

## RESEARCH NOTE

## Nematode Parasites of Brazilian Accipitrid and Falconid Birds (Falconiformes)

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This survey was scheduled to add recent data on nematode parasites of Brazilian hawks, in a study regarding avian helminths.

Sixty-five samples of nematodes recovered from Brazilian hawks between 1920 and 1955 in north, southeastern, and mid-eastern regions and deposited in the Helminthological Collection of the Oswaldo Cruz Institute (CHIOC) were studied. The number of samples according to each family of host species is:

ACCIPITRIDAE: 6 from *Accipiter bicolor pileatus* (Temminck); 1 from *Busarellus n. nigricollis* (Latham); 1 from *Buteo magnirostris magniplumis* (Bertoni); 12 from *Buteo m. magnirostris* (Gmelin); 4 from *Buteo magnirostris nattereri* (Sclater & Salvin); 3 from *Buteogallus u. urubitinga* (Gmelin); 2 from *Gampsonix s. swainsonii* (Vigors); 4 from *Geranospiza c. caerulescens* (Vieillot); 1 from *Harpagus diodon* (Temminck); 8 from *Heterospizias m. meridionalis* (Latham); 1 from *Ictinia plumbea* (Gmelin); and 2 from *Rostrhamus s. sociabilis* (Vieillot); FALCONIDAE: 1 from *Falco f. femoralis* (Temminck); 1 from *Falco r. ruficularis* (Daudin); 1 from *Falco sparverius cearae* (Cory); 1 from *Falco sparverius connamominus* (Swainson); 2 from *Herpethotes c. cachinnans* (L.); 6 from *Milvago c. chimachima* (Vieillot); 3 from *Polyborus p. plancus* (Miller) and 5 from *Polyborus* sp.

Nematodes were fixed in Railliet & Henry's solution, and were processed for study as de-

scribed elsewhere (RM Pinto et al. 1993 *Mem Inst Oswaldo Cruz* 88: 279-284). NHR and NGD indicate New Host Record and New Geographical Distribution, respectively. Classification and common names of hosts follow OMO Pinto (1978 *Novo catálogo das aves do Brasil* 1, 446 pp) and H Sick (1984 *Ornitologia Brasileira, uma introdução* 1, 474 pp). Confirmation of the taxonomic status of the nematodes was based on G Hartwich (1974 *CIH Keys to the nematode parasites of vertebrates* 2: 1-15), AG Chabaud (1975 *idem* 3:1-58), and RC Anderson and O Bain (1976 *ibidem*: 59-116).

*Contracaecum caballeri* Bravo-Hollis, 1939  
(Ascaridoidea, Anisakidae, Anisakinae)

Hosts: *Buteo m. magnirostris* (Gmelin) (= *Rupornis magnirostris*); common name: roadside hawk ("indaié")-NHR; *Buteogallus u. urubitinga* (Gmelin) (= *Falco urubitinga*, *Hypomorphnus urubitinga*); common name: black hawk, zone-tailed hawk ("cã-cã, cauã, gavião preto"); *Falco sparverius cearae* (Cory) (= *Cerchneis sparverius cearae*); common name: American kestrel ("gaviãozinho")-NHR; *Herpetotheres c. cachinnans* (L.); common name: laughing falcon ("acauã")-NHR; *Milvago c. chimachima* (Vieillot); common name: yellow-headed caracara ("cará-cará-i, cará-cará-pinhé, pinhé, gavião carrapateiro, chimango branco")-NHR.

Site of infection: intestine.

Localities: Porto Cabral, State of São Paulo, Barranco Alto and Porto Esperança, State of Mato Grosso do Sul, Brazil - NGD.

Specimens studied: CHIOC no 33087 a-c, 33093 a-b (whole mounts); 8671, 8768, 15520 (wet material).

Our specimens were identified as those previously redescribed (H Lent & JFT Freitas 1948 *Mem Inst Oswaldo Cruz* 46: 1-71), considering the size of the spicules and comparison of length ratios regarding esophagus, esophageal cecum and ventriculus. This is the first record of the genus *Contracaecum* in Brazilian Falconiformes.

*Physaloptera acuticauda* Molin, 1860  
(Physalopteroidea, Physalopteridae,  
Physalopterinae)

Hosts: *Accipiter bicolor pileatus* (Temminck) (= *Falco pileatus*, *Odontriorchis pileatus*); common name: bicolor hawk ("gavião-caçador bicolor")-NHR; *Herpetotheres c. cachinnans*.

