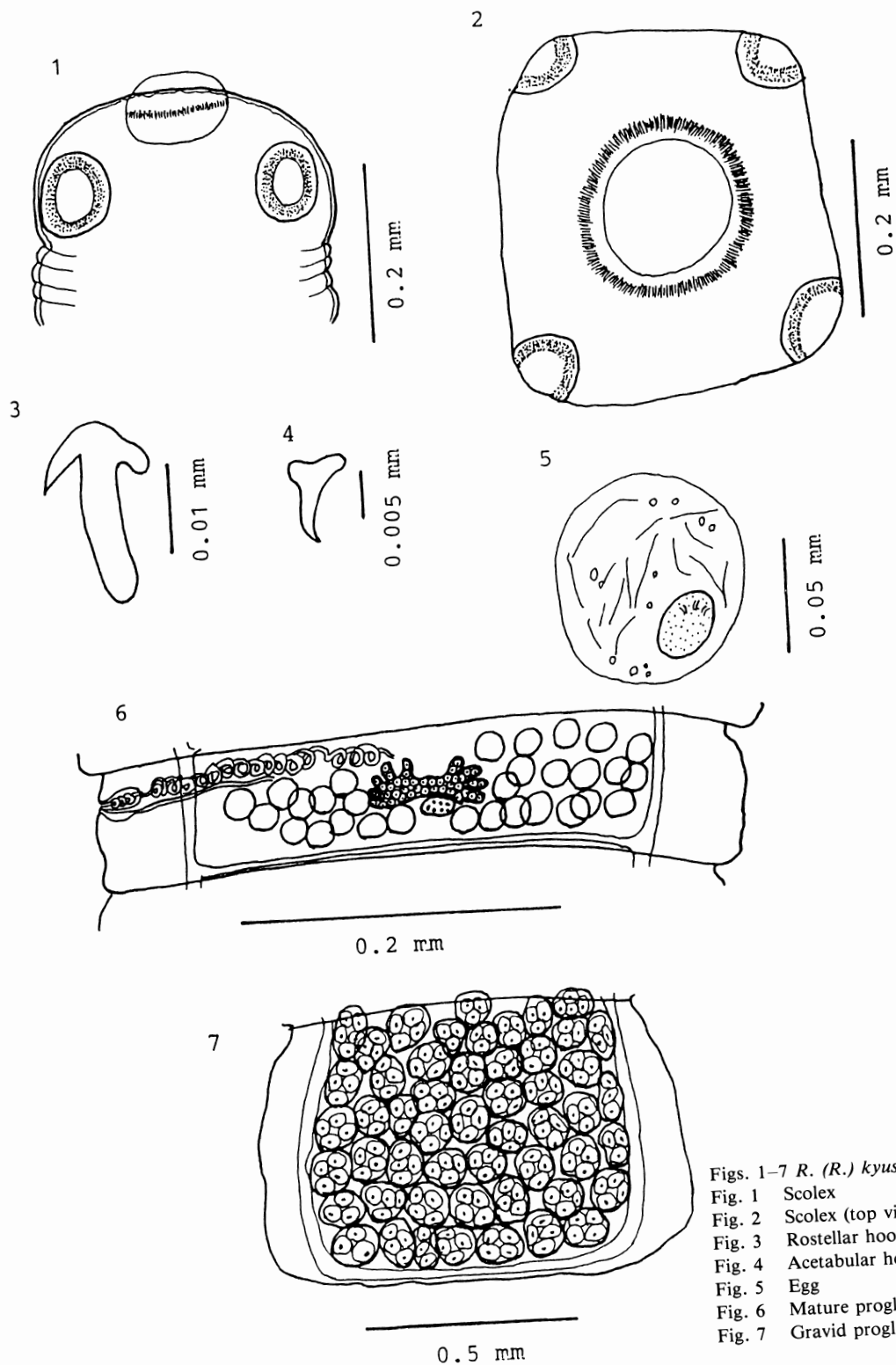
Raillietina Fuhrmann, 1920

Raillietina (Raillietina) Stiles et Orleman, 1926

Raillietina (Raillietina) kyushuensis n. sp.

