



<https://www.biodiversitylibrary.org/>

**Proceedings of the United States National Museum**

Washington Smithsonian Institution Press, [etc.]

<https://www.biodiversitylibrary.org/bibliography/7519>

**v.75=no.2772-2797 (1929):**

<https://www.biodiversitylibrary.org/item/32391>

Article/Chapter Title: Tapeworms of the genera *Rhabdometra* and *Paruterina* found in the quail and yellow-billed cuckoo

Author(s): Jones, Myrna F.

Page(s): Page [1], Page 2, Page 3, Page 4, Page 5, Page 6, Page 7, Page 8, Pl. 1

Holding Institution: Smithsonian Libraries and Archives

Sponsored by: Smithsonian

Generated 9 January 2026 2:56 PM

<https://www.biodiversitylibrary.org/pdf4/1874877i00032391.pdf>

This page intentionally left blank.

# TAPEWORMS OF THE GENERA RHABDOMETRA AND PARUTERINA FOUND IN THE QUAIL AND YELLOW-BILLED CUCKOO

By MYRNA F. JONES

*Of the Zoological Division, Bureau of Animal Industry*

## INTRODUCTION

The type material (U.S.N.M. Cat. No. 5151) of *Taenia odiosa* Leidy, 1887, until recently the only cestode reported from *Colinus virginianus*, is here redescribed and the species transferred to the genus *Rhabdometra*. This material, obtained for study through the courtesy of Dr. J. Percy Moore, of the University of Pennsylvania, consists of several entire strobilae and numerous fragments, in all about two dozen specimens. Various sections as well as toto mounts were made and examined by the writer.

Leidy's original description of *Taenia odiosa* is as follows:

Head hemiovoidal to conical, unarmed; bothria subterminal, spherical, near together; neck none; body immediately after as wide or nearly as wide as the head; anterior segments short, linear; succeeding segments all wrinkled annularly, the more anterior bandlike, the posterior barrel shaped. Generative apertures lateral, mostly not visible. Length  $\frac{1}{2}$  to 2 inches. Head 0.3 to 0.45 mm. wide; body just behind about as wide as the head; anterior segments 0.05 long; succeeding segments 0.15 long by 1 to 1.25 wide; at widest part of body, 0.5 long by 1.625 wide; posterior segments 1.25 long by 1.25 wide. From the intestine of the quail, *Ortyx virginianus*, four birds of the same brood.

## EXTERNAL MORPHOLOGY

The Leidy specimens vary in length from 20 to 50 mm., with a maximum width of 2 mm. Four scolices (figs. 1, 2) measure  $255\mu$ ,  $325\mu$ ,  $330\mu$ , and  $400\mu$  in diameter, their suckers measure  $120\mu$ ,  $150\mu$ ,  $150\mu$ , and  $180\mu$ , respectively, and are unarmed; no rostellum is present. A short neck is evident or indistinct, according to the state of contraction. In most specimens all segments are broader than long; however, most of the worms are longitudinally contracted; a few elongate segments, median or posterior in the strobila of specimens not so contracted, indicate that this is a decidedly variable feature (figs. 3, 4). A few gravid segments are as much as five times longer than broad.

## INTERNAL MORPHOLOGY

*Nervous system.*—The fairly prominent longitudinal nerves (fig. 7) lie exterior to the excretory canals, and in cross section appear to interrupt the inner layer of muscle-fiber bundles.

*Musculature.*—The longitudinal muscles (fig. 7) are arranged distinctly in an inner and an outer layer, each layer consisting of numerous bundles of fibers, a total of 40 or more. Transverse and dorsoventral muscles are but weakly developed.

*Excretory system.*—There are the usual small dorsal excretory canal and larger ventral excretory canal on either side (fig. 7). Anteriorly, they are approximately the same size. The transverse canal in the posterior portion of the segment is prominent, and a few supplementary transverse canals are observable, but these do not seem to make up a reticulate system such as Ransom describes for another rhabdometrid, *Rhadometra nullicollis*. The genital canals pass between the longitudinal excretory canals and dorsal to the longitudinal nerve (fig. 7).