Sites of infection: stomach and intestine.

Localities: Barranco Alto and Salobra, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 33074, 33099 a-b (whole mounts).

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*Physaloptera alata* Rudolphi, 1819

Hosts: *Buteo magnirostris magniplumis* (Bertoni) (= *Rupornis magnirostris magniplumis*); common name: roadside hawk ("gavião pega-pinto, gavião carijó, indaié")-NHR; *Buteo m. magnirostris*-NHR, *Herpetotheres c. cachinans*.

Sites of infection: stomach and intestine.

Localities: Barranco Alto, Bodoquena and Salobra, State of Mato Grosso do Sul, Brazil-NGD.

Specimens studied: CHIOC no 33,084, 33,085, 33,098 (whole mounts), 13,174 (wet material).

This species has been referred in a wide range of Falconiformes hosts in several parts of the world (EB Cram 1927 *US Nat Mus Bull* 140:1-465; BB Morgan 1943 *Trans Amer Micr Soc* 62:72-80) and this is the first report of *P. alata* in Brazil.

*Physaloptera subalata* Schneider, 1866

Hosts: *Accipiter bicolor pileatus*-NHR; *Geranospiza c. caerulescens* (Vieillot); common name: grey crane hawk ("gaviãozinho-pernilongo")-NHR.

Sites of infection: esophagus and stomach.

Localities: Barranco Alto and Salobra, State of Mato Grosso do Sul; Manaus, State of Amazonas, Brazil.

Specimens studied: CHIOC no 33075 a-f, 33076 a-c, 33097 a-b (whole mounts); 12617, 15601, 21472 (wet material).

*Oxyspirura (Cramispirura) altensis* (Rodrigues, 1962)

Skrjabin, Sobolev & Ivaschkin, 1967

(Thelazioidea, Thelaziidae, Oxyspirurinae)

Host: *Heterospizias m. meridionalis* (Latham); common names: brown buzzard, savannah hawk ("gavião-caboclo, casca de couro, inhapacanim do campo")-NHR.

Site of infection: eyes.

Locality: Barranco Alto, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 33070, 33071 (whole mounts).

Some differences were detected in the male specimen presently studied, when compared to those of the original description: presence of a gubernaculum, greater number of precloacal papillae and the aspect of the spicules; however, in our opinion, these modifications may be related to a parasite/host adaptation process. In order to properly compare both samples, type specimens of *O. (C.) altensis* deposited in CHIOC no. 28748 a-b, 28749 a-b (whole mounts) were examined.

*Thelazia (Thelaziella) aquilina* Baylis, 1934 (Thelazioidea, Thelaziidae, Thelaziinae)

Hosts: *Accipiter bicolor pileatus*-NHR; *Buteogallus u. urubitinga*-NHR; *Milvago c. chimachima*-NHR; *Polyborus p. plancus* (Miller); common name: crested caracara ("cará-cará, carancho")-NHR.

Site of infection: eyes.

Localities: Barranco Alto and Salobra, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 33073, 33077 (whole mounts); 15078, 15502 (wet material).

This is the second report of this species in Brazil and in new hosts, taking into account that *Thelazia spizaeti* was proposed (AA Strachan 1957 *Can J Zool* 35: 179-187) from a Brazilian hawk *Spizaetus o. ornatus* (Daudin) and later, the species was restudied on basis on type material and considered a junior synonym of *T. aquilina* (RC Anderson & C Diaz-Ungria 1959 *Mem Soc Ci Nat La Salle* 19: 35-37).

*Procyrnea leptoptera* (Rudolphi, 1819) Chabaud, 1975

(Habronematoidea, Habronematidae, Habronematinae)

Hosts: *Buteo m. magnirostris*-NHR; *Buteo magnirostris nattereri* (Sclater & Salvin) (= *Asturina nattereri*); common name: hawk ("gavião pega-pinto")-NHR; *Falco sparverius cearae*-NHR; *Geranospiza c. caerulescens*-NHR; *Harpagus diodon* (Temminck); common name: rufous-thighed kite ("gavião cinza")-NHR; *Heterospizias m. meridionalis*-NHR; *Milvago c. chimachima*-NHR; *Polyborus p. plancus*-NHR.

