



<http://dx.doi.org/10.11646/zootaxa.3936.3.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:32761296-83E1-4B93-9AA2-ADB5F1578B0F>

A checklist of the helminth parasites of marine mammals from Argentina

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Abstract

Based on published records and new data accumulated by the authors, we generated a list of the helminth parasites of marine mammals from off the coast of Argentina. We found 49 reports of helminths parasitizing cetaceans and pinnipeds from Argentina from 1952 to 2015. The list includes 54 taxa of helminths (8 acanthocephalans, 24 nematodes, 11 cestodes and 11 trematodes) associated with 18 species of cetaceans and 5 species of pinnipeds. Most of the records represent adults (5 acanthocephalans, 16 nematodes, 6 cestodes and 11 trematodes), followed by larvae (10 nematodes and 3 metacestodes) and juveniles (4 acanthocephalans and 2 cestodes). The checklist contains 24 named species (5 acanthocephalans, 8 nematodes, 4 cestodes and 7 trematodes) and 30 undetermined helminth taxa (3 acanthocephalans, 16 nematodes, 7 cestodes and 4 trematodes). The present account contains a parasite/host lists and information on the habitat, developmental stage and distribution of the parasites listed, repositories of their type and voucher specimens and references. A host-parasite list is also presented. The data compiled on the helminth of marine mammals from Argentina in the present study revealed gaps in the knowledge of their taxonomic identification, composition, distribution, host specificity and life cycles. These gaps are also briefly discussed in order to provide an outline for future research.

Key words: Acanthocephala, Nematoda, Cestoda, Trematoda, Carnivora, Cetacea, South West Atlantic

Introduction

Argentina has the third longest coastline in South America, extending about 4,725 km long from the borders of the La Plata River to the southern tip of South America (Barragán Muñoz *et al.* 2003). This region is considered to be one of the most productive ecosystems in the oceans and represents one of the largest continental shelves worldwide (Croxall and Wood 2002). The continental shelf, also known as Patagonian shelf, presents a complex oceanographic area, as two major marine currents coexist: the cold Malvinas and the warm Brazilian currents (Miloslavich *et al.* 2011). The interaction of these two currents produce an upwelling event, which allows a high biological activity, providing the conditions for the zooplankton development and, hence, a high diversity and abundance of squids and fish. The high abundance of zooplankton, squids and fish in this area sustains significant populations of top predator species, *i.e.* sea birds and marine mammals (see Croxall and Wood 2002 and references therein).

To date, 47 species of marine mammals (10 carnivores and 37 cetaceans) have been recorded in Argentinian

waters (Bastida *et al.* 2007; Crespo *et al.* 2008). Most of these species (3 carnivores and 27 cetaceans) maintain stable populations in the coast of Argentina, *e.g.* Commerson's dolphin *Cephalorhynchus commersonii* (Lacépède) (Cetacea: Delphinidae), dusky dolphin *Lagenorhynchus obscurus* (Gray) (Cetacea: Delphinidae), franciscana *Pontoporia blainvillei* (Gervais and d'Orbigny) (Cetacea: Iniidae), South American sea lion *Otaria flavescens* (Shaw) (Carnivora: Otariidae), southern elephant seal *Mirounga leonina* (Linnaeus) (Carnivora: Phocidae) and southern right whale *Eubalaena australis* (Desmoulins) (Cetacea: Balaenidae). Other species are known base on sporadic observations, *e.g.* Arnoux's beaked whale *Berardius arnuxii* Duvernoy (Cetacea: Ziphiidae), Antarctic fur seal *Arctocephalus gazella* (Peters) (Carnivora: Otariidae), blue whale *Balaenoptera musculus* (Linnaeus) (Cetacea: Balaenopteridae), common dolphin *Delphinus delphis* Linnaeus (Cetacea: Delphinidae), leopard seal *Hydrurga leptonyx* (de Blainville) (Carnivora: Phocidae) and pygmy sperm whale *Kogia breviceps* (Blainville) (Cetacea: Physteridae). Since marine mammals can move over long distance (*e.g.* Martin *et al.* 1984; Best *et al.* 1993; Chilvers *et al.* 2005; Campagna *et al.* 2006), the sporadic record of these species may represent vagrant individuals, out of its distribution range.

The helminth fauna of most species of marine mammals of the shoreline coast off Argentina is unknown or poorly studied. To our knowledge, the first record of helminths from these hosts in Argentina dates back to 1952, when two species of helminths (*i.e.* *Contracaecum osculatum* (Rudolphi, 1802) *sensu lato* (s.l.) and *Phyllobothrium* sp.) were reported from the South American sea lion *O. flavescens* by Carrara (1952). Since that time, numerous records have been published. Most of these studies addressed diverse aspects of the taxonomy, biology and ecology of the helminths parasitizing marine mammals including faunistic records (*e.g.* Loizaga de Castro *et al.* 2011; Dougnac and Fredes 2012), taxonomic issues (*e.g.* Raga *et al.* 1994a, 1994b; Hernández-Orts *et al.* 2012a) and population studies on some helminths (*e.g.* Aznar *et al.* 1997, 2001; Berón-Vera *et al.* 2004). However, these studies are performed at a very slow rate in part because these mammals are currently protected in Argentina. To date, sampling is largely limited to specimens stranded occasionally on the coast or captured as by-catch in fisheries (*e.g.* Berón-Vera *et al.* 2008; Hernández-Orts *et al.* 2013b).

In this paper, we compile available data on the helminth parasites associated with cetaceans and pinnipeds from Argentina, in order to provide a list of the species of helminths recorded together with the information about their hosts, habitat (site of infection), distribution and published records (some unpublished data obtained by the present authors are also included).

Material and methods

Based on extensive search of literary data, we generated a checklist (data compiled until January 2015) of the helminths associated with marine mammals from off the coast of Argentina. The information was obtained from different databases, *i.e.* Google Scholar, PubMed, Scopus and Web of Science. We also searched for reports and papers in the database of the National Scientific and Technical Research Council (CONICET) of Argentina, the Host-Parasite Database of the Natural History Museum, London, UK (<http://www.nhm.ac.uk/research-curation/scientific-resources/taxonomy-systematics/host-parasites/database/index.jsp>), and the collection database of the United States National Parasite Collection (USNPC), Beltsville, Maryland, U.S.A.

The parasite-host list is presented in alphabetical order starting with the acanthocephalans, followed by the nematodes and the platyhelminths (cestodes and trematodes). For each group of helminths, the classes, orders, families, genera and species are provided in alphabetical order. The nomenclature and classification for each metazoan group is mainly in accordance with the following references: Acanthocephala—Amin (2013); Nematoda—Anderson *et al.* (2009), Hodda (2011); Cestoda—Khalil *et al.* (1994), Kuchta *et al.* (2008), Caira *et al.* (2014); Trematoda—Olson *et al.* (2003), Jones *et al.* (2005), Bray *et al.* (2008). The checklist includes helminth parasites recorded to the species, generic, familial or order level (undetermined species). For each taxon of helminth parasites, the check list includes its scientific name, authority and year, host species, site in the host, developmental stage of the parasite, locality (see Fig. 1) and records (in chronological order). In addition, for the taxa deposited in the parasitological collections, type and voucher material, acronym (see abbreviations below) and accession number are provided. Developmental stage of nematode larvae is indicated with the following abbreviations: L3, third-stage larvae; L4, fourth-stage larva; and N/A, when information on the developmental stage of the larvae was not reported in the published record. Type and voucher material are also indicated in

superscript after accession numbers with the following abbreviations: H, holotype; P, paratype; S, syntypes; and V, voucher.

In the present checklist, we also provided a host-parasite list. For this checklist, we followed the nomenclature and classification of the hosts according to Wilson and Reeder (2005). This section is presented in taxonomical and alphabetical order.

Acronyms

- BMNH** Natural History Museum, London, UK.
CNHE Helminth Collection, Institute of Biology, UNAM, Mexico City, Mexico.
DAB Department of Animal Biology, University of Valencia, Valencia, Spain.
HCMLP Helminthological Collection of the Museo de La Plata, Buenos Aires, Argentina.
MHNG-PLAT Natural History Museum, Geneva, Switzerland.
MML Marine Mammals Laboratory, National Patagonic Center, CONICET, Puerto Madryn, Chubut, Argentina.
MNCN National Museum of Natural Sciences, Madrid, Spain.
MZU Parasite Collection of the Marine Zoology Unit, Cavanilles Institute of Biodiversity and Evolutionary Biology, University of Valencia, Valencia, Spain.
USNPC United States National Parasite Collection, Beltsville, Maryland, USA. The USNPC was recently transferred to the Smithsonian's National Museum of Natural History (NMNH) in Washington, DC, USA.

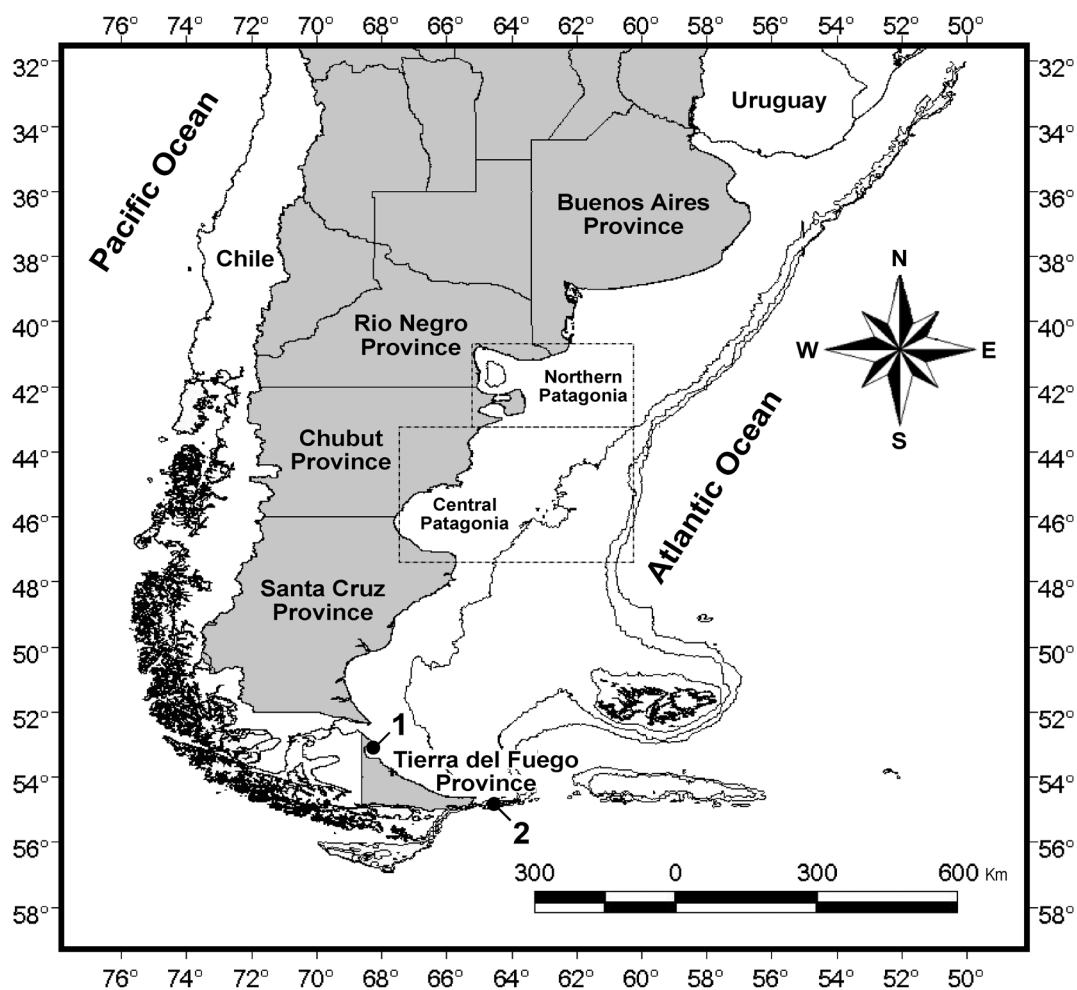


FIGURE 1. Map of Argentina (shadowed area) showing the provinces and geographical area where species of marine mammals have been collected. The filled circles indicate the collection sites (black circles) in the present study: (1) San Sebastian Bay; and (2) Elizalde Island, Staten Island (see Parasite- Host List).

Results

We found 49 published reports of helminth from marine mammals from off the coast of Argentina. In the present study, 54 helminth taxa (8 acanthocephalans, 24 nematodes, 11 cestodes and 11 trematodes) have been reported associated with 18 species of cetaceans and five species of pinnipeds in Argentina. In cetaceans, 17 species (3 acanthocephalans, 4 nematodes, 4 cestodes and 6 trematodes) and another 27 helminth taxa were not identified to the species level (3 acanthocephalans, 15 nematodes, 5 cestodes and 4 trematodes) are listed. A total of 8 named species (4 acanthocephalans, 4 nematodes and 1 trematode) and 9 undetermined helminth taxa (1 acanthocephalan, 5 nematodes and 3 cestodes) from pinnipeds in Argentina are also listed below.

