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APLOPARAKSIS BOREALIS SP. N. (CESTODA: HYMENOLEPIDIDAE) FROM PASSERIFORM AND CHARADRIIFORM BIRDS IN CHUKOTKA AND ALASKA

S. K. Bondarenko* and R. L. Rausch†

ABSTRACT: *Aploparaksis borealis* sp. n. (Cestoda: Hymenolepididae), from the long-tailed jaeger, *Stercorarius longicaudus* Vieillot, on the Seward Peninsula, Alaska, and from the red-throated pipit, *Anthus cervinus* (Pallas), and the Lapland longspur, *Calcarius lapponicus* (Linnaeus), in Chukotka, northeastern Siberia, is described. This cestode is distinguished by the structure of the cirrus and other morphologic characters from other species of *Aploparaksis* Clerc 1903 in which there are 10 rostellar hooks and the vitelline gland is aporal to the ovary. *A. borealis* is the first species of *Aploparaksis* to be reported from birds representing 2 orders (Passeriformes and Charadriiformes).

Numerous cestodes of the genus *Aploparaksis* Clerc 1903 (Hymenolepididae) were found in the small intestine of a long-tailed jaeger, *Stercorarius longicaudus* Vieillot, examined by one of us (RLR) on the Seward Peninsula, in western Alaska, on 16 July 1966. Preliminary study indicated that they represented an undescribed species. Subsequently, during the period June 1970 to July 1973, 11 and 2 cestodes of the same species were found (by SKB) in a red-throated pipit, *Anthus cervinus* (Pallas), and a Lapland longspur, *Calcarius lapponicus* (Linnaeus), respectively, in the Chaunsk Lowlands, western Chukotka. The species is described herein.

MATERIALS AND METHODS

The cestodes from the passeriform birds and 20 from the long-tailed jaeger were stained in Semichon's acetic carmine or Ehrlich's acid hematoxylin, processed by standard methods, and mounted entire. Rostellar hooks from selected specimens were mounted separately for accurate measurement, and the structure of the cirrus was determined from preparations in polyvinyl alcohol. All measurements are in micrometers unless otherwise stated.

Aploparaksis borealis sp. n.

(Figs. 1-7)

Description: Strobila 35 to 65 mm long, with up to about 600 segments. Maximum width, attained in gravid segments, 400 to 715. Strobila

flat; margins slightly serrate. All segments wider than long. Length/width ratio of mature segments about 1:5; length/width ratio increasing slightly posteriad. Neck 460 to 520 long, 160 to 180 wide. Scolex relatively large, 260 to 280 long by 230 to 248 wide. Suckers well developed, 62 to 95 in greater diameter. Rostellum 82 to 100 long, with 10 hooks in single row. Hooks of form typical for genus, 20 to 26 long (avg 23), with very short handle, and base 17 to 22 (avg 19). Rostellar sheath 260 to 280 long, extending posteriad beyond posterior margins of suckers. Ventral longitudinal excretory canals 8 to 33 in diameter, connected by transverse duct about 2 in diameter; dorsal canals 2 to 4 in diameter. Genital *Anlagen* visible immediately posterior to neck. Testis and ovary first visible near middle of immature segments. Genital pores unilateral and dextral, situated immediately anterior to middle of segmental margin. Genital ducts passing dorsally across longitudinal excretory canals. Cirrus sac elongate, 140 to 220 long by 25 to 45 in diameter (avg 150 by 30), directed anteromediad with proximal end near anterior margin of segment and mostly anterior to anterior margin of ovary; extending mediad across about $\frac{1}{3}$ of mature segment. Cirrus 53 to 74 long, cylindrical at base, distal end attenuated; 8 to 12 in diameter near middle, and 3 to 5 at distal end. Surface of cirrus covered with small spines arranged in 16 to 20 longitudinal rows, of which 8 to 10 are visible dorsally or ventrally. Internal seminal vesicle large, occupying most of cirrus sac, 100 to 150 long by 25 to 33 in diameter. External seminal vesicle elongate-ellipsoidal, 96 to 170 long by 33 to 56 in maximum diameter (avg 120 by 44), situated dorsally, extending from proximal end of cirrus sac posteropod, with greater part usually posterior to proximal portion of cirrus sac, and attaining maximum size in postmature segments. Testis dorsal, ovoid to ellipsoidal, 92 to 140 by 51 to 92 (avg 119 by 79), in aporal half of mature segment, often slightly overlapping aporal excretory canals, and extending through most of segmental length. Vas deferens arising from poral end of testis, extending pod along posteromedial curvature of external seminal vesicle and entering

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FIGURES 1-7. *Aploparaksis borealis* sp. n. 1. Scolex. 2. Rostellar hooks. 3. Immature segment, ventral view. 4. Mature segment, ventral view. 5. Evaginated cirrus. 6. Partly invaginated cirrus. 7. Embryophore.

