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STUDIES ON THE HELMINTH FAUNA OF ALASKA. XLIII. *STRIGEA MACROPHARYNX* SP. N., A TREMATODE PARASITE OF *FALCO RUSTICOLUS* L.

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ABSTRACT: *Strigea macropharynx* sp. n. (Trematoda: Strigeata, Strigeidae), an intestinal parasite of *Falco rusticolus* L., is described. Falconiformes harbor two species of *Strigea* (*S. falconis* Szidat, 1928, and *S. macroconophora* Dubois and Rausch, 1950) with vitellaria terminating near the copulatory bursa. Both differ from the new species in having a pharynx that is smaller than or subequal to the buccal sucker, as well as in other details. In *S. elegans* Chandler and Rausch, 1947, a parasite of Strigiformes, the eggs are larger, the testes of different form, and the vitellaria extend significantly farther into the region of the copulatory bursa. The very intimate contact existing between the tribocytic organ of *S. macropharynx* and the intestinal mucosa of the host suggests that extracorporeal digestion of host tissue takes place.

Twenty-six specimens of the trematode described herein were found among numerous neodiplostomes, *Neodiplostomum* (*Conodiplostomum*) *spathula banghami* Penrod, 1947, in the small intestine of a gyrfalcon, *Falco rusticolus* L. This bird (No. 31001), an adult female, was collected on 19 April 1964, at its nest in upper Keruktaġiak Creek, about 18 miles northwest of Chandler Lake, central Brooks Range, Alaska. The intestine was immediately removed and opened in order to prevent degenerative changes in the helminths. Because of severe cold, the material could not be fixed until some hours later, at which time some of the trematodes nevertheless could be preserved in situ.

Strigea macropharynx sp. n.

(Figs. 1 and 2)

(All measurements in microns unless otherwise indicated; averages in parentheses)

Diagnosis

Length of body 0.79 to 2.11 mm (avg 1.98). Anterior segment utricular to pyriform, more or less arched (curved) and convex dorsally, longer than wide, and narrower than posterior segment, 0.45 to 0.70 mm (avg 0.59) in length and 0.32 to 0.48 mm (avg 0.40) in width. Posterior segment cylindrical, with maximum width at level of testes, 1.27 to 1.54 mm (avg 1.39) in length and 0.38 to 0.60 mm (avg 0.45) in width; copulatory bursa, delimited by constriction or diminution in diameter of body, provided with moderately developed muscular ring ("Ringnapf"). Dimensions of terminal buccal sucker 100 to 140 by 105 to 140. Pharynx ovoid, 135 to 165 by 110 to 145,

much larger and more muscular than latter. Ventral sucker 195 to 245 by 150 to 220. Cucumiform proteolytic gland, 150 to 210 by 70 to 105, situated at base of anterior segment, oriented dorso-ventrally or obliquely in direction of ventral sucker, sometimes tangent to latter. Ovary reniform, at dorsal hilum, 125 to 180 by 100 to 135, situated between 34/100 and 45/100 (avg 41/100) of posterior segment. Laurer's canal present. Testes coarsely lobed, anterior testis 200 to 250 by 250 to 380; posterior, 200 to 310 by 270 to 390. Seminal vesicle posttesticular and dorsal. Vitellaria of anterior segment concentrated in lobes of tribocytic organ, extending in latter to middle or to anterior margin of ventral sucker, and diffusing beyond into dorsal, preacetabular mass; follicles much more abundant in posterior segment, chiefly ventral and extending to level of anteroventral margin of copulatory bursa. Vitelline reservoir and Mehlis' gland intertesticular. Hermaphroditic canal cylindrical, muscular, from 210 to 260 in length, with walls 10 to 18 thick; opening subterminal, slightly dorsal, near summit of genital cone, latter 85 to 120 in diameter when exerted. Genital atrium 135 to 170 in depth. From 16 to 50 eggs present, with average dimensions of 105 by 60.

Host: *Falco rusticolus* L.

Habitat: Small intestine.

Type locality: Head of Keruktaġiak Creek (lat 68°22' N, long 150°59' W), central Brooks Range, Alaska.

Type: In the collection of the senior author, Zoological Institute, University of Neuchâtel.

Paratypes: USNM Helm. Coll. No. 60891.