Most of the helminth taxa from marine mammals in Argentina represent nematodes ($n = 24$, i.e. 44% of total number of helminths reported), followed by cestodes and trematodes (both $n = 11$, 20%) and acanthocephalans ($n = 8$, 15%). Most of the records represent adults (5 acanthocephalans, 16 nematodes, 6 cestodes and 11 trematodes), followed by larvae (10 nematodes and 3 metacestodes) and juveniles (4 acanthocephalans and 2 cestodes). Information on the developmental stage for one acanthocephalan and nine nematodes was not provided in the published record (see below Host-Parasite List). The helminth parasite taxa infecting the highest number of hosts was the nematode *Anisakis simplex* (Rudolphi, 1809) s.l. (Anisakidae), recorded in nine species of cetaceans and one species of pinnipeds, followed by the acanthocephalan *Corynosoma australe* Johnston, 1937 (Polymorphidae), registered in four species of cetaceans and four species of pinnipeds.

In Argentinian waters, helminths were associated with 18 species of cetaceans from six families (Balaenopteridae, Delphinidae, Phocoenidae, Physeteridae, Pontoporiidae and Ziphiidae) and five species of pinnipeds from two families (Otariidae and Phocidae). The marine mammal with the highest number of helminth taxa was *O. flavescens* with 14 taxa of helminths, followed by *C. commersonii* with 13 species. In contrast, a single helminth taxa has been reported in *Globicephala melas* (Traill) (Cetacea: Delphinidae), *Lagenorhynchus australis* (Peale) (Cetacea: Delphinidae), *Leptonychotes weddellii* (Lesson) (Carnivora: Phocidae), *Mesoplodon layardii* (Gray) (Cetacea: Ziphiidae), *Tasmacetus shepherdi* Oliver (Cetacea: Ziphiidae), and *Ziphius cavirostris* Cuvier (Cetacea: Ziphiidae) (see below Host-Parasite List).

Parasite-host list

Acanthocephala Kohlreuther, 1771

Adults

Class Palaeacanthocephala Meyer, 1931

Order Polymorphida Petrochenko, 1956

Family Polymorphidae Meyer, 1931

Corynosoma Lühe, 1904

Corynosoma australe Johnston, 1937

(syn. *C. otariae* Morini & Boero, 1960)

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine

Locality: Claromec  (38 22'S, 60 16'W) and San Clemente del Tuy  (36 30'S, 56 20'W), Buenos Aires province; northern Patagonia (40 43'–43 20'S, 63 04'–65 07'W)

Specimens in collections: BMNH (2012.5.15.93–122)^v; HCMLP (No. 5405)^v; MZU (accession numbers not provided)^v; CNHE (9560)^v

References: Sardella *et al.* (2005) and Hern andez-Orts *et al.* (2013b)

Host: *Mirounga leonina* (Linnaeus)

Site in host: intestine

Locality: San Clemente del Tuyú (36°30'S, 56°20'W), Buenos Aires province

Specimens in collections: HCMLP (No. 5406)^v

References: Sardella *et al.* (2005)

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: La Plata River and Puerto Quequén (38°37'S, 58°50'W), Buenos Aires province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.1–20)^v; MZU (accession numbers not provided)^v; CNHE (9561)^v

References: Morini and Boero (1960), Aznar *et al.* (2006; 2012) and Hernández-Orts *et al.* (2012b; 2013b)

***Corynosoma bullosum* (Linstow, 1892)**

Host: *Physeter macrocephalus* Linnaeus

Site in host: intestine

Locality: Puerto Madryn (43°14'S, 65°02'W), Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Crespo *et al.* (1994, reported as *Bolbosoma* sp.) and Berón-Vera *et al.* (2008)

Notes: Berón-Vera *et al.* (2008) re-examined the acanthocephalans collected by Crespo *et al.* (1994) and identified them as *C. bullosum* and *Corynosoma* sp.

***Corynosoma cetaceum* Johnston & Best, 1942**

(syn. *Polymorphus* (*Polymorphus*) *cetaceum* (Johnston & Best, 1942))

Host: *Delphinus delphis* Linnaeus

Site in host: stomach

Locality: San Matías Gulf (40–42°S, 60–61°W) and northern Patagonia (39–42°S, 60–62°W)

Specimens in collections: USNPC (99621)^v

References: Aznar *et al.* (2002a; 2006) and Berón-Vera *et al.* (2007)

Host: *Phocoena spinipinnis* Burmeister

Site in host: duodenum, intestine, stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province; Punta Bengoa, Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Corcuera *et al.* (1995), Aznar *et al.* (2006) and Berón-Vera *et al.* (2008)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: duodenal ampulla, intestine, main stomach, pyloric stomach

Locality: Claromecó (38°52'S, 60°05'W), Mar del Plata (38°08'S, 57°32'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: BMNH (1993.5181–5200)^v; HCMLP (No. 5408)^v

References: Aznar *et al.* (1994; 1995; 1999a; 1999b; 2001; 2002b; 2006; 2012), Sardella *et al.* (2005) and Hernández-Orts *et al.* (2012b)

Host: *Tursiops truncatus* (Montagu)

Site in host: duodenal ampulla, intestine, main stomach, pyloric stomach

Locality: northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v

References: Romero *et al.* (2014)

***Corynosoma hamanni* (von Linstow, 1892)**

Host: *Hydrurga leptonyx* (de Blainville)

Site in host: intestine, stomach

Locality: Bahía San Sebastián (53°17'S, 68°28'W), Tierra del Fuego province; Patagonia

Specimens in collections: CNHE (9297)^v

References: Aznar *et al.* (2006) and present study

Notes: A male leopard seal *H. leptonyx* (body length 2.10 m) was found stranded on Bahía de San Sebastián in October 2013 (Fig. 1). Thirty-five adults of *C. hamanni* were collected attached to the stomach wall.

Host: *Leptonychotes weddellii* (Lesson)

Site in host: intestine

Locality: Tierra del Fuego province; Patagonia

References: Aznar *et al.* (2006)

***Corynosoma* sp.**

Host: *Physeter macrocephalus* Linnaeus

Site in host: intestine

Locality: Puerto Madryn (43°14'S, 65°02'W), Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Berón-Vera *et al.* (2008)

Juveniles¹

Class Palaeacanthocephala Meyer, 1931

Order Polymorphida Petrochenko, 1956

Family Polymorphidae Meyer, 1931

***Andracantha* Schmidt, 1975**

***Andracantha* sp.**

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: intestine

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

References: Aznar *et al.* (2012)

***Corynosoma* Lühe, 1904**

1. Marine mammals could act as “paradefinitive” hosts (see Moravec 1998) for some species of acanthocephalans. In these hosts, the acanthocephalans attain the subadult stage without reaching the sexual maturity (Aznar *et al.* 2012). In the present study, acanthocephalans which could not reach sexual maturity in a potential definitive host are denoted as ‘juveniles’ according to Sardella *et al.* (2005).

***Corynosoma australe* Johnston, 1937**

Host: *Hydrurga leptonyx* (de Blainville)

Site in host: stomach

Locality: Bahía San Sebastián (53°17'S, 68°28'W), Tierra del Fuego province

References: present study

Notes: A single degraded juvenile specimen of *C. australe* was collected.

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: intestine

Locality: Patagonia

References: Dans *et al.* (1999)

Host: *Phocoena dioptrica* Lahille

Site in host: intestine

Locality: Playa Unión, Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Berón-Vera *et al.* (2008)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: intestine

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: DAB (accession numbers not provided)^v

References: Aznar *et al.* (1994; 1995; 2012)

Notes: Aznar *et al.* (1994; 1995) reported few specimens of an unidentified species of a polymorphid acanthocephalan from the intestine of franciscanas *P. blainvillei*. These acanthocephalans were later identified as *C. australe* by Aznar *et al.* (2012).

Host: *Tursiops truncatus* (Montagu)

Site in host: intestine

Locality: Playa Unión (43°24'S, 65°03'W), Chubut province; northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v

References: Sánchez *et al.* (2002) and Romero *et al.* (2014)

Notes: Sánchez *et al.* (2002) reported adult forms of *C. australe* from the intestines of a single specimen of bottlenose dolphin *T. truncatus*. Aznar *et al.* (2012) suggest that *C. australe* cannot apparently reproduce, nor even grow, in cetaceans. Therefore, we re-assigned these specimens as juvenile forms of *C. australe*.

***Corynosoma cetaceum* Johnston & Best, 1942**

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine, stomach

Locality: Claromecó (38°22'S, 60°16'W) and San Clemente del Tuyú (36°30'S, 56°20'W), Buenos Aires province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.123–124)^v; HCMLP (No. 5409)^v; MZU (accession numbers not provided)^v

References: Sardella *et al.* (2005) and Hernández-Orts *et al.* (2013b)

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: Puerto Quequén (38°37'S, 58°50'W), Buenos Aires province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012. 5.15.21–22)^v; MZU (accession numbers not provided)^v

References: Aznar *et al.* (2012) and Hernández-Orts *et al.* (2013b)

***Profilicollis* Meyer, 1931**

***Profilicollis chasmagnathi* (Holcman-Spector, Mané-Garzón & Dei-Cas, 1977)**

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

Developmental stage not reported²

Class Palaeacanthocephala Meyer, 1931

Order Polymorphida Petrochenko, 1956

Family Polymorphidae Meyer, 1931

***Bolbosoma* Porta, 1908**

***Bolbosoma* sp.**

Host: *Mesoplodon hectori* (Gray)

Site in host: intestine

Locality: Puerto Quequén (38°37'S, 58°50'W), Buenos Aires province

References: Cappozzo *et al.* (2005)

Nematoda Cobb, 1932

Adults

Class Chromadorea Inglis, 1983

Order Spirurida Railliet, 1914

Family Anisakidae Railliet & Henry, 1912

***Anisakis* Dujardin, 1845**

***Anisakis physeteris* (Baylis, 1923)**

Host: *Physeter macrocephalus* Linnaeus

Site in host: stomach

Locality: Puerto Madryn (43°14'S, 65°02'W), Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Berón-Vera *et al.* (2008)

2. Information on the developmental stage of the acanthocephalans is not provided in the published record.

Anisakis simplex (Rudolphi, 1809) s.l.³

Host: *Delphinus delphis* Linnaeus

Site in host: forestomach

Locality: northern Patagonia (39°–42°S, 60°–62°W)

Specimens in collections: USNPC (99622)^v

References: Berón-Vera *et al.* (2007)

Host: *Lagenorhynchus cruciger* (Quoy & Gaimard)

Site in host: stomach

Locality: Playa Unión (43°20'S, 65°00'W), Rawson, and Playa Paraná (42°49'S, 64°53'W), Puerto Madryn, Chubut province

References: Fernández *et al.* (2003)

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: forestomach, main stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: BMNH (1993.5201–5205)^v; MZU (accession numbers not provided)^v

References: Aznar *et al.* (2003)

Host: *Phocoena dioptrica* Lahille

Site in host: esophagus, forestomach, main stomach

Locality: Playa Unión and Playa El Doradillo, Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Berón-Vera *et al.* (2008)

Host: *Phocoena spinipinnis* Burmeister

Site in host: duodenal ampulla, forestomach, main stomach, pyloric stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province; Punta Bengoa, Chubut province

Specimens in collections: BMNH (1993.5201–5205)^v; MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v

References: Aznar *et al.* (2003) and Berón-Vera *et al.* (2008)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: duodenal ampulla, main stomach, pyloric stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: BMNH (1993.5201–5205)^v

3. Anisakid nematodes belonging to the *Anisakis simplex* species complex mature and reproduce in the digestive tract of cetaceans (Mattiucci and Nascetti 2008). The taxonomic position of species of this complex has been controversial and confused, since morphological traits of taxonomic significance in this complex are few (Mattiucci *et al.* 2009). However, after the application of genetic molecular methods, the taxonomy and systematic position of these species have been widely accepted (Mattiucci *et al.* 2009; 2014 and references therein). Today, the *A. simplex* complex (i.e. *A. simplex* s.l.) is composed of 3 sibling species, namely, *A. berlandi* Mattiucci, Cipriani, Webb, Paoletti, Marcer, Bellisario, Gibson & Nascetti, 2014, *A. pegerffii* Campaña-Rouget & Biocca, 1955, and *A. simplex* s.s. (see Mattiucci *et al.* 2014). The species of the *A. simplex* complex are cosmopolitan, *A. berlandi* have been reported in the southern Pacific Ocean and the South African Atlantic coasts, *A. pegerffii* along the Mediterranean Sea and the southeastern Pacific Ocean (New Zealand coast), and *A. simplex* s.s. is widespread between 35°N and the Arctic Cycle, in both the western and eastern Atlantic and Pacific Oceans (Mattiucci and Nascetti 2008; Mattiucci *et al.* 2014). In Argentina, morphological and molecular characterizations of the *A. simplex* species complex have never been performed. However, in some studies on helminth parasites of marine mammals from this country, these nematodes have been assigned as *A. simplex* s.l. (e.g. Fernández *et al.* 2003; Berón-Vera *et al.* 2007, 2008; Leonardi *et al.* 2011; Romero *et al.* 2014). Other published reports on helminth parasites have assigned these nematodes as *Anisakis* sp. Type I larva *sensu* Berland (1961) (see Berón-Vera *et al.* 2001; Hernández-Orts *et al.* 2013), or as *A. simplex sensu* Davey (1971) (see Aznar *et al.* 2003), which are currently recognized as *A. simplex* s.l. (Paggi *et al.* 1998; Mattiucci and Nascetti 2008). Other authors have reported these nematodes in Argentina as *A. simplex* (see, Gibson and Harris 1979; Aznar *et al.* 1994, 1995; Dans *et al.* 1999; Sánchez *et al.* 2002). However, because the current distribution of *A. simplex* s.s. is restricted to the North Hemisphere (see above), we re-assigned these specimens as *A. simplex* s.l. In the present checklist we did not find any evidence to differentiate species included in the *A. simplex* complex in Argentina, therefore we re-assigned all these nematodes as *A. simplex* s.l.

