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STUDIES ON THE HELMINTH FAUNA OF ALASKA. XXII
PARANOPLOCEPHALA WIGGINSI N. SP.,
A CESTODE FROM AN ARCTIC GROUND SQUIRREL

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During the summer of 1953, Mr. Edward T. Roche, of the Department of Zoology, University of Southern California, continued observations on the life history of the ground squirrel, *Citellus undulatus barrowensis* (Merriam), along the Meade River south of Point Barrow, Alaska. In the course of this work, 55 ground squirrels were examined for intestinal parasites, and were found commonly to harbor cestodes. Mr. Roche kindly offered a number of these cestodes to the writer for study, and they represent an undescribed species of *Paranoplocephala* Lühe, 1910.

In appreciation of the generous cooperation extended to the personnel of this laboratory by Dr. Ira L. Wiggins, formerly Scientific Director of the Arctic Research Laboratory, Office of Naval Research, at Point Barrow, the name *Paranoplocephala wigginsii* n. sp. is proposed for this cestode.

Paranoplocephala wigginsi n. sp.
(Figs. 1-2)

Diagnosis: Length of strobilae containing early gravid segments up to 150 mm; maximum width, attained in post-mature segments, 5 mm. Segments all wider than long; length/width ratio in mature segments about 1:10; length relatively greater in gravid segments, with length/width ratio about 1:5. Scolex well developed and distinct from strobila; about 750 μ in diameter. Suckers prominent. Short neck present. Ventral longitudinal excretory canals prominent; about 35 μ in diameter. Dorsal longitudinal excretory canals situated lateral to ventral canals. Genital pores irregularly alternating, with majority dextral; situated at about

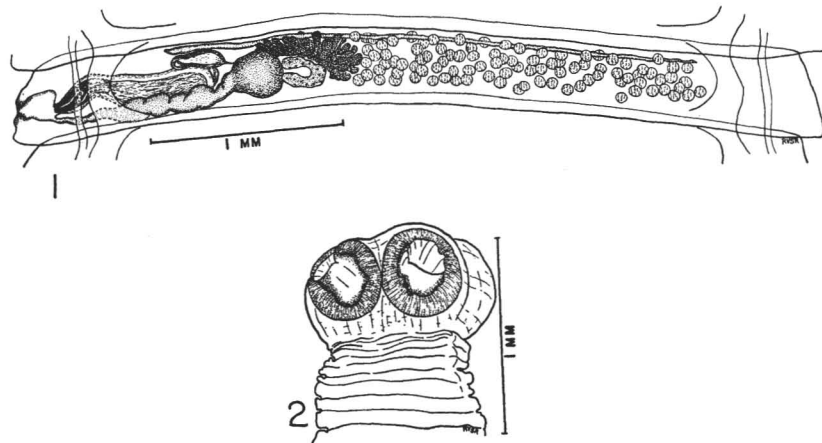


FIG. 1. *Paranoplocephala wigginsi* n. sp. Mature segment, ventral view.
FIG. 2. *Paranoplocephala wigginsi* n. sp. Scolex.

middle of segment margin. Genital atrium large and relatively deep. Genital canals are dorsal to longitudinal excretory canals. Elongate cirrus sac strongly developed, of somewhat greater diameter at aporal end; it measures 670–820 μ long by 160–193 μ in greatest diameter (av. 750 x 175 μ). Cirrus densely spinose. Internal seminal vesicle prominent. External seminal vesicle, characterized by very thick, glandular-appearing walls, lies antero-ventral to aporal end of cirrus sac. Testes range in number from 89–115 per segment (av. 100); they extend from aporal margin of ovary nearly to aporal ventral longitudinal excretory canal, but rarely overlap the latter. Testes may overlap tubular uterus in mature segments, but do not always extend completely anterior to it. Vagina opens posterior to cirrus sac; its course is relatively direct mediad, and it enlarges to form seminal receptacle which extends to vitelline gland and ovary; in late mature segments seminal receptacle may overlap the latter organs ventrally. Vitelline gland somewhat U-shaped, posterior to ovary. Strongly lobed, arc-shaped ovary situated in poral half of segment. Early uterus tubular, lying across anterior field of segment; does not extend laterally as far as ventral longitudinal excretory canals. Anterior and posterior sacculations develop in post-mature segments, and

gravid uterus nearly fills segment. Fully-developed eggs not present; egg size not determined.

Host: Ground squirrel, *Citellus undulatus barrowensis* (Merriam).

