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NOTA CIENTIFICA

Wild animals endoparasites (Nemathelminthes and Platyhelminthes) from the Manu Biosphere Reserve, Peru

Endoparasitos (Nemathelminthes y Platyhelminthes) de animales de vida silvestre de la Reserva de Biósfera del Manu, Perú

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Resumen

Durante el año 2001, se recolectaron 8 géneros de helmintos de mamíferos y aves silvestres del Perú, en la Reserva Biosfera del Manu (Departamentos de Cusco y Madre de Dios), desde los 470 a 3780 m. Los parásitos fueron fijados con alcohol etílico en el campo y transportados al laboratorio para estudiarlos; los nemátodos se diafanizaron y los céstodos y trematódos se colorearon con carmín de acuerdo a técnicas convencionales. La identificación específica de algunos helmintos fue imposible por el estado en que se encontraban, pero se dan a conocer por ser material de gran importancia y ser algunos de ellos algunos registros nuevos para el Perú. Nuestros hallazgos son los siguientes: *Rhopalias caballeroi* Kifune y Uyema, 1982, *Rhopalias* sp. (probable n. sp.), *Taenia pisiformis* Bloch, 1780 (cisticerco), *Mesocestoides* sp. (tetratyridia), *Aprocta* sp., *Evaginuris branicki* Mc Clure, 1932, *Haematospiculum* sp., *Protospirura* sp., *Diplotriaena* sp., *Thelazia* sp. 1, *Thelazia* sp. 2, *Thelazia* sp. 3 y *Subulura* sp.

Palabras clave: Nemathelminthes, Platyhelminthes, Reserva de Biósfera del Manu, Perú.

Abstract

During 2001, eight genera (three identified to species level) of endoparasites were collected from wild mammals and birds in Peru. These collections were part of a large survey along an elevational gradient (470 – 3780 m.) on the Southwestern border of the Manu Biosphere Reserve (Departments of Cusco and Madre de Dios). Parasites were field–fixed in 70% ethyl alcohol and transported to the laboratory, where nematodes were cleared and cestodes were stained using standard procedures. Identification of some specimens was impossible. Nonetheless, the material is of exceptional interest because it includes the first Peruvian records of some taxa. Our findings include: *Rhopalias caballeroi* Kifune and Uyema, 1982, *Rhopalias* sp. (probable n. sp.), *Taenia pisiformis* Bloch, 1780 (cysticercus), *Mesocestoides* sp. (tetratyridia), *Aprocta* sp., *Evaginuris branicki* Mc Clure, 1932, *Haematospiculum* sp., *Protospirura* sp., *Diplotriaena* sp., *Thelazia* sp. 1, *Thelazia* sp. 2, *Thelazia* sp. 3 and *Subulura* sp.

Keywords: Nemathelminthes, Platyhelminthes, Manu Biosphere Reserve, Peru.

In the year 2001, a large survey of mammals, birds, and their parasites was conducted at the Manu Biosphere Reserve (Departments of Cusco and Madre de Dios) Peru. The Manu Biosphere Reserve is considered as one of the richest biodiversity regions of the world. Located in a remote area of the Eastern Andes cordillera, it includes the entire Manu river basin and part of the Alto Madre de Dios river basin, containing both high rugged mountains and lowlands plains. The northern and western boundaries are formed by clear defined geologic formations. However, the southern and eastern boundaries are determined by imaginary lines assigned to geographic points. High ground between the Rio Las Piedras and Manu Basins forms the northern limit, and The Paucartambo Mountains, which divide the waters of Urubamba River from the Alto Madre de Dios, are the western limit. Altitudes vary from 365 m at the mouth of the Manu River to more than 4000 m near Noche Triste in the Andes.

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The highest known point is Cerro Huáscar at 4020 m. The area has a wide range of climates from the cold dry Andes to the hot humid Amazon jungle. In the high Andes temperature ranges from 2 °C to 6 °C, while in lower areas such as Cosha Cashu, the annual average is approximately 24 °C (with a max. of 33 and min. of 13 °C). Total annual rainfall in the lower forest of the park is approximately 4000 mm, increasing in the upper cloud forest to more than 5000 mm and diminishing to 3000 mm in the páramo. There are two seasons: from October to April when temperature falls and rainfall increases, and from May to September when temperature rises and rainfall diminishes. This neotropical area has been the focus of considerable research and the most attractive place to carry out many studies related to biodiversity inventory, mapping, systematics, and taxonomy of flora and fauna in recent years. These studies, published in a variety of journals and widely disseminated, have contributed tremendously to our knowledge and understanding of tropical ecosystems. Thus, the Manu Biosphere Reserve continues to be the most important place in Peru for wildlife research.