References: Aznar *et al.* (1994; 1995; 2003)

Host: *Tursiops truncatus* (Montagu)

Site in host: forestomach, main stomach, pyloric stomach

Locality: Playa Unión (43°24'S, 65°03'W), Chubut province; northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v

References: Sánchez *et al.* (2002) and Romero *et al.* (2014)

Anisakis spp.

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Locality: Cabo Peña and Paso Las Cholgas, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Host: *Lagenorhynchus australis* (Peale)

Site in host: stomach

Locality: Estancia Sara, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Contracaecum Railliet & Henry, 1912

Contracaecum ogmorhini Johnston & Mawson, 1941 sensu stricto (s.s.)

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine, stomach

Locality: Claromecó (38°22'S, 60°16'W) and Mar del Plata (38°08'S, 57°32'W), Buenos Aires province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.173)^v; HCMLP (No. 5096/1, 5096/2)^v; MZU (accession numbers not provided)^v

References: Mattiucci *et al.* (2003; 2008), Timi *et al.* (2003) and Hernández-Orts *et al.* (2013b)

Host: *Mirounga leonina* (Linnaeus)

Site in host: stomach

Locality: Península Valdés, Chubut province

References: Mattiucci *et al.* (2003)

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.77–92)^v

References: Hernández-Orts *et al.* (2013b)

Contracaecum miroungae Nikolskii, 1974

Host: *Mirounga leonina* (Linnaeus)

Site in host: stomach

Locality: Península Valdés, Chubut province

References: Mattiucci *et al.* (2003; 2008)

***Contracaecum osculatum* (Rudolphi, 1802) s.l.**

Host: *Mirounga leonina* (Linnaeus)
Site in host: stomach
Locality: Península Valdés, Chubut province
References: Mattiucci *et al.* (2003)

***Contracaecum* sp.**

Host: *Hydrurga leptonyx* (de Blainville)
Site in host: stomach, upper intestine
Locality: Bahía San Sebastián (53°17'S, 68°28'W), Tierra del Fuego province
References: present study
Notes: About 800 adult specimens of *Contracaecum* sp. were collected.
Host: *Mirounga leonina* (Linnaeus).
Site in host: not known, worms found in scats
Locality: Elizalde Island (54°41'S, 64°16'W), Staten Island, Tierra del Fuego
References: present study

Notes: Thirteen adult specimens of *Contracaecum* sp. were collected in 5 fresh scats from southern elephant seals collected in Elizalde Island (Fig. 1) in August 2013 by one co-author (M.N.P.V.).

***Pseudoterranova Mozgovi*, 1951**

Pseudoterranova cattani George-Nascimento & Urrutia, 2000

Host: *Arctocephalus australis* (Zimmermann)
Site in host: intestine
Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)
Specimens in collections: MZU (accession numbers not provided)^v
References: Hernández-Orts *et al.* (2013b)
Host: *Otaria flavescens* (Shaw)

Site in host: intestine
Locality: Mar del Plata and Quequén, Buenos Aires province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.66–76)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b) and Timi *et al.* (2014)

***Pseudoterranova decipiens* (Krabbe, 1878) s.l.**

Host: *Tursiops truncatus* (Montagu)
Site in host: forestomach
Locality: northern Patagonia (40°30'–43°30'S, 64°–65°W)
Specimens in collections: MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v
References: Romero *et al.* (2014)

Notes: Romero *et al.* (2014) reported specimens of *P. decipiens* mainly in the forestomach of bottlenose dolphins *T. truncatus*, from northern Patagonia. *Pseudoterranova decipiens* s.s. occur as parasite of seals from the North Hemisphere (Mattiucci and Nascetti 2008); therefore, we re-assigned Romero *et al.* (2014) specimens as *P. decipiens* s.l.

***Pseudoterranova* sp.**

Host: *Mirounga leonina* (Linnaeus)

Site in host: intestine, scats

Locality: Elizalde Island (54°41'S, 64°16'W), Staten Island, Tierra del Fuego province; northern Patagonia

References: Hernández-Orts *et al.* (2013a) and present study

Notes: Nine adult specimens of *Pseudoterranova* sp. were collected in 5 scats in the present study.

Host: *Tursiops truncatus* (Montagu)

Site in host: forestomach, main stomach

Locality: Playa Unión (43°24'S, 65°03'W), Chubut province

References: Sánchez *et al.* (2002)

Anisakidae gen. sp.

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Locality: Lainez River, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Host: *Ziphius cavirostris* Cuvier

Site in host: intestine, stomach

Locality: Bahía San Sebastián, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Order Rhabditida Chitwood, 1933

Family Ancylostomatidae Looss, 1905

***Uncinaria* Froelich, 1789**

***Uncinaria hamiltoni* Baylis, 1933**

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: Punta León reserve (43°03'S, 64°47'W), Chubut province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.35–39)^v; USNPC (94041, 94042)^v; MZU (accession numbers not provided)^v

References: Berón-Vera *et al.* (2004), Hernández-Orts *et al.* (2013b) and Nadler *et al.* (2013)

Family Metastrongylidae Leiper, 1912

***Halocercus* Baylis & Daubney, 1925**

***Halocercus* spp.**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: lungs

Locality: Paso Las Cholgas, Ladrillero River, Cabo Domingo and Cabo Peña, Tierra del Fuego province

References: Dougnac and Fredes (2012)

***Pseudalius* Dujardin, 1845**

***Pseudalius inflexus* (Rudolphi, 1808)**

Host: *Phocoena spinipinnis* Burmeister

Site in host: lungs

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

References: Corcuera *et al.* (1995)

***Stenurus* Dujardin, 1845**

***Stenurus minor* (Kühn, 1829)**

Host: *Phocoena spinipinnis* Burmeister

Site in host: aerial sinuses

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

References: Corcuera *et al.* (1995)

***Stenurus* spp.**

Host: *Phocoena dioptrica* Lahille

Site in host: tympanic bullae

Locality: Bahía San Sebastián, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Larvae

Class Chromadorea Inglis, 1983

Order Spirurida Railliet, 1914

Family Anisakidae Railliet & Henry, 1912⁴

***Anisakis* Dujardin, 1845**

***Anisakis simplex* (Rudolphi, 1809) s.l.**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: intestine, stomach

Developmental stage: L3

Locality: Tierra del Fuego province; central Patagonia and San Jorge Gulf (45°–47°S)

References: Berón-Vera *et al.* (2001)

Host: *Delphinus delphis* Linnaeus

Site in host: forestomach, pyloric stomach

Developmental stage: L3, L4

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province; northern Patagonia (39°–42°S, 60°–62°W)

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4. Third-stage larvae (L3) of anisakid nematodes are recently acquired larval forms, which infect marine mammals when they prey on cephalopods and fish (McClelland 2002; Klimpel *et al.* 2004). In marine mammals, the L3 moult into the fourth-stage larva (L4) and then into adult.

Specimens in collections: BMNH (1993.5201–5205)^v; MZU (accession numbers not provided)^v; USNPC (99622)^v

References: Aznar *et al.* (2003) and Berón-Vera *et al.* (2007)

Host: *Lagenorhynchus cruciger* (Quoy & Gaimard)

Site in host: stomach

Developmental stage: L3, L4

Locality: Playa Unión (43°20'S, 65°00'W), Rawson, and Playa Paraná (42°49'S, 64°53'W), Puerto Madryn, Chubut province

References: Fernández *et al.* (2003)

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: forestomach, intestine, main stomach

Developmental stage: L3, L4

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province; Patagonia

Specimens in collections: BMNH (1993.5201–5205)^v; MZU (accession numbers not provided)^v

References: Dans *et al.* (1999) and Aznar *et al.* (2003)

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Developmental stage: L3

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.23–24)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

Host: *Phocoena dioptrica* Lahille

Site in host: esophagus, forestomach, main stomach

Developmental stage: L3, L4

Locality: Playa Unión and Playa El Doradillo, Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Berón-Vera *et al.* (2008)

Host: *Phocoena spinipinnis* Burmeister

Site in host: duodenal ampulla, forestomach, main stomach, pyloric stomach

Developmental stage: L3, L4

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province; Punta Bengoa, Chubut province

Specimens in collections: BMNH (1993.5201–5205)^v; MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v

References: Aznar *et al.* (2003) and Berón-Vera *et al.* (2008)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: duodenal ampulla, main stomach, pyloric stomach

Developmental stage: L3, L4

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: BMNH (1993.520 1–5205)^v

References: Aznar *et al.* (1994; 1995; 2003)

Host: *Tursiops truncatus* (Montagu)

Site in host: forestomach, main stomach, pyloric stomach

Developmental stage: L3, L4

Locality: Playa Unión (43°24'S, 65°03'W), Chubut province; northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: MML (accession numbers not provided)^v; MZU (accession numbers not provided)^v

References: Sánchez *et al.* (2002) and Romero *et al.* (2014)

Anisakis sp.

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: intestine, stomach

Developmental stage: N/A

Locality: Playa Bonita (43°21'S, 65°03'W), Chubut province

References: Loizaga de Castro *et al.* (2014)

Notes: Loizaga de Castro *et al.* (2014) identified these nematodes as *Anisakis* sp. Type II sensu Berland (1961) from the stomach and intestine of the dusky dolphin *L. obscurus*. The morphology of the larval *Anisakis* Type II is shared by three different species: *A. brevispiculata* Dollfus, 1966, *A. physeteris*, and *A. paggiae* Mattiucci, Nascetti, Dailey, Webb, Barros, Cianchi & Bullini, 2005, which parasitize strictly whales of the family Physeteridae, i.e. sperm whale, pygmy sperm whale and dwarf sperm whale (see Mattiucci and Nascetti 2008). Therefore, the identification of these nematodes by Loizaga de Castro *et al.* (2014) seems to be doubtful.

Host: *Mesoplodon hectori* (Gray)

Site in host: stomach

Developmental stage: L4

Locality: Mar del Plata (38°00'S, 57°33'W) and Puerto Quequén (38°37'S, 58°50'W), Buenos Aires province

References: Cappozzo *et al.* (2005)

Host: *Phocoena spinipinnis* Burmeister

Site in host: stomach

Developmental stage: N/A

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

References: Corcuera *et al.* (1995)

Anisakis spp.

Host: *Lagenorhynchus australis* (Peale)

Site in host: stomach

Developmental stage: N/A

Locality: Estancia Sara, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Contracaecum Railliet & Henry, 1912

Contracaecum ogmorhini Johnston & Mawson, 1941 s.s.

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine, stomach

Developmental stage: L3, L4

Locality: Claromecó (38°22'S, 60°16'W) and Mar del Plata (38°08'S, 57°32'W), Buenos Aires province; northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.173)^v; HCMLP (No. 5096/1, 5096/2)^v; MZU (accession numbers not provided)^v

References: Timi *et al.* (2003) and Hernández-Orts *et al.* (2013b)

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Developmental stage: L4

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.77–92)^v

References: Hernández-Orts *et al.* (2013b)

***Contracaecum* sp.**

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine

Developmental stage: L3

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.125–139)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

Host: *Hydrurga leptonyx* (de Blainville)

Site in host: stomach, upper intestine

Developmental stage: L3, L4

Locality: Bahía San Sebastián (53°17'S, 68°28'W), Tierra del Fuego province

References: present study

Notes: Approximately 1,200 larvae of *Contracaecum* sp. were collected.

