



Checklist of helminth parasites of threatened vertebrate species from Brazil

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Table of contents

| | |
|--|----|
| Abstract | 1 |
| Introduction | 2 |
| Materials and methods | 2 |
| Results | 3 |
| Parasite-Host list | 3 |
| Phylum Acanthocephala Rudolphi..... | 3 |
| Class Palaeacanthocephala Meyer | 3 |
| Class Archiacanthocephala Meyer | 4 |
| Phylum Nematoda (Rudolphi) | 4 |
| Phylum Platyhelminthes Gegenbaur | 14 |
| Class Cestoda Van Beneden | 14 |
| Class Monogenea Carus | 17 |
| Class Trematoda Rudolphi | 18 |
| Class Actinopterygii | 25 |
| Class Chondrichthyes | 26 |
| Class Amphibia | 27 |
| Class Reptilia | 28 |
| Class Aves | 29 |
| Class Mammalia | 32 |
| Discussion | 40 |
| Acknowledgments | 40 |
| References | 40 |

Abstract

Using available records, unpublished information retrieved from the Helminthological Collection of the Oswaldo Cruz Institute (CHIOC) and published reports, a checklist of the recorded helminth parasites of endangered vertebrates from Brazil was generated. A total of 772 records and 186 helminth species (6 Acanthocephala, 83 Nematoda, 23 Cestoda, 64 Trematoda, 10 Monogenea) in 76 host species (7 Actinopterygii, 8 Chondrichthyes, 1 Amphibia, 10 Reptilia, 22 Aves, 28 Mammalia) from Brazil were listed in the present work, including 39 undetermined helminth species and 10 new host records. This is the first compilation of the helminth parasites of threatened vertebrates in Brazil and in the Neotropics.

Key words: helminth, biodiversity, parasite, threatened vertebrate species, IUCN 2008 Red List, Brazil

Introduction

Parasitic infections are an important factor in conservation biology and can be used to inform management decisions, indicating that studies of parasite population genetics can have important implications in host population biology (McCoy *et al.* 2003; Wickström *et al.* 2003).

There are many vertebrate species that have yet to be examined for parasites, despite the fact that 3,524 vertebrate species are currently reported on red lists (Whiteman & Parker 2005). A number of Brazilian vertebrates are presently listed on the IUCN Red List of Threatened Species (IUCN 2008). Brazil is the fifth largest country in the world and has the highest species diversity of all of the megadiversity countries, accounting for roughly 14% of the world's biota (Lewinsohn & Prado 2002). Helminth species are the most diverse group of metazoan parasites of vertebrates and are recognized as an important component of global biodiversity (Poulin and Morand 2004). Research efforts directed at documenting parasite species have increased recently. As knowledge of parasite biodiversity is dependent on previous studies of host biodiversity, the loss of host species diversity implies a possible loss of parasite species diversity. With an increasing awareness of the accelerating loss of biological diversity both in the general public and in the scientific community, comparative studies using parasites as indicators of ecological age and diversity will be needed (Gardner & Campbell 1992).

Previous monographs (Rudolphi 1819; Diesing 1850, 1851, 1856; Yamaguti 1959, 1963a, b, 1971; Travassos 1965; Travassos *et al.* 1969; Schmidt 1986; Thatcher 1993 and Vicente *et al.* 1985, 1990, 1993, 1995, 1997, 1999) have included records within generalized compilations of helminths that are parasites of threatened host species in Brazil.

Here we present the first effort to compile and summarize information on the helminth parasites of threatened vertebrate species in Brazil.

Materials and methods

Using published records and unpublished information retrieved from the Helminthological Collection of the Oswaldo Cruz Institute (CHIOC), a checklist of the helminth parasites of endangered animals from Brazil was generated. In addition to published records, parasite specimens stored in the CHIOC since 1901 were examined. The curator of the CHIOC, Dr. Marcelo Knoff (knoffm@ioc.fiocruz.br), should be contacted with any questions.

The checklist follows the classification and systematic arrangements of the following studies: at length Gibson *et al.* (2002) and Jones *et al.* (2005) for Digenea; Boeger and Kritsky (1993) for Monogenea; Khalil *et al.* (1994) for Cestoda; Vicente *et al.* (1985, 1990, 1993, 1995, 1997, 1999) for Nematoda; and Amin (1985, 1987) for Acanthocephala.

Helminth species are presented in alphabetical order, followed by information on their hosts (specific name), the site of infection, the locations where the specimens were collected and references (between parentheses, in chronological sequence). In addition, the checklist includes some helminth species recorded only to the genus level (undetermined species). Helminth species names follow those provided in the most recent taxonomic literature. Mention of helminths and host species in this list does not imply that the authors agree with their validity or taxonomy.

The host species were selected based on IUCN categories (IUCN 2008), five of which were taken into account: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN) and Vulnerable (VU). The remaining three (Near Threatened – NT, Least Concern – LC, and Data Deficient – DD) were not relevant to the scope of this work. In addition, the following categories on the Biodiversitas Red List (Machado *et al.* 2005) were also considered: EX, EW, CR, EN and VU for the species included in the IUCN (2008) Red List and the categories EX, EW, CR and EN for the species not included in this list.

Higher-level classification was conducted as follows: Actinopterygii and Chondrichthyes follows Froese and Pauly (2008); Amphibia and Squamata follows SBH (2008a, b); Testudines follows Fritz and Havas (2007); Aves follows Sick (1997); and Mammalia follows Wilson and Reeder (2005).

Host species were arranged in alphabetical order. The following conventions in relation to the parasite records were observed: NHR refers to a new host record in Brazil. Voucher specimens of the new parasitological records are deposited in the CHIOC. The catalog number was included for all species with type specimens and voucher specimens deposited in this collection.

Results

This is the first attempt to compile the large amounts of information regarding threatened host species from the Helminthological Collection of the Oswaldo Cruz Institute (CHIOC), which is unpublished.

A total of 772 records and 186 helminth species (6 Acanthocephala, 83 Nematoda, 23 Cestoda, 64 Trematoda, and 10 Monogenea) in 76 host species (7 Actinopterygii, 8 Chondrichthyes, 1 Amphibia, 10 Reptilia, 22 Aves, 28 Mammalia) from Brazil were listed in the current study, and 39 undetermined helminth species were also included. In the present work, 10 new host records were listed. A total of 318 parasite specimen samples stored in the CHIOC were recorded.

In this checklist, 440 host species were analyzed, 332 of which are included in the IUCN (2008) Red List (Figures 1, 2, 3, 4, 5, 6, 7), and 108 species are only included in the list compiled by Machado *et al.* (2005).

Parasite-Host list

Phylum Acanthocephala Rudolphi

Class Palaeacanthocephala Meyer

Order Echinorhynchida Southwell & MacFie

Family Rhadinorhynchidae Travassos

Gorgorhynchus sp.

Dipturus trachydermus (Krefft & Stehmann), unspecified site of infection, unspecified locality (Santos *et al.* 2008).

Order Polymorphida Petrochenko

Family Polymorphidae Meyer

Bolbosoma turbinella (Diesing)

Pontoporia blainvillei (Gervais & d'Orbigny), large intestine, stomach, Rio Grande do Sul (Silva & Cousin 2004, 2006a).

Balaenoptera borealis Lesson, intestine, small intestine, Rio de Janeiro (Machado-Filho 1964; Muniz-Pereira *et al.* 1999, Pinto *et al.* 2004) (CHIOC 29626, 29639, 29640, 29836, 29751–29831).

Corynosoma australe Johnston (Larval)

Pagrus pagrus (Linnaeus), unspecified site of infection, unspecified locality (Luque & Poulin 2004)

Pontoporia blainvillei (Gervais & d'Orbigny), unspecified site of infection, Rio Grande do Sul (Silva & Cousin 2004).

Galeorhinus galeus (Linnaeus), spiral valve, Rio Grande do Sul (Knoff *et al.* 2001a; Santos *et al.* 2008).

Corynosoma sp. (Larval)

Galeorhinus galeus (Linnaeus), spiral valve, Rio Grande do Sul (Knoff *et al.* 2001a; Santos *et al.* 2008).

Pagrus pagrus (Linnaeus), coelomatic cavity, mesenteries, Rio de Janeiro (Paraguassú *et al.* 2002a; Santos *et al.* 2008; Luque & Poulin 2004) (CHIOC 34526).

Polymorphus (Polymorphus) cetaceum (Johnston & Best)

Pontoporia blainvillei (Gervais & d'Orbigny), stomach, Rio Grande do Sul (Silva & Cousin 2004, 2006b).

Polymorphus sp.

Pagrus pagrus (Linnaeus), coelomatic cavity and mesenteries, Rio de Janeiro (Paraguassú *et al.* 2002a; Santos *et al.* 2008) (CHIOC 34527).

Order Echinorhynchida Southwell & MacFie

Family Rhadinorhynchidae Travassos

Rhadinorhynchus pristis (Rudolphi)

Balistes vetula Linnaeus, intestine, Rio de Janeiro (Alves *et al.* 2005; Santos *et al.* 2008) (CHIOC 36485).

Class Archiacanthocephala Meyer

Order Oligacanthorhynchida Petrochenko

Family Oligacanthorhynchidae Southwell & Macfie

Oncicola spirula (Olfers)

Leontopithecus rosalia (Linnaeus), intestine, large intestine, Rio de Janeiro (Rudolphi 1819; Diesing 1850; Travassos 1917; Machado-Filho 1950) (CHIOC 17811a–c, 17845).

Prosthenorchis elegans (Diesing)

Leontopithecus chrysomelas (Kuhl), intestine, Rio de Janeiro (Pissinatti *et al.* 2007).

Leontopithecus chrysopygus (Mikan), intestine, Rio de Janeiro (Pissinatti *et al.* 2007).

Leontopithecus rosalia (Linnaeus), intestine, Rio de Janeiro (Diesing 1851; Travassos 1917; Pissinatti *et al.* 2007).

Phylum Nematoda (Rudolphi)

Superfamily Acuarioidea Molin

Family Acuariidae Railliet, Henry & Sisoff

Schistorophus sp.

Crax fasciolata pinima (Pelzeln), ventriculus, Pará, NHR (CHIOC 9030).

Seuratia shipleyi (Stossich)

Thalassarche melanophrys (Temminck), stomach, Rio de Janeiro (Vicente *et al.* 1995).

Stegophorus diomedea (Johnston & Mawson)

Thalassarche melanophrys (Temminck), stomach, Rio de Janeiro (Vicente *et al.* 1995).

Superfamily Ancylostomatoidea Chabaud

Family Ancylostomatidae Looss

Monodontus nefastus Travassos

Tapirus terrestris (Linnaeus), stomach, small intestine, Mato Grosso do Sul, Mato Grosso (Travassos 1945a; Vicente *et al.* 1997).

Monodontus sp.

Cacajao calvus (I. Geoffroy), small intestine, Amazonas (Gonçalves *et al.* 2002) (CHIOC 34006a–b).

Necator sp.

Cacajao calvus (I. Geoffroy), small intestine, Amazonas (Vicente *et al.* 1992) (CHIOC 5842).

Lagothrix lagotricha (Humboldt), unspecified site of infection, unspecified locality (Vicente *et al.* 1997).

Superfamily Aprocetoidea Skrjabin & Schikhobalova

Family Aprocetidae Skrjabin & Shikhobavova

Aproceta pyrrhurae Freitas & Mendonça

Aratinga solstitialis (Linnaeus), abdominal cavity, Espírito Santo (Pinto *et al.* 1993; Vicente *et al.* 1995).

Pyrrhura cruentata (Wied), abdominal cavity, Espírito Santo (Vicente *et al.* 1995) (CHIOC 19554 – holotype, 19555 – allotype, 19556 a–e – paratype, 23403 – paratype).

Superfamily Ascaridoidea Railliet & Henry

Family Anisakidae Skrjabin & Karokhin

Anisakis physeteris Baylis

Physeter macrocephalus Linnaeus, stomach, Rio de Janeiro (Pinto *et al.* 2004).

Balaenoptera borealis Lesson, unspecified site of infection, unspecified locality (Pinto *et al.* 2004).

Anisakis sp. (Larval)

Balistes vetula Linnaeus, mesenteries, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 35316).

Carcharhinus signatus (Poey), stomach, spiral valve, Paraná (Knoff *et al.* 2001b) (CHIOC 33886).

Chelonia mydas (Linnaeus), conjunctive tissue, Rio de Janeiro **NHR** (CHIOC 2260).

Dipturus trachydermus (Krefft & Stehmann), spiral valve, Paraná (Knoff *et al.* 2001b) (CHIOC 33888).

Pagrus pagrus (Linnaeus), mesenteries and liver, Rio de Janeiro (Paraguassú *et al.* 2002a; Luque & Poulin 2004).

Anisakis typica Diesing

Pontoporia blainvillei (Gervais & d'Orbigny), stomach, Rio Grande do Sul (Silva & Cousin 2004).