Habitat: Small intestine.

Type locality: Along the Meade River, 46 miles south of Point Barrow, Alaska.

Type: Slides containing an entire specimen have been deposited in the Helminthological Collection of the U. S. National Museum, No. 49357.

DISCUSSION

There are 12 apparently valid species of *Paranoplocephala*; viz., *P. omphalodes* (Hermann, 1783), *P. mamillana* (Mehlis, 1831), *P. transversaria* (Krabbe, 1879), *P. wimerosa* (Moniez, 1880), *P. isomydis* (Setti, 1892), *P. forcipata* (v. Linstow, 1904), *P. variabilis* (Douthitt, 1915), *P. infrequens* (Douthitt, 1915), *P. acanthocirrosa* Baer, 1924, *P. ryjikovi* Spasskii, 1950, *P. neofibrinus* Rausch, 1952, and *P. lemmi* Rausch, 1952. Of these, *P. omphalodes*, *P. variabilis*, *P. infrequens*, *P. neofibrinus*, and *P. lemmi* occur in North America.

Six of the above species (*P. mamillana*, *P. wimerosa*, *P. variabilis*, *P. infrequens*, *P. neofibrinus*, *P. lemmi*), have relatively short, more or less wedge-shaped strobilae. This, along with other morphological characteristics, serves to distinguish *P. wigginsi* n. sp. from any of these six, so they will not be considered in detail here.

Baer (1949) redescribed *P. isomydis*, parasitic in an African rodent, *Arvicanthus abyssinicus* Rüppell; on the basis of Baer's description, *P. wigginsi* n. sp. can be differentiated by its elongate strobila, much larger cirrus sac, and greater number of testes.

Spasskii (1951, p. 316) assigned *Bertia forcipata* v. Linstow, 1904, [= *Bertiella forcipata* (v. Linstow, 1904)] to the genus *Paranoplocephala*. *P. forcipata* is a parasite of a Peruvian rodent, *Lagidium peruanum* Meyen, and there is apparently no information regarding it beyond von Linstow's original description. Baer (1927) treated *Bertiella forcipata* as a synonym of *P. omphalodes*. However, *P. omphalodes* appears to be restricted in North America to arctic Alaska (Rausch, 1952), and its occurrence in South America seems improbable. In any event, *P. wigginsi* n. sp. differs from *P. forcipata* in having more testes, a larger cirrus sac, and in other details.

The species described herein resembles somewhat *P. acanthocirrosa* (from an African water rat, *Otomys irroratus* Brants), but it has a greater number of testes (40 to 50 in *P. acanthocirrosa*) which are dissimilar in distribution. It possesses, as well, an external seminal vesicle, which is lacking in *P. acanthocirrosa*.

In North America, *P. omphalodes* is the only species of *Paranoplocephala* having an elongate strobila. Moreover, it is a parasite of microtine rodents, and has never been reported from sciurids. A description of this species, using Alaskan material, has been published by Rausch (1952). *P. wigginsi* n. sp. is unlike *P. omphalodes* in its possession of an external seminal vesicle, in its having more testes of different distribution (51 to 61 in *P. omphalodes*), and in its greater size of cirrus sac.

Two species of *Paranoplocephala* are known to parasitize Eurasian sciurids. *P. transversaria* has been collected from *Marmota marmota* Linnaeus, *M. caudata* Jacquemont, and *Marmota* sp., in various localities in

Europe and Asia. *P. wigginsi* n. sp. is distinct from *P. transversaria* in that the genital pores alternate irregularly (pores unilateral in *P. transversaria*), and its testes are more numerous (60 to 80 in *P. transversaria*).

The second sciurid parasite, *P. ryjikovi*, has been reported in marmots, *Marmota baibacina* Kastschenko [sic] and *Marmota* sp., from the mountains of Tian'-Shan'. The writer has not been able to obtain the original description of this cestode, but a detailed diagnosis of the species is included in the monograph of the "Anoplocephalata" by Spasskii (1951, p. 322). *P. wigginsi* n. sp. and *P. ryjikovi* are similar, but the former possesses an external seminal vesicle and fewer testes (150 and more in *P. ryjikovi*) of different distribution.

It appears that *P. wigginsi* n. sp. can be distinguished from the other species of *Paranoplocephala* by host-species occurrence alone. However, knowledge is far from complete on the parasite-host relationships existing in northeastern Siberia where conditions undoubtedly are most like those of arctic Alaska.

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