latter at posterior end. Vagina thin-walled, 57 to 74 long by 6 to 8 in diameter, opening in genital atrium posterior to orifice of male duct, extending mediad posterior to cirrus sac, enlarging poral to longitudinal excretory canals, and forming large, thin-walled seminal receptacle. Seminal receptacle elongate-ovoid, 100 to 179 long by 47 to 83 in maximum diameter (avg 130 by 65), situated dorsal to ovary and ventral to external seminal vesicle, extending mediad to poral margin of testis. Ovary of variable form, usually trilobed, situated ventrally in poral half of mature segment, 85 to 119 in transverse dimension by 51 to 95 long (avg 96 by 75), extending from poral excretory canals mediad and slightly overlapping poral margin of testis. Vitelline gland variable in form, reniform to subspherical, 31 to 59 in length by 22 to 39 wide (avg 46 by 31), situated just aporal to midline, ventral to testis, and sometimes in contact with aporal margin of ovary. Large vitelline duct extending posteromedial from vitelline gland. Uterus first visible in late mature segments as small diverticulum arising ventrally near posterior margin of segment; later appearing as transverse sac enlarging bilaterally and filling gravid segment between longitudinal excretory canals. Embryophore 32 to 41 long by 19 to 36 (avg 36 by 33). Embryonic hooks about 12 long.

Type host: Long-tailed jaeger, *Stercorarius longicaudus* Vieillot; also recorded from the red-throated pipit, *Anthus cervinus* (Pallas), and the Lapland longspur, *Calcarius lapponicus* (Linnaeus).

Habitat: Small intestine of host.

Type locality: Near the Niukluk River, ap-

proximately 113 km east of Nome, Seward Peninsula, Alaska; also recorded at the mouth of the Chaun River, near the southern shore of Chaunsk Gulf, northeastern Siberia.

Type: Holotype in the Collection of the Laboratory of Helminthology (Moscow), Academy of Sciences of the USSR, No. 460; paratype in the Helminthological Collection of the U. S. National Museum, No. 74085.

DISCUSSION

Two opinions exist concerning the systematic arrangement of hymenolepidid cestodes characterized in part by the presence of a single testis. Such cestodes have been placed in a single genus, *Aploparaksis* Clerc 1903, by some investigators (Williamson and Rausch, 1965; Todd, 1967; Deblock and Rausch, 1968; Olsen, 1970), while others distinguished additional genera or subgenera (Oshmarin, 1963, p. 141; Bondarenko, 1966; Spasskii and Iurpalova, 1968; Belopol'skaia and Kulachkova, 1968). Species having 10 hooks and the vitelline gland situated aporal to the ovary, as does that described in the present work, were placed by Spasskii and Iurpalova (1968) in a separate subgenus, *Tanureria* Spasskii and Iurpalova 1968. Species having more than 10 rostellar hooks and the vitelline gland ventral to the ovary were

removed to the genus *Monorcholepis* Oshmarin 1963 (cf. Oshmarin, 1963; Spasskaia, 1966). The status of *Monorcholepis* has been discussed recently by Spasskii and Spasskaia (1972). The species described here is retained in the genus *Aploparaksis* Clerc 1903 sensu lato.

Five species of *Aploparaksis* having 10 rostellar hooks and the vitelline gland aporal to the ovary are recognized: *A. xemae* Schiller 1951; *A. secessivus* Gubanov and Mamaev 1960; *A. diagonalis* Spasskii and Bobova 1961; *A. lateralis* Spasskii and Iurpalova 1968; and *A. pseudosecessivus* Belopol'skaia 1969. In addition to the dimensions of the rostellar hooks and the size of the egg, the structure of the cirrus is an important taxonomic character in discriminating species of the genus *Aploparaksis* (cf. Deblock and Rausch, 1968, Table I). *A. borealis* sp. n. is readily separated from the other five species of this morphologic group by its relatively short cirrus that lacks a bulblike enlargement at the base. It is further distinguished by differences in size and proportions of the rostellar hooks and by different proportions and relationships of the genital organs.

A. borealis is the only species of the genus to be recorded from birds representing different orders (Charadriiformes and Passeriformes). Of the other five species in the same morphologic group, *A. xemae* occurs in gulls and shorebirds (Charadriiformes), while *A. secessivus*, *A. diagonalis*, *A. lateralis*, and *A. pseudosecessivus* are known only from shorebirds. The long-tailed jaeger from which *A. borealis* was collected must have become infected soon after hatching, for the bird was still down-covered, with the primary feathers just appearing. The avian hosts of *A. borealis* are holarctic species, although the red-throated pipit has been found only rarely to breed in westernmost Alaska.

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