*Male reproductive organs.*—The testes (figs. 5, 6, 7) are posterior in the segment, and posterior and lateral to the ovary. They vary in number from 12 to 25 in the segments of a single strobila, the usual range being from 16 to 22. In no case were more than 25 observed. Well-developed testes are usually transversely elongate and measure about 75 by 45  $\mu$ . The vasa efferentia are indistinct; the vas deferens is prominent and in the anterior portion of the segment. The cirrus is comparatively straight in the cirrus sac, the straight region being 160 to 180  $\mu$  long, and is armed with small spines for a distance of about 60 $\mu$  from its tip. The large cirrus pouch (figs. 5, 7) passes median of the longitudinal excretory canals, and extends diagonally toward the anterior portion of the segment. In mature segments it varies from 195 to 225  $\mu$  long by 45 to 60  $\mu$  wide, more rarely to 300 $\mu$  by 52 to 60  $\mu$ ; in gravid segments the cirrus pouch (figs. 2, 4), though distinct, is usually smaller, ranging from 165 to 195  $\mu$  in length.

*Female reproductive organs.*—The vagina (figs. 5, 6) is posterior and dorsal to the cirrus pouch. The enlarged distal portion, 135 to 195  $\mu$  long by 35 to 45  $\mu$ , wide, is followed by a narrow tubular proximal portion 4 to 6  $\mu$  in diameter, and that in turn by an ovoidal or cylindrical seminal receptacle (figs. 5, 6, 7). The ovary (figs. 5, 6, 7) is median (equatorial) or postmedian (postequatorial) in position, and is bilobed when mature. The vitelline gland (figs. 5, 6) is posterior and ventral to the ovary, and between them lies the small so-called shell gland (fig. 7). The uterus (figs. 5, 6, 7), originally situated anterior and dorsal to the ovary, invades and comes to occupy the space previously occupied by the ovary before the latter degenerates;

the uterus at that earlier stage is somewhat spherical, while in the gravid segment it is tubular and longitudinally elongate (figs. 3, 4). The parauterine organ develops anterior to the uterus. As is usual with this structure, it first appears as a denser region of the parenchyma (figs. 5, 6); later there may appear in connection with this area a solid mass projecting back into the developing uterus. In gravid segments the parauterine organ appears as a tubular organ extending from the uterus nearly to the anterior margin of the segment. At the point of contact there is typically a projection (or contraction) of the parauterine organ back into the uterus (fig. 4).

The onchospheres in the uterus measure 28 to 30  $\mu$  in diameter, with embryonic hooks approximately 16 $\mu$  in length. No ova were observed in the parauterine organ.

#### SYSTEMATIC POSITION

These specimens have the generic characters of *Rhabdometra* which are as follows: Paruterininae: Scolex unarmed, without rostellum. Genital pores irregularly alternate. Genital canals pass between longitudinal excretory vessels. Testes posterior and lateral to female glands. Uterus median, tubular, and elongate longitudinally, or globular. A parauterine organ develops anterior to the uterus and extends forward nearly to the anterior border of the segment.

Six species of *Rhabdometra* have been described previously. One species, *R. similis*, considered by the writer to belong in the genus *Paruterina*, is discussed in an appended note. The accompanying chart will serve to distinguish the specific characters and to compare *R. odiosa* with the five known species. Based on the characters shown on the chart the following key may be made:

A. Genital pore posterior to middle of segment margin.

1. Testes few (12).....*R. nigropunctata*.

2. Testes numerous (about 60)

(a) Testes posterior and lateral to female glands; cirrus pouch extending beyond midline of segments; genital canals dorsal to longitudinal nerve.....*R. numida*.

(b) Testes surrounding female glands (contrary to generic diagnosis); cirrus pouch not reaching midline of segment.....*R. cylindrica*.

B. Genital pore anterior to middle of segment margin.

1. Testes few (about 12 to 30).....*R. tomica*, *R. odiosa*.

2. Testes numerous (about 60).....*R. nullicollis*.

Distinguishing *R. tomica* (Kolodkovsky, 1906) from *R. odiosa* (Leidy, 1887) is difficult. *R. tomica* has 20 to 30 testes "or more"; *R. odiosa* has 12 to 25, as many as 30 never having been observed. The cirrus pouch of *R. tomica*, as estimated from drawings, is some-

what larger than that of *R. odiosa*; and the "eggs" (onchospheres?) of *R. tomica* are described as being the larger,  $37\mu$  as opposed to 28 to  $32\mu$ . Without other distinguishing factors these characters are perhaps of doubtful value; the position of the genital canal in relation to the longitudinal nerve, and the presence or absence of a cirrus retractor muscle are unknown. It is possible that *R. tomica* and *R. odiosa* are identical, but in view of the known geographical distribution, Russia and the United States, and the difference in hosts, *R. tomica* being from *Tetrao tetrix*, and the possible distinguishing characters mentioned above, the writer prefers not to consider *R. tomica* a synonym of *R. odiosa* without examination of the former and comparison of the two.

