

A SURVEY OF PARASITIC NEMATODES OF PICIFORM BIRDS IN CUBA

V. BARUŠ

Institute of Parasitology, Czechoslovak Academy of Sciences, Prague

Abstract. A total of 8 nematode species belonging to 6 families (*D. nasuta*, *M. centuri*, *G. nspiculata*, *S. travassosi*, *A. stoddardi*, *A. americana*, *D. serratospicula*, *Th. venusta*) were found in birds of the order Piciformes in Cuba. The species *Subulura travassosi* and *Thominx venusta* are new for Cuba. The species *Dispharynx nasuta*, *Subulura travassosi* and *Thominx venusta* were found in 5 new hosts.

According to the checklist by García and Garrido (1965), birds of the order Piciformes from Cuba are represented by a total of 9 species and subspecies of the genera *Colaptes*, *Nesocoeleus*, *Centurus*, *Sphyrapicus*, *Xiphidiopicus* and *Campephilus*. The literature on parasitic nematodes of piciform hosts contains only several data relating to findings of 4 species of parasitic worms in this bird order (Baruš 1966; Baruš and Sonin 1968). The present paper surveying all earlier findings has been completed with data obtained from our material collected in 1966—1969. This offers additional information on the zoogeography and morphology of nematodes parasitizing hosts of the order Piciformes in the neotropical region.

MATERIAL

A total of 89 hosts of the order Piciformes belonging to 7 species and subspecies have been examined at autopsy: *Colaptes auratus chrysocaulosus* (4/1);* *Centurus superciliaris superciliaris* (25/11); *C. superciliaris florentinai* (7/7); *C. superciliaris murceus* (6/2); *Sphyrapicus varius varius* (7/1); *Xiphidiopicus percussus percussus* (18/7); *X. percussus insulaepinorum* (12/1). Only two rare species—*Nesocoeleus fernandinae* and *Campephilus principalis bairdii*—have not been examined. The hosts were obtained and helminthologically examined during joint expeditions of the workers of the Biological Institute of the Cuban Academy of Sciences and of the Institute of Parasitology, Czechoslovak Academy of Sciences. We wish to express our sincere thanks to Dr. Orlando H. Garrido for identifying the definitive host species. In our collection of nematodes, we identified a total of 8 species belonging to 6 families.

RESULTS

1. *Dispharynx nasuta* (Rudolphi, 1819)

Host: *Sphyrapicus varius varius* L.—a new host; location: proventriculus; locality: Botanical gardens of Havana.

Of a total of 7 *S. v. varius* examined this species (a female) was found in one host.

*) Of the numerals in parentheses, the numerator refers to the number of hosts examined; the denominator to the number of positive hosts.

The geographical distribution of this nematode is cosmopolitan, its range of definitive hosts is very wide. Baruš and Garrido (1968) recorded findings of this nematode in passeriform birds (*Dendroica discolor*, *D. fusca*, *Pheucticus ludovicianus*, *Corvus nasicus*, *Quiscalus niger caribaeus*) and in the charadriiform bird (*Charadrius vociferus ternominatus*) in Cuba.

2. *Microtetrameres centuri* Baruš, 1966

Hosts: *Centurus superciliaris superciliaris* (Temminck), *C. superciliaris florentinoi* Garrido, *Xiphidiopicus percussus percussus* (Temminck); location: proventriculus; localities: Viñales, Soroa, La Quira (province Pinar del Río); Baracoa (province Oriente); Cayo Largo. Found in 4 of the 25 *C. s. superciliaris* examined (8—59 nematodes per host); in 4 of the 7 *C. s. florentinoi* (8—21 nematodes); in one of the 18 *X.p. percussus* (7 nematodes).

In addition to the hosts reported from Cuba, *M. centuri* was found by Ellis (1969 a, b) in the U.S.A. (Iowa) in *Sturnella magna* and *S. neglecta* (Passeriformes). This author studied in detail the life cycle of this nematode and demonstrated in experiments that nymphs of *Melanoplus* spp. (Orthoptera) are utilized as intermediate hosts.