Site of infection: gizzard.

Localities: Belém, State of Pará; Bodoquena and Salobra, State of Mato Grosso do Sul, Brazil-NGD.

Specimens studied: CHIOC no 33079 a-b, 33082, 33086 a-c, 33088, 33090 a-g, 33095 (whole mounts); 3300, 8681, 11676, 11677, 11692, 12517, 12618, 13172, 13182, 13483, 13485, 15020 (wet material).

This is the first report in Brazil of *P. leptoptera*, the type of the genus, previously assigned in several hawks from Europe and Africa as *Habronema leptoptera* (Cram *loc. cit.*).

*Procyrnea mansioni* (Seurat, 1914) Chabaud, 1975

Host: *Buteo m. magnirostris*-NHR.

Site of infection: gizzard.

Locality: Salobra, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 33078 a-c, 33081 a-c, 33083 a-b (whole mounts).

This species was referred in Brazil as *Spiroptera longistriata* (R Molin 1859 *Sitzungsber d k Akad d Wissench Wien math-naturw C 1* (1858)33: 297-302). According to LG Seurat (1914 *C r Soc Biol Paris* 76: 7-10), part of

Molin's material should be described as a new species, *Habronema mansioni*, proposed at that occasion. In a same necropsy, *P. mansioni* was found together *P. longistriata* and this situation can be related to a possible misinterpretation of Molin, when dealing with two distinct species instead of only *P. longistriata* as formerly stated.

*Synhimantus (Synhimantus) rectus* (Molin, 1860) Gendre, 1920

(= *Synhimantus (S.) sygmoideus* (Molin, 1860) Skrjabin, 1924)

(Acuarioidea, Acuariidae, Acuariinae)

Hosts: *Buteo m. magnirostris*-NHR; *Buteo magnirostris nattereri*-NHR; *Heterospizias m. meridionalis*-NHR; *Milvago c. chimachima*-NHR.

Site of infection: gizzard.

Localities: Angra dos Reis and Rio de Janeiro, State of Rio de Janeiro; Salobra, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 33080, 33091 a-h, 33092, 33096 a-d (whole mounts); 4183, 7691 (wet material)

The junior synonymy proposed herein, considering *S. (S.) sygmoideus* identical to *S. (S.) rectus*, the valid species, is based on the fact that data concerning morphometrics, hosts and geographical distribution on both species are coincidental. Moreover, the character that has been taken into account to distinguish *S. (S.) sygmoideus* from *S. (S.) rectus* refers only to the aspect of the body in the former, described as "bent in a sigmoid curvature". In the several samples examined, some specimens from the same necropsy, either appeared properly straight or were somewhat bent, indicating that this difference in aspect may be related to the individual absorption of the fixative solution.

*Skrjabinura spiralis* Gnédina, 1933 (= *S. magnum* Johnston & Mawson, 1941) Mawson, 1960)

(Seuratoidea, Seuratidae, Seuratinae)

Hosts: *Falco r. rufigularis* Daudin (= *Falco albigularis*); common name: bat falcon ("gavião de coleira, cauré, tentenzinho")-NHR; *Milvago c. chimachima*-NHR.

Site of infection: intestine.

Locality: Salobra, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 33094 a-b (whole mounts), 11539 (wet material).

This is the second report of *S. spiralis* in Brazil, already referred in a guira cuckoo, *Guira guira* (Gmelin), based on a single male specimen (SS Rodrigues & HO Rodrigues 1981 *Atas Soc Biol Rio de Janeiro* 22: 39-56). In this opportunity, *S. magnum* (Johnston & Mawson, 1941)

Mawson 1960, is proposed as a junior synonym of *S. spiralis*. The genus *Seuratinema* was erected (TH Johnston & PM Mawson 1941 *Proc Linn Soc N South Wales* 66: 250-256) to include *S. magnum* as the type species, based on a single female specimen. The synonymy of the genus *Seuratinema* with *Skrjabinura* was proposed (PM Mawson 1960 *Ann Par hum comp* 35: 430-431), and this concept was ractified by AG Chabaud (1978 *CHI Keys to the nematode parasites of vertebrates* 6: 1-71), who also referred to the mistake of Mawson (1960), when reporting *Skrjabinema* instead of *Skrjabinura*, which is the concerned genus. Comparison of original morphometric data on *S. spiralis* according to MP Gnédina (1933 *Ann Par* 11: 180-184) and Johnston and Mawson (*loc. cit.*) with those of the present findings, supports the synonymy proposed herein.