(Figs. 1–7)

Strobila 51.25–65.00 in length, 1.0–1.2 in maximum width. Proglottids wider than long, serrate. Scolex 0.15–0.18 long by 0.30–0.36 wide. Rostellum 0.18–0.19 in diameter, armed with two rows of 220–240 hammer-shaped rostellar hooks, 0.018–0.020 long. Suckers round, measuring 0.065–0.075 by 0.055–0.063, marginally armed with 5 rows of hooklets, 0.01–0.0125 long, neck absent. Genital pores unilateral, located at anterior one-third of proglottid margin. Mature proglottid 0.65 long by 1.0–1.2 wide. Testes 22–29 in number, 0.038–0.045 by 0.035–0.053 in size, divided in two groups on each side of proglottid; 9–11 poral and 13–18 aporal. Cirrus pouch pyriform, 0.070–0.088 by 0.038–0.045 in size, not reaching longitudinal osmoregulatory canal.



Figs. 1-7 *R. (R.) kyushuensis* n. sp.

- Fig. 1 Scolex
- Fig. 2 Scolex (top view)
- Fig. 3 Rostellar hook
- Fig. 4 Acetabular hook
- Fig. 5 Egg
- Fig. 6 Mature proglottid
- Fig. 7 Gravid proglottid

Cirrus without spines, 0.038 long by 0.01 wide. Vas deference located at near midline, and extending laterally, forming many convolution toward base of cirrus pouch. Vagina opening posterior to male genital opening, swollen out in distal portion, 0.075 by 0.025. Ovary multilobate, situated in middle of proglottid, 0.18–0.24 across. Vitelline gland irregular reniform, 0.05–0.08 by 0.03–0.05, located close below ovary. Gravid proglottid 0.6 long by 0.8–0.85 wide, containing 60–66 egg capsules, 0.07–0.10 in diameter, situated between both longitudinal osmoregulatory canals; each egg capsule containing 3–4 eggs.

Eggs spherical, 0.075–0.080 in diameter, surrounded by a thin membrane. Onchosphere subspherical, 0.03 by 0.020–0.025 in size; embryonic hooks 0.0075 long.

Host: Pigeon, *Columba livia domestica*

Habitat: Small intestine

Locality and date: Beppu City; January 10, 1992

Type specimens: Holotype and paratype deposited in Meguro Parasitological Museum, MPM Coll. No. 19561

Discussion

Four species of the subgenus *Raillietina* Stiles et Orleman, 1926 with the strobila less than 70 mm in length have been recorded from the pigeon: *R. (R.) ceylonica* (Baczynska, 1914), *R. (R.) columbiella* Ortlepp, 1938, *R. (R.) flaminata* Meggitt, 1931 and *R. (R.) spiralis* (Baczynska, 1914) (Fuhrmann, 1932, Sawada, 1965, Schmidt, 1986). The present new species closely resembles *R. (R.) flaminata* Meggitt, 1931 in the position of genital pore. However, it differs from that in the smaller size of scolex (0.3–0.36 vs. 0.72), the larger size of rostellar hooks (0.02 vs. 0.009), the larger number of testes (22–29 vs. 5–9), the location of cirrus pouch (not crossing vs. reaching longitudinal osmoregulatory canal), and the larger number of egg capsules (60–66 vs. 16).

Raillietina (Raillietina) japonensis n. sp.
(Figs. 8–13)

Strobila 210–223 in length, maximum width 1.0–1.55 in young gravid proglottids, but senile ones longer than wide. Proglottids serrate. Scolex 0.3–0.45 long by 0.35–0.40 wide. Rostellum 0.2 in diameter, armed with 2 rows of 200–220 hammer-shaped rostellar hooks, 0.018–0.023 long. Suckers round, 0.08 by 0.07–0.075 in size, marginally armed with 5 rows of hooklets, 0.0075–0.012 long. Neck very slender, 4.0–5.3 long by 0.20–0.25 wide. Genital pores unilateral, located slightly anterior to middle of each proglottid margin. Mature proglottid 0.30–0.33 long by 0.65–1.0 wide. Testes 21–22 in number, 0.05 by 0.055–0.063 in size, arranged in two groups on each side of proglottid and behind and bilaterally of ovary, 8–9 poral and 12–13 aporal. Cirrus pouch pyriform, 0.10–0.12 long by 0.035–0.043 wide, crossing longitudinal osmoregulatory canal. Cirrus without spines. Vas deference located at near midline, and running laterally, much convoluted toward base of cirrus pouch. Vagina opening posterior to male genital one, swollen out in distal portion, 0.070–0.075 long by 0.020–0.025 wide. Ovary transversely elongate, bilobate, situated in midline of proglottid, 0.18–0.24 across. Vitelline gland ovoid, 0.050–0.088 by 0.063 in size, situated just behind ovary. Gravid proglottid, 0.7 long by 0.95–1.55 wide.