Contracaecum sp. (Larval)

Balistes vetula Linnaeus, mesenteries, Rio de Janeiro (São Clemente *et al.* 1995; Alves *et al.* 2005; Luque & Poulin, 2004) (CHIOC 35318).

Carcharhinus signatus (Poey), stomach, spiral valve, Paraná (Knoff *et al.* 2001b) (CHIOC 33887).

Dipturus trachydermus (Krefft & Stehmann), stomach, spiral valve, Paraná (Knoff *et al.* 2001b) (CHIOC 33889).

Mustelus schmitti Springer, spiral valve, Rio Grande do Sul (Knoff *et al.* 2001b) (CHIOC 34274).

Pagrus pagrus (Linnaeus), mesenteries, Rio de Janeiro, Espírito Santo (Barros 1994; São Clemente *et al.* 1994; Paraguassú *et al.* 2002a) (CHIOC 34437).

Galeiceps longispiculum (Freitas & Lent)

Pteronura brasiliensis (Gmelin), stomach, small intestine, Mato Grosso do Sul (Vicente *et al.* 1997; Vieira *et al.* 2008a) (CHIOC 12563 – paratype, 15417 – holotype and allotype, 15418a–i – 15419 – paratypes, 18047, 18048).

***Hysterothylacium* sp. (Larval)**

Balistes vetula Linnaeus, mesenteries, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 35321).

Pagrus pagrus (Linnaeus), general cavity, liver, Rio de Janeiro (Vicente *et al.* 1985, 1999; Luque & Poulin 2004).

***Phocanema* sp. (Larval)**

Pagrus pagrus (Linnaeus), mesenteries, Rio de Janeiro, Espírito Santo (São Clemente *et al.* 1994).

***Pseudanisakis sulamericana* Santos, Lent & Gibson**

Rioraja agassizi (Müller & Henle), intestine, São Paulo (Santos *et al.* 2004) (CHIOC 35235 – holotype and allotype, 35236 – paratype).

***Pseudoterranova* sp. (Larval)**

Mustelus schmitti Springer, spiral valve, Rio Grande do Sul (Knoff *et al.* 2001b) (CHIOC 34275).

Pagrus pagrus (Linnaeus), mesenteries, Rio de Janeiro (Paraguassú *et al.* 2002a) (CHIOC 34438).

Balaenoptera borealis Lesson, unspecified site of infection, unspecified locality (Pinto *et al.* 2004).

***Raphidascaris* sp. (Larval)**

Dipturus trachydermus (Krefft & Stehmann), stomach, spiral valve, Paraná (Knoff *et al.* 2001b) (CHIOC 33890).

Pagrus pagrus (Linnaeus), mesenteries, liver, general cavity, Rio de Janeiro, Espírito Santo (Vicente *et al.* 1985; São Clemente *et al.* 1994; Vicente *et al.* 1999; Paraguassú *et al.* 2002a; Luque & Poulin, 2004) (CHIOC 34439).

***Sulcascaaris sulcata* (Rudolphi)**

Chelonia mydas (Linnaeus), stomach, Rio de Janeiro (Freitas & Lent 1946; Vicente *et al.* 1993) (CHIOC 16088, 17707a–c, 17708a–k).

***Terranova* sp. (Larval)**

Pagrus pagrus (Linnaeus), liver, general cavity, Rio de Janeiro, Espírito Santo (Vicente *et al.* 1985; São Clemente *et al.* 1994; Vicente *et al.* 1999; Luque & Poulin 2004).

Family Ascarididae Baird

***Angusticaecum brevispiculum* Chapin**

Chelonoides denticulata (Linnaeus), intestine, Pará (Chapin 1925; Vicente *et al.* 1993).

***Amplificaecum* sp. (Larval)**

Steindachneridion parahybae (Steindachner), swim bladder, São Paulo (Vicente *et al.* 1985).

***Ascaris elongata* Rudolphi**

Alouatta belzebul ululata Elliot, intestine, unspecified locality (Rudolphi 1819; Diesing 1851; Stuart *et al.* 1998).

***Heterocheilus tunicatus* Diesing**

Trichechus inunguis (Natterer), small intestine, unspecified locality (Dujardin 1845; Diesing 1851).

Superfamily Camallanoidea Travassos

Family Camallanidae Railliet & Henry

Camallanus microcephalus (Dujardin)

Peltocephalus dumerilianus Schweigger, small intestine, unspecified locality (Diesing 1851).

Superfamily Cosmoceroidea Travassos

Family Atractidae Travassos

Labiduris gulosa (Rudolphi, 1819)

Chelonoides denticulata (Linnaeus), cardiac vessels, cecum, Rio de Janeiro, Pará (Chapin 1925; Vicente *et al.* 1993) (CHIOC 19935, 28489, 34817).

Labiduris irineuta Costa

Chelonoides denticulata (Linnaeus), large intestine, Rio de Janeiro (Costa 1961; Vicente *et al.* 1993) (CHIOC 19931, 19932, 19933, 19934, 28488a–h – holotype, allotype and paratype).

Labiduris zschokkei Linstow

Chelonoides denticulata (Linnaeus), intestine, unspecified locality (Vicente *et al.* 1993).

Paraorientattractis semiannulata Gibbons, Khalil & Marinkelle

Podocnemis unifilis Troschel, large intestine, Pará (Gibbons *et al.* 1997).

Parattractis hystrix (Diesing)

Podocnemis erythrocephala (Spix), intestine, Amazonas (Diesing 1851).

Family Cobboldinidae Skrjabin

Klossinemella travassosi Costa, Motta & Gomes

Chelonoides denticulata (Linnaeus), large intestine, Amazonas (Vicente *et al.* 1993) (CHIOC 7110, 30041a–l – holotype, allotype and paratype).

Family Cosmocercidae Travassos

Aplectana sp.

Physalaemus soaresi Izecksohn, large intestine, Rio de Janeiro (Vicente *et al.* 1990).

Cosmocerca parva Travassos

Physalaemus soaresi Izecksohn, intestine, Rio de Janeiro (Vicente *et al.* 1990).

Family Kathlaniidae Yorke & Maplestone

Kathlania leptura (Rudolphi)

Chelonia mydas (Linnaeus), intestine, unspecified locality (Inglis 1957; Vicente *et al.* 1993)

Tonaudia freitasi Vicente & Santos

Chelonia mydas (Linnaeus), intestine, stomach, Ceará (Vicente *et al.* 1993).

Family Oxyascarididae (Travassos)

Oxyascaris oxyascaris Travassos

Physalaemus soaresi Izecksohn, small intestine, large intestine, Rio de Janeiro (Vicente *et al.* 1990).

Superfamily Dioctophymatoidea Railliet

Family Dioctophymatidae (Railliet)

Dioctophyma renale (Goeze)

Speothos venaticus (Lund), kidney, Mato Grosso (Barros *et al.* 1990; Vieira *et al.* 2008a) (CHIOC 169).

Eustrongylides sp.

Steindachneridion parahybae (Steindachner), unspecified site of infection, São Paulo (Vicente *et al.* 1985).

Superfamily Filarioidea Weinland

Family Onchocercidae (Leiper)

Dipetalonema caudispina (Molin)

Ateles paniscus (Linnaeus), abdominal cavity, Pará (Freitas 1964) (CHIOC 9027, 15438a–k).

Brachyteles arachnoides (Geoffroy), unspecified site of infection, Rio de Janeiro (Freitas 1943; Notarnicola *et al.* 2008).

Leontopithecus rosalia (Linnaeus), unspecified site of infection, Pará (Freitas 1943; Notarnicola *et al.* 2008).

Dipetalonema gracilis (Rudolphi)

Ateles paniscus (Linnaeus), abdominal cavity, unspecified locality (Freitas 1964).

Brachyteles arachnoides (Geoffroy), abdominal cavity, unspecified locality (Diesing 1851).

Lagothrix lagotricha (Humboldt), abdominal cavity, unspecified locality (Freitas 1964; Vicente *et al.* 1997).

Leontopithecus chrysopygus (Mikan), abdominal cavity, unspecified locality (Diesing 1851).

Leontopithecus rosalia (Linnaeus), abdominal cavity, unspecified locality (Diesing 1851).

Saguinus bicolor (Spix), abdominal cavity, unspecified locality (Diesing 1851).

Dipetalonema sp.

Alouatta fusca (Geoffroy Saint-Hilaire), abdominal cavity, Espírito Santo (Vicente *et al.* 1992; Vicente *et al.* 1997) (CHIOC 29524).

Dirofilaria sp.

Pteronura brasiliensis (Gmelin), under the skin, Mato Grosso do Sul, Rio de Janeiro (Vieira *et al.* 2008a) (CHIOC 15415, 22160).

Dirofilaria spectans Freitas & Lent

Pteronura brasiliensis (Gmelin), heart, pulmonary artery, Mato Grosso do Sul (Freitas & Lent 1949; Vicente *et al.* 1997; Vieira *et al.* 2008a) (CHIOC 13236 – paratype, 17704a–b – holotype and allotype, 17705a–h – paratype).

Pelecitus circularis (Molin)

Anodorhynchus hyacinthinus (Latham), tendon of the foot, Mato Grosso do Sul (Travassos 1930; Pinto *et al.* 1993; Vicente *et al.* 1995).

Thamnophilus caerulescens cearensis (Cory), foot joint, Mato Grosso (Oniki *et al.* 2002).

***Pelecitus helycinus* (Molin)**

Anodorhynchus hyacinthinus (Latham), tendon of the foot, Mato Grosso do Sul (Vicente *et al.* 1995).

***Pelecitus* sp.**

Gubernatrix cristata Vieillot, unspecified site of infection, unspecified locality (Pinto & Noronha 2003).

***Tetrapetalonema zakii* (Nagaty)**

Leontopithecus rosalia (Linnaeus), unspecified site of infection, unspecified locality (Vicente *et al.* 1997).

Superfamily Gnathostomatoidea Railliet

Family Gnathostomatidae Railliet

***Ancyracanthus pinnatifidus* Diesing**

Peltocephalus dumerilianus Schweigger, stomach, intestine, unspecified locality (Dujardin 1845; Diesing 1851; Gomes & Kohn 1970; Vicente *et al.* 1993).

Superfamily Habronematoidea Railliet & Henry

Family Tetrameridae Travassos

***Crassicauda crassicauda* (Creplin)**

Balaenoptera borealis Lesson, penis, urethra, intestine, Rio de Janeiro (Muniz-Pereira *et al.* 1999) (CHIOC 29663, 29664, 29672, 29674, 29676–29678, 29695).

Balaenoptera physalus (Linnaeus), penis, urethra, intestine, Rio de Janeiro (Muniz-Pereira *et al.* 1999).

***Tetrameres paradoxus* Diesing**

Diomedea exulans Linnaeus, proventricle, unspecified locality (Vicente *et al.* 1995).

***Tetrameres* sp.**

Crax blumenbachii Spix, ventricle, Espírito Santo (Travassos 1945b) (CHIOC 15886).

Superfamily Heterakoidea Railliet & Henry

Family Ascaridiidae Travassos

***Ascaridia hermaphrodita* (Froelich)**

Amazona vinacea (Kuhl), intestine, unspecified locality (Diesing 1851; Travassos 1930; Serra-Freire & Bianchin 1978; Vicente *et al.*, 1995).

Anodorhynchus hyacinthinus (Latham), small intestine, Rio de Janeiro (Barros *et al.* 2002) (CHIOC 34434).

Aratinga solstitialis (Linnaeus), intestine, unspecified locality (Vicente *et al.* 1995).

***Ascaridia sergiomeitri* Pereira**

Pipile jacutinga (Spix), unspecified site of infection, unspecified locality (Serra-Freire & Bianchin 1978).

***Ascaridia serrata* (Schneider)**

Pipile jacutinga (Spix), unspecified site of infection, Mato Grosso do Sul (Vicente *et al.* 1995).

Family Aspidoderidae Freitas

Aspidodera fasciata (Schneider)

Tolyteutes tricinctus (Linnaeus), intestine, large intestine, Piauí (Proença 1937; Vicente 1966; Vicente *et al.* 1997) (CHIOC 11, 706a–g, 4446a).

Aspidodera raillieti Travassos

Tolyteutes tricinctus (Linnaeus), intestine, Piauí, **NHR** (CHIOC 4446 b).

Aspidodera scoleciformis (Diesing)

Tolyteutes tricinctus (Linnaeus), intestine, large intestine, Piauí (Diesing 1851; Proença 1937; Vicente 1966; Vicente *et al.* 1997) (CHIOC 10, 706, 9668).

Aspidodera vazi Proença

Tolyteutes tricinctus (Linnaeus), unspecified site of infection, Piauí, **NHR** (CHIOC 4446c).