During this survey, endoparasites were collected from mammals and birds hosts. Parasites specimens were field-fixed in 70% ethyl alcohol and transported to the laboratory, where nematodes were cleared and cestodes were stained using standard procedures. However, some of the specimens were poorly preserved and identification to species level was impossible. Nonetheless, we consider that the material is of exceptional interest, as it includes the first Peruvian records of some taxa.

Platyhelminthes

Trematoda

1) *Rhopalias caballeroi* Kifune and Uyema, 1982.

Eigthteen individual parasites.

Host: *Didelphis marsupialis* Linnaeus, 1758 «zarigüeya orejinegra» (Didelphimorphia: Didelphidae).
Site of infection: Large intestine.
Locality: «Consuelo» Paucartambo - Pilcopata road, Cusco 1000 m.

2) *Rhopalias* Stiles and Hassal, 1898

Undetermined species, 52 individual parasites.

Host: *Didelphis marsupialis* Linnaeus, 1758 «zarigüeya orejinegra».
Site of infection: Large intestine.
Locality: «Consuelo» Paucartambo - Pilcopata road, Cusco 1000 m.

Cestoda

3) *Taenia pisiformis*, Bloch, 1780.

Cyst, two individual parasites.

Host: *Thomasomys oreas* Anthony, 1926 «ratón montaraz dorado» (Rodentia: Muridae).
Site of infection: Liver.
Locality: «Esperanza» Paucartambo - Pilcopata road, Cusco 2880 m.

4) *Mesocestoides* Valliant, 1863

Undetermined species, tetratyridia, two individual parasites.

Host: *Akodon torques* (Thomas, 1917) «ratón campestre» (Rodentia: Muridae).
Site of infection: Liver.
Locality: «Esperanza» Paucartambo - Pilcopata road, Cusco 2880 m.

Nemathelminthes

Nematoda

5) *Aprocta* Linstow, 1883.

Undetermined species, two individual parasites. New record.

Host: *Turdus chiguanco* (Lafresnaye and D'orbigny, 1873) «zorzal» (Passeriformes: Turdidae).
Site of infection: Eye.
Locality: «Esperanza» Paucartambo - Pilcopata road, Cusco 2280 m.

6) *Evaginuris branicki* Mc Clure 1932.

Twenty four individual parasites.

Host: *Dinomys branicki* Peters, 1873 «pacarana» (Rodentia: Dinomyidae).
Site of infection: Large intestine.

Locality: «Consuelo» Paucartambo - Pilcopata road, Cusco 1000 m.

7) *Haematospiculum* Skrjabin, 1916.

Undetermined species, two individual parasites. New record.

Host: *Uropsalis segmentata* (Cassin, 1849) «chotacabra» (Caprimulgiformes: Caprimulgidae).
Site of infection: Palate.
Locality: «Esperanza» Paucartambo - Pilcopata road, Cusco 2880 m.

8) *Protospirura* Seurat, 1914.

Undetermined species, four individual parasites.

Host: *Akodon orophilus* Osgood, 1913, «ratón campestre montañés» (Rodentia: Muridae).
Site of infection: Small intestine.
Locality: «Esperanza» Paucartambo - Pilcopata road, Cusco 2880 m.

9) *Thelazia* Bosc, 1819.

Undetermined species , three individual parasites.

Host: *Pteroglossus beauharnaesii* (Wasler, 1832) «tucán» (Piciformes: Ramphastidae).
Site of infection: Eye.
Locality: «Maskoitania» Atalaya, Madre de Dios 470 m.

10) *Thelazia* Bosc, 1819.

Undetermined species, three individual parasites.

Host: *Aulacorhynchus prasinus* (Sturm, 1841) «tucán» (Piciformes: Ramphastidae) one individual parasited.
Site of infection: Eye.
Locality: «Maskoitania» Atalaya, Madre de Dios 470 m.

11) *Thelazia* Bosc, 1819.

Undetermined species, three individual parasites.

Host: *Saltator aurantirostris* (Chapman, 1927) «arrocero» (Passeriformes: Emberezidae), two individual parasited.
Site of infection: eye.
Locality: «Esperanza» Paucartambo - Pilcopata road, Cusco 2880 m.