Senile proglottid 1.0–1.1 long by 0.85 wide, containing 60–63 egg capsules with 4–8 eggs each, 0.09–0.10 by 0.10–0.13 in size, situated between both longitudinal osmoregulatory canals. Eggs spherical, 0.063–0.075 by 0.075–0.088, surrounded by a thin membrane. Onchosphere subspherical 0.012–0.020 by 0.0175; embryonic hooks 0.005 long.

Host: Pigeon, *Columba livia domestica*

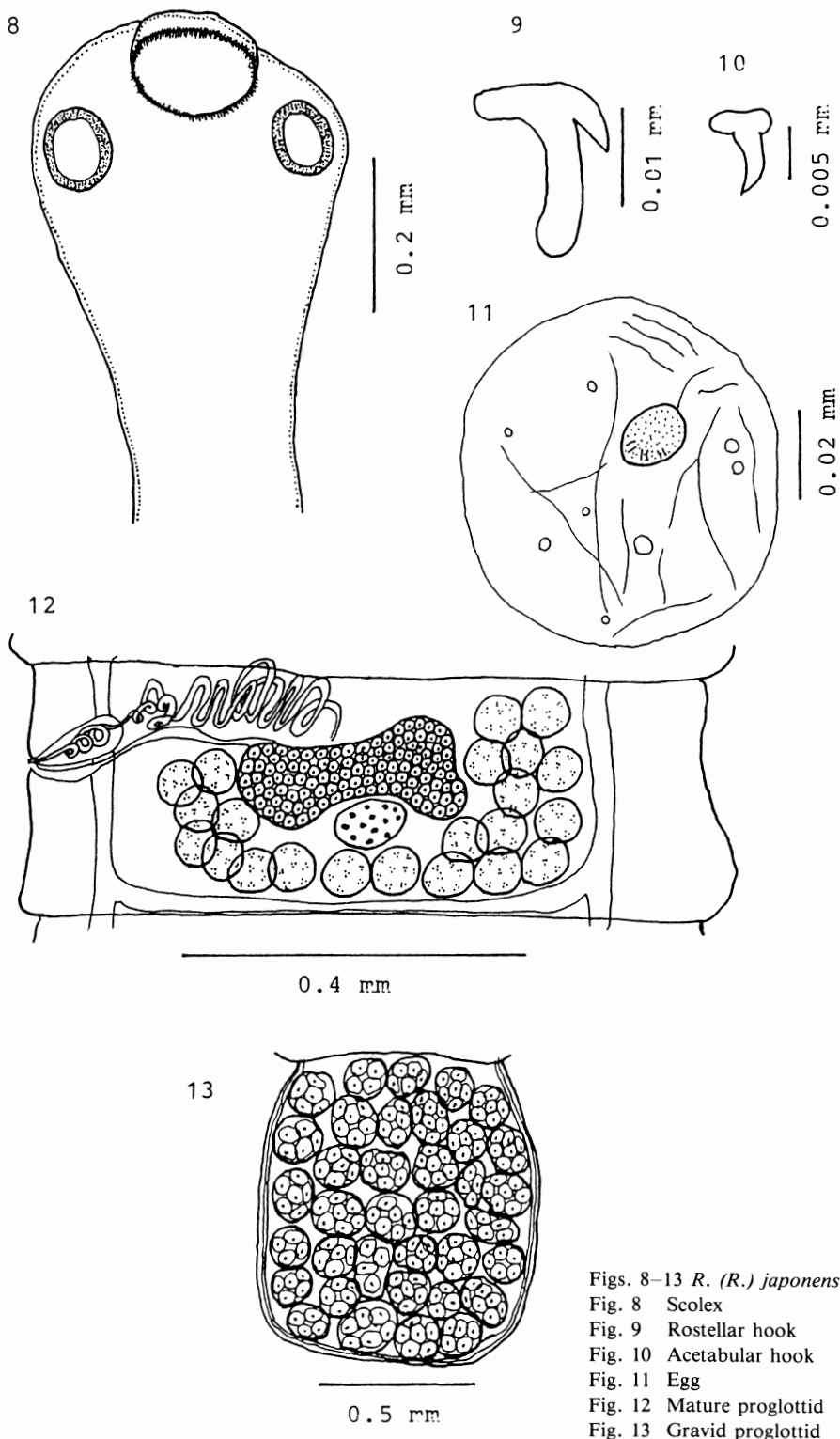
Habitat: Small intestine

Locality and date: Beppu City; January 24, 1992

Type specimens: Holotype and paratype deposited in Meguro Parasitological Museum, MPM Coll. No. 19562

Discussion

Thirty six species of the subgenus *Raillietina*



Figs. 8–13 *R. (R.) japonensis* n. sp.
 Fig. 8 Scolex
 Fig. 9 Rostellar hook
 Fig. 10 Acetabular hook
 Fig. 11 Egg
 Fig. 12 Mature proglottid
 Fig. 13 Gravid proglottid

Stiles et Orleman, 1926 have been recorded from the pigeon (Fuhrmann, 1932, Sawada, 1965, Schmidt, 1986). The present new species closely resembles *Raillietina (Raillietina) tokyoensis* Sawada, 1960 in the number of rostellar hooks, the location of genital pores, the number of testes and the size of embryonic hooks. However, it differs from that in the longer neck (4.0–5.2 long by 0.20–0.25 wide vs. 0.09 wide), the larger size of scolex (0.30–0.45 by 0.35–0.40 vs. 0.19–0.20 wide), the larger size of sucker (0.08 by 0.070–0.075 vs. 0.04–0.048 by 0.03–0.048), the smaller number of acetabular hooklet rows (5 vs. 7–8), the larger size of rostellum (0.2 vs. 0.074–0.089 in diameter), and the larger size of rostellar hooks (0.018–0.023 vs. 0.008).

