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***Davainea lagopodis* sp. nov. (Cestoda; Davaineidae) from Grouse (Tetraonidae)**
(Studies on the helminth fauna of Alaska, XLVI)

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Cestodes of the genus *Davainea* Blanchard 1891, from grouse in various Eurasian and North American regions have been identified as *D. tetraoensis* Fuhrmann 1919, or less frequently as *D. proglottina* (Davaine 1860). Those from ptarmigan (*Lagopus* spp.) in Alaska, resembling *D. tetraoensis* in some details but having only a single row of rostellar hooks and fewer testes, were earlier reported as *D. proglottina* by Babero (1953). The study of additional material from grouse from Alaska indicates that this cestode is specifically distinct from the two species mentioned. It is described here as new.

Materials and Methods

The infected spruce grouse, *Canachites canadensis* (Linnaeus) (1), was collected at Wasilla, south-central Alaska, July, 1954; the rock ptarmigan, *Lagopus mutus* (Montin) (1), at Tulugak Lake, central Brooks Range, May, 1949; the willow ptarmigan, *Lagopus lagopus* (Linnaeus) (1), at the village of Atkasuk, on the Meade River, arctic Alaska, June, 1963; (1) in the vicinity of Nabesna, Wrangell Mountains, southern Alaska, August, 1966; and (3) (obtained by L. M. Shults) in the Kenai Mountains above Skilak Lake, September, 1966.

In most of the birds listed, less than 100 specimens of the cestodes were present. Massive infections, comprised of ca 4000 to 5000 individuals, were found in the willow ptarmigan from the Kenai Peninsula.

The cestodes were stained entire in Semichon's acetic carmine, Ehrlich's acid hematoxylin, and for special purposes, in a 1 per cent aqueous solution of methyl green-pyronin. Characteristics of the hooks on the rostellum and suckers were determined from scolices mounted separately and from wet preparations of material fixed in formalin.

Davainea lagopodis sp. nov.

Figs. 1—3

(All measurements in millimeters)

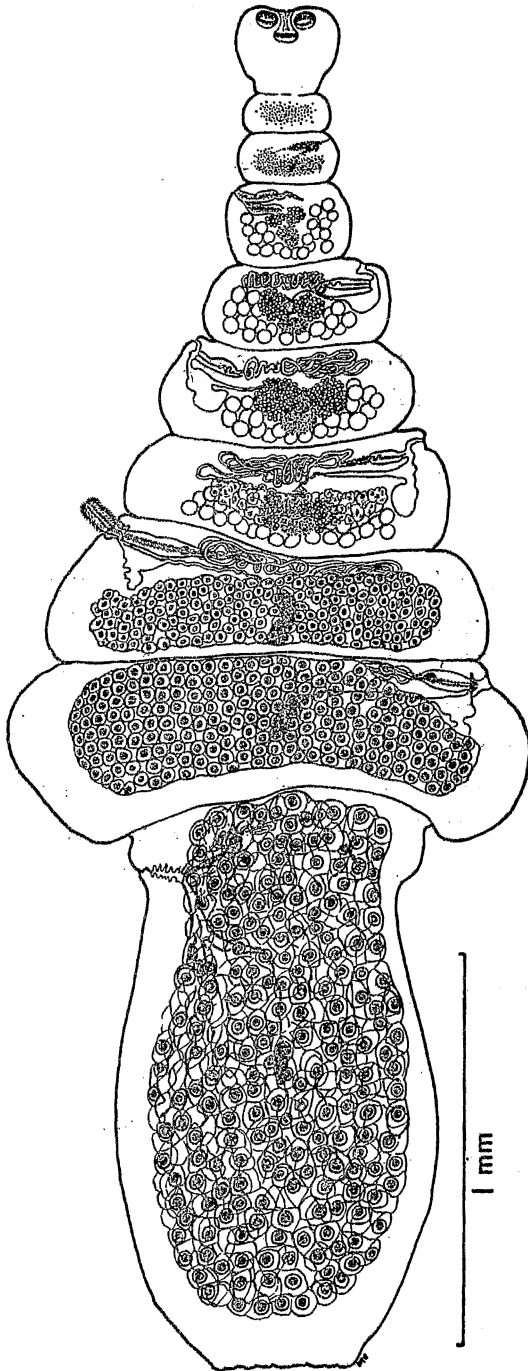


Fig. 1. Entire strobila of *Davainea lagopodis* sp. nov.