#### KNOWN DISTRIBUTION OF *R. ODIOSA*

In so far as possible the type material of *R. odiosa* was compared with quail cestodes more recently collected. Most of the material was not well preserved and specific identification was impossible in some cases. However, the material in no case could be definitely assigned to a species of *Rhabdometra* other than *R. odiosa*.

Leidy's type material was collected in Florida. The material compared with it was sent in to the Zoological Division through the courtesy of H. L. Stoddard, of the Biological Survey, and was collected over a period from 1925 to 1928 in Grady County, Ga., or near by, and in Leon County, Fla. One of the 15 birds represented had been imported from Mexico originally, but had been with other captive quail in Georgia for several months. Five of these birds were "captive" birds raised for experimental use, the others might be considered "wild." The material sent in by Mr. Stoddard showed only 15 quail out of at least a hundred infected with *Rhabdometra*. Twenty "wild" specimens sent in from West Virginia failed to show any *Rhabdometra*. It appears that *R. odiosa* is a native parasite of *Colinus virginianus*, but one of the many parasites that occur somewhat sporadically as regards distribution or seasonal incidence.

Cestode	<i>R. nigropunctata</i> Crey, 1890 (host, <i>Coturnix coturnix</i> )	<i>R. tomica</i> Kholodkovsky, 1906 (host, <i>Tetrao tetrix</i> )	<i>R. nullicollis</i> Ransom, 1909 (host, <i>Centrocercus urophasianus</i> and <i>Pedioecetes phasianellus columbianus</i> )	<i>R. numida</i> Fuhrmann, 1909 (host, <i>Numida pitlorhyncha</i> )	<i>R. cylindrica</i> Beddard, 1914 (host, <i>Caccabis melanocephala</i> )	<i>R. odiosa</i> Leidy, 1887 (host, <i>Colinus virginianus</i> )
Length	140 by 1.5 mm	60 to 70 by 1.5 mm.	50 to 100 by 2-2 mm.	40 to 50 by 1.5 mm.	150 by 1.2 mm	50 by 2 mm.
Diameter of scolex	382 $\mu$	450 $\mu$	560 to 650 $\mu$	570 $\mu$	"Small"	(max.) 255 to 400 $\mu$ .
Diameter of suckers	166 by 137 $\mu$	200 $\mu$	140 to 160 $\mu$	200 by 160 $\mu$	"Large in portion."	120 to 180 $\mu$ .
Position of genital pore in relation to middle of margin.	Posterior	Anterior from figure.	Anterior	Posterior	Posterior	Anterior.
Arrangement of longitudinal muscles.		2 layers	2 layers close together.	1 layer definite, outer bundle scattered.	Similar to <i>R. numida</i> .	2 layers (about 40 bundles each).
Number of testes and size.	12, 58 $\mu$	20 to 30 "or more," (?)	About 60, 80 to 100 $\mu$ .	60 to 70, 36 to 50 $\mu$ .	Numerous	12 to 25, 75 by 45 $\mu$ .
Position of genital canal in relation to longitudinal nerve.	(?)		Dorsal	Ventral	Ventral	Dorsal.
Size of cirrus pouch	313 by 137 $\mu$	(?) About 320 to 360 from Fig. 10.	350 to 380 by 80 to 100 $\mu$ , spined tip.	790 by 30 $\mu$	Long, less than 790 $\mu$ , more than 380 $\mu$ .	165, 195 to 300 $\mu$ by 52 to 60 $\mu$ .
Size of onchospheres	46 by 40 $\mu$	37 $\mu$	18 $\mu$	29 $\mu$	(?)	28 to 32 $\mu$ .