Host: *Mirounga leonina* (Linnaeus)

Site in host: scats

Developmental stage: L3

Locality: Elizalde Island (54°41'S, 64°16'W), Staten Island, Tierra del Fuego

References: present study

Notes: Twenty-one L3 of *Contracaecum* sp. were collected in 5 scats.

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Developmental stage: L3

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.25–34)^v

References: Hernández-Orts *et al.* (2013b)

***Contracaecum* spp.**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Developmental stage: N/A

Locality: Lainez River and Paso Las Chagas, Tierra del Fuego province

References: Dougnac and Fredes (2012)

***Pseudoterranova* Mozgovi, 1951**

***Pseudoterranova cattani* George-Nascimento & Urrutia, 2000**

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine

Developmental stage: L4

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Developmental stage: L4

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.66–76)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

***Pseudoterranova decipiens* (Krabbe, 1878) s.l.**

Host: *Tursiops truncatus* (Montagu)

Site in host: forestomach

Developmental stage: L3, L4

Locality: northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: MML (accession numbers not provided)^V; MZU (accession numbers not provided)^V

References: Romero *et al.* (2014)

***Pseudoterranova* sp.**

Host: *Mirounga leonina* (Linnaeus)

Site in host: not known, worms found in scats

Developmental stage: L4

Locality: Elizalde Island (54°41'S, 64°16'W), Staten Island, Tierra del Fuego province

References: present study

Notes: Twenty-nine L4 of *Pseudoterranova* sp. were collected in 5 scats.

Host: *Tursiops truncatus* (Montagu)

Site in host: duodenal ampoule, forestomach, main stomach

Developmental stage: L3, L4

Locality: Playa Unión (43°24'S, 65°03'W), Chubut province

References: Sánchez *et al.* (2002)

***Pseudoterranova* spp.**

Host: *Lagenorhynchus cruciger* (Quoy and Gaimard)

Site in host: stomach

Developmental stage: N/A

Locality: Estancia Moat, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Anisakidae gen. sp.

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Developmental stage: N/A

Locality: Lainez River, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Host: *Lagenorhynchus cruciger* (Quoy and Gaimard)

Site in host: stomach

Developmental stage: N/A

Locality: Estancia Moat, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Developmental stage not reported⁵

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5. Information on the developmental stage of the nematodes (including larval and adult forms) is not provided in the published record.

Class Chromadorea Inglis, 1983

Order Spirurida Railliet, 1914

Family Anisakidae Railliet & Henry, 1912

***Anisakis* Dujardin, 1845**

***Anisakis simplex* s.l. (Rudolphi, 1809)**

Host: *Balaenoptera borealis* Lesson

Site in host: stomach

Locality: San Antonio Oeste, Río Negro province

References: Leonardí *et al.* (2011)

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Locality: Bahía Grande, Santa Cruz province

Specimens in collections: BMNH (accession numbers not available)^v

References: Gibson and Harris (1979)

***Contracaecum* Railliet & Henry, 1912**

***Contracaecum osculatum* (Rudolphi, 1802) s.l.**

Host: *Otaria flavescens* (Shaw)

Site in host: stomach

Locality: Argentina

References: Carrara (1952)

Notes: Carrara (1952) identified these nematodes as *C. osculatum*. However, since *C. osculatum* s.s. parasitize seals from the North Hemisphere (see Mattiucci and Nascetti 2008) we re-assigned this taxa as *C. osculatum* s.l.

***Contracaecum* sp.**

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

References: Aznar *et al.* (1995)

***Contracaecum* spp.**

Host: *Otaria flavescens* (Shaw)

Site in host: stomach

Locality: Mar del Plata and Quequén, Buenos Aires province

References: Timi *et al.* (2014)

Family Tetrameridae Travassos, 1914

***Crassicauda* Leiper & Atkinson, 1914**

***Crassicauda* spp.**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: tympanic bullae

Locality: Paso Las Cholgas and Estancia Sara, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Order Rhabditida Chitwood, 1933

Family Metastrongylidae Leiper, 1912

***Halocercus* Baylis & Daubney, 1925**

***Halocercus brasiliensis* Lins de Almeida, 1933**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: lungs

Locality: Argentina

Specimens in collections: BMNH (accession numbers not available)^v

References: Gibson and Harris (1979)

***Skrjabinalius* Delyamure, 1942**

***Skrjabinalius* sp.**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: lungs

Locality: Puerto Deseado, Santa Cruz province

References: Goodall *et al.* (1988)

***Stenurus* Dujardin, 1845**

***Stenurus* sp.**

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: intestine

Locality: Playa Bonita (43°21'S, 65°03'W), Chubut province

References: Loizaga de Castro *et al.* (2014)

Notes: Species of *Stenurus* are parasites of lungs and cranial sinuses of cetaceans (Anderson *et al.* 2009). The presence of specimens of *Stenurus* sp. in the intestine of the dusky dolphin could be related to an accidental transfer of these nematodes from the lungs to the intestine when the dolphin was necropsied.

Metastrongylidae gen. sp.

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: lungs

Locality: Cabo Peña and Paso Las Cholgas, Tierra del Fuego province

References: Dougnac and Fredes (2012, reported as Pseudaliidae gen. sp.)

Platyhelminthes Gegenbaur, 1859

Adults

Class Cestoda Rudolphi, 1808

Order Diphylobothriidea Kuchta, Scholz, Brabec & Bray, 2008

Family Diphylobothriidae Lühe, 1910

***Diphylobothrium* Cobbold, 1858**

***Diphylobothrium* sp.**

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.140–141)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b, reported as *Diphylobothrium* spp.)

Notes: Voucher specimens of *Diphylobothrium* spp. from *A. australis* partially described by Hernández-Orts *et al.* (2013b) were re-examined by two co-authors (J.S.H.-O. and R.K.) who identified them as belonging to a single species of *Diphylobothrium* (most probably *D. pacificum*).

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.40–65)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b, reported as *Diphylobothrium* spp.)

Notes: Voucher specimens of *Diphylobothrium* spp. from *O. flavescens* partially described by Hernández-Orts *et al.* (2013b) were re-examined by two co-authors (J.S.H.-O. and R.K.) who identified them as belonging to a single species of *Diphylobothrium*.

Order Tetrabothriidea Baer, 1954

Family Tetrabothriidae Linton, 1891

***Strobilocephalus* Baer, 1932**

***Strobilocephalus triangularis* (Diesing, 1850)**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: intestine

Locality: Tierra del Fuego province

References: Berón-Vera *et al.* (2001)

***Tetrabothrius* Rudolphi, 1819**

***Tetrabothrius affinis* (Lönnerberg, 1891)**

Host: *Balaenoptera borealis* Lesson

Site in host: intestine

Locality: San Antonio Oeste, Río Negro province

References: Leonardi *et al.* (2011)

***Tetrabothrius hobergi* Nikolov, Cappozzo, Berón-Vera, Crespo, Raga & Fernández, 2010**

Host: *Mesoplodon hectori* (Gray)

Site in host: intestine

Locality: Puerto Quequén (38°37'S, 58°50'W), Buenos Aires province

Specimens in collections: MHNG-PLAT (INVE 67081)^S; MZU (accession numbers not provided)^V

References: Cappozzo *et al.* (2005, reported as *Tetrabothrius* sp.) and Nikolov *et al.* (2010)

***Tetrabothrius* spp.**

Host: *Balaenoptera borealis* Lesson

Site in host: intestine

Locality: Bahía Golondrina, Ushuaia, Tierra del Fuego province

References: Dougnac and Fredes (2012)

***Trigonocotyle* Baer, 1935**

***Trigonocotyle* spp.**

Host: *Tasmacetus shepherdi* Oliver

Site in host: stomach

Locality: Estancia Sara and Punta Sinai, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Notes: Species of *Trigonocotyle* inhabit the intestine of cetaceans (Delyamure 1955; Markowski 1955; Hoberg 1990). The presences of specimens of *Trigonocotyle* spp. in the stomach of *T. shepherdi* seems to be related to *post-mortem* movement of the tapeworms from the anterior small intestine.

Juveniles (immature specimens)

Order Tetrabothriidea Baer, 1954

Family Tetrabothriidae Linton, 1891

***Tetrabothrius* Rudolphi, 1819**

***Tetrabothrius* sp.**

Host: *Mesoplodon hectori* (Gray)

Site in the hosts: intestine

Locality: Puerto Quequén (38°37'S, 58°50'W), Buenos Aires province

Specimens in collections: MZU (accession numbers not provided)^V

References: Cappozzo *et al.* (2005) and Nikolov *et al.* (2010, reported as *Tetrabothrius* sp. 1)

Host: *Phocoena dioptrica* Lahille

Site in host: intestine

Locality: Playa El Doradillo, (42°39'S, 64°59'W), Chubut province

Specimens in collections: MML (accession numbers not provided)^V; MZU (accession numbers not provided)^V

References: Berón-Vera *et al.* (2008) and Nikolov *et al.* (2010, reported as *Tetrabothrius* sp. 2)

Host: *Stenella coeruleoalba* (Meyen)

Site in host: intestine

Locality: Playa Unión, (41°03'S, 62°48'W), Chubut province

References: Loizaga de Castro *et al.* (2011)

Tetrabothriidae gen. sp.

Host: *Arctocephalus australis* (Zimmermann)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: BMNH (2012.5.15.141–143)^v; MZU (accession numbers not provided)^v

References: Hernández-Orts *et al.* (2013b)

Metacestodes

Order Phyllobothriidea Caira, Jensen, Waeschenbach, Olson & Littlewood, 2014

Family Phyllobothriidae Braun, 1900

***Phyllobothrium* van Beneden, 1850**

***Phyllobothrium delphini* (Bosc, 1802)**

Host: *Lagenorhynchus cruciger* (Quoy & Gaimard)

Site in host: blubber

Locality: Playa Unión (43°20'S, 65°00'W), Rawson, and Playa Paraná (42°49'S, 64°53'W), Puerto Madryn, Chubut province; Estancia Moat, Tierra del Fuego province

References: Fernández *et al.* (2003) and Dougnac and Fredes (2012)

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: blubber

Locality: Playa Bonita (43°21'S, 65°03'W), Chubut province

Specimens in collections: BMNH (2013.7.4.1–3)^v

References: Loizaga de Castro *et al.* (2014)

Host: *Mesoplodon grayi* Von Haast

Site in host: blubber

Locality: San Antonio Oeste Río, Negro province

Specimens in collections: MML (accession numbers not provided)^v

References: Berón-Vera *et al.* (2008)

Host: *Physeter macrocephalus* Linnaeus

Site in host: blubber

Locality: Puerto Madryn (43°14'S, 65°02'W) and Playa Los Cangrejales (43°22'S, 65°02'W), Chubut province

Specimens in collections: MML (accession numbers not provided)^v

References: Crespo *et al.* (1994), Berón-Vera *et al.* (2008) and Degradi *et al.* (2011)

Host: *Stenella coeruleoalba* (Meyen)

Site in host: subcutaneous blubber

Locality: Playa Unión (41°03'S, 62°48'W), Chubut province

Reference: Loizaga de Castro *et al.* (2011)

***Phyllobothrium* sp.**

Host: *Mesoplodon layardii* (Gray)

Site in host: blubber

Locality: San Matías Gulf (41°S, 62°W), Río Negro province

References: Bordino and González (1992)

Host: *Otaria flavescens* (Shaw)

Site in host: blubber
Locality: Argentina
References: Carrara (1952)

Phyllobothriidea gen. sp.

***Scolex pleuronectis* Müller, 1787⁶**

Host: *Mesoplodon grayi* Von Haast
Site in host: anal crypts of the intestine
Locality: San Antonio Oeste, Río Negro province
Specimens in collections: MML (accession numbers not provided)^v
References: Berón-Vera *et al.* (2008)
Host: *Phocoena dioptrica* Lahille
Site in host: anal crypts of the intestine
Locality: Playa El Doradillo, Chubut province
Specimens in collections: MML (accession numbers not provided)^v
References: Berón-Vera *et al.* (2008)

Adults

Class Trematoda Rudolphi, 1808

Order Diplostomida Olson, Cribb, Tkach, Bray & Littlewood, 2003

Family Brauninidae Wolf, 1903

***Braunina* Heider, 1900**

***Braunina cordiformis* Wolf, 1903**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Locality: Comodoro Rivadavia, Chubut province; Tierra del Fuego province; central Patagonia and San Jorge Gulf (45°–47°S)

References: Gibson and Harris (1979), Greenwood and Taylor (1979), McKenzie and Blair (1983), Berón-Vera *et al.* (2001) and Lunaschi and Drago (2007)

Host: *Delphinus delphis* Linnaeus

Site in host: stomach

Locality: northern Patagonia (39°–42°S, 60°–62°W)

Specimens in collections: USNPC (99623)^v

References: Berón-Vera *et al.* (2001), Berón-Vera *et al.* (2007), Lunaschi and Drago (2007) and Fraijja-Fernández *et al.* (2014)

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: stomach, intestine

Locality: Patagonia

References: Dans *et al.* (1999) and Lunaschi and Drago (2007)

Host: *Mesoplodon hectori* (Gray)

6. *Scolex pleuronectis* is a collective name encompassing morphologically almost indistinguishable metacestodes of a number of phyllobothriidean species (Chambers *et al.* 2000).

