

CAPILLARIIDS (NEMATODA: CAPILLARIIDAE) FROM PASSERIFORM BIRDS OF NEPAL*

V. BARUŠ and M. DANIEL

Institute of Parasitology, Czechoslovak Academy of Sciences, Prague

Abstract. A total of 83 hosts of the order Passeriformes from Nepal were examined for nematodes. Nine of them were found to be infected with 4 nematode species, *Capillaria erilis*, *C. oropanctata*, *Capillaria* sp. and *Thamnix rigidula*. The last species is redescribed in detail. Three of the definitive hosts are new for the above-mentioned nematode species and this is the first record from Nepal.

During the parasitological and zoological investigations of the Czechoslovak expedition to the region of Makalu mountain (Great Himalaya, East Nepal), besides other animals also birds were captured and examined for parasites. The birds of the order Passeriformes are dealt with in the present paper.

MATERIAL

A total of 83 birds of the order Passeriformes were examined. Nine of them, belonging to the species *Prunella collaris nipalensis* (Lyth, 1843) (family Prunellidae), *Chaimarrornis leucocephalus* (Vigors, 1831) and *Muscicapa hodgsoni* (Verreaux, 1871) (both of the family Muscicapidae) harboured the nematodes. The captures were carried out in spring 1973 before the arrival of the summer monsoon, in the Barun Khola valley. This river is the right tributary of the river Arun (estuary 87°22' E, 27°42' N) and forms an axis of the valley reaching up to the Nepal–Tibet border between Mount Everest and Makalu.

A brief characteristic of the localities

1. Phematan, 3450 m — a turfy terrace of the Barun Khola River.
2. Yamle Khalka, 3600 m — a cirque depression, whose bottom is covered with river terraces. Around the depression there is a humid coniferous forest with rhododendrons.
3. Tadosa, 3900 m — a gorge connecting two differently formed layers of the Barun valley. The upper timberline with sporadic islets of dwarfed firs and bushy rhododendrons.
4. Shershon, 4500 m — a lacustrine terrace at the place where the Upper Barun glacier opens into the Barun valley. A typical zone of Alpine meadows.
5. The surroundings of the front of the Upper Barun glacier (4900 m). The birds were caught on huge fossil moraines; the bottom of the valley is filled with a lacustrine terrace. The elements of the Alpine meadows zone are disappearing at this height.

*) Scientific results of the Czechoslovak expeditions to the Hindu Kush and Himalaya. Communication No. 22.

RESULTS

1. *Capillaria oopunctata* (Linstow, 1873)

Fig. 1 A—D

Hosts: *Prunella collaris nipalensis*, *Chaimarrornis leucocephalus*. Location: small intestine. Locality: Yanle Khalka, Tadosa, the front of the Upper Barun glacier.

This species was recovered from 4 *P. collaris nipalensis* and 1 *C. leucocephalus* (intensity of infection 1—4 nematodes per host). The material comprised 6 males and 6 females.

C. oopunctata is a characteristic parasite of birds of the families Turdidae and Sturnidae with Holarctic distribution (reaching also to Neotropic region, Antillean subregion — Baruš 1969). Our specimens conform in the morphology and measurements to the data given by Wakelin (1966) and Jögis (1974). A characteristic feature of this species is a vulval appendage, measuring 0.12—0.15 mm in length in our material. The eggs have a markedly punctate surface and measure 0.060—0.065 × 0.029—0.032 mm. The spicule is 0.72—1.18 mm long. Like in the specimens described by Wakelin (1966), the distal end of male spicule is dis-