12) *Subulura* Molin, 1860.

Species undetermined, two individual parasites.

Host: *Trogon melanurus* (Swainson, 1837) (Trogoniformes: Trogonidae).
Site of infection: Small intestine.
Locality: «Maskoitania» Atalaya Madre de Dios 470 m.

Peru has an extraordinarily rich and diverse fauna and the Manu Biosphere Reserve is arguably home to the richest terrestrial fauna on earth. Consequently, helminth parasites are also rich in this region. Helminths play an important role in the ecological system and alteration of this system can bring, in consequence, the mergeing of parasite diseases. Thus, it is critical to understand these diseases and the ethiological agents that cause them, many of which are zoonotic organisms and may affect animal and human health. Unfortunately, our knowledge about these organisms in Peru is very poor, especially of the wild fauna. The helminth fauna of wild animals is composed mainly by nematodes and cestodes; however, trematodes and acanthocephala also parasitize some host species and affect certain organs, adhering to them by specialized structures. Some of the helminths that we present herein have already been reported in Peru by other investigators. Nonetheless, we expand the known ranges and host associations of these taxa. Previous records include *Rhopalias caballeroi* ex *Didelphis marsupialis* and *Philander opossum* from Tingo María in Huánuco (Kifune and Uyema, 1982); *R. coronatus* (Rudolphi, 1819) Stiles et Hassall, 1898 ex *Metachirus nudicaudatus*, *Didelphis marsupialisis*, *D. paraguayensis* and *D. albiventris* from Tingo María in Huánuco, Nanchoc in Cajamarca, and Sierra Central del Perú; and *R. baculifer* Braun, 1901 ex *Philander opossum*, *Metachirus nudicaudatus* and *Didelphis marsupialis* from Tingo María (Miyazaki et al., 1978; Morales, 1996); *Mesocestoides lineatus* ex *Pseudalopex inca* from Puno (Hurtado et al., 1983); *Taenia pisiformis* ex domestic dog from Puno, Lima, Pasco, and Junín (Chavez and Zaldívar, 1967); *Evaginuris branicki* in a zoological park in

Lima (Sarmiento et al, 1999); a subspecies of *Protospirura numidica criceticola* ex *Akodon boliviensis*, and *Chroeomys jelskii* from Checayani from Puno (Sutton, 1989).

Our specimens of *Rhopalias* sp. resembles *R. coronatus* (Stiles and Hassal, 1898), a species distributed from Mexico to Argentina (Lamothe, 1978). However, our specimens differ from that species in possessing longer proboscideal sheaths, characteristic constant in all 50 specimens that we have analyzed. Thus, we reported them as undetermined species until we have the opportunity to examine the type material of *R. coronatus.*

The only cestoda taxa include in this work (*Taenia pisiformis, Mesocestoides*) were represented by larval stages; nevertheless, severe inflamation was observed in affected organs from our collection.

Nematodes *Protospirura* were found in small intestine of their hosts, but some were also found in stomachs. In Peru, Ibañez, 1966, described *P. chanchanensis* as a parasite of the common rat *Rattus rattus* fromTrujillo. Later, Sarmiento et al. (1999), reported this species in Lima parasitizing the same host. *Thelazia* and *Aprocta* parasitize the ocular cavity of their hosts and are known to produce severe lesions. These nematodes require a intermediate host (commonly an arthropod), in order to transmit the parasitological infection to animals. The genus *Subulura* is one of the several taxa that parasitize bird intestines, but it is not known to have major pathological, importance. In Peru, only five species have been described: *S. huaynacapaci* (Freitas & Ibañez, 1968) ex *Oreophalus ruficollis*, *S. samanamudi* (Ibañez, 1969) ex *Crotophaga sulcirrostris*, *S. brumpti* (Lopez - Neyra, 1922) ex *Gallus gallus* f. domestica and *Cairina moschata* f. domestica, *S. forcipata* (Rudolphi, 1819) ex *Coccyzus erythropthalmus* and *Subulura* sp. ex *Columba livia* f. domestica. Although, some of our reported helminths are not new for Peru, they helps us to expand the known range and in some cases document new host associations. Moreover, these findings are part of a large survey project conducted in the most biodiverse and high priority habitats reserve in Peru. This research may also be useful for conservation centers and zoologicals parks, in that it could help managers and veterinarians prevent or eliminate parasitological diseases from animals in their care.

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