Site in host: intestine

Locality: Mar del Plata (38°00'S, 57°33'W), Buenos Aires province

References: Cappozzo *et al.* (2005)

Host: *Tursiops truncatus* (Montagu)

Site in host: duodenal ampulla, main stomach, pyloric stomach

Locality: Playa Unión (43°24'S, 65°03'W), Chubut province; northern Patagonia (40°30'–43°30'S, 64°–65°W) and central Patagonia

Specimens in collections: BMNH (2013.11.29.3–8)^v

References: Berón-Vera *et al.* (2001), Sánchez *et al.* (2002), Lunaschi and Drago (2007) and Romero *et al.* (2014)

Family Notocotyliidae Lühe, 1909

***Ogmogaster* Jägerskiöld, 1891**

***Ogmogaster antarcticus* Johnston, 1931**

Host: *Balaenoptera borealis* Lesson

Site in host: stomach

Locality: San Antonio Oeste, Río Negro province

References: Leonardi *et al.* (2011) and Fraija-Fernández *et al.* (2014)

Order Plagiorchiida La Rue, 1957

Family Brachycladiidae Odhner, 1905

***Nasitrema* Ozaki, 1935**

***Nasitrema* sp.**

Host: *Globicephala melas* (Traill)

Site in host: air sinuses

Locality: Tierra del Fuego province

References: Raga *et al.* (1994a)

***Oschmarinella* Skrjabin, 1947**

***Oschmarinella rochebruni* (Poirier, 1886)**

Host: *Delphinus delphis* Linnaeus

Site in host: intestine

Locality: northern Patagonia (39°–42°S, 60°–62°W)

Specimens in collections: USNPC (99620)^v

References: Berón-Vera *et al.* (2007)

***Oschmarinella* sp.**

Host: *Lagenorhynchus cruciger* (Quoy & Gaimard)

Site in host: intestine

Locality: Playa Unión (43°20'S, 65°00'W), Rawson, Chubut province

References: Fernández *et al.* (2003) and Lunaschi and Drago (2007)

***Synthesium* Stunkard & Alvey, 1930**

***Synthesium pontoporiae* (Raga, Aznar, Balbuena & Dailey, 1994)**

(syn. *Hadwenius pontoporiae* Raga, Aznar, Balbuena & Dailey, 1994)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in hosts: duodenum, intestine, stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: BMNH (1993.5.17.1–2)^{P,V}; DAB (PB.N88.1–21, PB.N89.1–16, and PB.N90.1–11)^V; USNPC (82915, 82916, 86760, 86761, 86762)^{H,P}

References: Aznar *et al.* (1994; 1995; 1997), Raga *et al.* (1994b) and Lunaschi and Drago (2007)

***Synthesium tursionis* (Marchi, 1873)**

Host: *Tursiops truncatus* (Montagu)

Site in host: intestine

Locality: northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: BMNH (2013.11.29.9)^V

References: Romero *et al.* (2014)

***Synthesium* sp.**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Locality: Tierra del Fuego province; central Patagonia and San Jorge Gulf (45°–47°S)

References: Berón-Vera *et al.* (2001) and Lunaschi and Drago (2007)

Host: *Lagenorhynchus cruciger* (Quoy & Gaimard)

Site in host: intestine

Locality: Playa Unión (43°20'S, 65°00'W), Rawson, and Playa Paraná (42°49'S, 64°53'W), Puerto Madryn, Chubut province

References: Fernández *et al.* (2003, reported as *Hadwenius* sp. 1 and *Hadwenius* sp. 2) and Lunaschi and Drago (2007)

Host: *Lagenorhynchus obscurus* (Gray)

Site in host: intestine, stomach

Locality: Patagonia

References: Dans *et al.* (1999) and Lunaschi and Drago (2007)

***Synthesium* spp.**

Host: *Lagenorhynchus cruciger* (Quoy & Gaimard)

Site in host: intestine

Locality: Estancia Moat, Tierra del Fuego province

References: Dougnac and Fredes (2012)

Family Heterophyidae Leiper, 1909

***Ascocotyle* Looss, 1899**

***Ascocotyle patagoniensis* Hernández-Orts, Montero, Crespo, García, Raga & Aznar, 2012**

Host: *Otaria flavescens* (Shaw)

Site in host: intestine

Locality: northern Patagonia (40°43'–43°20'S, 63°04'–65°07'W)

Specimens in collections: holotype BMNH (2012.2.13.1, 2012.2.13.2–6)^{HP}; USNPC (105290)^P; MNCN (4.02/52–4.02/57)^P; MZU (EF2 11592–11605)^V

References: Hernández-Orts *et al.* (2012a; 2013b)

***Pholeter* Odhner, 1914**

***Pholeter gastrophilus* (Kossack, 1910)**

Host: *Cephalorhynchus commersonii* (Lacépède)

Site in host: stomach

Locality: central Patagonia and San Jorge Gulf (45°–47°S)

References: Berón-Vera *et al.* (2001) and Lunaschi and Drago (2007)

Host: *Delphinus delphis* Linnaeus

Site in host: stomach

Locality: northern Patagonia (39°–42°S, 60°–62°W)

Specimens in collections: USNPC (99624)^V

References: Berón-Vera *et al.* (2007)

Host: *Lagenorhynchus obscurus* (Gray)

Site in the host: intestine

Locality: Patagonia

References: Dans *et al.* (1999) and Lunaschi and Drago (2007)

Host: *Phocoena spinipinnis* Burmeister

Site in host: stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province; Punta Bengoa, Chubut province

Specimens in collections: MML (accession numbers not provided)^V

References: Corcuera *et al.* (1995) and Berón-Vera *et al.* (2008)

Host: *Pontoporia blainvillei* (Gervais & d'Orbigny)

Site in host: stomach

Locality: Claromecó (38°52'S, 60°05'W) and Necochea (38°27'S, 58°50'W), Buenos Aires province

Specimens in collections: DAB (accession numbers not provided)^V

References: Aznar *et al.* (1994; 1995) and Lunaschi and Drago (2007)

Host: *Tursiops truncatus* (Montagu)

Site in host: duodenal ampulla, main stomach, pyloric stomach

Locality: northern Patagonia (40°30'–43°30'S, 64°–65°W)

Specimens in collections: BMNH (2013.11.29.1–2)^V

References: Romero *et al.* (2014)

Host–Parasite list

(A—Acanthocephala, N—Nematoda, C—Cestoda, T—Trematoda)

Order Carnivora

Family Phocidae

Hydrurga leptonyx (de Blainville): A—*Corynosoma australe*, *C. hamanni*; N—*Contracaecum* sp.

Mirounga leonina (Linnaeus): A—*Corynosoma australe*; N—*Contracaecum miroungae*, *C. ogmorhini* s.s., *C. osculatum* s.l., *Contracaecum* sp., *Pseudoterranova* sp.

Leptonychotes weddellii (Lesson): A—*Corynosoma hamanni*.

Family Otariidae

Arctocephalus australis (Zimmermann): A—*Corynosoma australe*, *C. cetaceum*; N—*Contracaecum ogmorhini* s.s., *Contracaecum* sp., *Pseudoterranova cattani*; C—*Diphyllobothrium* sp., Tetrabothriidae gen. sp.

Otaria flavescens (Shaw): A—*Andracantha* sp., *Corynosoma australe*, *C. cetaceum*, *Profilicollis chasmagnathi*; N—*Anisakis simplex* s.l., *Contracaecum ogmorhini* s.s., *C. osculatum* s.l., *Contracaecum* sp., *Contracaecum* spp., *Pseudoterranova cattani*, *Uncinaria hamiltoni*; C—*Diphyllobothrium* sp., *Phyllobothrium* sp.; T—*Ascocotyle patagoniensis*.

Order Cetacea

Family Balaenopteridae

Balaenoptera borealis Lesson: N—*Anisakis simplex* s.l.; C—*Tetrabothrius affinis*, *Tetrabothrius* spp.; T—*Ogmogaster antarcticus*.

Family Delphinidae

Cephalorhynchus commersonii (Lacépède): N—Anisakidae gen. sp., *Anisakis simplex* s.l., *Anisakis* spp., *Contracaecum* spp., *Crassicauda* spp., *Halocercus brasiliensis*, *Halocercus* spp., Metastrongylidae gen. sp., *Skrjabinalius* sp.; C—*Strobilocephalus triangularis*; T—*Braunina cordiformis*, *Pholeter gastrophilus*, *Synthesium* sp.

Delphinus delphis Linnaeus: A—*Corynosoma cetaceum*; N—*Anisakis simplex* s.l.; T—*Braunina cordiformis*, *Oschmarinella rochebruni*, *Pholeter gastrophilus*.

Globicephala melas (Traill): T—*Nasitrema* sp.

Lagenorhynchus australis (Peale): N—*Anisakis* spp.

Lagenorhynchus cruciger (Quoy and Gaimard): N—Anisakidae gen. sp., *Anisakis simplex* s.l., *Pseudoterranova* spp.; C—*Phyllobothrium delphini*; T—*Oschmarinella* sp., *Synthesium* sp., *Synthesium* spp.

Lagenorhynchus obscurus (Gray): A—*Corynosoma australe*; C—*Phyllobothrium delphini*; N—*Anisakis simplex* s.l., *Anisakis* sp., *Stenurus* sp.; T—*Braunina cordiformis*, *Pholeter gastrophilus*, *Synthesium* sp.

Stenella coeruleoalba (Meyen): C—*Phyllobothrium delphini*, *Tetrabothrius* sp.

Tursiops truncatus (Montagu): A—*Corynosoma australe*, *C. cetaceum*; N—*Anisakis simplex* s.l., *Pseudoterranova decipiens* s.l., *Pseudoterranova* sp.; T—*Braunina cordiformis*, *Pholeter gastrophilus*, *Synthesium tursionis*.

Family Phocoenidae

Phocoena dioptrica Lahille: A—*Corynosoma australe*; N—*Anisakis simplex* s.l., *Stenurus* spp.; C—*Scolex pleuronectis*, *Tetrabothrius* sp.

Phocoena spinipinnis Burmeister: A—*Corynosoma cetaceum*; N—*Anisakis simplex* s.l., *Anisakis* sp., *Pseudalius inflexus*, *Stenurus minor*; T—*Pholeter gastrophilus*.

Family Physeteridae

Physeter macrocephalus Linnaeus: A—*Corynosoma bullosum*, *Corynosoma* sp.; C—*Phyllobothrium delphini*; N—*Anisakis physeteris*.

Family Pontoporiidae

Pontoporia blainvillei (Gervais & d'Orbigny): A—*Andracantha* sp., *Corynosoma australe*, *C. cetaceum*; N—*Anisakis simplex* s.l., *Contracaecum* sp.; T—*Pholeter gastrophilus*, *Synthesium pontoporiae*.

Family Ziphiidae

Mesoplodon grayi Von Haast: C—*Phyllobothrium delphini*, *Scolex pleuronectis*.

Mesoplodon hectori (Gray): A—*Bolbosoma* sp.; C—*Tetrabothrius hobergi*, *Tetrabothrius* sp.; N—*Anisakis* sp.; T—*Braunina cordiformis*.

Mesoplodon layardii (Gray): C—*Phyllobothrium* sp.

Tasmacetus shepherdii Oliver: C—*Trigonocotyle* spp.

Ziphius cavirostris Cuvier: N—Anisakidae gen. sp.

Discussion

This study suggests that our knowledge on the diversity of parasitic helminths of marine mammals from Argentina is still incomplete. Helminths have been only reported in 23 out of 47 species of marine mammals recorded in Argentinian waters. Moreover, for 6 species of marine mammals examined (1 pinnipeds and 5 cetaceans), available data are limited to a single-species record and thus their helminth fauna remains to be elucidated. Additionally, most of the studies were based on few hosts found either dead stranded on the coast or as by-catch in fisheries. We, therefore, expect that the parasitic diversity will increase when more hosts are analyzed in further studies.