Family Heterakidae Railliet & Henry

Heterakis arquata (Schneider)

Psophia viridis obscura Pelzeln, intestine, Rondônia (Vicente *et al.* 1995) (CHIOC 07, 859a–f, 4448).

Heterakis nattereri Travassos

Crax blumenbachii Spix, cecum, Espírito Santo, Mato Grosso do Sul, Pará, Rio de Janeiro (Vicente *et al.* 1995) (CHIOC 4112 – paratype, 14813, 14814).

Heterakis oscari Travassos, Pinto & Muniz

Crax blumenbachii Spix, intestine, Mato Grosso do Sul (Travassos *et al.* 1927; Vicente *et al.* 1995).

Heterakis psophiae Travassos

Psophia viridis obscura Pelzeln, intestine, Rondônia (Vicente *et al.* 1995) (CHIOC 06 – holotype and allotype, 855, 856a–c – paratype, 9665 – paratype, 20847 – paratype).

Odonterakis fariai (Travassos)

Odontophorus capueira plumbeicollis Cory, cecum, Rio de Janeiro (Vicente *et al.* 1995).

Superfamily Oxyuroidea Railliet

Family Oxyuridae Cobbold

Trypanoxyurus (*Haploxyuris*) *goeldi* Inglis & Coosgrove

Callimico goeldii (Thomas), intestine, unspecified locality (Vicente *et al.* 1997).

Trypanoxyuris (*Paraoxyuronema*) *brachytelesi* (Artigas)

Brachyteles arachnoides (Geoffroy), large intestine, São Paulo (Artigas 1936; Hugot *et al.* 1996; Vicente *et al.* 1997).

Trypanoxyuris (*Trypanoxyuris*) *minutus* (Schneider)

Alouatta belzebul (Linnaeus), intestine, cecum, Pará, Piauí (Vicente *et al.* 1992; Vicente *et al.* 1997) (CHIOC 102, 4445, 6689, 10093).

Alouatta guariba guariba (Humboldt), cecum, intestine, Espírito Santo, São Paulo (Vicente *et al.* 1992; Vicente *et al.* 1997; Noronha *et al.* 2004) (CHIOC 29503).

Family Pharyngodonidae Travassos

Pharyngodon cesarpintoi Pereira

Liolaemus lutzae Mertens, stomach, Rio de Janeiro (Rocha 1995) (CHIOC 32821a–e).

Thelandros sceleratus Travassos

Liolaemus lutzae Mertens, large intestine, Rio de Janeiro (Rodrigues 1992).

Superfamily Physalopteroidea Sobolev

Family Physalopteridae Leiper

Physaloptera dilatata Rudolphi

Leontopithecus rosalia (Linnaeus), intestine, unspecified locality (Diesing 1851).

Chiropotes satanas (Hoffmannsegg), intestine, unspecified locality (Diesing 1851).

Lagothrix lagotricha (Humboldt), stomach, unspecified locality (Vicente *et al.* 1997).

Physaloptera losseni Ortlepp

Leptodon forbesi (Swann), pharyngeal cavity, Alagoas (Santos & Gomes 1989; Vicente *et al.* 1995) (CHIOC 32351).

Physaloptera retusa Rudolphi

Liolaemus lutzae Mertens, stomach and intestine, Rio de Janeiro (Rocha 1995) (CHIOC 32820a–c).

Physaloptera sp.

Leontopithecus rosalia (Linnaeus), stomach, Rio de Janeiro (Vicente *et al.* 1992; Vicente *et al.* 1997) (CHIOC 13600).

Physalaemus soaresi Izecksohn, stomach, Rio de Janeiro (Vicente *et al.* 1990).

Cacajao calvus (I. Geoffroy), stomach, Amazonas (Vicente *et al.* 1992; Vicente *et al.* 1997) (CHIOC 5846).

Lagothrix lagotricha (Humboldt), unspecified site of infection, Pará (Vicente *et al.* 1997) (CHIOC 21384).

Proleptus acutus Dujardin

Zapteryx brevirostris (Müller & Henle), stomach, small and large intestine, São Paulo (Silva *et al.* 2008)

Superfamily Rhabditoidea Travassos

Family Rhabdiasidae Railliet

Rhabdias sp.

Anisolepis undulatus (Wiegmann), unspecified site of infection, unspecified locality, NHR (CHIOC 8087).

Superfamily Spiruroidea Railliet & Henry

Family Cucullanidae Cobbold

Cucullanus pinnai Travassos, Artigas & Pereira

Steindachneridion parahybae (Steindachner), intestine, São Paulo (Vicente *et al.* 1985).

Dichelyne (Cucullanellus) travassosi (Guimarães & Cristofaro)

Balistes vetula Linnaeus, stomach, intestine, Bahia (Guimarães & Cristofaro 1974; Vicente *et al.* 1985) (CHIOC 31037a–f – holotype, allotype and paratype).

***Dichelyne* sp.**

Balistes vetula Linnaeus, intestine, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 35320).

Family Spirocercidae Chabaud

***Physocephalus meridionalis* (Molin)**

Tapirus terrestris (Linnaeus), stomach, unspecified locality (Vicente *et al.* 1997).

***Physocephalus nitidulans* (Schneider)**

Tapirus terrestris (Linnaeus), stomach, Mato Grosso do Sul (Travassos 1945a; Vicente *et al.* 1997).

***Pygarginema verrucosa* (Molin)**

Blastocerus dichotomus (Illiger), stomach, Mato Grosso (Vicente *et al.* 1997).

Superfamily Strongyloidea Weinland

Family Strongylidae Baird

***Chapiniella variabilis* (Chapin)**

Chelonoides denticulata (Linnaeus), intestine, Pará (Chapin 1925; Vicente *et al.* 1993).

***Kiluluma longipene* (Molin)**

Tapirus terrestris (Linnaeus), large intestine, Mato Grosso, Mato Grosso do Sul (Travassos 1945a; Vicente *et al.* 1997).

***Neomurshidia monosticha* (Diesing)**

Tapirus terrestris (Linnaeus), small intestine, large intestine, Mato Grosso, Mato Grosso do Sul (Diesing 1851; Travassos 1945a; Vicente *et al.* 1997).

***Sauricola sauricola* Chapin**

Chelonoides denticulata (Linnaeus), intestine, Pará (Chapin 1925; Vicente *et al.* 1993).

Superfamily Subuluroidea Travassos

Family Subuluridae Yorke & Maplestone

***Primasubulura distans* (Rudolphi)**

Saguinus bicolor (Spix 1823), intestine, Amazonas (Diesing 1851; Vicente *et al.* 1997).

***Primasubulura jacchi* (Marcel)**

Callithrix aurita (Geoffroy), small intestine, Minas Gerais (Pinto 1970; Vicente *et al.* 1992; Vicente *et al.* 1997) (CHIOC 30520 a–m, 30521 a–d).

***Subulura amazonica* Pereira & Machado Filho**

Pteronura brasiliensis (Gmelin), small intestine, Amazonas (Vieira *et al.* 2008a) (CHIOC 21205, 22160, 34213).

***Subulura interrogans* Lent & Freitas**

Pteronura brasiliensis (Gmelin), large intestine, Amazonas (Vieira *et al.* 2008a) (CHIOC 21203).

***Subulura suctoria* (Molin)**

Caprimulgus candicans (Pelzeln), intestine, Rio de Janeiro (Vicente *et al.* 1995).

Superfamily Thelazioidea Oerley

Family Thelaziidae Skrjabin

***Oxyspirura cephaloptera* (Molin)**

Momotus momota marcgraviana Pinto & Camargo, eyes, Mato Grosso (Vicente *et al.* 1995).

***Oxyspirura matogrosensis* Rodrigues**

Momotus momota marcgraviana Pinto & Camargo, eyes, Mato Grosso do Sul (Vicente *et al.* 1995).

***Oxyspirura* sp.**

Momotus momota marcgraviana Pinto & Camargo, eyes, Mato Grosso do Sul (Vicente *et al.* 1995).

***Thelazia anadorhynchi* Strachan**

Anodorhynchus hyacinthinus (Latham), eyes, central Brazil (Strachan 1957).

***Thelazia anolabiata* (Molin)**

Anodorhynchus hyacinthinus (Latham), eyes, Central Brazil (Vicente *et al.* 1995).

Crax fasciolata pinima (Pelzeln), eyes, Mato Grosso do Sul (Vicente, *et al.* 1995) (CHIOC 14473, 14556, 15535, 15598, 30499a–b).

***Thelazia chungkingensis* Hsü**

Mitu mitu (Linnaeus), eyes, Central Brazil (Strachan 1957; Vicente *et al.* 1995).

***Thelazia* sp.**

Crax blumenbachii Spix, eyes, Mato Grosso do Sul (Vicente *et al.* 1995) (CHIOC 11340).

Superfamily Trichinelloidea Railliet

Family Trichuridae (Ransom)

***Capillaria* sp.**

Crax blumenbachii Spix, esophagus, cecum, Espírito Santo, Mato Grosso do Sul (Vicente *et al.* 1995) (CHIOC 11341, 11413, 15884, 15885).

***Pseudocapillaria (Ichthyocapillaria) maricaensis* Rodrigues**

Liolaemus lutzae Mertens, small intestine, Rio de Janeiro (Rodrigues 1992, Moravec 2001) (CHIOC 32796a – holotype, 30796b–i – paratypes).

***Trichuris opaca* Barker & Noyes**

Chaetomys subspinosus (Olfers), intestine, Bahia (Kuniy & Brasileiro 2006).

***Trichuris ovis* (Abildgaard)**

Blastocerus dichotomus (Illiger), intestine, unspecified locality (Diesing 1851).

***Trichuris* sp.**

Blastocerus dichotomus (Illiger), unspecified site of infection, Mato Grosso do Sul (Travassos *et al.* 1927).

Leopardus tigrinus (Schreber), unspecified site of infection, unspecified locality (Beldomenico *et al.* 2005; Vieira *et al.* 2008a).

Superfamily Trichostrongyloidea Cram

Family Molineidae Skrjabin & Schulz

Allintoshius parallintoshius (Araujo)

Myotis ruber (Geoffroy), small intestine, São Paulo (Vicente *et al.* 1997).

Molineus major Cameron

Pteronura brasiliensis (Gmelin), lung, Mato Grosso do Sul (Vieira *et al.* 2008a) (CHIOC 12643).

Family Trichostrongylidae Leiper

Cooperia punctata (Linstow)

Blastocerus dichotomus (Illiger), stomach (abomaso), São Paulo (Nascimento *et al.* 2000).

Haemonchus contortus (Rudolphi)

Blastocerus dichotomus (Illiger), stomach (abomaso), small intestine, São Paulo, Mato Grosso do Sul (Travassos *et al.* 1927; Vicente *et al.* 1997; Nascimento *et al.* 2000).

Trichostrongylus axei (Cobbold)

Blastocerus dichotomus (Illiger), stomach (abomaso), São Paulo (Nascimento *et al.* 2000).

Trichostrongylus colubriformis (Giles)

Blastocerus dichotomus (Illiger), stomach (abomaso), São Paulo (Nascimento *et al.* 2000).

Phylum Platyhelminthes Gegenbaur

Class Cestoda Van Beneden

Order Cyclophyllidea Van Beneden

Family Anoplocephalidae Choldkovsky

Anoplocephala mamillana (Mehlis)

Tapirus terrestris (Linnaeus), unspecified site of infection, unspecified locality (Travassos 1965).

Anoplocephaloides globiceps (Diesing)

Tapirus terrestris (Linnaeus), small intestine, São Paulo, Mato Grosso (Diesing 1856; Travassos 1965; Schmidt 1986).

Mathevotaenia megastoma (Diesing)

Alouatta belzebul (Linnaeus), small intestine, Paraná (Diesing 1850, 1856; Travassos 1965; Stuart *et al.* 1998).

Brachyteles arachnoides (Geoffroy) small intestine, Rio de Janeiro (Diesing 1856; Travassos 1965).

Saguinus bicolor (Spix), small intestine, Amazonas (Diesing 1850, 1856; Travassos 1965).

***Moniezia rugosa* (Diesing)**

Brachyteles arachnoides (Geoffroy), unspecified site of infection, unspecified locality (Travassos 1965).

Brachyteles hypoxanthus (Kuhl), small intestine, unspecified locality (Diesing 1850).

***Thysanosoma actinoides* Diesing**

Blastocercus dichotomus (Illiger), cecum, Mato Grosso (Diesing 1856; Travassos 1965).

Family Davaineidae Braun

***Raillietina (Fuhrmannetta) elongata* (Fuhrmann)**

Taoniscus nanus (Temminck), unspecified site of infection, unspecified locality (Travassos 1965).

***Raillietina (Raillietina) leptacantha* (Fuhrmann)**

Crax fasciolata pinima (Pelzeln), unspecified site of infection, unspecified locality (Travassos 1965; Schmidt 1986).