Acknowledgment

The author wishes to thank Dr. Hiroshi Itagaki for valuable advices.

References

- 1) Fuhrmann, O. (1932): Les Ténias des oiseaux. Mém. Univ. Neuchâtel, Vol. 8, 44–45.
- 2) Kugi, G. (1992): *Raillietina (Raillietina) beppuensis* n. sp. from a pigeon, *Columba livia domestica*. Jpn. J. Parasitol., 41, 105–107.
- 3) Meggitt, F. J. (1931): On cestodes collected in Burma. Part 2. Parasitology, 23: 250–263.
- 4) Sawada, I. (1960): *Raillietina (Raillietina) tokyoensis* n. sp. from a domestic pigeon, *Columba livia domestica*. Annot. Zool. Japon., 33, 57–60.
- 5) Sawada, I. (1965): On the genus *Raillietina* Fuhrmann, 1920 (2). J. Nara Gakugei Univ. (Nat.), 13, 5–38.
- 6) Sawada, I. and Kugi, G. (1970): Studies on the helminth fauna of kyushu. Part 5. Cestode parasites of wild mammals and birds from Oita Prefecture. Annot. Zool. Japon., 52, 137–138.
- 7) Sawada, I. and Kugi, G. (1986): Studies on the helminth fauna of Kyushu. Part 8. Cestode parasites of wild pigeon from Oita Prefecture. Proc. Japan. Soc. Syst. Zool., 33, 1–3.
- 8) Schmidt, G. D. (1986): Handbook of Tapeworm Identification. CRC Press, Florida, 256–265.
- 9) Yamaguti, S. (1935): Studies on the helminth fauna of Japan. Part 6. Cestodes of birds, 1. Japan. J. Zool., 6, 194–195.