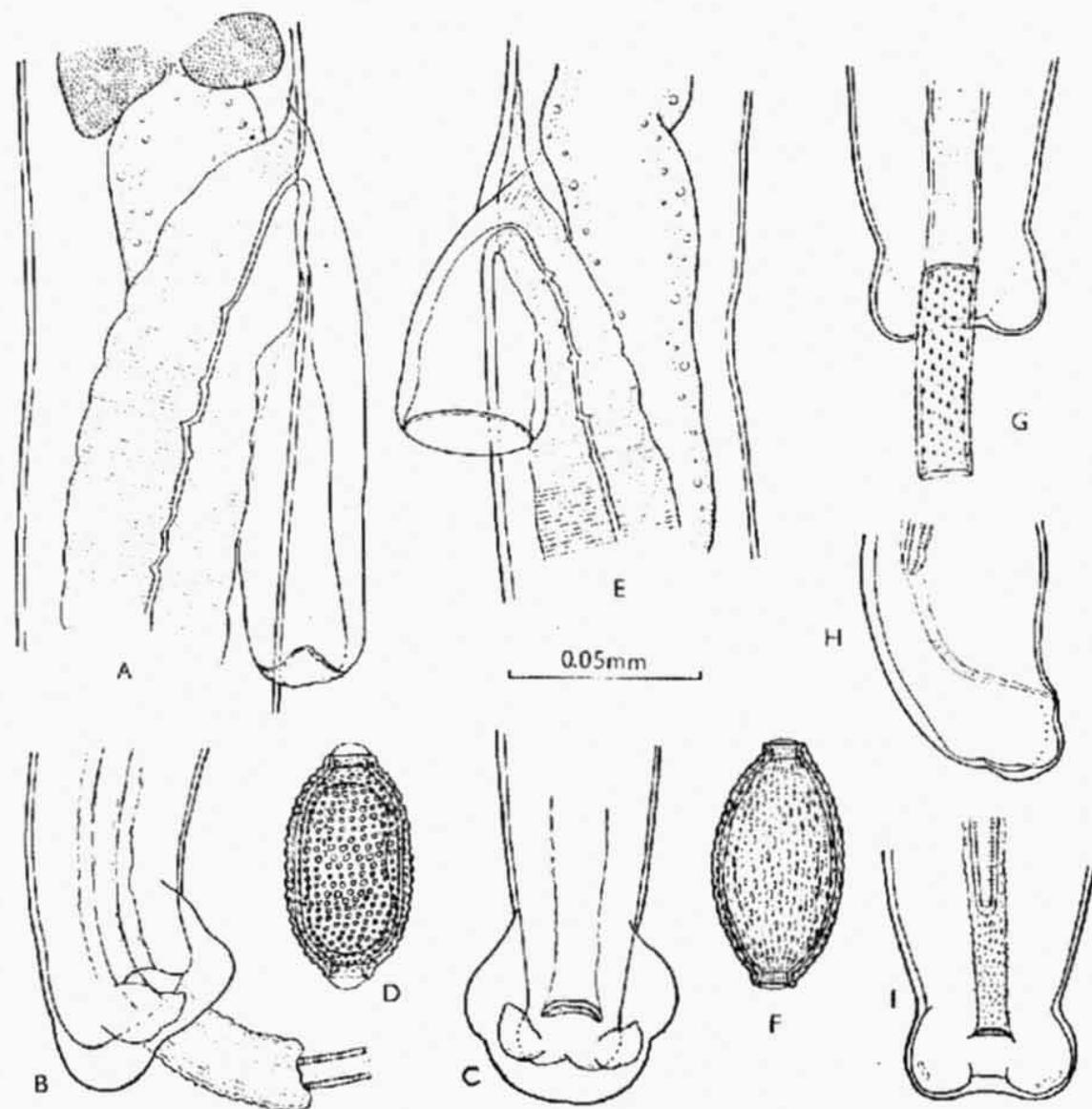


Fig. 1. A-D — *Capillaria oopunctata* (Linstow, 1873); E, F — *C. exilis* (Dujardin, 1845); G-I — *Thominx rigidula* (Dujardin, 1845); A, E — vulval appendages; B, C — pseudobursa (lateral and ventral views); D, F — eggs; G, H, I — posterior end of male body (ventral and lateral views). Original.

tinctly rounded. The hook-like end of spicule mentioned by Boyd (1951) was observed in two males. In our opinion, it is an artifact made during the fixation of specimens with feebly sclerotized distal end of spicule. This is the first record from 2 new definitive hosts from Nepal.

2. *Capillaria exilis* (Dujardin, 1845)

Fig. 1 E, F

Hosts: *Prunella collaris nivalis*, *Chaimarrornis leucocephalus*. Location: small intestine. Locality: Yanle Khalka, the front of the Upper Barun glacier.

One female specimen (slightly damaged) was found in each of the above-mentioned hosts.

Our specimens were identified as *C. exilis* on the basis of their characteristic morphological features, as the shape of vulval appendage (0.058 mm long), surface structure of eggs (longitudinal striae) and their size (0.060—0.065 × 0.031—0.033 mm). A detailed redescription of this taxon was published by Wakelin (1966). *C. exilis* is a characteristic parasite of birds of the families Turdidae and Sturnidae. Wakelin (1967) found it also in the hosts of the families Ploceidae and Anatidae. It has been hitherto reported from Europe and North America. Our specimens were found for the first time in Nepal in two new definitive hosts.

3. *Capillaria* sp.

Fig. 2

Host: *Muscicapa hodgsoni*. Location: small intestine. Locality: Phematan.

A single female specimen and a fragment of the posterior part of male were found in one host. According to the morphology, the specimens are closely related to the species *Capillaria obsignata* Madsen, 1945 (= syn. *C. anseris* Madsen, 1945), *C. belopolskiae* Jögis, 1968, *C. perezi* Freitas et Lent, 1937, *C. gigantotecta* Lubimova, 1947, *C. longistriata* Walton, 1923 and *C. saurotherae* Baruš et Lorenzo Hernández, 1970. The length of spicules varies from 0.8 to 2.0 mm in these species. In our material, the spicule was shorter (0.73 mm). Owing to unsufficient material available we were unable to evaluate the variability of characters and to make an exact species determination. The specimens described here are most closely related in the morphology to the species *C. obsignata*, which is a common parasite of birds of the orders Galliformes and Columbiformes. However, it was rarely recorded also from the hosts of the order Passeriformes, as mentioned by Wakelin (1965) and Rosický et al. (1974).