***Raillietina (Raillietina) leptosoma* (Diesing)**

Anodorhynchus hyacinthinus (Latham), small intestine, unspecified locality (Diesing 1850; Travassos 1930, 1965).

Guaruba guarouba (J.F. Gmelin), unspecified site of infection, unspecified locality (Travassos 1965).

Family Hymenolepididae Ariola

***Hymenolepis diminuta* (Rudolphi)**

Chaetomys subspinosus (Olfers), intestine, Bahia (Kuniy & Brasileiro 2006).

***Hymenolepis* sp.**

Tangara cyanocephala cearensis Cory, intestine, Rio de Janeiro, **NHR** (CHIOC 1699).

Order Proteocephalidea Mola

Family Proteocephalidae La Rue

***Ophiotaenia lopesi* Rego**

Chelonoides denticulata (Linnaeus), small intestine, Pará (Rego 1967; Schmidt 1986) (CHIOC 30291 – holotype, 30292a–e – paratype, 30451).

Order Tetraphyllidea Carus

Family Phyllobothriidae Braun

***Anthobothrium laciniatum* Linton**

Carcharhinus longimanus (Poey), spiral valve, Pernambuco (Rego 1977; Schmidt 1986).

***Anthobothrium pristis* Woodland**

Pristis perotteti Valenciennes, in Müller & Henle, spiral valve, Amazonas (Rego 1973).

***Phyllobothrium filiforme* Yamaguti**

Carcharhinus longimanus (Poey), spiral valve, Pernambuco (Rego 1977; Schmidt 1986).

Order Trypanorhyncha Diesing

Family Eutetrarhynchidae Guiart

Eutetrarhynchus vooremi São Clemente & Gomes

Mustelus schmitti Springer, spiral valve, Rio de Janeiro (São Clemente & Gomes 1989) (32566a–d – paratype, 32566e – holotype).

Family Grillotiidae Dollfus

Progrillotia dollfusi Carvajal & Rego

Carcharhinus signatus (Poey), stomach, spiral valve, Paraná, Santa Catarina (Knoff *et al.* 2002, 2004b).

Family Lacistorhynchidae Guiart

Callitetrarhynchus gracilis (Rudolphi) (Larval)

Balistes vetula Linneaus, muscle, Rio de Janeiro (São Clemente *et al.* 1995).

Callitetrarhynchus sp. (Larval)

Balistes vetula Linneaus, unspecified site of infection, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 36480).

Callitetrarhynchus speciosus (Linton) (Larval)

Balistes vetula Linneaus, unspecified site of infection, Rio de Janeiro (Luque & Poulin 2004)

Family Otobothriidae Dollfus

Otobothrium sp. (Larval)

Balistes vetula Linneaus, mesenteries, Rio de Janeiro (São Clemente *et al.* 1995; Alves *et al.* 2005) (CHIOC 36482).

Family Pterobothriidae Pintner

Pterobothrium fragile (Diesing)

Pristis perotteti Valenciennes, in Müller & Henle, unspecified site of infection, unspecified locality (Rego 1973; Schmidt 1986).

Family Tentaculariidae Poche

Tentacularia coryphaenae Bosc

Carcharhinus longimanus (Poey), stomach, spiral valve, Paraná, Santa Catarina, Pernambuco (Rego 1977; Knoff *et al.* 2002, 2004a) (CHIOC 31431a–c).

Heteronybelinia yamagutii (Dollfus)

Carcharhinus signatus (Poey), spiral valve, Paraná, Santa Catarina (Knoff *et al.* 2002, 2004c) (CHIOC 34501).

Heteronybelinia nipponica (Yamaguti)

Carcharhinus signatus (Poey), spiral valve, Paraná, Santa Catarina (Knoff *et al.* 2002; Knoff *et al.* 2004c) (CHIOC 34502).

***Mixonybelinia beveridgei* (Palm, Walter, Schwerdtfeger & Reimer)**

Dipturus trachydermus (Kreff & Stehmann), stomach, spiral valve, Paraná (Knoff *et al.* 2002, 2004c) (CHIOC 34503 a–c).

***Nybelinia (Nybelinia) lingualis* (Cuvier)**

Mustelus schmitti Springer, spiral valve, Rio de Janeiro (São Clemente & Gomes 1989) (CHIOC 32568).

Larval species name

***Scolex pleuronectis* Müller**

Pagrus pagrus (Linnaeus), mesenteries, Rio de Janeiro (Paraguassú *et al.* 2002a; Luque & Poulin 2004) (CHIOC 34525).

Balistes vetula Linnaeus, unspecified site of infection, Rio de Janeiro (Luque & Poulin 2004).

Genera incertae sedis

***Tetrarhynchus* sp.**

Pagrus pagrus (Linnaeus), abdominal cavity, Rio de Janeiro, **NHR** (CHIOC 334, 6950, 6951).

Class Monogenea Carus

Subclass Oligonchoinea Bychowsky

Order Mazocraeidea Bychowsky

Family Gastrocotylidae Price

***Sibitrema poonui* Yamaguti**

Thunnus obesus (Lowe), unspecified site of infection, Rio de Janeiro (Cohen & Kohn 2008).

Subclass Polyonchoinea Bychowsky

Order Capsalidea Lebedev

Family Capsalidae Baird

***Encotyllabe lintoni* Monticelli**

Pagrus pagrus (Linnaeus), pharynx, Rio de Janeiro (Fabio 1998; Cohen & Kohn 2008).

***Encotyllabe spari* Yamaguti**

Pagrus pagrus (Linnaeus), gills, Rio de Janeiro (Paraguassú *et al.* 2002a) (CHIOC 34531).

***Lamellodiscus* sp.**

Pagrus pagrus (Linnaeus), gills, Rio de Janeiro (Paraguassú *et al.* 2002a; Cohen & Kohn 2008) (CHIOC 34532).

***Microcotyle* sp.**

Pagrus pagrus (Linnaeus), gills, Rio de Janeiro, **NHR** (CHIOC 4249).

***Nasicola brasiliensis* Kohn, Baptista-Farias, Santos & Gibson**

Thunnus obesus (Lowe), nasal cavity, Rio de Janeiro (Kohn *et al.* 2004; Cohen & Kohn 2008) (CHIOC 34825, 34924a–b – holotype, 34925a–b – paratype, 34926 – paratype, 34927a–b – paratype, 34928a–c – paratype, 34929 – paratype, 34930a–b – paratype, 34932 – paratype, 34933a–b – paratype, 34934a–b – paratype, 34935 – paratype).

***Polyabroides multispinosus* Roubal**

Pagrus pagrus (Linnaeus), gills, Rio de Janeiro (Paraguassú *et al.* 2002a; Cohen & Kohn 2008) (CHIOC 34533).

Order Gyrodactylidea Bychowsky

Family Anoplodiscidae Tagliani

***Anoplodiscus longivaginat* Paraguassú, Luque & Alves**

Pagrus pagrus (Linnaeus), mouth, gills, Rio de Janeiro (Paraguassú *et al.* 2002a, 2002b; Cohen & Kohn 2008) (CHIOC 34528, 34905 – holotype, 34906a–d – paratype, 34907).

***Benedenia* sp.**

Pagrus pagrus (Linnaeus), gills, Rio de Janeiro (Paraguassú *et al.* 2002a) (CHIOC 34529).

***Echinopelma brasiliensis* Fabio**

Pagrus pagrus (Linnaeus), gills, Rio de Janeiro (Fabio 1999; Paraguassú *et al.* 2002a; Cohen & Kohn 2008) (CHIOC 34530).

Order Dactylogyridea Bychowsky

Family Diplectanidae Monticelli

***Pseudorhabdosynochus beverleyburtonae* (Oliver)**

Epinephelus marginatus (Lowe), gills, Rio de Janeiro (Santos *et al.* 2000; Cohen & Kohn 2008) (CHIOC 33987a–b).

***Pseudorhabdosynochus sulamericanus* Santos, Buchmann & Gibson**

Epinephelus niveatus (Valenciennes), gills, Rio de Janeiro (Santos *et al.* 2000; Cohen & Kohn 2008) (CHIOC 33985a–i – holotype and paratype).

Subclass Polystomatoinea Lebedev

Order Polystomatidea Lebedev

Family Polystomatidae Gamble

***Polystomoides brasiliensis* Vieira, Novelli, Sousa & Souzalima**

Hydromedusa maximiliani (Mikan), buccal cavity, pharyngeal cavity, Minas Gerais (Vieira *et al.* 2008b) (CHIOC 36902 – holotype, 36903a–d – paratype).

Class Trematoda Rudolphi

Order Aspidocotylea Monticelli

Family Aspidogasteridae Poche

***Lophotaspis vallei* (Stossich)**

Caretta caretta (Linnaeus), stomach, esophagus, São Paulo (Araujo 1941; Hendrix & Short 1972).

Order Digenea Van Beneden

Family Apocreadiidae Skrjabin

***Neoapocreadium chabaudi* Kohn & Fernandes**

Balistes vetula Linnaeus, small intestine, Rio de Janeiro (Gomes & Fábio 1971b; Gomes *et al.* 1978; Alves *et al.* 2005; Kohn *et al.* 2007) (CHIOC 30566a–b – holotype and paratype, 31455, 31456, 36474).

Family Azygiidae Lühe

***Otodistomum veliporum* (Creplin)**

Dipturus trachydermus (Krefft & Stehmann), stomach, spiral valve, Paraná (Knoff *et al.* 2001a; Kohn *et al.*, 2007) (CHIOC 33980a–d).

Family Brachylaimidae Joyeux & Foley

***Brachylaima centrodes* (Braum)**

Crax blumenbachii Spix, cloaca, Espírito Santo, NHR (CHIOC 15789, 29879).

***Glaphyrostomum propinquum* Braum**

Dendrocolaptes certhia medius Todd, intestine, unspecified locality (Thatcher 1993).

***Leucochloridium* sp.**

Odontophorus capueira plumbeicollis Cory, unspecified site of infection, unspecified locality (Travassos *et al.* 1969).

Family Bucephalidae Poche

***Prosorhynchus ozakii* Manter**

Epinephelus niveatus (Valenciennes), pyloric ceca, unspecified locality (Thatcher 1993).

***Prosorhynchus pacificus* Manter**

Mycteroperca interstitialis Poey, pyloric ceca, Santa Catarina (Amato 1982; Kohn *et al.* 2007).

Family Campulidae Odhner

***Lecithodesmus goliath* (Beneden)**

Balaenoptera borealis Lesson, 1828, liver, Rio de Janeiro (Travassos *et al.* 1969; Santos *et al.* 1996; Muniz-Pereira *et al.* 1999; Pinto *et al.* 2004) (CHIOC 27225, 27224a–f, 27226a–c).

***Synthesium pontoporiae* (Raga, Aznar, Balbuena & Dailey)**

Pontoporia blainvillei (Gervais & d'Orbigny), stomach, Rio Grande do Sul (Silva & Cousin 2004; Marigo *et al.* 2008).

Family Choerocotyloidea Yamaguti

***Chiorchis fabaceus* (Diesing)**

Trichechus inunguis (Natterer), small intestine, cecum, large intestine, unspecified locality (Price 1932; Travassos *et al.* 1969).

Trichechus manatus Linnaeus, small intestine, large intestine, cecum, Amazonas (Diesing 1850; Travassos *et al.* 1969) (CHIOC 8478).

***Cladorchis asper* (Diesing)**

Tapirus terrestris (Linnaeus), cecum, unspecified locality (Diesing 1850; Viana 1924; Travassos 1934; Travassos *et al.* 1969; Thatcher 1993).

***Cladorchis pyriformis* (Diesing)**

Tapirus terrestris (Linnaeus), small intestine, large intestine, cecum, Mato Grosso do Sul (Diesing 1850; Viana 1924; Travassos 1934, 1945a; Travassos *et al.* 1969; Thatcher 1993).

***Cladorchis* sp.**

Tapirus terrestris (Linnaeus), unspecified site of infection, Mato Grosso do Sul (Travassos *et al.* 1927).

***Nematophila grandis* (Diesing)**

Peltocephalus dumerilianus Schweigger, large intestine, unspecified locality (Diesing 1850).

Podocnemis erythrocephala (Spix), large intestine, unspecified locality (Diesing 1850).

***Nematophila* sp.**

Podocnemis unifilis Troschel, intestine, São Paulo (Travassos *et al.* 1969) (CHIOC 8477).

Family Dicrocoeliidae Odhner

***Athesmia heterolecithodes* (Braun)**

Psophia viridis obscura Pelzeln, bile duct, Amazonas (Travassos 1944; Freitas 1962; Travassos *et al.* 1969).

***Balanorchis anastrophus* Fiscoeder**

Blastocerus dichotomus (Illiger), rumen, stomach, Mato Grosso do Sul (Viana 1924; Travassos *et al.* 1927, 1969; Travassos 1934; Nascimento *et al.* 2006).