3. *Geopetitia aspiculata* Webster, 1971

The first finding of nematodes of the genus *Geopetitia* Chabaud, 1951 in the neotropical region was reported by Baruš (1968). Nematodes were recovered from a Cuban endemite, the bird species *Dives atrovioleaceus* (d'Orbigny), belonging to the family Icteridae (Passeriformes). In view of the

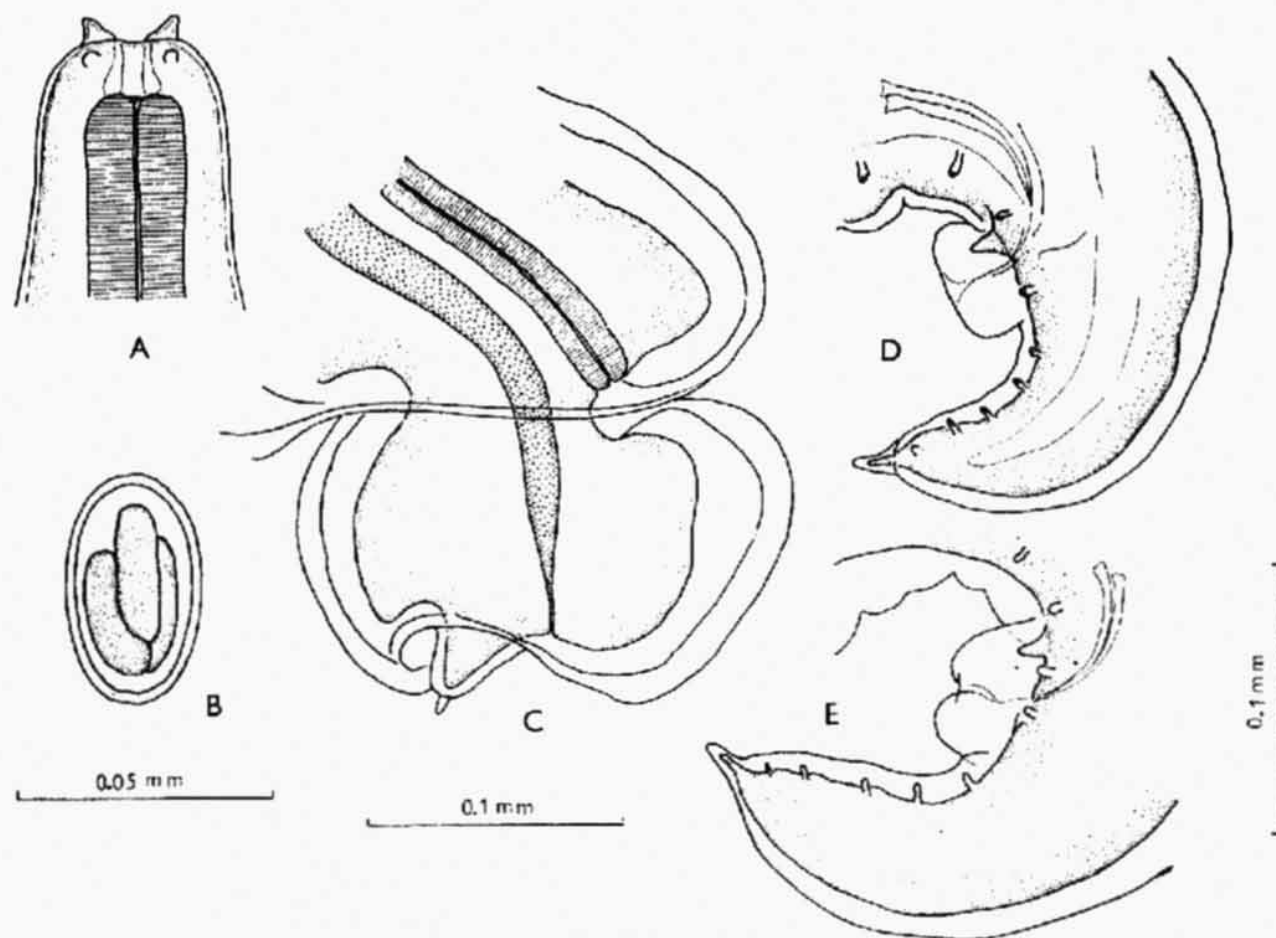


Fig. 1. *Geopetitia aspiculata* Webster, 1971 from the host *Xiphidiopicus percussus percussus* (A—D) and *Contopus caribaeus caribaeus* (E). A—anterior portion of male body (ventral view); B—egg; C—posterior end of female body (lateral view); D, E—posterior end of male body (lateral view).