Description: The fragment of the posterior portion of male measures 1.5 mm in length and 0.061 mm in maximum width. The posterior end of body makes a membranous spherical pseudobursa, supported from each side by a papilla. The pseudobursa is 0.038 mm wide and 0.027 mm high. The cloaca is situated at the distance of 0.019 mm from the posterior end of body. The spicule is 0.73 mm long and circular in section. The proximal part of the spicule sheath measures 0.016 mm, middle part 0.008 mm and distal, markedly rounded part 0.005 mm in width. The spicule sheath

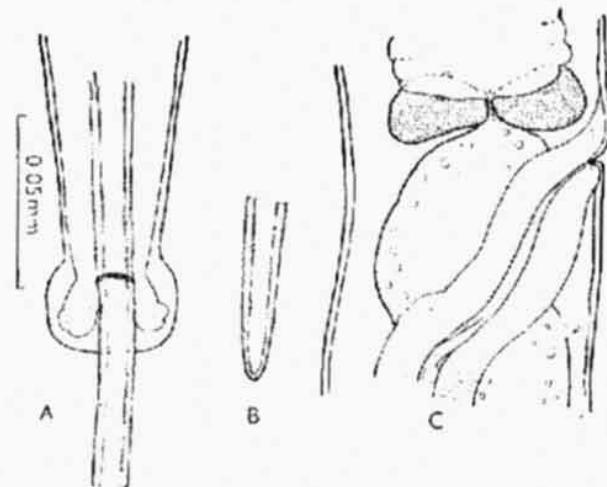


Fig. 2. *Capillaria* sp. A — pseudobursa (ventral view); B — distal end of spicule; C — vulva region (lateral view). Original.

is without spines and measures 0.54 mm in length. It is not evaginated and therefore bears distinct transverse folds.

The female body measures 4.83 mm in length and 0.058 mm in maximum width. Total length of the oesophagus is 2.94 mm. The ratio of the anterior and posterior portions of body is 1:0.64. The vulva is situated behind the oesophagus at the distance of 0.065 mm. It has rounded and not salient margins. The eggs have a distinctly granulated surface and measure $0.050-0.061 \times 0.026-0.027$ mm. The anus is situated at the distance of 0.014 mm from the posterior end of the body.

4. *Thominx rigidula* (Dujardin, 1845) comb. n.

Figs. 1 G-I, 3

Host: *Prunella collaris nivalis*. Location: large intestine. Locality: Siershon, the front of the Upper Barun glacier.

Two definitive hosts harboured 25 specimens of this species (11 males and 14 females partly in fragments).

T. rigidula was described by Dujardin (1845) on the basis of specimens recovered from *Prunella modularis* from France (Rennes). No further records are available.

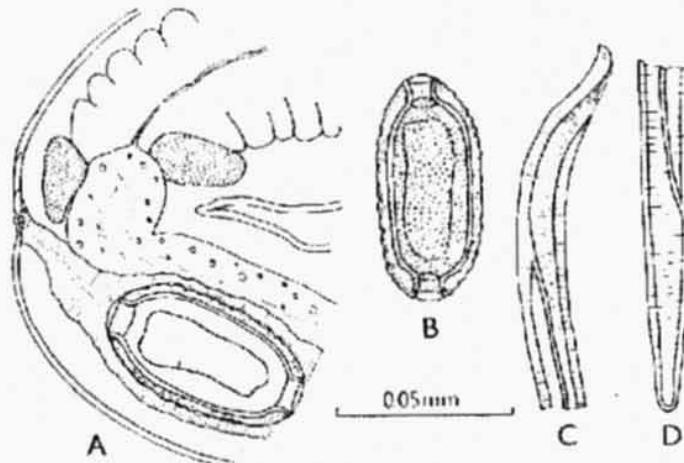


Fig. 3. *Thominx rigidula* (Dujardin, 1845). A — vulva region (lateral view); B — egg; C — proximal end of spicule (lateral view); D — distal end of spicule (ventral view). Original.