***Brachylecithum rarum* (Travassos)**

Tangara cyanocephala cearensis Cory, bile duct, Rio de Janeiro (Travassos *et al.* 1969; Thatcher 1993) (CHIOC 12399, 12400a–b, 12401a–b, 12402a–d, 13939).

***Conspicuum conspicuum* (Faria)**

Callimico goeldii (Thomas), bile duct, unspecified locality (Travassos *et al.* 1969).

***Lyperosomum oswaldoi* (Travassos)**

Crax blumenbachii Spix, bile duct, Espírito Santo (Travassos 1945b) (CHIOC 15303, 15312, 15313).

Odontophorus capueira plumbeicollis Cory, bile duct, unspecified locality (Travassos *et al.* 1969).

***Paradistomum parvissimum* (Travassos)**

Liolaemus lutzae Mertens, gall bladder, Rio de Janeiro (Rodrigues 1992).

***Zonorchis confusus* Travassos**

Procnias nudicollis (Vieillot), bile duct, unspecified locality (Travassos *et al.* 1969; Thatcher 1993).

***Zonorchis microrchis* (Travassos)**

Psophia viridis obscura Pelzeln, bile duct, unspecified locality (Travassos *et al.* 1969).

Family Didymozoidae Monticelli

***Didymocystis orbitalis* Yamaguti**

Thunnus obesus (Lowe), periorbital connective and adipose tissues, Rio de Janeiro (Justo & Kohn 2005; Kohn *et al.* 2007).

***Didymosulcus palati* (Yamaguti)**

Thunnus obesus (Lowe), hard denticle palate, gill arches, Rio de Janeiro (Justo *et al.* 2008).

***Didymosulcus philobranchiarca* (Yamaguti)**

Thunnus obesus (Lowe), hard denticle palate, gill arches, unspecified locality (Justo *et al.* 2008).

Family Diplostomidae Poirier

***Alaria clathrata* Diesing**

Pteronura brasiliensis (Gmelin), intestine, stomach, unspecified locality (Viana 1924; Thatcher 1993; Vieira *et al.* 2008a).

***Alaria pseudoclathrata* (Krause)**

Pteronura brasiliensis (Gmelin), intestine, unspecified locality (Thatcher 1993; Vieira *et al.* 2008a).

***Diplostomum alarioides* Dubois**

Pteronura brasiliensis (Gmelin), large intestine, Mato Grosso do Sul (Travassos & Freitas 1941; Thatcher 1993; Vieira *et al.* 2008a) (CHIOC 12802, 15379a–b).

Family Echinostomatidae Looss

***Baschkirovitrema incrassatum* (Diesing)**

Pteronura brasiliensis (Gmelin), intestine, unspecified locality (Viana 1924; Thatcher 1993; Vieira *et al.* 2008a).

Family Eucotylidae Cohn

***Paratanaisia bragai* (Santos)**

Odontophorus capueira plumbeicollis Cory, kidney, unspecified locality (Travassos *et al.* 1969).

***Tanaisia magnicola* Freitas**

Psophia viridis obscura Pelzeln, kidney, unspecified locality (Travassos *et al.* 1969).

Family Fellodistomidae Nicoll

***Varelacreptotrema travassoi* Gomes & Fabio**

Balistes vetula Linnaeus, stomach, Rio de Janeiro (Gomes & Fábio 1971a; Kohn *et al.* 2007) (CHIOC 30593a–f – holotype and paratype).

Family Gorgoderidae Looss

Xystretum pulchrum (Travassos)

Balistes vetula Linnaeus, urinary bladder, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 36478).

Family Hemiuridae Looss

Lecithochirium sp.

Pagrus pagrus (Linnaeus), stomach, Rio de Janeiro (Paraguassú *et al.* 2002a) (CHIOC 34523).

Odontophorus capueira plumbeicollis Cory, unspecified site of infection, unspecified locality (Travassos *et al.* 1969).

Parahemiurus merus (Linton)

Pagrus pagrus (Linnaeus), stomach, intestine, Rio de Janeiro (Paraguassú *et al.* 2002a; Kohn *et al.* 2007) (CHIOC 34524).

Family Heterophyidae Odhner

Cryptocotyle thapari McIntosh

Pteronura brasiliensis (Gmelin), intestine, unspecified locality (Thatcher 1993; Vieira *et al.* 2008a).

Ascocotyle (Phagicola) arnaldoi (Travassos)

Thalassarche melanophrys (Temminck), intestine, unspecified locality (Travassos *et al.* 1969; Thatcher 1993).

Family Lecithasteridae Odhner

Aponurus laguncula Looss

Balistes vetula Linnaeus, stomach, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 36467, 36468).

Family Lepocreadiidae Odhner

Hypocreadium biminensis (Sogandares-Bernal)

Balistes vetula Linnaeus, intestine, Rio de Janeiro (Alves *et al.* 2005) (CHIOC 36472).

Family Liolopidae Odhner

Helicotrema spirale (Diesing)

Chelonoides denticulata (Linnaeus), intestine, unspecified locality (Viana 1924; Travassos *et al.* 1969).

Peltocephalus dumerilianus Schweigger, intestine, unspecified locality (Diesing 1850).

Family Metacetabulidae Freitas & Lent

Metacetabulum invaginatum Freitas & Lent

Chelonia mydas (Linnaeus), middle intestine, Rio de Janeiro, São Paulo (Freitas & Lent 1938; Travassos *et al.* 1969; Thatcher 1993) (CHIOC 7398, 9886, 9975, 9889a–c – holotype, 15433a–h).

Family Microscaphidiidae Looss

Neoctangium travassosi Ruiz

Chelonia mydas (Linnaeus), intestine, Rio de Janeiro (Ruiz 1943) (CHIOC 6980, 9771a–b).

Polyangium linguatula (Looss)

Chelonia mydas (Linnaeus), intestine, Rio de Janeiro (Freitas & Lent 1938; Travassos *et al.* 1969; Thatcher 1993) (CHIOC 9887a–c).

Family Notocotyliidae Lühe

Ogmogaster antarcticus Johnston

Balaenoptera borealis Lesson, 1828, intestine, rectum, Rio de Janeiro (Travassos *et al.* 1969; Santos *et al.* 1996; Muniz-Pereira *et al.* 1999; Pinto *et al.* 2004) (CHIOC 33974a–c, 33975a–c).

Balaenoptera physalus (Linnaeus), intestine, rectum, Rio de Janeiro (Muniz-Pereira *et al.*, 1999).

Ogmogaster sp.

Balaenoptera physalus (Linnaeus), large intestine, rectum, Rio de Janeiro, **NHR** (CHIOC 29757, 29758, 29759, 29760, 29761, 29762).

Family Ochetosomatidae Leão

Ochetosoma heterocoelium (Travassos)

Bothrops insularis (Amaral), buccal cavity, esophagus, São Paulo (Corrêa *et al.* 1990).

Family Opisthorchiidae Braun

Amphimerus interruptus (Braun)

Speothos venaticus (Lund), bile ducts, Amazonas (Vieira *et al.* 2008a) (CHIOC 16650a–c).

Family Opisthotrematidae Poche

Pulmonicola cochleotrema (Travassos & Vogelsang)

Trichechus manatus Linnaeus, stomach, unspecified locality (Travassos *et al.* 1969).

Family Paragonimidae Dollfus

Paragonimus rudis (Diesing)

Pteronura brasiliensis (Gmelin), lung, unspecified locality (Viana 1924; Vieira *et al.* 2008a).

Family Paramphistomidae Fiscoeder

Paramphistomum cervi (Zeder)

Blastocerus dichotomus (Illiger), rumen, Mato Grosso do Sul (Nascimento *et al.* 2006).

Paramphistomum liorchis Fiscoeder

Blastocerus dichotomus (Illiger), stomach, Mato Grosso do Sul (Viana 1924; Travassos *et al.* 1927, 1969; Travassos 1934).

Family Pronocephalidae Looss

Cricocephalus albus (Kuhl & Hasselt)

Caretta caretta (Linnaeus), intestine, unspecified locality (Travassos *et al.* 1969).

Chelonia mydas (Linnaeus), stomach, small intestine, Rio de Janeiro (Travassos *et al.* 1969; Thatcher 1993) (CHIOC 4526, 4536, 6923, 7399, 9767, 9768a–b, 9773, 9774a–c, 9777, 9794, 20797).

Eretmochelys imbricata (Linnaeus), intestine, unspecified locality (Travassos *et al.* 1969; Thatcher 1993).

Pleurogonius linearis Looss

Chelonia mydas (Linnaeus), intestine, unspecified locality (Travassos *et al.* 1969).

Pleurogonius lobatus (Looss)

Chelonia mydas (Linnaeus), stomach, small intestine, Rio de Janeiro (Travassos *et al.* 1969) (CHIOC 9941, 9888a–b).

Pleurogonius longiusculus (Beneden)

Chelonia mydas (Linnaeus), intestine, Rio de Janeiro (Travassos *et al.* 1969) (CHIOC 6979, 9770a–b).

Pleurogonius trigonocephalus (Rudolphi)

Chelonia mydas (Linnaeus), intestine, unspecified locality (Travassos *et al.* 1969).

Caretta caretta (Linnaeus, 1758), oesophagus, intestine, unspecified locality (Diesing 1850).

Pronocephalus obliquus Looss

Caretta caretta (Linnaeus), stomach, esophagus, intestine, unspecified locality (Viana 1924).

Chelonia mydas (Linnaeus), Intestine, unspecified locality (Travassos *et al.* 1969; Thatcher 1993) (CHIOC 7400, 9769, 9775a–d).

Pyelosomum crassum (Looss)

Chelonia mydas (Linnaeus), large intestine, Rio de Janeiro (Travassos *et al.* 1969; Thatcher 1993) (CHIOC 4537, 9772a–c).

Pyelosomum longiusculus Looss

Chelonia mydas (Linnaeus), intestine, unspecified locality (Thatcher 1993).

Family Rhytidodidae Odhner

Rhytidodes gelatinosus (Rudolphi)

Caretta caretta (Linnaeus), intestine, unspecified locality (Diesing 1850; Viana 1924; Travassos *et al.* 1969; Thatcher 1993).

Chelonia mydas (Linnaeus), intestine, unspecified locality (Travassos *et al.* 1969; Thatcher 1993).

Family Spirorchiidae Stunkard

Amphiorchis caborojoensis Fischthal & Acholonu

Eretmochelys imbricata (Linnaeus), small intestine, São Paulo (Werneck *et al.* 2008a).

Carettacola stunkardi Martin & Bamberger

Eretmochelys imbricata (Linnaeus), body wash, São Paulo (Werneck *et al.* 2008a).

***Learedius learedi* Price**

Chelonia mydas (Linnaeus), heart, liver, spleen, lungs, kidneys, mesenterium, São Paulo (Werneck *et al.* 2006).

***Monticellius indicum* Mehra**

Chelonia mydas (Linnaeus), heart, São Paulo (Werneck *et al.* 2008b).

Family Telorchidae Stunkard

***Loefgrenia loefgreni* Travassos**

Podocnemis unifilis Troschel, intestine, Pará (Travassos *et al.* 1969; Thatcher 1993) (CHIOC 1495 – paratype, 1496, 9336 – paratype, 9337 – paratype).

***Orchidasma amphiorchis* (Braun)**

Caretta caretta (Linnaeus), stomach, intestine, unspecified locality (Thatcher 1993).

Chelonia mydas (Linnaeus), stomach, small intestine, Rio de Janeiro (Freitas & Lent 1938; Travassos *et al.* 1969; Thatcher 1993) (CHIOC 3387, 3388, 3397, 3398, 3399, 4538, 9776a–b).

Family Zygotyphidae Ward

***Zygotyphus lunatum* (Diesing)**

Blastocerus dichotomus (Illiger), large intestine, cecum, Mato Grosso do Sul (Diesing 1850; Viana 1924; Travassos *et al.* 1969; Nascimento *et al.* 2006).

Host-Parasite list

Class Actinopterygii

Order Perciformes

Family Scombridae

Thunnus obesus (IUCN: VU, Biodiversitas: Not included)

Didymocystis orbitalis

Didymosulcus palati

Didymosulcus philobranthiarca

Nasicola brasiliensis

Family Serranidae

Epinephelus marginatus (IUCN: EN, Biodiversitas: Not included)

Pseudorhabdosynochus beverleyburtonae

Epinephelus niveatus (IUCN: VU, Biodiversitas: Not included)

Prosorhynchus ozakii

Pseudorhabdosynochus sulamericanus

Mycteroperca interstitialis (IUCN: VU, Biodiversitas: Not included)

Prosorhynchus pacificus

Family Sparidae

Pagrus pagrus (IUCN: EN, Biodiversitas: Not included)

Anisakis sp.
Anoplodiscus longivaginatus
Benedenia sp.
Contracaecum sp.
Corynosoma australe
Corynosoma sp.
Echinopelma brasiliensis
Encotyllabe lintoni
Hysterothylacium sp.
Lamellodiscus sp.
Lecithochirium sp.
Microcotyle sp.
Parahemiurus merus
Phocanema sp.
Polyabroides multispinosus
Polymorphus sp.
Pseudoterranova sp.
Raphidascaris sp.
Scolex pleuronectis
Terranova sp.
Tetrarhynchus sp.