Diagnosis: Strobila 1.5 to 3.6 long, comprised of 6 to 9 (usually 7) segments; maximum width, 0.720 to 1.3, attained in penultimate segment. Strobilar margins slightly serrate. All but last (gravid) segments wider than long, with length width ratio 1 : 3 to 1 : 4; gravid segment longer than wide, with length width ratio 1.2 : 1 to 1.9 : 1. Gravid segment often equal in size to remainder of strobila. In living and preserved material, gravid segment covered by yellow-colored, longitudinally striated tegument which is stained by methyl green and carmine, but little, if at all, by hematoxylin. Scolex 0.144 to 0.250 wide by 0.158 to 0.200 long. Rostellum about 0.050 long by 0.122 to 0.140 wide, and provided with 64 to 103 (av. 81) hooks, 0.007 to 0.010 long, and arranged in single, somewhat irregular row. Suckers 0.043 to 0.055 in diameter, armed by circle of hooklets forming zone about 0.018 wide. Long-bladed hooklets of 3 types, measuring about 0.004, 0.006, and 0.010, respectively. Neck short, usually less than 0.100. Genital pores regularly alternate, in anterior third of segment. Genital Anlagen visible in second or third segments; third or fourth segment mature. Elongate cirrus sac, 0.160 to 0.230 long by 0.074 to 0.100 in diameter, situated in anterior third of segment, extending mediad across about 1/3 of width of mature segment. Robust cirrus 0.185 to 0.220 long by about 0.040 in diameter when fully extended; lumen of cirrus about 0.007 in diameter. Extended

cirrus constricted at base and attenuated toward tip, and covered by thickly set, slender spines about 0.008 long. Vas deferens much coiled, extending from proximal end of cirrus sac mediad beyond midline of segment. Testes subspherical to spherical, 20 to 28 in number (av. for 50 segments: 24; mode: 23), situated dorsally in posterior half of segment; diameter of testes in mature segments 0.060 to 0.108. Distal portion of vagina forms inflated vestibule around proximal portion of common genital duct and surrounding opening of cirrus sac; vagina narrows immediately posterior

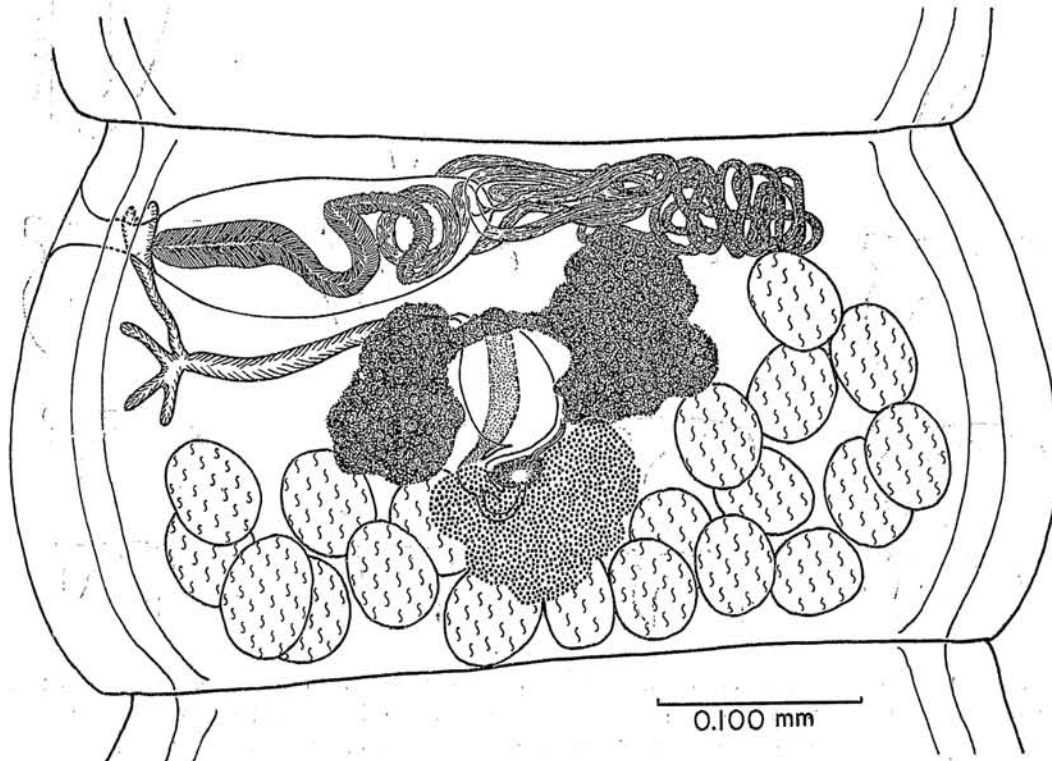


Fig. 2. Mature segment of *Davainea lagopodis* sp. nov.