To date, only three species of helminths have been described from marine mammals in Argentina: two species of trematodes (*Synthesium pontoporiae* from *P. blainvillei* and *Ascocotyle patagoniensis* from *O. flavescens*) and one cestode (*Tetrabothrius hobergi* from *M. hectori*). Most of the other taxa of trematodes, cestodes, nematodes or acanthocephalans have been previously recorded parasitizing pinnipeds and cetaceans in different localities worldwide (e.g. Delyamure 1955; Dailey and Brownell 1972; Gibson and Harris 1979; Agustí *et al.* 2005b; Luque *et al.* 2010; Aznar *et al.* 2012; Felix 2013). Most of the species identification was based exclusively on morphological characters (e.g. Berón-Vera *et al.* 2001, 2008; Hernández-Orts *et al.* 2013b; Romero *et al.* 2014). However, molecular data are available for only very few helminths parasitizing marine mammals. In Argentina, molecular studies have only been performed for clarifying taxonomic and phylogenetic issues of some species of

ancylostomids (*Uncinaria hamiltoni*) and anisakid nematodes (*Contracaecum ogmorhini* s.s., *C. miroungae*, *C. osculatum* s.l. and *Pseudoterranova cattani*) (Mattiucci *et al.* 2003, 2008; Nadler *et al.* 2013; Timi *et al.*, 2014), and in polymorphid acanthocephalans (*Corynosoma australe* and *C. cetaceum*) (see Sardella *et al.* 2005). Molecular genetic markers are necessary to reliably identify several species of parasitic helminths from marine mammals (*e.g.* anisakid nematodes or diphylobothriid cestodes), from which their systematic and nomenclature is controversial and confused by using exclusively morphological characters (Mattiucci and Nascetti 2008; Scholz *et al.* 2009; Mattiucci *et al.* 2014).

Most of the helminth parasites from the present checklist use marine mammals as definitive hosts, *i.e.* in these hosts the parasite reach sexual maturity is able to reproduce (Aznar *et al.* 2012). Only in the case of the cestodes *Phyllobothrium delphini*, *Phyllobothrium* sp. and *Scolex pleuronectis*, which mature and reproduce in sharks, marine mammals act as intermediate or paratenic hosts (Agustí *et al.* 2005a; Randhawa 2011). As many as three parasite taxa found in this study (*i.e.* *Contracaecum* sp., *Andracantha* sp. and *P. chasmagnathi*) use fish-eating birds as definitive host (*i.e.* cormorants or seagulls) (see Hernández-Orts *et al.* 2013b and references therein). In marine mammals, these parasites probably do not mature or cannot reproduce (Aznar *et al.* 2012; Hernández-Orts *et al.* 2013b).

The specific identity of the intermediate/paratenic hosts for most helminth parasites of marine mammals from Argentina is unknown and, therefore, their life cycles remain to be described. With the exception of ancylostomid nematodes (*Uncinaria* spp.) that have a direct life cycle, the life cycle of helminth parasites maturing in marine mammals is complex, including intermediate or paratenic hosts (*e.g.* Dailey 2005; Hernández-Orts 2013). Larvae of helminth parasites (*e.g.* third-stage larvae of anisakid nematodes or diphylobothrid plerocercoids) of marine mammals are a cause for concern because they can infect humans who consume raw or undercooked fish, and may cause disease known as anisakiosis or diphylobothriosis (Mattiucci and Nascetti 2008; Scholz *et al.* 2009). Currently, larval forms of helminth parasites from marine mammals have been reported infecting several species of cephalopods and fish inhabit the coast of Argentina (*e.g.* González and Kroeck 2000; Timi 2007; Hernández-Orts 2013; Hernández-Orts *et al.* 2013b; Cantatore and Timi 2014 and references therein). In addition to the potential health problem caused by these parasites, the identification of their larval forms in Argentina waters, especially by using molecular methods (*e.g.* Hernández-Orts *et al.* 2013b; Timi *et al.* 2013), will contribute to a better knowledge of the biology and transmission of helminths infecting this group of hosts.

Acknowledgments

We would like to thank two anonymous reviewers for their suggestions and helpful edits. The authors also thank J.A. Raga and J.J. Aznar for providing literature on marine mammals from Argentina. We are indebted to A. Kostadinova for her comments on the manuscript. Thanks are also due to F. Negri, J. Torres (and his family), J. Escobar, M. L. Fasola, R. Samaniego, S. Harris, J.M. Manuel Raya Rey and H. Boersma for their assistance during field work. We are indebted to A. González and N.R. Goodall of the Museo Acatashún, Ushuaia, Tierra del Fuego for their assistance with the stranded leopard seal. This study was supported by the Mohamed bin Zayed Species Conservation Fund (project No 0925516), Czech Science Foundation (P506/12/1632) and PICT CONICET (N°1832). J.S.H.O. benefited a Postdoctoral Fellowship from the General Directorate of Academic Staff Affairs (DGAPA), UNAM, Mexico.

References

- Agustí, C., Aznar, F.J., Olson, P.D., Littlewood, D.T.J., Kostadinova, A. & Raga, J.A. (2005a) Morphological and molecular characterization of tetraphyllidean merocercoids (Platyhelminthes: Cestoda) of striped dolphins (*Stenella coeruleoalba*) from the Western Mediterranean. *Parasitology*, 130, 461–474.
<http://dx.doi.org/10.1017/S0031182004006754>
- Agustí, C., Aznar, F.J. & Raga, J.A. (2005b) Tetraphyllidean plerocercoids from Western Mediterranean cetaceans and other marine mammals around the world: a comprehensive morphological analysis. *Journal of Parasitology*, 91, 83–92.
<http://dx.doi.org/10.1645/GE-372R>
- Amin, O.M. (2013) Classification of the Acanthocephala. *Folia Parasitologica*, 60, 273–305.
<http://dx.doi.org/10.14411/fp.2013.031>

- Anderson, R.C., Chabaud, A.G. & Willmott, S. (2009) *Keys to the nematode parasites of vertebrates. Archival Volumen*. CABI, Wallingford, 480 pp.
- Aznar, F.J., Balbuena, J.A. & Raga, J.A. (1994) Helminth communities of *Pontoporia blainvillei* (Cetacea: Pontoporiidae) in Argentina waters. *Canadian Journal of Zoology*, 72, 702–706.
<http://dx.doi.org/10.1139/z94-094>
- Aznar, F.J., Balbuena, J.A., Bush, A.O. & Raga, J.A. (1997) Ontogenetic habitat selection by *Hadwenius pontoporiae* (Digenea: Campulidae) in the intestine of franciscanas (Cetacea). *Journal for Parasitology*, 83, 13–18.
- Aznar, F.J., Berón-Vera, B., Crespo, E.A. & Raga, J.A. (2002a) Presence of genital spines in a male *Corynosoma cetaceum* Johnston & Best, 1942 (Acanthocephala). *Journal of Parasitology*, 88, 403–404.
[http://dx.doi.org/10.1645/0022-3395\(2002\)088\[0403:POGSIA\]2.0.CO;2](http://dx.doi.org/10.1645/0022-3395(2002)088[0403:POGSIA]2.0.CO;2)
- Aznar, F.J., Bush, A.O., Balbuena, J.A. & Raga, J.A. (2001) *Corynosoma cetaceum* in the stomach of franciscanas, *Pontoporia blainvillei* (Cetacea): an exceptional case of habitat selection by an acanthocephalan. *Journal of Parasitology*, 87, 536–541.
[http://dx.doi.org/10.1645/0022-3395\(2001\)087\[0536:CCITSO\]2.0.CO;2](http://dx.doi.org/10.1645/0022-3395(2001)087[0536:CCITSO]2.0.CO;2)
- Aznar, F.J., Bush, A.O., Fernández, M. & Raga, J.A. (1999a) Constructional morphology and mode of attachment of the trunk of *Corynosoma cetaceum* (Acanthocephala: Polymorphidae). *Journal of Morphology*, 241, 237–249.
[http://dx.doi.org/10.1002/\(SICI\)1097-4687\(199909\)241:3<237::AID-JMOR6>3.0.CO;2-A](http://dx.doi.org/10.1002/(SICI)1097-4687(199909)241:3<237::AID-JMOR6>3.0.CO;2-A)
- Aznar, F.J., Bush, A.O. & Raga, J.A. (1999b) *Polymorphus arctocephali* Smales, 1986, a synonym of *Corynosoma cetaceum* Johnston & Best, 1942 (Acanthocephala: Polymorphidae). *Systematic Parasitology*, 44, 59–70.
<http://dx.doi.org/10.1023/A:1006161620990>
- Aznar, F.J., Bush, A.O. & Raga, J.A. (2002b) Reduction and variability of trunk spines in the acanthocephalan *Corynosoma cetaceum*: the role of physical constraints on attachment. *Invertebrate Biology*, 121, 104–114.
<http://dx.doi.org/10.1111/j.1744-7410.2002.tb00051.x>
- Aznar, F.J., Hernández-Orts, J.S., Suárez, A.A., García-Varela, M., Raga, J.A. & Cappozzo, H.L. (2012) Assessing host-parasite specificity through coprological analysis: a case study with species of *Corynosoma* (Acanthocephala: Polymorphidae) from marine mammals. *Journal of Helminthology*, 86, 156–164.
<http://dx.doi.org/10.1017/S0022149X11000149>
- Aznar, F.J., Herreras, M.V., Balbuena, J.A. & Raga, J.A. (2003) Population structure and habitat selection by *Anisakis simplex* in 4 odontocete species from northern Argentina. *Comparative Parasitology*, 70, 66–77.
[http://dx.doi.org/10.1654/1525-2647\(2003\)070\[0066:PSAHSB\]2.0.CO;2](http://dx.doi.org/10.1654/1525-2647(2003)070[0066:PSAHSB]2.0.CO;2)
- Aznar, F.J., Pérez-Ponce de León, G. & Raga, J.A. (2006) Status of *Corynosoma* (Acanthocephala: Polymorphidae) based on anatomical, ecological, and phylogenetic evidence, with the erection of *Pseudocorynosoma* n. gen. *Journal of Parasitology*, 92, 548–564.
<http://dx.doi.org/10.1645/GE-715R.1>
- Aznar, F.J., Raga, J.A., Corcuera, J. & Monzón, F. (1995) Helminths as biological tags for franciscana (*Pontoporia blainvillei*) (Cetacea, Pontoporiidae) in Argentinian and Uruguay waters. *Mammalia*, 59, 427–435.
<http://dx.doi.org/10.1515/mamm.1995.59.3.427>
- Barragán Muñoz, J.M., Dadon, J.R., Matteucci, S.D., Morello, J.H., Baxendale, C. & Rodríguez, A. (2003) Preliminary basis for an integrated management program for the coastal zone of Argentina. *Coastal Management*, 31, 55–77.
<http://dx.doi.org/10.1080/08920750390168309>
- Bastida, R., Rodríguez, D., Secchi, E. & da Silva, V. (2007) *Mamíferos acuáticos de Sudamérica y Antártida*. Vázquez Mazzini Editores, Buenos Aires, Argentina, 368 pp.
- Baylis, H.A. (1923) An ascarid from the sperm whale. *Annals and Magazine of Natural History*, 11, 211–217.
- Baylis, H.A. (1933) A new species of the nematode genus *Uncinaria* from a sea-lion, with some observations on related species. *Parasitology*, 25, 308–316.
<http://dx.doi.org/10.1017/S0031182000019508>
- Berland, B. (1961) Nematodes from some Norwegian marine fishes. *Sarsia*, 2, 1–50.
- Berón-Vera, B., Crespo, E.A. & Raga, J.A. (2008) Parasites in stranded cetaceans of Patagonia. *Journal of Parasitology*, 94, 946–948.
<http://dx.doi.org/10.1645/GE-1296.1>
- Berón-Vera, B., Crespo, E.A., Raga, J.A. & Pedraza, S.N. (2004) *Uncinaria hamiltoni* (Nematoda: Ancylostomatidae) in South American sea lions, *Otaria flavescens*, from northern Patagonia, Argentina. *Journal of Parasitology*, 90, 860–863.
<http://dx.doi.org/10.1645/GE-182R>
- Berón-Vera, B., Crespo, E.A., Raga, J.A. & Fernández, M. (2007) Parasite communities of common dolphins (*Delphinus delphis*) from Patagonia: the relation with host distribution and diet and comparison with sympatric hosts. *Journal of Parasitology*, 93, 1056–1060.
<http://dx.doi.org/10.1645/GE-1070R.1>
- Berón-Vera, B., Pedraza, S.N., Raga, J.A., Gil de Pertierra, A., Crespo, E.A., Koen Alonso, M. & Goodall, R.N.P. (2001) Gastrointestinal helminths of Commerson's dolphins *Cephalorhynchus commersonii* from central Patagonia and Tierra del Fuego. *Diseases of Aquatic Organisms*, 47, 201–208.
<http://dx.doi.org/10.3354/dao047201>