Order Siluriformes

Family Pimelodidae

Steindachneridion parahybae (IUCN: Not included, Biodiversitas: CR)

Amplicaecum sp.
Cucullanus pinnai
Eustrongyloides sp.

Order Tetraodontiformes

Family Balistidae

Balistes vetula (IUCN: VU, Biodiversitas: Not included)

Anisakis sp.
Aponurus laguncula
Callitetrarhynchus gracilis
Callitetrarhynchus speciosus
Callitetrarhynchus sp.
Contracaecum sp.
Dichelyne (Cucullanellus) travassosi
Dichelyne sp.
Hypocreadium biminensis
Hysterothylacium sp.
Neoapocreadium chabaudi
Otobothrium sp.
Rhadinorhynchus pristis
Scolex pleuronectis

Varelacreptotrema travassoi
Xystretum pulchrum

Class Chondrichthyes

Order Carcharhiniformes

Family Carcharhinidae

Carcharhinus longimanus (IUCN: VU, Biodiversitas: VU)

Anthobothrium laciniatum

Phyllobothrium filiforme

Tentacularia coryphaenae

Carcharhinus signatus (IUCN: VU, Biodiversitas: VU)

Anisakis sp.

Contracaecum sp.

Heteronybelinia nipponica

Heteronybelinia yamagutii

Progrillotia dollfusi

Tentacularia coryphaenae

Family Triakidae

Galeorhinus galeus (IUCN: VU, Biodiversitas: CR)

Corynosoma australe

Corynosoma sp.

Mustelus schmitti (IUCN: EN, Biodiversitas: VU)

Contracaecum sp.

Eutetrarhynchus vooremi

Nybelinia (Nybelinia) lingualis

Pseudoterranova sp.

Order Rajiformes

Family Arhynchobatidae

Rioraja agassizi (IUCN: VU, Biodiversitas: Not included)

Pseudanisakis sulamericana

Family Pristidae

Pristis perotteti Valenciennes, in Müller & Henle, 1841 (IUCN: CR, Biodiversitas: CR)

Anthobothrium pristis

Pterobothrium fragile

Family Rajidae

Dipturus trachydermus (IUCN: VU, Biodiversitas: Not included)

Anisakis sp.

Contraecaecum sp.
Gorgorhynchus sp.
Mixonybelinia beveridgei
Otodistomum veliporum
Raphidascaaris sp.

Family Rhinobatidae

Zapteryx brevirostris (IUCN: VU, Biodiversitas: Not included)
Proleptus acutus

Class Amphibia

Order Anura

Family Leptodactylidae

Physalaemus soaresi (IUCN: EN, Biodiversitas: EN)
Aplectana sp.
Cosmocerca parva
Oxyascaris oxyascaris
Physaloptera sp.

Class Reptilia

Order Squamata

Family Polychrotidae

Anisolepis undulatus (IUCN: VU, Biodiversitas: VU)
Rhabdias sp.

Family Tropiduridae

Liolaemus lutzae (IUCN: VU, Biodiversitas: CR)
Paradistomum parvissimum
Pharyngodon cesarpinto
Phyloptera retusa
Pseudocapillaria (Ichthyocapillaria) maricaensis
Thelandros sceleratus

Order Testudines

Family Chelidae

Hydromedusa maximiliani (IUCN: VU, Biodiversitas: Not included)
Polystomoides brasiliensis

Family Cheloniidae

Caretta caretta (IUCN: EN, Biodiversitas: VU)

Cricocephalus albus

Lophotaspis vallei

Orchidasma amphiorchis

Pronocephalus obliquus

Rhytidodes gelatinosus

Chelonia mydas (IUCN: EN, Biodiversitas: VU)

Anisakis sp.

Cricocephalus albus

Kathlania leptura

Learedius learedi

Metacetabulum invaginatum

Neoctangium travassosi

Orchidasma amphiorchis

Pleurogonius linearis

Pleurogonius lobatus

Pleurogonius longiusculus

Pleurogonius trigonocephalus

Polyangium linguatula

Pronocephalus obliquus

Pyelosomum crassum

Pyelosomum longiusculus

Rhytidodes gelatinosus

Sulcascaris sulcata

Tonaudia freitasi

Eretmochelys imbricata (IUCN: CR, Biodiversitas: EN)

Amphiorchis caborojoensis

Carettacola stunkardi

Cricocephalus albus

Orchidasma amphiorchis

Family Pelomedusidae

Peltocephalus dumerilianus (IUCN: VU, Biodiversitas: Not included)

Ancyracanthus pinnatifidus

Camallanus microcephalus

Helicotrema spirale

Nematophila grande

Podocnemis erythrocephala (IUCN: VU, Biodiversitas: Not included)

Nematophila grande

Paratractis hystrix

Podocnemis unifilis (IUCN: VU, Biodiversitas: Not included)

Loefgrenia loefgreni

Nematophila sp.

Paraorientatractis semiannulata

Family Testudinidae

Chelonoides denticulata (IUCN: VU, Biodiversitas: Not included)

Angusticaecum brevispiculum

Chapiniella variabilis
Helicotrema spirale
Klossinemella travassosi
Labiduris gulosa
Labiduris irineuta
Labiduris zschokkei
Ophiotaenia lopesi
Sauricola sauricola

Class Aves

Order Caprimulgiformes

Family Caprimulgidae

Eleothreptus candicans (Pelzeln, 1867) (IUCN: EN, Biodiversitas: EN)
Subulura suctoria

Order Coraciiformes

Family Momotidae

Momotus momota marcgraviana (IUCN: Not included, Biodiversitas: EN)
Oxyspirura cephaloptera
Oxyspirura matogrosensis
Oxyspirura sp.

Order Falconiformes

Family Accipitridae

Leptodon forbesi (IUCN: CR, Biodiversitas: Not included)
Physaloptera losseni

Order Galliformes

Family Cracidae

Crax blumenbachii (IUCN: EN, Biodiversitas: EN)
Brachylaima centrodes
Capillaria sp.
Heterakis nattereri
Heterakis oscari
Lyperosomum oswaldoi
Tetrameres sp.
Thelazia sp.
Crax fasciolata pinima (IUCN: Not included, Biodiversitas: EN)
Thelazia anolabiata
Raillietina (Raillietina) leptacantha
Schistorophus sp.
Mitu mitu (IUCN: EW, Biodiversitas: EW)

Thelazia chungkingensis
Pipile jacutinga (IUCN: EN, Biodiversitas: EN)
Ascaridia sergiomeitrai
Ascaridia serrata
Odontophorus capueira plumbeicollis (IUCN: Not included, Biodiversitas: EN)
Leucochloridium sp.
Lyperosomum oswaldoi
Odonterakis fariai
Paratanaisia bragai

Order Gruiformes

Family Psophiidae

Psophia viridis obscura (IUCN: Not included, Biodiversitas: EN)
Athesmia heterolecithodes
Heterakis arquata
Heterakis psophiae
Tanaisia magnicolica
Zonorchis microrchis

Order Passeriformes

Family Cotingidae

Procnias nudicollis (IUCN: VU, Biodiversitas: Not included)
Zonorchis confusus

Family Dendrocolaptidae

Dendrocolaptes certhia medius (IUCN: Not included, Biodiversitas: EN)
Glaphyrostomum propinquum

Family Emberizidae

Gubernatrix cristata (IUCN: EN, Biodiversitas: CR)
Pelecitus sp.
Tangara cyanocephala cearensis (IUCN: Not included, Biodiversitas: EN)
Brachylecithum rarum
Hymenolepis sp.

Family Thamnophilidae

Thamnophilus caerulescens cearensis (IUCN: Not included, Biodiversitas: EN)
Pelecitus circularis

Order Procellariiformes

Family Diomedidae

- Diomedea exulans* (IUCN: VU, Biodiversitas: VU)
Tetrameres paradoxus
Thalassarche melanophrys (IUCN: EN, Biodiversitas: VU)
Phagicola arnaldoi
Seurattia shipleyi
Stegophorus diomedae

Order Psittaciformes

Family Psittacidae

- Amazona vinacea* (IUCN: VU, Biodiversitas: EN)
Ascaridia hermaphrodita
Anodorhynchus hyacinthinus (IUCN: EN, Biodiversitas: VU)
Ascaridia hermaphrodita
Pelecitus circularis
Raillietina (Raillietina) leptosoma
Thelazia anadorhynchi
Thelazia anolabiata
Aratinga solstitialis (IUCN: EN, Biodiversitas: Not included)
Aprocta pyrrhurae
Ascaridia hermaphrodita
Guaruba guarouba (IUCN: EN, Biodiversitas: VU)
Raillietina (Raillietina) leptosoma
Pyrrhura cruentata (IUCN: VU, Biodiversitas: VU)
Aprocta pyrrhurae

Order Tinamiformes

Family Tinamidae

- Taoniscus nanus* (IUCN: VU, Biodiversitas: VU)
Raillietina (Fuhrmannetta) elongata

Class Mammalia

Order Artiodactyla

Family Cervidae

- Blastocerus dichotomus* (IUCN: VU, Biodiversitas: VU)
Balanorchis anastrophus
Cooperia punctata
Haemonchus contortus
Paramphistomum cervi
Paramphistomum liorchis

Pygarginema verrucosa
Thysanosoma actinoides
Trichostrongylus axei
Trichostrongylus colubriformis
Trichuris ovis
Trichuris sp.
Zygocotyle lunatum

Order Carnivora

Family Canidae

Speothos venaticus (IUCN: Not included, Biodiversitas: VU)
Amphimerus interruptus
Diocotophyma renale

Family Felidae

Leopardus tigrinus (IUCN: VU, Biodiversitas : VU)
Trichuris sp.

Family Mustelidae

Pteronura brasiliensis (IUCN: EN, Biodiversitas: VU)
Alaria clathrata
Alaria pseudoclathrata
Baschkirovitrema incrassatum
Cryptocotyle thapari
Diplostomum alarioides
Dirofilaria sp.
Dirofilaria spectans
Galeiceps longispiculum
Molineus major
Paragonimus rudis
Subulura amazonica
Subulura interrogans

Order Cetacea

Family Balaenopteridae

Balaenoptera borealis (IUCN: EN, Biodiversitas: VU)
Anisakis physeteris
Bolbosoma turbinella
Crassicauda crassicauda
Lecithodesmus goliath
Pseudoterranova sp.
Balaenoptera physalus (IUCN: EN, Biodiversitas: EN)
Crassicauda crassicauda
Ogmogaster antarcticus
Ogmogaster sp.

Family Physeteridae

Physeter macrocephalus (IUCN: VU, Biodiversitas: VU)
Anisakis physeteris

Family Pontoporidae

Pontoporia blainvillei (IUCN: VU, Biodiversitas: EN)
Anisakis typica
Bolbosoma turbinella
Corynosoma australe
Polymorphus (Polymorphus) cetaceum
Synthesium pontoporiae

Order Chiroptera

Family Vespertilionidae

Myotis ruber (IUCN: Not included, Biodiversitas: VU)
Allintoshius parallintoshius

Order Cingulata

Family Dasypodidae

Tolypeutes tricinctus (IUCN: VU, Biodiversitas: VU)
Aspidodera fasciata
Aspidodera raillieti
Aspidodera scoleciformis
Aspidodera vazi

Order Perissodactyla

Family Tapiridae

Tapirus terrestris (IUCN: VU, Biodiversitas: Not included)
Anoplocephala globiceps
Anoplocephala mamillana
Cladorchis asper
Cladorchis pyriformis
Cladorchis sp.
Kiluluma longipene
Monodontus nefastus
Neomurshidia monosticha
Physocephalus meridionalis
Physocephalus nitidulans

Order Primates

Family Atelidae

Alouatta belzebul (IUCN: VU, Biodiversitas: CR)

Ascaris elongata

Mathevotaenia megastoma

Trypanoxyuris (Trypanoxyuris) minutus

Alouatta guariba guariba (IUCN: Not included, Biodiversitas: CR)

Dipetalonema sp.

Trypanoxyuris (Trypanoxyuris) minutus

Ateles paniscus (IUCN: VU, Biodiversitas: Not included)

Dipetalonema caudispina

Dipetalonema gracilis

Brachyteles arachnoides (IUCN: EN, Biodiversitas: EN)

Dipetalonema caudispina

Dipetalonema gracilis

Mathevotaenia megastoma

Moniezia rugosa

Trypanoxyuris (Paraoxyuronema) brachytelesi

Brachyteles hypoxanthus (IUCN: CR, Biodiversitas: CR)

Moniezia rugosa

Lagothrix lagotricha (IUCN: VU, Biodiversitas: Not included)

Dipetalonema gracilis

Necator sp.