The original data on the morphology and measurements of this species were used also by later authors in their monographs: Diesing (1851), Stossich (1890), Travassos (1915), Madsen (1945), López-Neyra (1947) and Skryabin et al. (1957). In the determination of our material we considered the fact that two species of capillariids were described from the hosts of the family Prunellidae. The species *C. longifilla* (Dujardin, 1845) was redescribed in detail by Wakelin (1967) and Baruš (1970). Detailed data on the other species, *C. rigidula*, are still lacking. The identification of our material as *C. rigidula* was based on the length and shape of the spicule (according to Dujardin 1.05 mm long) and length and surface structure of eggs (according to Dujardin they are 0.057 mm long and have a granulated surface). Our specimens differ from the original description in markedly smaller length of body and ratio of the anterior and posterior parts of body. Small spines were observed on the spicule sheath of our specimens. This character was not recorded by Dujardin (1845). We suppose that in spite of the mentioned differences our material is identical with *C. rigidula*. With regard to the presence of spines on the spicule sheath we transfer it to the genus *Thominx* Dujardin, 1845.

Of the palearctic species of capillariids parasitizing passeriform birds the most closely related to *T. rigidula* is *T. similis* (Kowalewski, 1904). The latter species was redescribed in detail by Wakelin (1966) and Jögis (1968). *T. similis* has a distinctly shorter spicule (according to the above authors 0.42—0.56 mm) and the surface of eggs has a fine lattice pattern with fine striae at each pole. In *T. rigidula* the surface of eggs is distinctly granulated, similarly as in *C. ovoipunctata*. Of other species, also *C. angusta* (Dujardin, 1845) and *Thominx manica* Dujardin, 1845 may be considered, but according to the original descriptions, the former has a longer spicule (1.4 mm) and larger eggs (0.055—0.061 mm) and the latter a distinctly shorter spicule (0.25 mm).

Description: The male body measures 5.77—6.42 mm in length and 0.051 to 0.060 mm in width at the level of the oesophagus. The head end is 0.017—0.021 mm wide. The total length of oesophagus is 2.18—2.62 mm. The ratio of the anterior to posterior portion of body is 1 : 1.3—1.4. The posterior end of body is rounded, measuring 0.032—0.036 mm in width in dorso-ventral position and bears a pair of lateral papillae, 0.020—0.023 mm high. The cloaca is situated at the distance of 0.012 to 0.019 mm from the end of the body. The spicule is well sclerotized, 0.93—1.11 mm long and triangular in section. Its proximal end measures 0.019—0.023 mm, middle part 0.016 mm and distal end 0.005—0.007 mm in width. The end of the spicule is markedly rounded. The evaginated part of the spicule sheath is 0.039—0.107 mm long. When it is 0.107 mm long, then its proximal portion (measuring 0.038 mm) is covered with fine spines 0.001 mm long and the remaining distal portion is smooth. The width of the evaginated spicule sheath is 0.016—0.020 mm.

The female measures 9.37—9.84 mm in length and 0.058—0.065 mm in maximum width at the level of vulva. The total length of oesophagus is 3.94—4.44 mm. The ratio of the anterior and posterior portions of body is 1 : 1.3—1.4. The vulva is situated behind the oesophagus at the distance of 0.014—0.023 mm. The margins of vulva are rounded, not salient or only slightly salient. The posterior end of body is rounded, the anus lies 0.014—0.022 mm from its tip. The eggs measure 0.050—0.058 × 0.025 to 0.027 mm. They have a distinctly granulated surface with fine striae at each pole.

КАПИЛЯРИДЫ (НЕМАТОДА: CAPILLARIIDAE) ВОРОБЫХ ПТИЦ НЕПАЛА

В. Баруш и М. Даниел

Резюме. При исследовании 83 птиц отряда Passeriformes из Непала обнаружены 4 вида нематод, *Capillaria exilis*, *C. ovoipunctata*, *Capillaria* sp. и *Thominx rigidula*. Дано подробное описание последнего. Три дефинитивных хозяина новы для приведенных видов нематод и это первая находка в Непале.

REFERENCES

BARUŠ V., Additional notes on nematodes parasitizing passeriform birds of Cuba. *Folia parasit.* (Praha) 16: 312, 1969.
—, *Capillaria longifilla* (Dujardin, 1845) from passeriform birds of Czechoslovakia. *Folia parasit.* (Praha) 17: 200, 1970.
BOYD E. M., A survey of parasitism in the starling, *Sturnus vulgaris* L., in North America. *J. Parasit.* 37: 56—84, 1951.
DIESING K. M., *Systema Helminthum* II. *Vindobonae*, pp. 1—588, 1851.
DUJARDIN M. F., *Histoire naturelle des Helminthes ou Vers intestinaux*. Paris, pp. 1 à 654, 1845.
JÖGIS V. A., New and rare nematodes of migratory birds of the Kurish spit. *Parazitologiya* (Leningrad) 2: 62—70, 1968. (In Russian.)
—, Nematodes of birds of the Kaliningrad region and Estonian SSR. *Parazitol. sbornik* (Leningrad) 26: 81—113, 1974. (In Russian.)
LÓPEZ-NEYRA C. R., Generos y especies nue-