small number of nematodes available, this species was arranged preliminarily to the species *G. madagascariensis* Chabaud, 1961. However, in spite of the small material, Baruš (1968) pointed out some differences in the topography of the caudal papillae of the males (a feature ascribed to variability) in the material from Cuba and Madagascar, in the definitive hosts (the typical host of *G. madagascariensis* is the bird *Nectarinia souimanga*, family Nectarinidae) and in the geographically different areas. Later, more material of nematodes of the genus *Geopetitia* was found in the endemites *Xiphidiopicus percussus percussus* (Picidae, Piciformes) and *Contopus caribaeus caribaeus* (Tyrannidae, Passeriformes). Upon examination, the topography of the caudal papillae was found to be constant in nematodes of our material, confirming the difference between the forms in the birds from Madagascar and Cuba. This taxon has been described recently by Webster (1971). Hosts: *X. p. percussus* (Temminck), *Dives atrovirens* (d'Orbigny) and *C. caribaeus caribaeus* (d'Orbigny). Location: in cysts on the outer wall of the proventriculus. Locality: peninsula Guanahacabibes (province Pinar del Río).

Of the 18 *X. p. percussus* examined, this species was found in two birds (our material consisted only of fragments of 4 males and 1 female worm); of the *C. c. caribaeus* examined, this nematode species was found in one host (fragments of 6 males and 3 females); of the 12 *D. atrovirens* examined two were positive (one complete male, fragments of 12 males and 4 females).

Table 1. Measurements of the nematode *Geopetitia aspiculata* from material of various hosts

Hosts	<i>Xiphidiopicus percussus percussus</i>	<i>Contopus caribaeus caribaeus</i>	<i>Dives atrovirens</i>
Measurements of the male			
Body length	—	—	18.900
Length of buccal capsule	0.009—0.010	0.010—0.011	0.011
Width of buccal capsule	0.011—0.014	0.014	0.009—0.011
Length of muscular oesophagus	0.280—0.360	0.240—0.270	0.260—0.300
Length of glandular oesophagus	0.500—0.620	0.410—0.730	0.660—0.780
Nerve ring	0.100—0.120	0.100—0.140	0.170—0.210
Distance of cloaca	0.087—0.096	0.093—0.100	0.085—0.130
Measurements of the female			
Length of buccal capsule	0.010	0.009	0.015
Width of buccal capsule	0.010	0.015	0.012
Length of muscular oesophagus	0.490	0.220—0.360	0.350
Length of glandular oesophagus	1.460	0.800—1.090	1.170
Nerve ring	0.220	—	0.270
Distance of anus	0.051	0.051	0.081—0.110
Distance of vulva	0.150	0.250	0.340
	0.043—0.045		0.042—0.048
Size of eggs	×	0.047 × 0.025	×
	0.023—0.027		0.019—0.027

4. *Subulura travassosi* Barreto, 1918

Host: *Xiphidiopicus percussus percussus* (Temminck); location: large intestine; locality: Río Cañas (province Pinar del Río).

This species is known to parasitize numerous hosts of the order Piciformes in Brasil (see Barreto 1919). Díaz Ungría (1964) recorded it from Venezuela. In Cuba, we found one specimen of *X. p. percussus* (1 female) in one of the 18 hosts examined.

5. *Aproctella stoddardi* Cram, 1931

Host: *Xiphidiopicus percussus insulapinorum* Bangs.; location: body cavity; locality: La Vega (Isla de Pinos).

One female specimen was found in one of the 12 hosts examined.

Sonin and Baruš (1968) recorded this nematode species in 14 bird species of the orders Passeriformes, Strigiformes and Psittaciformes. According to Sonin (1968) the geographical distribution of this species covers mainly the neotropical zone (Brasil, Cuba, Mexico) and the nearctic zone (U.S.A., Canada).

6. *Diplotrriaena americana* Walton, 1927

Hosts: *Centurus superciliaris superciliaris* (Temminck); *C. s. florentinai* Garrido; location: air sacs, body cavity; localities: Sorel (province Pinar del Río); Topes de Colantes, Cayo Largo del Sur, Cayo Cantiles (province Las Villas); Baracoa (province Oriente).