Physaloptera dilatata

Physaloptera sp.

Family Callitrichidae

Callimico goeldii (IUCN: VU, Biodiversitas: Not included)

Conspicuum conspicuum

Trypanoxyurus (Haploxyuris) goeldi

Callithrix aurita (IUCN: EN, Biodiversitas: VU)

Primasubulura jacchi

Leontopithecus chrysomelas (IUCN: EN, Biodiversitas: EN)

Prosthenorchis elegans

Leontopithecus chrysopygus (IUCN: CR, Biodiversitas: CR)

Dipetalonema gracilis

Prosthenorchis elegans

Leontopithecus rosalia (IUCN: EN, Biodiversitas: EN)

Dipetalonema caudispina

Dipetalonema gracilis

Oncicola spirula

Physaloptera dilatata

Physaloptera sp.

Prosthenorchis elegans

Tetrapetalonema zakii

Saguinus bicolor (IUCN: EN, Biodiversitas: CR)

Dipetalonema gracilis

Mathevotaenia megastoma

Primasubulura distans

Family Pitheciidae

Cacajao calvus (IUCN: VU, Biodiversitas: VU)

Monodontus sp.

Necator sp.

Physaloptera sp.

Chiropotes satanas (IUCN: CR, Biodiversitas: EN)

Physaloptera dilatata

Order Rodentia

Family Echimyidae

Chaetomys subspinosus (IUCN: VU, Biodiversitas: VU)

Hymenolepis diminuta

Trichuris opaca

Order Sirenia

Family Trichechidae

Trichechus inunguis (IUCN: VU, Biodiversitas: VU)

Chiorchis fabaceus

Heterocheilus tunicatus

Trichechus manatus (IUCN: VU, Biodiversitas: CR)

Chiorchis fabaceus

Pulmonicola cochleotrema

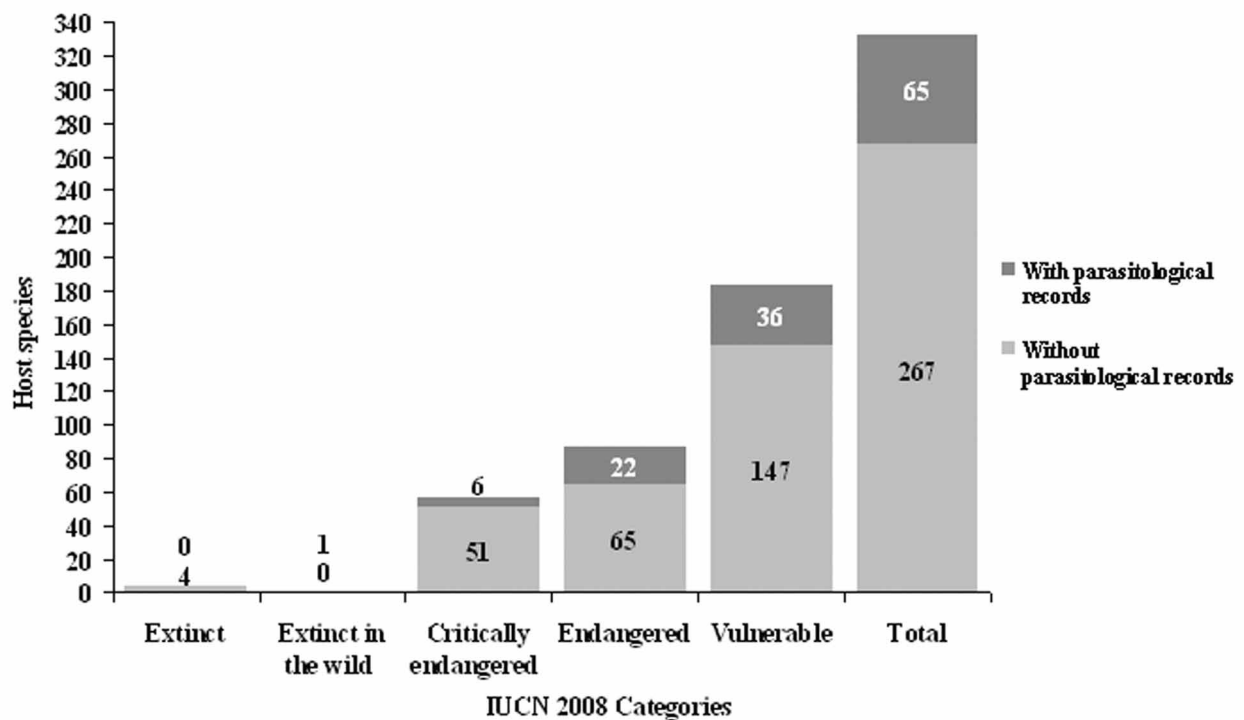


FIGURE 1. Vertebrate species with parasitological records cited in IUCN red list 2008

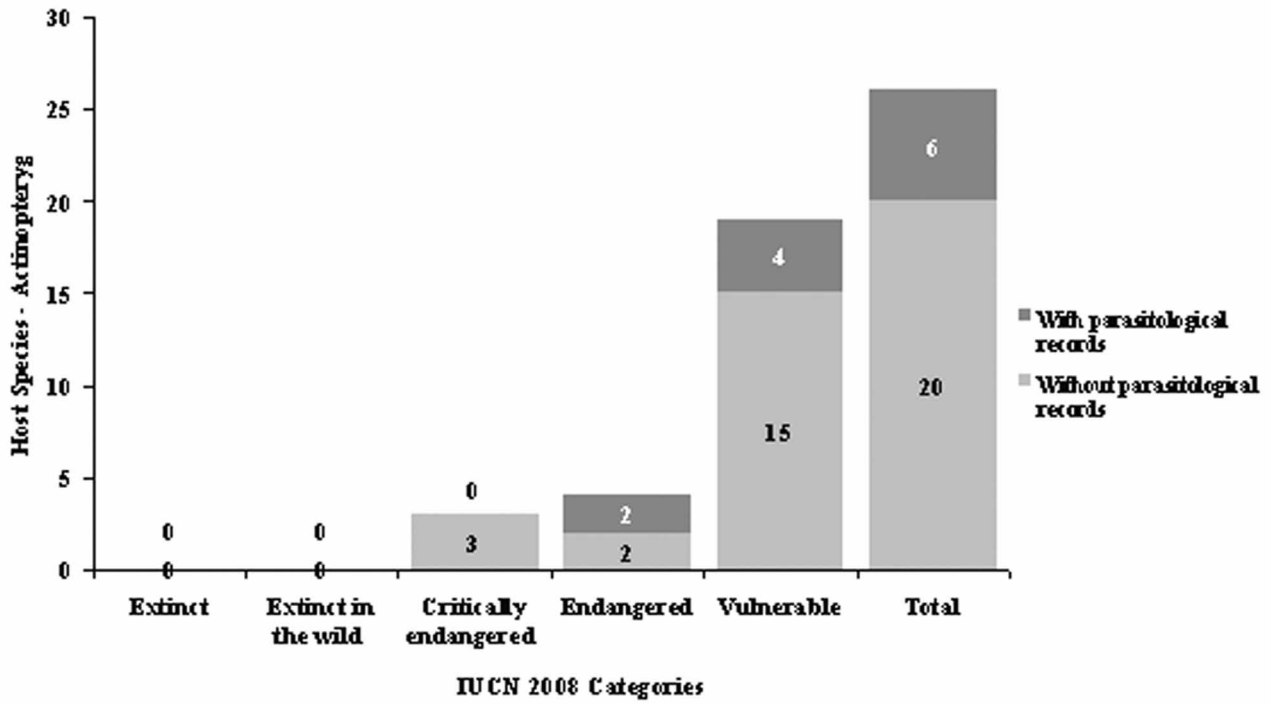


FIGURE 2. Actinopterygii species with parasitological records cited in IUCN red list 2008

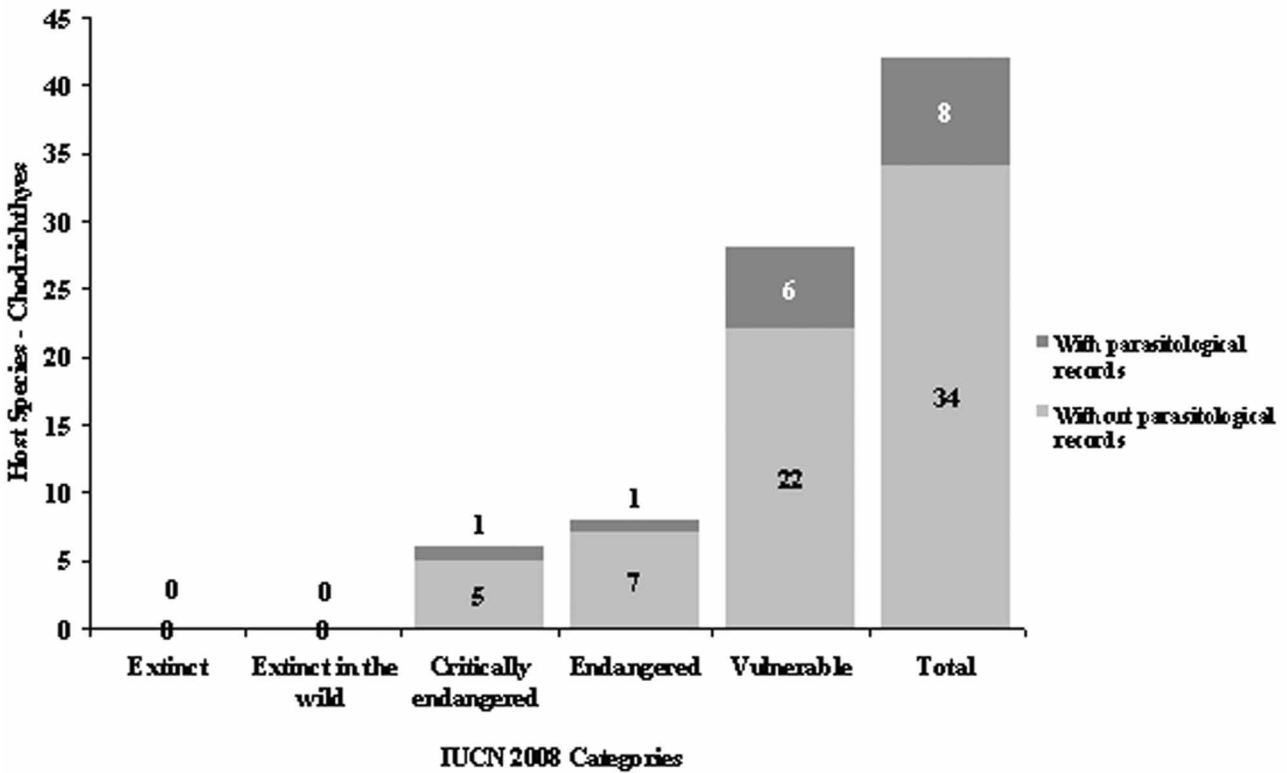


FIGURE 3. Chondrichthyes species with parasitological records cited in IUCN red list 2008

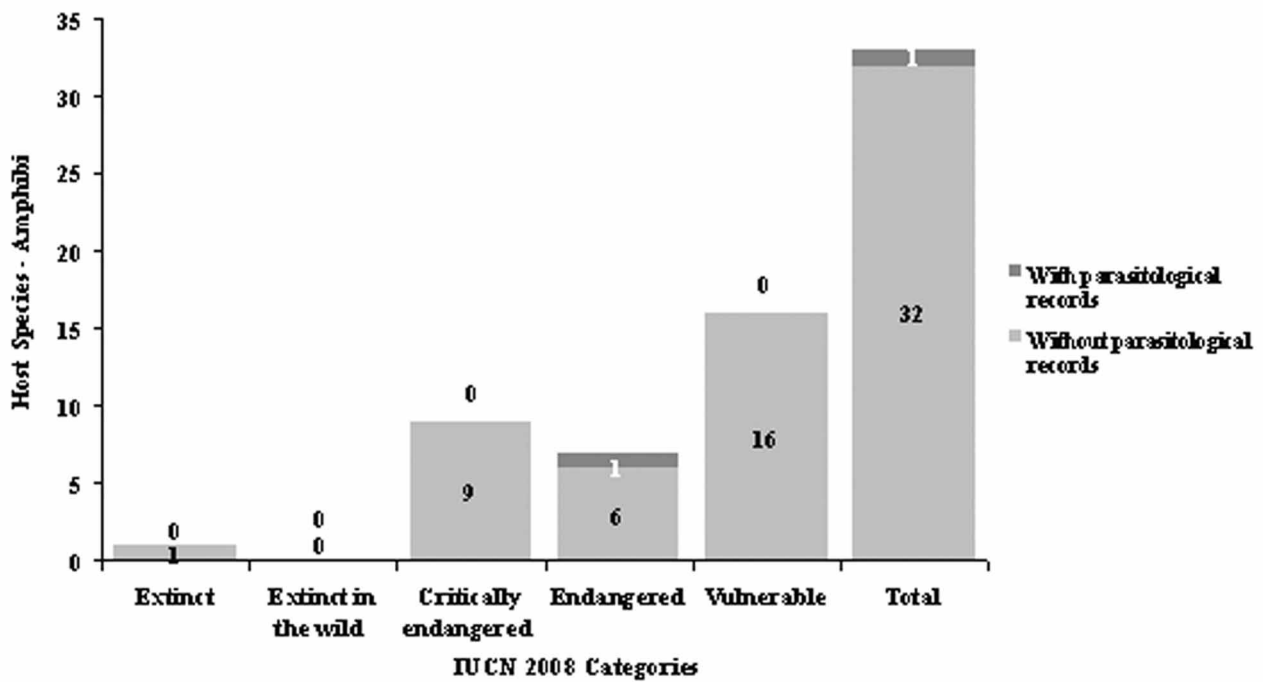


FIGURE 4. Amphibian species with parasitological records cited in IUCN red list 2008