- Best, P.B., Payne, R., Rowntree, V., Palazzo, J.T. & Both, M.D. (1993) Long-range movements of South Atlantic right whales *Eubalaena australis*. *Marine Mammal Science*, 93, 227–234.
<http://dx.doi.org/10.1111/j.1748-7692.1993.tb00451.x>
- Bordino, P. & González, R. (1992) *Presencia del parásito Phyllobothrium sp. (Cestoda) y del foronte Conchoderma auritum (Crestacea, Cirripedia) sobre Mesoplodon layardii (Cetacea, Ziphiidae)*. V Reunión de Trabajo de Especialistas en Mamíferos Acuáticos de América del Sur, Buenos Aires, Argentina, 10 pp.
- Bosc, L.A.G. (1802) *Histoire naturelle des Vers. Contenant leur Description et leurs Moeurs*. Chez Deterville, Paris, 324 pp.
- Bray, R.A., Gibson, D.I. & Jones, A. (2008) *Keys to the Trematoda. Vol. 3*. CAB International and Natural History Museum, London, 824 pp.
- Caira, J.N., Jensen, K., Waeschenbach, A., Olson, P.D. & Littlewood, D.T.J. (2014) Orders out of chaos—molecular phylogenetics reveals the complexity of shark and stingray tapeworm relationships. *International Journal for Parasitology*, 44, 55–73.
<http://dx.doi.org/10.1016/j.ijpara.2013.10.004>
- Campagna, C., Piola, A.R., Marin, M.R., Lewis, M. & Fernández, T. (2006) Southern elephant seal trajectories, fronts and eddies in the Brazil/Malvinas Confluence. *Deep Sea Research Part I: Oceanographic Research Papers*, 53, 1907–1924.
<http://dx.doi.org/10.1016/j.dsr.2006.08.015>
- Campana-Rouget, Y. & Biocca, E. (1955) Une nouvelle espèce d' *Anisakis* chez un phoque méditerranéen. *Annales de Parasitologie Humaine et Comparée*, 30, 477–480.
- Cantatore, D.M.P. & Timi, J.T. (2015) Marine parasites as biological tags in South American Atlantic waters, current status and perspectives. *Parasitology*, 142, 5–24
<http://dx.doi.org/10.1017/S0031182013002138>
- Cappozzo, H.L., Negri, M.F., Mahler, B., Lía, V.V., Martínez, P., Gianggiobe, A. & Saubidet, A. (2005) Biological data on two Hector's beaked whales, *Mesoplodon hectori*, stranded in Buenos Aires province, Argentina. *Latin American Journal of Aquatic Mammals*, 4, 113–128.
<http://dx.doi.org/10.5597/lajam00076>
- Carrara, I.S. (1952) *Lobos marinos, pingüinos y guaneras de la costa del litoral marítimo e islas adyacentes de la República Argentina*. Publicación Especial de la Facultad de Ciencias Veterinarias, Universidad de La Plata, 180 pp.
- Chambers, C.B., Cribb, T.H. & Jones, M.K. (2000) Tetraphyllidean metacestodes of teleosts of the Great Barrier Reef, and the use of *in vitro* cultivation to identify them. *Folia Parasitologica*, 47, 285–292.
- Chilvers, B.L., Wilkinson, I.S., Duignan, P.J. & Gemmill, N.J. (2005) Summer foraging areas for lactating New Zealand sea lions *Phocarcetos hookeri*. *Marine Ecology Progress Series*, 304, 235–247.
<http://dx.doi.org/10.3354/meps304235>
- Corcuera, J., Monzón, F., Aguilar, A., Borrell, A. & Raga, J.A. (1995) Life history data, organochlorine pollutants and parasites from eight Burmeister's porpoises, *Phocoena spinipinnis*, caught in Northern Argentine waters. In: Bjørge, A. & Donovan, G.P. (Eds.), *Biology of the Phocoenids. A collection of Papers*. International Whaling Commission, Cambridge, pp. 365–372.
- Crespo, E.A., García, N.A., Dans, S.L. & Pedraza, S.N. (2008) Mamíferos marinos. In: Boltovskoy, D. (Ed.), *Atlas de Sensibilidad Ambiental de la Costa y el Mar Argentino*. Secretaría de Ambiente y Desarrollo Sustentable de la Nación (Proyecto ARG 02/018 “Conservación de la Diversidad Biológica y Prevención de la Contaminación Marina en Patagonia”), Buenos Aires, Argentina. Available from: <http://atlas.ambiente.gov.ar/index.htm> (accessed 11 February 2015)
- Crespo, E.A., Koen Alonso, M., García, N.A., Reyes, L.M., Cozzuol, M.A. & Corcuera, J. (1994) *Varamiento de un cachalote (Physeter macrocephalus) en la costa del Golfo Nuevo, Chubut, Argentina*. Anales de la IV reunión de trabajo de especialistas en mamíferos acuáticos de América del Sur, Valdivia, pp. 56–74.
- Croxall, J.P. & Wood, A.G. (2002) The importance of the Patagonian Shelf for top predator species breeding at South Georgia. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 12, 101–118.
<http://dx.doi.org/10.1002/aqc.480>
- Dailey, M.D. & Brownell, R.I. Jr. (1972) A checklist of marine mammal parasites. In: Rigdway, S.R. (Ed), *Mammals of the Sea, Biology and Medicine*. Charles C. Thomas, Springfield, pp. 528–589.
- Dailey, M.D. (2005) Parasites of marine mammals. In: Rohde, K. (Ed.), *Marine Parasitology*. CSIRO Publishing, Collingwood, pp. 408–414.
- Dans, S.L., Reyes, L.M., Pedraza, S.N., Raga, J.A. & Crespo, E.A. (1999) Gastrointestinal helminths of the dusky dolphin, *Lagenorhynchus obscurus*, off Patagonia coasts, in the Southwestern Atlantic Ocean. *Marine Mammal Science*, 15, 649–660.
<http://dx.doi.org/10.1111/j.1748-7692.1999.tb00834.x>
- Degrati, M., García, N.A., Grandi, M.F., Leonardi, M.S., Loizaga de Castro, R., Vales, D.G., Dans, S.L., Pedraza, S.N. & Crespo, E.A. (2011) New record of a stranded sperm whale (*Physeter macrocephalus*) and a review of strandings along the continental Argentine coast. *Mastozoología Neotropical*, 18, 307–313.
- Delyamure, S.L. (1955) *Helminth fauna of marine mammals (ecology and phylogeny)*. Akademiya Nauk SSSR, Moscow, 517 pp. [translated by the Israel Program for Scientific Translation, Jerusalem, 1968, 522 pp]
- Diesing, K.M. (1850) *Systema Helminthum, Vol. I*. Wilhelmum Braumüller, Vindobonae, 679 pp.
- Dollfus, R. (1966) Helminthofaune de *Kogia breviceps* (de Blainville, 1838) Cétacé Odontocète. *Annales de la Société des*

- Dougnac, C. & Fredes, F. (2012) *Identificación de endoparásitos en cetáceos de Tierra del Fuego*. Editorial Académica Española, Saarbrücken, 130 pp.
- Felix, J.R. (2013) *Parasitic infections in marine mammals from 1892 to 1978*. Zea Books, Lincoln, 150 pp.
- Fernández, M., Berón-Vera, B., García, N.A., Raga, J.A. & Crespo, E.A. (2003) Food and parasites from two Hourglass dolphins, *Lagenorhynchus cruciger* (Quoy and Gaimard, 1824), from Patagonia waters. *Marine Mammal Science*, 19, 832–836.
<http://dx.doi.org/10.1111/j.1748-7692.2003.tb01133.x>
- Fraija-Fernández, N., Olson, P.D., Crespo, E.A., Raga, J.A., Aznar, F.J. & Fernández, M. (2015) Independent host switching events by digeneans parasites of cetaceans inferred from ribosomal DNA. *International Journal for Parasitology*, 45, 167–173.
<http://dx.doi.org/10.1016/j.ijpara.2014.10.004>
- George-Nascimento, M. & Urrutia, X. (2000) *Pseudoterranova cattani* sp. nov. (Ascaridoidea: Anisakidae), a parasite of the South American sea lion *Otaria byronia* de Blainville from Chile. *Revista Chilena de Historia Natural*, 73, 93–98.
- Gibson, D.I. & Harris, E.A. (1979) The helminth-parasites of cetaceans in the collection of the British Museum (Natural History). *Investigations on Cetacea*, 10, 309–324.
- González, R.A. & Kroeck, M.A. (2000) Enteric helminths of the shortfin squid *Illex argentinus* in San Matias Gulf (Argentina) as stock discriminants. *Acta Parasitologica*, 45, 89–93.
- Goodall, R.N.P., Galeazzi, A.R., Leatherwood, S., Miller, K.W., Cameron, I.S., Kastelein, R.K. & Sobral, A.P. (1988) Studies of Commerson's dolphins, *Cephalorhynchus commersonii*, off Tierra del Fuego, 1976–1984, with a review of information on the species in the South Atlantic. *Report of the International Whaling Commission*, Special Issue 9, 161–171.
- Greenwood, A.G. & Taylor, D.C. (1979) Odontocete parasites: some new host records. *Aquatic Mammals*, 7, 23–25.
- Hernández-Orts, J.S. (2013) *Taxonomy and ecology of metazoan parasites of otariids from Patagonia, Argentina: adult and infective stages*. PhD thesis, University of Valencia, Valencia, 205 pp.
- Hernández-Orts, J.S., Aznar, F.J., Blasco-Costa, I., García, N.A., Vállora-Montero, M., Crespo, E.A., Raga, J.A. & Montero, F.E. (2013a) Description, microhabitat selection and infection patterns of sealworm larvae (*Pseudoterranova decipiens* species complex, Nematoda: Ascaridoidea) in fishes from Patagonia, Argentina. *Parasites & Vectors*, 6, 252.
<http://dx.doi.org/10.1186/1756-3305-6-252>
- Hernández-Orts, J.S., Montero, F.E., Crespo, E.A., García, N.A., Raga, J.A. & Aznar F.J. (2012a) A new species of *Ascocotyle* (Trematoda: Heterophyidae) from the South American sea lion, *Otaria flavescens*, off Patagonia, Argentina. *Journal of Parasitology*, 98, 810–816.
<http://dx.doi.org/10.1645/GE-2959.1>
- Hernández-Orts, J.S., Montero, F.E., Juan-García, A., García, N.A., Crespo, E.A., Raga, J.A. & Aznar, F.J. (2013b) Intestinal helminth fauna of the South American sea lion *Otaria flavescens* and fur seals *Arctocephalus australis* from northern Patagonia, Argentina. *Journal of Helminthology*, 87, 336–347.
<http://dx.doi.org/10.1017/S0022149X12000454>
- Hernández-Orts, J.S., Timi, J.T., Raga, J.A., García-Varela, M., Crespo, E.A. & Aznar, F.J. (2012b) Patterns of trunk spine growth in two congeneric species of acanthocephalan: investment in attachment may differ between sexes and species. *Parasitology*, 139, 945–955.
<http://dx.doi.org/10.1017/S0031182012000078>
- Hoberg, E.P. (1990) *Trigonocotyle sextesticulae* sp. nov. (Eucestoda: Tetrabothriidae): a parasite of pygmy killer whales (*Feresa attenuata*). *Canadian Journal of Zoology*, 68, 1835–1838.
<http://dx.doi.org/10.1139/z90-263>
- Holcman-Spector, B., Mañe-Garzón, F. & Dei-Cas, E. (1977) Una larva cystacantha (Acanthocephala) de la cavidad general de *Chasmagnathus granulata* Dana, 1851. *Revista de Biología del Uruguay*, 5, 67–76.
- Hodda, M. (2011) Phylum Nematoda Cobb 1932. *Zootaxa*, 3148, 63–95.
- Johnston, T.H. (1931) New trematodes from the Subantarctic and Antarctic. *Australian Journal of Experimental Biology and Medicine Science*, 8, 91–98.
- Johnston, T.H. (1937) Entozoa from the Australian hair seal. *Proceedings of the Linnean Society of New South Wales*, 62, 9–16.
- Johnston, T.H. & Best, E.W. (1942) Australian Acanthocephala. No. 3. *Transactions of the Royal Society of South Australia*, 66, 250–254.
- Johnston, T.H. & Mawson, P.M. (1941) Nematodes from Australian marine mammals. *Records of the South Australian Museum*, 6, 429–434.
- Jones, A., Bray, R.A. & Gibson, D.I. (2005) *Keys to the Trematoda. Volume 2*. CAB International and Natural History Museum, London, 768 pp.
- Khalil, L.F., Jones, A. & Bray, R.A. (1994) *Key to the cestode parasites of vertebrates*. CAB International, Wallingford, 751 pp.
- Klimpel, S., Palm, H.W., Rückert, S. & Piatkowski, U. (2004) The life cycle of *Anisakis simplex* in the Norwegian Deep (northern North Sea). *Parasitology Research*, 94, 1–9.
<http://dx.doi.org/10.1007/s00436-004-1154-0>
- Kossack, W. (1910) Neue Distomem. *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten*, 56, 114–120.
- Krabbe, H. (1878) Saelernes og Tandhvalernes Spolorme. *Oversigt over det Kongelige Danske videnskabernes selskabs forhandling*, 1, 43–51.