Of a total of 25 *C. s. superciliaris* examined this species was found in 8 hosts (3—44 nematodes per host); of the 7 *C. s. florentinai* 4 were positive (5—25 nematodes per host).

Walton (1927) described this species from the host *Colaptes auratus* in the U.S.A. Later, this species was redescribed by Anderson (1959) from material obtained from the typical host of the same area. Sonin and Baruš (1968) recorded the finding of this species from Cuba.

7. *Diplotrriaena serratospicula* Wehr, 1934

Host: *Xiphidiopicus percussus percussus* (Temminck); location: air sacs and thoracic and abdominal cavity; localities: peninsula Guanahacabibes and Soroa (province Pinar del Río); Isabela de Sagua (province Santa Clara).

Of the 18 *X. p. percussus* examined this species was found in 3 hosts (4—12 nematodes per host).

Wehr (1934) published the original description of this species from material obtained from the host *Chryserpes striatus* from the Dominican Republic. The second finding of this species was recorded by Sonin and Baruš (1968) from Cuba.

8. *Thominx venusta* (Freitas et Mendonca, 1958)

Hosts: *Colaptes auratus chrysocaulosus* Gundlach, *Xiphidiopicus percussus percussus* (Temminck), *Centurus superciliaris superciliaris* (Temminck). (All these are new hosts.) Location: small intestine; locality: Baracoa (province Oriente); Soroa, La Quira (province Pinar del Río).

Of the 4 *C. auratus chrysocaulosus* examined this species was found in one of them (1 female), also in one of the 18 *X. percussus percussus* examined (5 nematodes); in 4 of the 25 *C. superciliaris superciliaris* examined (1—9 nematodes per host).

Four nematode species of the family Capillariidae are known from hosts of the order Piciformes. According to López-Neyra (1947), an unspined spicule sheath was found in 3 species (*C. picorum* Rudolphi, 1819; *C. leidyella* Travassos, 1915 and *C. longistriata* Walton, 1923). Spines on the spicule sheath are figured and described only in the original description of the species *C. venusta* Freitas et Mendonca, 1958, parasitizing hosts of the family Ramphastidae in Brasil. A detailed redescription of this species has been given by Freitas, Mendonca and Guimaraes (1959) from material obtained from the typical host and from two new hosts (*Ramphastos toco* and *R. vitellinus ariel*). With regard to the presence of spines on the spicule sheath this species has to be relisted

to the genus *Thominox* Dujardin, 1845. Ours is the first finding of this species in Cuba. The morphological features of our material from hosts of the family Picidae are in accord with those of the original description of the species. The spines on the spicule sheath are small and visible on the extended part of the sheath. This feature is indistinct in a completely retracted sheath. The description of our material from the new hosts has been added in order to complete information on the metrical variability of this species.