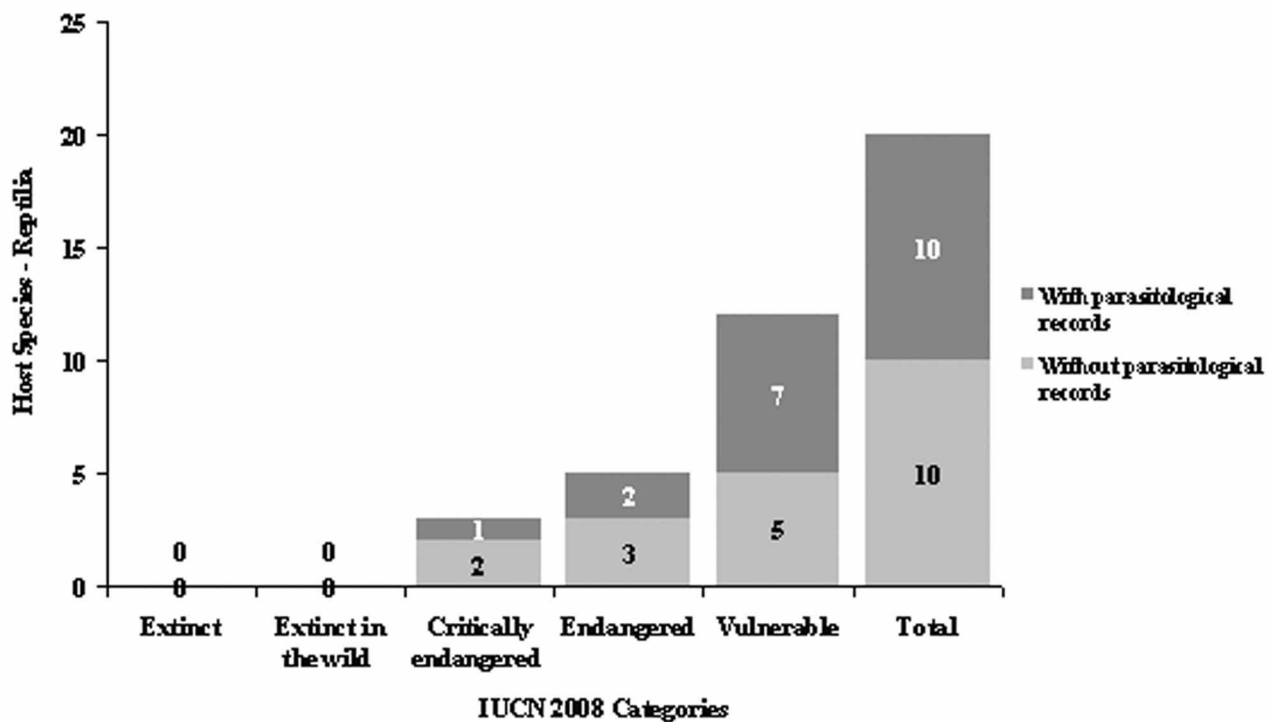


FIGURE 5. Reptilian species with parasitological records cited in IUCN red list 2008

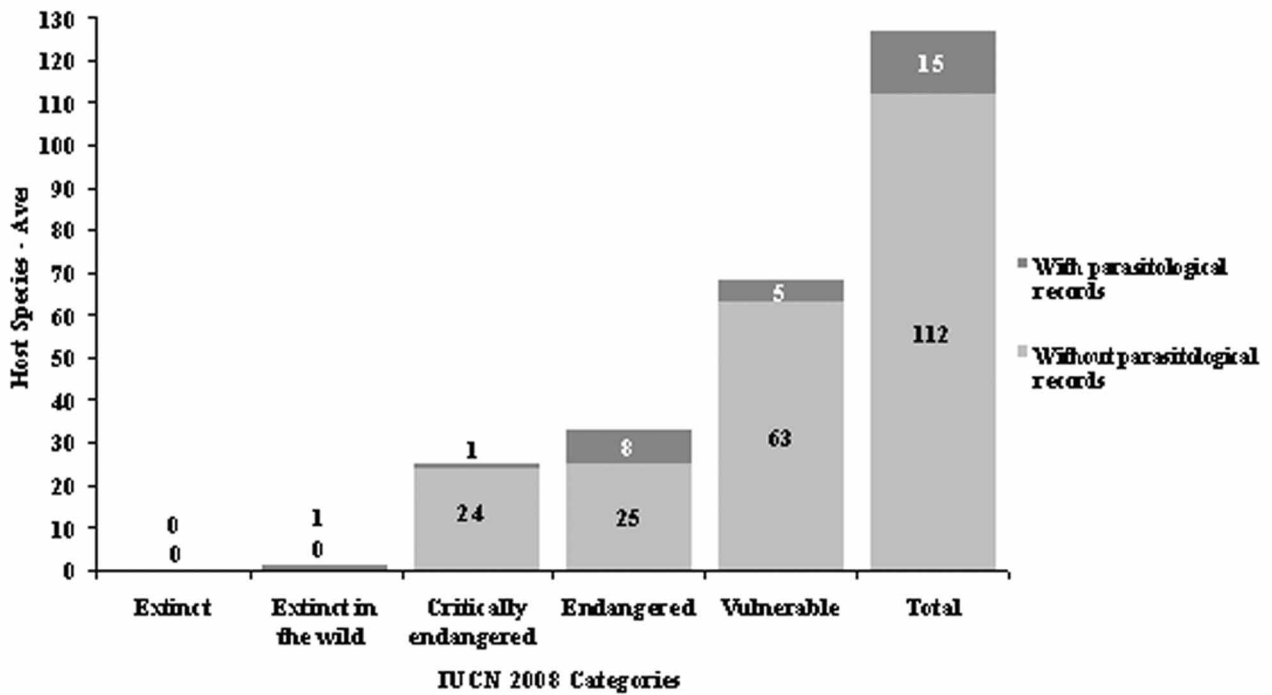


FIGURE 6. Avian species with parasitological records cited in IUCN red list 2008

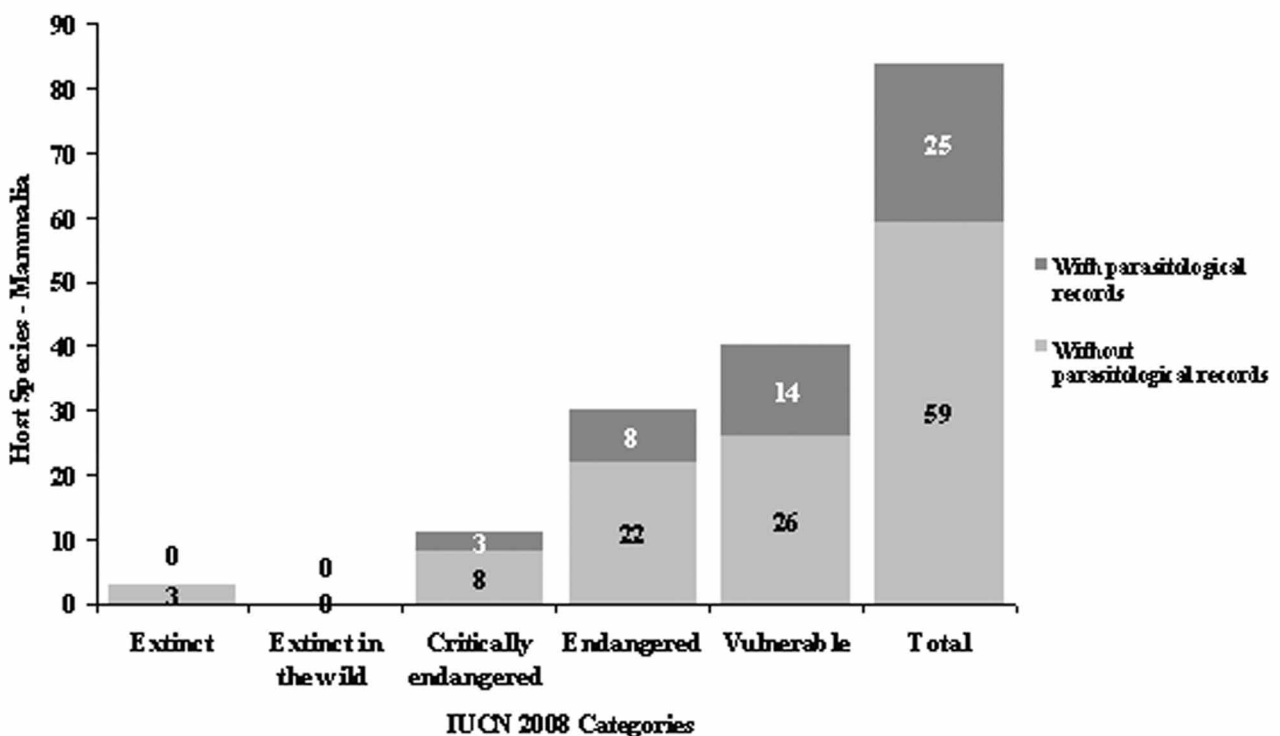


FIGURE 7. Mammalian species with parasitological records cited in IUCN red list 2008

Discussion

Several authors argue that pathogens could be implicated in a number of extinctions of their hosts, and this possibility has been clearly important to conservationists concerned with the protection of species with low population sizes (Boots & Sasaki 2003). The list of extinct species includes *Mitu mitu* (Linnaeus) (Galliformes, Cracidae). As an example demonstrating how host extinction could be related to parasite extinction, *M. mitu* is the only known host recorded in Brazil since Strachan (1957) for the nematode species *Thelazia chungkingensis*, reinforcing the idea that parasites may go extinct along with their hosts. No parasites were ever recorded from most of the host species now listed as extinct, including *Phrynomedusa fimbriata* Miranda-Ribeiro (Amphibia, Anura); *Desmodus draculae* Morgan, Linares & Ray (Mammalia, Chiroptera), *Juscelinomys candango* Moojen (Mammalia, Rodentia), and *Noronhomys vespuccii* Carleton & Olson (Mammalia, Rodentia). Some rare host species, such as *Hydromedusa maximiliani* (Mikan) (Testudines, Chelidae), that were cited in the list as vulnerable, were only recently reported as being parasite hosts (Vieira *et al.* 2008b).

Another large gap in knowledge is evident in the many parasite species that are no longer cited as occurring in host species included in the list but were previously described in the work of helminthologists, such as Diesing (1850, 1851, and 1856), Dujardin (1845), and Rudolphi (1819), and from material collected by Johannes von Natterer between 1817 to 1835. The trematode parasite species *Neotangium travassosi* described by Ruiz (1943) had no identified host species (only the common name had been cited), but when the CHIOC card files were examined, the turtle species *Chelonia mydas* (Linnaeus) (Testudines, Cheloniidae) was identified as a host.

None of the red lists published to date include parasitic helminths, despite the large number of data available. Whiteman and Parker (2005) ask: “Will there be more parasites on the IUCN Red List of Threatened species a decade from now?” This question has important conservation implications, and we suggest that parasites should be included along with their hosts on every red list.

Acknowledgments

We thank Marcelo Knoff, Liege Renata Siqueira, Magda Sanchez de Oliveira, Tainah Domingos Soares, and Anne Liporage de Matos from CHIOC for information about helminths deposited. Fabiano M. Vieira was supported by a student fellowship from REUNI/UFRRJ (Programa de Apoio ao Plano de Reestruturação e Expansão das Universidades Federais, Brazil). José L. Luque was supported by a Research fellowship from CNPq (Conselho Nacional de Pesquisa e Desenvolvimento Tecnológico, Brazil).

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