RHABDOMETRA SIMILIS RANSOM, 1909, TRANSFERRED TO GENUS  
PARUTERINA

*Rhabdometra similis* Ransom, 1909, was described originally from material lacking scolices. Linton (1927) reported *R. similis* from the same host, *Coccygus americanus*, from which the earlier material was collected and described the scolex as bearing a double crown of small hooks on the rostellum. In so far as was possible, toto mounts of Linton's material were compared by the present writer with the type material of *R. similis*; mature and gravid segments of the two are similar, showing no more than ordinary variation within a species. Linton writes that sections of the more recent material agree in detail with the transverse section of *R. similis* as described by Ransom (1909, fig. 24).

The generic diagnosis of *Rhabdometra*, subfamily Paruterininae, includes the character of a scolex which is unarmed and without rostellum, while the genus *Paruterina* differs from *Rhabdometra* chiefly in the occurrence of a rostellum armed with a double row of hooks. *R. similis* is found to fit the generic diagnosis of *Paruterina* in all respects, and to be distinguishable from other described species of that genus by the size and number of hooks, position and size of cirrus pouch, and the number of testes. In addition to having an armed scolex, *R. similis* is found to differ consistently from all other species of *Rhabdometra* in having comparatively few, only 20 to 24, bundles of fibers in the inner layer of longitudinal muscles. It is of interest that this condition is definitely described for a species of *Paruterina*, *P. angustata* Fuhrmann, 1906. It is concluded that *R. similis* should be transferred to the genus *Paruterina* as *Paruterina similis* (Ransom, 1909) Jones, 1929 (the present paper).

## BIBLIOGRAPHY

BEDDARD, FRANK E.

1914. Contributions to the Anatomy and Systematic Arrangement of the Cestoidea. XIV. On a new species of *Rhabdometra*, and the Paruterine organ in *Otiditaenia*. In Proc. Zool. Soc. London, vol. 68, pp. 859-887, figs. 1-11.

FUHRMANN, O.

1906. Die Taniien der Raubvogel. In Centralbl. f. Bakteriol., 1 Abt., Jena, vol. 41 (1) Originale, pp. 79-89, 212-221, figs. 1-32.
1909. Die Cestoden der Vögel des weissen Nils. In Jägerskiöld, L. A., Results Swedish Zool. Expedition to Egypt and the White Nile 1901, 55 pp. 53 figs. Uppsala.

KHOLODKOVSKY, N. A.

1906. Cestodes nouveaux ou peu connus. In Arch. Paras., Paris, vol. 10, no. 3, Oct. 15, pp. 332-347, figs. 1, 2, pls. 8-10, figs. 1-46.

LEIDY, JOSEPH.

1887. Tapeworms in Birds. In Journ. Comp. Med. and Surg., Philadelphia, vol. 8, no. 1, Jan., pp. 1-11, figs. 1-27.

LINTON, EDWIN.

1927. Notes on Cestode Parasites of Birds. No. 2656 from the Proc. U. S. Nat. Mus., vol. 70, art. 7, Washington, D. C., pp. 1-73, pls. 1-15, 221 figs.

RANSOM, B. H.