DISCUSSION

Strigea macropharynx sp. n. is characterized by the large size of its very muscular pharynx [ratio of lengths of pharynx/anterior segment = 0.20 to 0.30 (avg 0.26)], and by the presence of a long, cylindrical hermaphroditic

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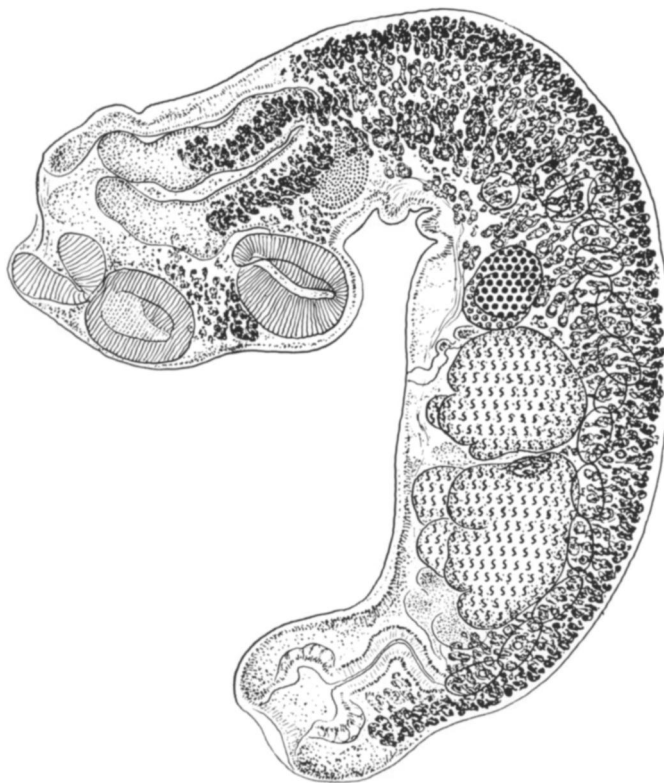


FIGURE 1. *Strigea macropharynx* sp. n., from *Falco rusticolus* L. Type specimen, length 2.11 mm.

canal with muscular walls bordered externally by small, probably prostatic, cells. This canal does not emerge at the summit of the genital cone, but nearby on the dorsal surface; its opening is therefore subterminal.

Strigea macropharynx may be compared with *S. falconis* Szidat, 1928 (a cosmopolitan species) and *S. macroconophora* Dubois and

Rausch, 1950 (North America), both occurring in Falconiformes, and both with vitellaria terminating near the copulatory bursa, and with *S. elegans* Chandler and Rausch, 1947, a parasite of Strigiformes (North America). In these three species, the pharynx is smaller than the buccal sucker or subequal to it.

S. falconis is of larger size (up to 5.25 mm

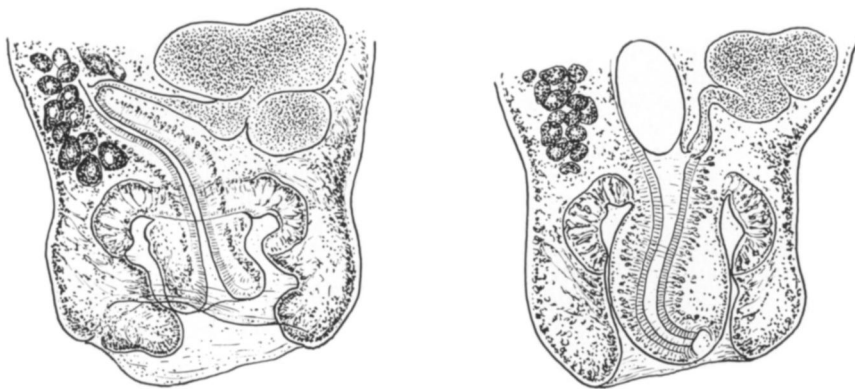


FIGURE 2. *S. macropharynx*. Details of posterior end of two specimens.

long) and has a distinctly delimited copulatory bursa of different structure (Szidat, 1929; Dubois, 1938).

S. macroconophora is well characterized by the size of the genital cone (0.34 to 0.66 by 0.40 to 0.51 mm) (Dubois and Rausch, 1950a).

S. elegans is distinguished by the large dimensions of the eggs (115 to 125 by 65 to 75 μ) and by the form of the testes (see Chandler and Rausch, 1947, fig. 2; Dubois and Rausch, 1950b, fig. 9; Pearson, 1959, fig. 1); the vitellaria penetrate ventrally into the wall of the copulatory bursa to the level of the excretory pore, or reach nearly the end of the body.

At the time of fixation, some individuals of *S. macropharynx* were still attached to the intestinal mucosa of the host. The removal of such specimens left relatively deep crater-like cavities, as a result of tearing away the mucosal tissue enveloped by the tribocytic organ. In serial sections of trematodes fixed in situ a particularly intimate contact was noted between the tribocytic organ and the intestinal mucosa (Fig. 3). This finding supports the hypothesis that extracorporeal digestion of mucosal cells takes place, as observed by Lee (1962) for *Diplostomum phoxini* (Faust, 1918), in the intestine of ducklings, and by Erasmus and Öhman (1963) in the case of *Cyathocotyle bushiensis* Khan, 1962, in the intestine of ducks. Although the material from the gyrfalcon was not fixed promptly enough to prevent some degeneration of the mucosa, it could be determined from sections stained in hematoxylin-eosin that the trematodes evoked no local tissue reaction.

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FIGURE 3. Anterior end of *S. macropharynx*, in situ, showing intimate connection between tribocytic organ and host tissue. Tissue section stained with Alcian blue-PAS. Scale has value of 250 μ .

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