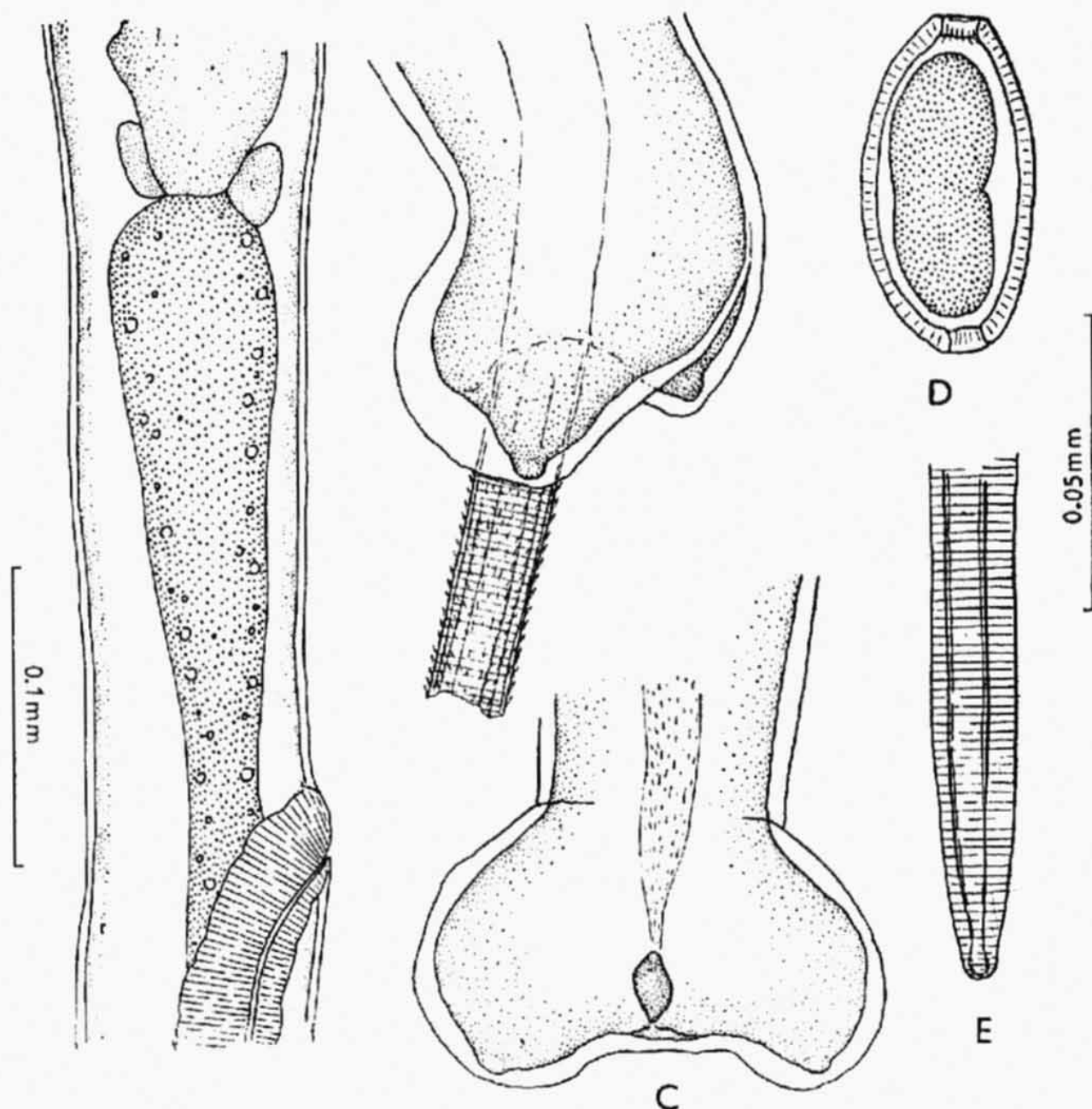


Fig. 2. *Thominox venusta* (Freitas et Mendonca, 1958) from the host *Centurus superciliaris superciliaris*. A—vulva area (lateral view); B—pseudobursa (lateral view); C—pseudobursa (ventral view); D—egg; E—distal spicule end.

Male: Overall length 17.16—20.00 mm, width at oesophagus level 0.055—0.062 mm. Muscular oesophagus 0.51—0.59 mm long. Overall length of oesophagus 7.56—7.95 mm. Nerve ring at 0.18—0.20 mm from anterior body end. Bacillary bands extending laterally along the body lines. The posterior end forms the typical pseudobursa supported from each side by one large papilla. Width of pseudobursa 0.076—0.080 mm,

height 0.040—0.045 mm. Length of spicule sheath 1.46—2.19 mm. The sheath is covered with fine spines. Spicule well pseudochitinized, 1.53—1.97 mm long. Width of its proximal end 0.015—0.017 mm; its distal end is rounded. 39—40 stichocytes. **Female:** Overall length 25.20—26.64 mm, width at oesophagus ending 0.080—0.10 mm. Length of muscular oesophagus 0.52—0.62 mm. Overall oesophagus length 8.66 to 9.04 mm. Number of stichocytes 39—42. Bacillary bands extending along the whole body on both lateral sides. Vulva at 0.20—0.39 mm from oesophagus end. Its edges are rounded and indistinct. Eggs measure 0.053—0.058 mm by 0.028—0.034 mm. The outer cover of the eggs bears a fine longitudinal striation. The posterior ending of the body rounded. Anus subterminal.