to opening of cirrus sac, then dilates to form large diverticulum situated postero-ventral to cirrus sac. Vaginal diverticulum variable in size and shape, attaining maximum length of about 0.074. From medial side of diverticulum, vagina extending mediad, forming ovoid to subspherical seminal receptacle situated ventrally between ovarian lobes. Diverticulum and vagina nearly to seminal receptacle lined by thin spines or bristles. Penetration of vaginal diverticulum by cirrus occasionally observed in post-mature segments. Seminal receptacle 0.044 to 0.090 in greatest diameter. Posterior to seminal receptacle, seminal duct, oviduct (extending in dorsal plane posteriad from ovarian isthmus), and duct from vitelline gland joining to form enlargement from which short duct extending to Mehlis' gland. Latter, about 0.045 in diameter, situated dorsally in anterior concavity of vitelline gland. Uterine duct extending anteriad and ventrad from Mehlis' gland. Vitelline gland ovoid to

reniform, 0.070 to 0.110 wide, situated ventrally on midline posterior to ovary. Bilobed ovary situated ventrally and transversely near middle of segment; ovarian lobes about 0.090 to 0.100 wide, with aporal lobe frequently larger. Uterus appears ventrally as rounded cavities in parenchyma. Gravid segment containing irregular

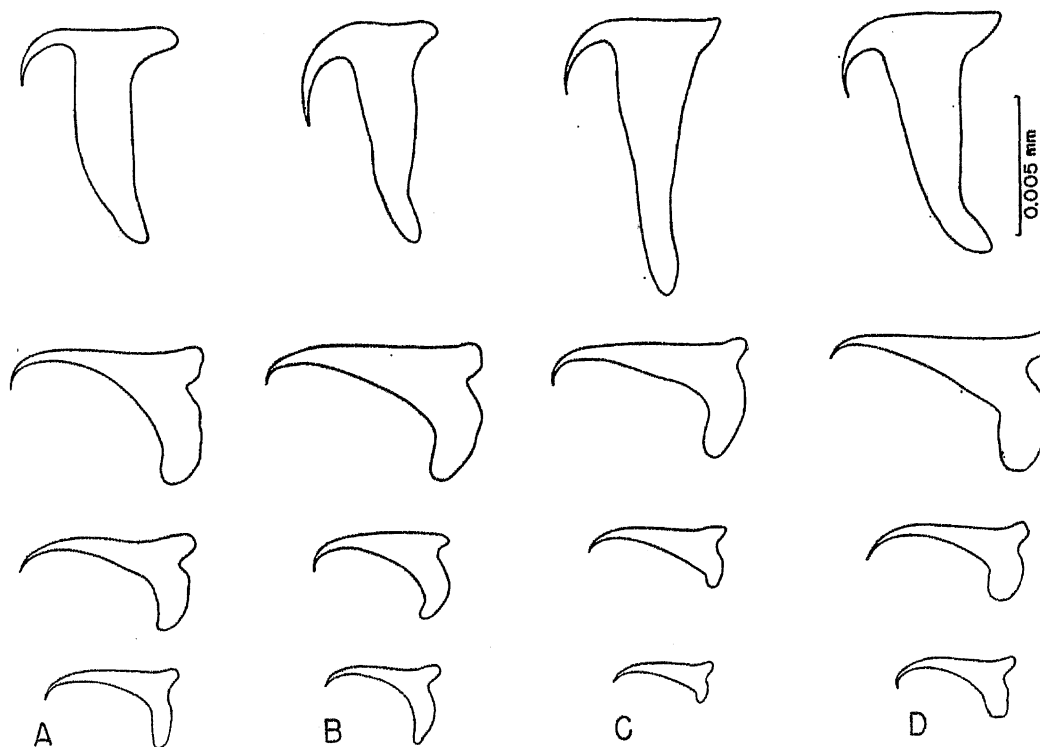


Fig. 3. Rostellar hooks (top row) and hooks from suckers of *Davainea lagopodis* sp. nov.: A — Willow ptarmigan (paratype); B — Willow ptarmigan, Kenai Peninsula; C — Rock ptarmigan, central Brooks Range; D — Spruce grouse, Wasilla (southern Alaska).

polygonal chambers, each with single egg. Cirrus sac, vagina, vestige of seminal receptacle, and uterine duct persist in gravid segment. Eggs subspherical to spherical, 0.028 to 0.036 in diameter (av. 0.032). Embryo 0.019 to 0.023 in diameter; embryonic hooks about 0.008 long.