1909. The Taenioid Cestodes of North American Birds. Bull. 69, U. S. Nat. Mus., Washington, pp. 1-141, figs. 1-42.

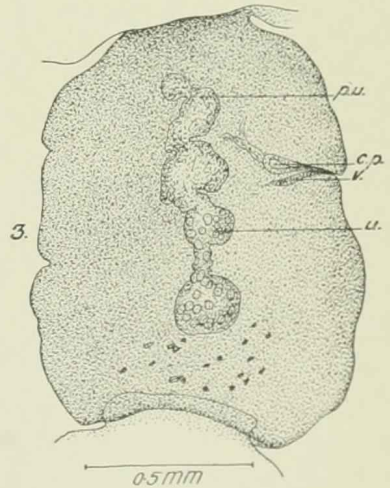
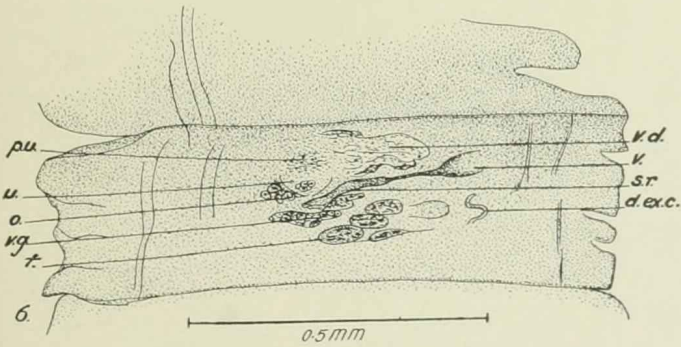
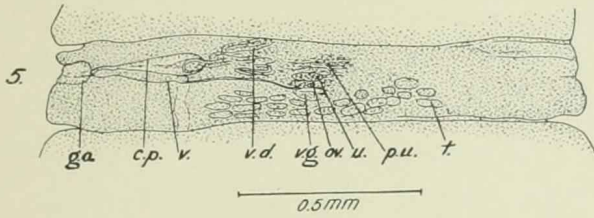
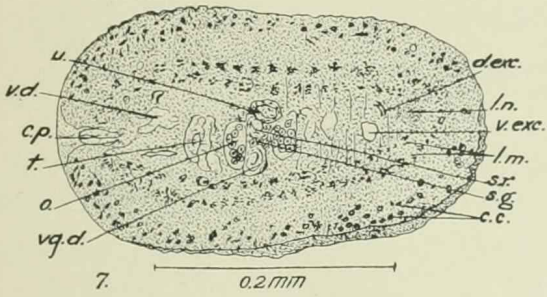
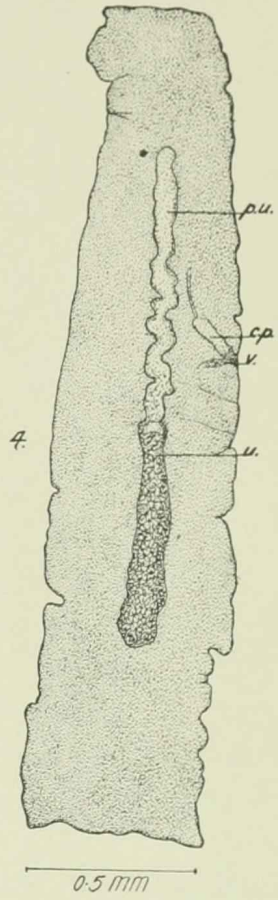
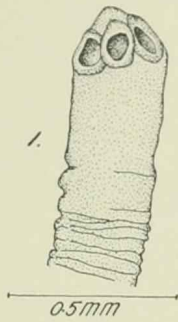
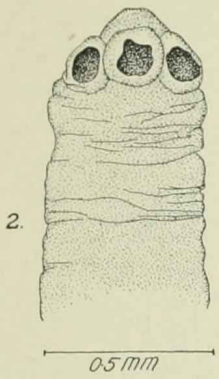
## EXPLANATION OF PLATE

- FIGURE 1.—Head and anterior portion of one strobila.  
2.—Head and anterior portion of a second strobila.  
3.—Gravid segment, contracted.  
4.—Gravid segment, elongate.  
5.—Mature segment. Toto mount.  
6.—Mature segment. Frontal section.  
7.—Mature segment. Transverse section.

## RHABDOMETRA ODIOSA

- |                                       |                                          |
|---------------------------------------|------------------------------------------|
| <i>c c</i> —calcareous corpuscles.    | <i>s r</i> —seminal receptacle.          |
| <i>c p</i> —cirrus pouch.             | <i>t</i> —testis.                        |
| <i>d exc</i> —dorsal excretory canal. | <i>u</i> —uterus.                        |
| <i>g a</i> —genital aperature.        | <i>v</i> —vagina.                        |
| <i>l m</i> —longitudinal muscle.      | <i>v d</i> —vas deferens.                |
| <i>l n</i> —longitudinal nerve.       | <i>v ex c</i> —ventral excretory canal.  |
| <i>o (ov)</i> —ovary.                 | <i>v g</i> —vitelline gland.             |
| <i>pu</i> —parauterine organ.         | <i>v g d</i> —duct from vitelline gland. |
| <i>s g</i> —shell gland.              |                                          |





RHABDOMETRA ODIOSA

FOR EXPLANATION OF PLATE SEE PAGE 8