*Diplotriaena falconis* (Connal, 1912) Blanc, 1919

(Diplotriaenoidea, Diplotriaenidae, Diplotriaeninae)

Host: *Polyborus p. plancus*.

Site of infection: body cavity.

Locality: Salobra, State of Mato Grosso do Sul, Brazil.

Specimen studied: CHIOC no 15099 (wet material).

Specimens which could not be identified to the already referred species, due to their poor conditions of preservation are distributed in the following genera:

*Contracaecum* sp.

Hosts: *Busarellus n. nigricollis* (Latham); common name: black collared hawk ("gavião velho, gavião padre, gavião belo, panema"); *Polyborus* sp., *Rostrhamus s. sociabilis* (Vieillot); common name: snail kite ("gavião-caramujeiro, gavião de aruá").

Sites of infection: intestine and stomach (?).

Localities: Barranco Alto and Salobra, State of Mato Grosso do Sul; Lassance, State of Minas Gerais, Brazil.

Specimens studied: CHIOC no 8095, 8146, 8162, 8689, 8695, 14102, 14969, 15548 (wet material).

*Physaloptera* sp.

Hosts: *Gampsonix s. swainsonii* Vigors; common names: Vigor's hawk, pearl kite ("gaviãozinho"); *Ictinia plumbea* (Gmelin); common name: plumbeous kite ("sovi, gavião sauveiro").

Site of infection: stomach.

Locality: Salobra, State of Mato Grosso do Sul, Brazil.

Specimens studied: CHIOC no 12630, 12988, 20504 (wet material).

*Oxyspirura* sp.

Hosts: *Falco f. femoralis* Temminck (= *Falco fusco-caerulescens*); common name: aplomado falcon ("gavião de coleira"); *Heterospizias m. meridionalis*.

Site of infection: eyes.

Localities: Cachimbo, State of Pará; Salobra, State of Mato Grosso, Brazil.

Specimens studied: CHIOC no 33072 (whole mount), 11675, 12526 (wet material).

*Procyrnea* sp.

Hosts: *Falco sparverius connamonimus* Swainson; common name: American krestel ("gaviãozinho"); *Polyborus* sp.

Site of infection: gizzard.

Localities: Lassance, State of Minas Gerais; Rincão, State of São Paulo, Brazil.

Specimens studied: CHIOC no 2008, 6164 (wet material).

Other nematode species reported from hawks in Brazil and not found during the present study:

*Dispharynx capitata* (Molin, 1860) Cram,

1927, from *Accipiter s. superciliosus* (L.) (= *Falco minutus*); *Oxyspirura octopapillata* Caballero, 1942, from Accipitridae sp.; *Physaloptera inflata* (Molin, 1860) Stossich, 1889, from *Parabuteo u. unicinctus* (Temminck); *Physaloptera losseni* Ortlepp, 1937, from *Leptodon forbesi* (Swann, 1922); *Thelazia campanulata* (Molin, 1858) Railliet & Henry, 1910 (species inquirenda), from *Buteo m. magnirostris* (Gmelin), Falconidae sp.; *Thelazia papillosa* (Molin, 1860) Railliet & Henry, 1910 (species inquirenda) from *Geranospiza caerulescens gracilis* (Temminck); *Thelazia pittae* Johnston & Mawson, 1941 (species inquirenda), from *Spizastur melanoleuchus* (Vieillot); *Serratospiculum verrucosum* (Molin, 1858) Skrjabin, 1915, from *Buteo swainsoni* Bonaparte; *Spiroptera saginata* (Rudolphi, 1819) Dujardin, 1845, from *Falco furca-tus*(sic)(RJ Ortlepp 1922 *Proc Zool Soc London* 2: 999-1107, Cram (*loc. cit.*), Strachan (*loc. cit.*), Anderson & Diaz-Ungria (*loc. cit.*), S Yamaguti 1961 *Systema Helminthum* 3. *The nematodes of vertebrates* I, II, 1261 pp, CP Santos & DC Gomes 1989 *Rev Brasil Biol* 49: 1031-1034).