REFERENCES

- ANDERSON R. C., Preliminary revision of the genus *Diplotriana* Henry et Ozoux, 1909 (Diplotrianidae, Diplotrianinae). *Parassitologia* (Roma) 1: 195—307, 1959.
- BAIN O., CHABAUD A. G., Spirurides parasites d'oiseaux malgaches (troisième note). *Bull. Mus. Nat. Hist. Natur.* 37: 173—185, 1965.
- BARRETO A. L., Sobre as especies brasileiras da subfamilia Subulurinae Travassos, 1914. *Mem. Inst. Oswaldo Cruz* 1: 10—70, 1919.
- BARUŠ V., Nematodos de la familia Tropisuridae Yamaguti, 1961, parásitos de aves de Cuba. *Poeyana* (La Habana) 1—22, 1966.
- , Nematodos parásitos de aves en Cuba. Parte I. *Poeyana* (La Habana) 1—37, 1966.
- , Parasitic nematodes of birds of the family Icteridae (Passeriformes) in Cuba. *Folia parasit.* (Praga) 15: 131—146, 1968.
- , GARRIDO O. H., Nematodes parasitic in birds of the order Passeriformes in Cuba. *Folia parasit.* (Praga) 15: 147—160, 1968.
- CHABAUD A. G., Description d'un nématode parasite de mésange, *Geopetitia pari* n.gen., n.sp. intermédiaire entre Tetrameridae et Crassicaudidae, et hypothèses sur l'interprétation phylogénétique des helminthes de ce groupe. *Ann. Parasit. hum. et comp.* 26: 190—200, 1951.
- , Quatre spiruroides parasites d'oiseaux malgaches. *Mém. Inst. Sci. Madagascar* (ser. A) 14: 119—122, 1960.
- DÍAZ UNGRÍA C., Nematodes parásitos de aves Venezolanas, con descripción de una especie nueva. *Bol. Soc. Venezolana Cienc. Nat.* (Caracas) 25: 187—205, 1964.
- ELLIS CH. J., Life history of *Microtetrameres centuri* Baruš, 1966 (Nematoda: Tetrameridae) I. Juveniles. *J. Nematol.* 1: 84—93, 1969.
- , Life history of *Microtetrameres centuri* Baruš, 1966 (Nematoda: Tetrameridae). II. Adults. *Parasit.* 55: 713—719, 1969.
- FREITAS J. F. T., MENDONÇA J. M., Nova *Capillaria* parasita de aracari (Nematoda, Trichuroidea). *Atas da Soc. Biol. Rio Janeiro* (Julho/agosto) 39—40, 1958.
- , GUIMARÊS J. P., Sobre algamas espécies do genero *Capillaria* Zeder, 1800 parasitas de aves (Nematoda, Trichuroidea). *Mém. Inst. Oswaldo Cruz* 57: 17—31, 1959.
- GARCÍA F., GARRIDO O. H., Catalogo de la fauna Cubana. XIII. Catalogo de las aves de Cuba 1—2. *Mus. Felipe Poey, Cuba* (trabajos de divulgación) 27—28: 1—82, 1965.
- LÓPEZ—NEYRA C., Generos y especies nuevas o mal conocidas de Capillariinae. *Rev. Iber. Parasitol.* 7: 191—238, 1947.
- MAWSON P. M., Three species of the genus *Geopetitia* Chabaud (Nematoda: Spirurata) from Australian birds. *Parasitology* 56: 715—718, 1966.
- RASHEED S., The nematode parasites of the birds of Hyderabad (India). *Biologia* (Lahore) 6: 1—116, 1960.
- SONIN M. D., Osnovy nematologii XXI. (Filaria of animals and man and the diseases caused by them.) (2). *Publ. House Nauka Moskva* 1—390, 1968. (In Russian.)
- SUMILO R. P., (Round worms of Corvidae from Central Moldavia). *Izvest. Moldavskogo fil. AN SSSR* 81: 13—32, 1961. (In Russian.)
- , BORGARENKO L. F., New findings of nematodes of the genus *Geopetitia* Chabaud, 1951. *Helminthologia* (Moskva) 4: 464—478, 1962/1963.
- TRAVASSOS L., Sobre as especies brasileiras do genero *Capillaria* Zeder, 1800. *Mém. Inst. Oswaldo Cruz* 7: 146—171, 1915.
- VUYLSTEKE C., Nematodes parasites d'oiseaux. Exploration du Parc National Albert, Bruxelles (2e série) 17: 3—7, 1963.