Type host: Willow ptarmigan, *Lagopus lagopus* (Linnaeus) (No. 29850).

Habitat: Small intestine of host.

Type locality: Village of Atkasuk (Meade River), arctic Alaska.

Type specimen: Helminthological collection of the United States National Museum, No. 71157.

Discussion

Comparison of species of *Davainea* is difficult because of the lack of sufficiently detailed descriptions of material from different hosts and geographic regions. The

possible diagnostic value of the shape of the rostellar hooks cannot be assessed at present, nor have limits of normal morphological variation been determined for the described species. The material considered in the present paper was relatively uniform morphologically. The strobilae were similar in proportions and, in general, in size; only the specimens from the rock ptarmigan were consistently smaller, resembling in size the smaller specimens from willow ptarmigan. Examination of intact rows of rostellar hooks on compressed scolices (wet mounts) under oil immersion disclosed a considerable range in the number of hooks. Some variation was noted both in shape and in size of the rostellar hooks (Fig. 3). The hooks of the rostellum comprised a single, although slightly irregular row. Variation in number of testes and in dimensions of other organs was not unusual in degree.

D. lagopodis sp. nov. resembles *D. tetraoensis* most closely in morphological characteristics, but can be distinguished by the form of its strobila (pre-gravid segments all wider than long; gravid segment usually longer than wide, often equaling remainder of strobila in size), by its smaller number of rostellar hooks (120 to 130 in *D. tetraoensis*), by having rostellar hooks arranged in a single row, and by differences in proportions of other organs.

Compared with descriptions of *D. proglottina* (Fuhrmann 1919, Schmelz 1941, Artiukh 1966), *D. lagopodis* differs in having a larger number of segments, a larger number of testes, and larger rostellar hooks.

The geographic distribution of *D. lagopodis* in North America is unknown. Some poorly preserved specimens from a spruce grouse collected by me in the Duck Mountain region of southern Manitoba, Canada, in September, 1947, seem referable to this species. Both *D. lagopodis* and *D. tetraoensis* may occur in Eurasia. The cestodes from grouse in the Gorkov Oblast', identified as *D. tetraoensis* by Oliger (1940) may represent *D. lagopodis*.

References

- А р т ю х Е. С. (1966): Даваинеаты — ленточные гельминты диких и домашних животных. Основы цестодологии, Т. 6, Акад. Наук СССР, Москва. 511 стр. — О л и г е р И. М. (1940): Паразитофауна рябчика (*Tetrastes bonasia volgensis* But.) на севере Горьковской области. Ученые записки ЛГУ, № 59. стр. 103—124. — В а б е р о, В. В. (1953): Studies on the helminth fauna of Alaska. XVI. A survey of the helminth parasites of ptarmigan (*Lagopus* spp.). J. Parasit. 39:538—546. — F u h r m a n n O. (1919): Notes helminthologiques suisses. II. Rev. Suisse Zool. 27:353—376. — S c h m e l z, O. (1941): Quelques cestodes nouveaux d'oiseaux d'Asie. Rev. Suisse Zool. 48:143—199.

Davainea lagopodis sp. nov. (Cestoda; Davaineidae) из *Lagopus lagopus*

Резюме

Описывается новый вид цестоды *Davainea lagopodis* sp. nov., который очень распространен у *Lagopus lagopus* на Аляске. Новый вид очень отличается от родственного вида *D. tetraoensis* Fuhrmann 1919. Отличается формой стробилы, небольшим количеством ростелярных крючков, расположенных в одном ряду, и разной величиной половых органов. От *D. proglottina* отличается большим количеством проглотид, а так же большим количеством семенников и значительной длиной ростелярных крючков.

Р. Л. Пауш

Davainea lagopodis sp. nov. (Cestoda; Davaineidae) aus dem Schneehuhn (Tetraonidae)

Zusammenfassung

Beschrieben wird eine neue Cestodenart, *Davainea lagopodis* sp. nov., die in Hühnervögel in Alaska weit verbreitet ist. Die neue Art unterscheidet sich von der naheverwandten *D. tetraoensis* Fuhrmann, 1919, durch die Form der Strobila, durch die kleineren Anzahl der Rostellarhaken, die in einer Reihe sind, und durch verschiedene Grössenverhältnisse der Geschlechtsorganen; von *D. proglottina* (Davaine, 1860) durch die grössere Anzahl der Proglottiden, durch die grössere Anzahl der Hoden, und durch die grössere Länge der Rostellarhaken.

R. L. Rausch