- Kuchta, R., Scholz, T., Brabec, J. & Bray, R.A. (2008) Suppression of the tapeworm order Pseudophyllidea (Platyhelminthes: Eucestoda) and the proposal of two new orders, Bothriocephalidea and Diphylobothriidea. *International Journal for Parasitology*, 38, 49–55.
<http://dx.doi.org/10.1016/j.ijpara.2007.08.005>
- Kühn, M. (1829) Description d'une nouvelle espèce de Strongyle trouvée dans le Marsouin. *Bulletin des Sciences Naturelles et de Géologie*, 17, 150–153.
- Leonardi, M.S., Grandi, M.F., García, N.A., Svendsen, G., Romero, M.A., González, R. & Crespo, E.A. (2011) A stranding of *Balaenoptera borealis* (Lesson 1828) from Patagonia, Argentina, with notes on parasite infestation and diet. *African Journal of Marine Science*, 33, 177–179.
<http://dx.doi.org/10.2989/1814232X.2011.572384>
- Lins de Almeida, J. (1933) Nouveau nématode parasite de cétacés du Brésil, *Halocercus brasiliensis* n. sp. *Comptes rendus des séances de la Société de biologie et de ses filiales*, 114, 955–957.
- Linstow, O.V. (1891) Helminthen aus Süd-Georgien. Nach der Ausbeute der Deutschen Station von 1882–1883. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, 9, 59–77.
- Loizaga de Castro, R., Leonardi, M.S., Grandi, M.F., García, N.A. & Crespo, E.A. (2011) Far from home: record of a vagrant striped dolphin in Patagonia with notes on diet, parasites and age determination. *Mammalian Biology*, 76, 521–524.
<http://dx.doi.org/10.1016/j.mambio.2011.02.004>
- Loizaga de Castro, R., Vales, D.G., Degradi, M., García, N., Fernández, M. & Crespo, E.A. (2014) Primer registro de quistes de cestodos en delfines oscuros costeros (*Lagenorhynchus obscurus*) en la costa de Argentina. *Hidrobiológica*, [in press].
- Lunaschi, L. & Drago, F. (2007) Checklist of digenean parasites of wild mammals from Argentina. *Zootaxa*, 1580, 35–50.
- Lönnberg, E. (1891) Anatomische Studien über Skandinavische Cestoden. *Konglig. Svenska Vetenskaps-Akademiens Handlingar*, 24, 1–108.
- Luque, J.L., Muniz-Pereira, L.C., Siciliano, S., Siqueria, L.R., Oliveira, M.S. & Vieira, F.M. (2010) Checklist of helminth parasites of cetaceans from Brazil. *Zootaxa*, 2548, 57–68.
- Marchi, P. (1873) Sopra una specie nuova di *Distomum* trovate nelle intestina del *Delphinus tursio*. *Atti della Società Italiana de Scienze Naturali*, 15, 304.
- Martin, A.R., Katona, S.K., Matilla, D., Hembree, D. & Waters, T.D. (1984) Migration of humpback whales between the Caribbean and Iceland. *Journal of Mammalogy*, 65, 330–333.
- Markowski, S. (1955) Cestodes of whales and dolphins from the Discovery collections. *Discovery Reports*, 27, 377–395.
- Mattiucci, S., Cianchi, R., Nascetti, G., Paggi, L., Sardella, N., Timi, J., Webb, S.C., Bastida, R., Rodríguez, D. & Bullini, L. (2003) Genetic evidence for two sibling species within *Contracaecum ogmorhini* Johnston & Mawson, 1941 (Nematoda: Anisakidae) from otariid seals of boreal and austral regions. *Systematic Parasitology*, 54, 13–23.
<http://dx.doi.org/10.1023/A:1022145926409>
- Mattiucci, S., Cipriani, P., Webb, S.C., Paoletti, M., Marcer, F., Bellisario, B., Gibson, D.I. & Nascetti, G. (2014) Genetic and morphological approaches distinguish the three sibling species of the *Anisakis simplex* species complex, with a species designation as *Anisakis berlandi* n. sp. for *A. simplex* sp. C (Nematoda: Anisakidae). *Journal for Parasitology*, 100, 199–214.
<http://dx.doi.org/10.1645/12-120.1>
- Mattiucci, S. & Nascetti, G. (2008) Advances and trends in the molecular systematics of anisakid nematodes, with implications for their evolutionary ecology and host-parasite co-evolutionary processes. *Advances in Parasitology*, 66, 47–148.
[http://dx.doi.org/10.1016/S0065-308X\(08\)00202-9](http://dx.doi.org/10.1016/S0065-308X(08)00202-9)
- Mattiucci, S., Nascetti, G., Dailey, M., Webb, S.C., Barros, N.B., Cianchi, R. & Bullini, L. (2005) Evidence for a new species of *Anisakis* Dujardin, 1845: morphological description and genetic relationships between congeners (Nematoda: Anisakidae). *Systematic Parasitology*, 61, 157–171.
<http://dx.doi.org/10.1007/s11230-005-3158-2>
- Mattiucci, S., Paoletti, M. & Webb, S.C. (2009) *Anisakis nascettii* n. sp. (Nematoda: Anisakidae) from beaked whales of the southern hemisphere: morphological description, genetic relationships between congeners and ecological data. *Systematic Parasitology*, 74, 199–217.
<http://dx.doi.org/10.1007/s11230-009-9212-8>
- Mattiucci, S., Paoletti, M., Webb, S.C., Sardella, N., Timi, J.T., Berland, B. & Nascetti, G. (2008) Genetic relationships among species of *Contracaecum* Railliet & Henry, 1912 and *Phocascaris* Höst, 1932 (Nematoda: Anisakidae) from pinnipeds inferred from mitochondrial cox2 sequences, and congruence with allozyme data. *Parasite*, 15, 408–419.
<http://dx.doi.org/10.1051/parasite/2008153408>
- McClelland, G. (2002) The trouble with sealworms (*Pseudoterranova decipiens* species complex, Nematoda): A review. *Parasitology*, 124, S183–S203.
<http://dx.doi.org/10.1017/S0031182002001658>
- McKenzie, J. & Blair, D. (1983) Parasites from Hector's dolphin (*Cephalorhynchus hectori*). *New Zealand Journal of Zoology*, 10, 126–127.
<http://dx.doi.org/10.1080/03014223.1983.10423898>
- Miloslavich, P., Klein, E., Díaz, J.M., Hernández, C.E., Bigatti, G., Campos, L., Artigas, F., Castillo, J., Penchaszadeh, P.E., Neill, P.E., Carranza, A., Retana, M.V., Díaz de Astarloa, J.M., Lewis, M., Yorio, P., Piriz, M.L., Rodríguez, D., Yonshigue-Valentin, Y., Gamboa, L. & Martín, A. (2011) Marine biodiversity in the Atlantic and Pacific coasts of South America: knowledge and gaps. *PLoS ONE*, 6, e14631.

<http://dx.doi.org/10.1371/journal.pone.0014631>

- Moravec, F. (1998) Nematodes of freshwater fishes of the Neotropical region. Academy of Sciences of the Czech Republic, České Budějovice, 464 pp.
- Morini, E.G. & Boero, J.J. (1960) *Corynosoma otariae* n. sp. (Acanthocephala; Polymorphidae) parásito de un lobo marino (*Otaria flavescens*). *Acta y trabajos del Primer Congreso Sudamericano de Zoología*, 1959, La Plata, pp. 229–234.
- Müller, O.F. (1787) Verzeichnis der bisher entdeckten Eingeweidewürmer der Thiere, in welchen sie gefunden wurden, und besten Schriften die dieselben erwähnen. *Naturforscher*, 22, 33–86.
- Nadler, S.A., Lyons, E.T., Pagan, C., Hyman, D., Lewis, E.E., Beckmen, K., Bell, C.M., Castinel, A., DeLong, R.L., Duignan, P.J., Farinpour, C., Burek Huntington, K., Kuiken, T., Morgades, D., Naem, S., Norman, R., Parker, C., Ramos, P., Spraker, T.R. & Berón-Vera, B. (2013) Molecular systematics of pinniped hookworms (Nematoda: Uncinaria): species delimitation, host associations and host-induced morphometric variation. *International Journal for Parasitology*, 43, 1119–1132.
<http://dx.doi.org/10.1016/j.ijpara.2013.08.006>
- Nikolov, P.N., Cappozzo, H.L., Berón-Vera, B., Crespo, E.A., Raga, J.A. & Fernández, M. (2010) Cestodes from Hector's beaked whale (*Mesoplodon hectori*) and spectacled porpoise (*Phocoena dioptrica*) from Argentinean waters. *Journal of Parasitology*, 96, 746–751.
<http://dx.doi.org/10.1645/GE-2200.1>
- Nikolskii, O.R. (1974) *Contracaecum mirounga* sp. n. (Nematoda, Anisakidae)—a new nematode of the southern elephant seal. *Izvestija Tikhookeanskogo Nauchno-Issledovatelskogo Instituta Rybnogo Khozjajstva i Okeanografii*, 83, 107–109. [in Russian]
- Olson, P.D., Cribb, T.H., Tkach, V.V., Bray, R.A. & Littlewood, D.T.J. (2003) Phylogeny and classification of the Digenea (Platyhelminthes: Trematoda). *International Journal for Parasitology*, 33, 733–755.
[http://dx.doi.org/10.1016/S0020-7519\(03\)00049-3](http://dx.doi.org/10.1016/S0020-7519(03)00049-3)
- Paggi, L., Nascetti, G., Weeb, S.C., Mattiucci, S., Cianchi, R. & Bullini, L. (1998) A new species of *Anisakis* Dujardin, 1845 (Nematoda, Anisakidae) from beaked whales (Ziphiidae): allozyme and morphological evidence. *Systematic Parasitology*, 40, 161–174.
<http://dx.doi.org/10.1023/A:1006093201920>
- Poirier, M.J. (1886) Trematodes nouveaux ou peu connus. *Bulletin de la Societé Philomathique de Paris*, Series 3, 10, 20–39.
- Raga, J.A., Abril, E., Goodall, N.P. & Balbuena, J.A. (1994a) *Nasitrema* sp. (Digenea: Nasitrematidae) from the long-finned pilot whale (*Globicephala melas*) off Tierra del Fuego; a new host record. *Reports of the International Whaling Commission*, 44, 371–374.
- Raga, J.A., Aznar, J., Balbuena, J.A. & Dailey, M.D. (1994b) *Hadwenius pontoporiae* sp. n. (Digenea: Campulidae) from the intestine of franciscana (Cetacea: Pontoporiidae) in Argentinian waters. *Journal of the Helminthological Society of Washington*, 61, 45–49.
- Randhawa, H.S. (2011) Insights using a molecular approach into the life cycle of a tapeworm infecting great white sharks. *Journal of Parasitology*, 97, 275–280.
<http://dx.doi.org/10.1645/GE-2530.1>
- Romero, M.A., Fernández, M., Dans, S.L., García, N.A., González, R. & Crespo, E.A. (2014) Gastrointestinal parasites of bottlenose dolphins *Tursiops truncatus* from the extreme southwestern Atlantic, with notes on diet composition. *Diseases of Aquatic Organisms*, 108, 61–70.
<http://dx.doi.org/10.3354/dao02700>
- Rudolphi, C.A. (1802) Fortsetzung der beobachtungen über die Eingeweidewürmer. *Archiv für Zoologie und Zootomie*, 2, 1–67.
- Rudolphi, C.A. (1808) *Entozoorum sive vermium intestinalium. Historia Naturalis. Vol. 1.* Sumtibus Tabernae Librariae et Artium, Amsterdam, 527 pp.
- Rudolphi, C.A. (1809) *Entozoorum sive vermium intestinalium. Historia Naturalis. Vol. 2.* Sumtibus Tabernae Librariae et Artium, Amsterdam, 459 pp.
- Sánchez, J., Kuba, L., Berón-Vera, B., Dans, S.L., Crespo, E.A., Van Bresselem, M.F., Coscarella, M.A., García, N.A., Koen Alonso, M., Pedraza, S.N. & Mariotti, P.A. (2002) Uterine adenocarcinoma with generalised metastasis in a bottlenose dolphin *Tursiops truncatus* from northern Patagonia, Argentina. *Diseases of Aquatic Organisms*, 48, 155–159.
<http://dx.doi.org/10.3354/dao048155>
- Sardella, N.H., Mattiucci, S., Timi, J.T., Bastida, R.O., Rodríguez, D.H. & Nascetti, G. (2005) *Corynosoma australe* Johnston, 1937 and *C. cetaceum* Johnston & Best, 1942 (Acanthocephala: Polymorphidae) from marine mammals and fishes in Argentinian waters: allozyme markers and taxonomic status. *Systematic Parasitology*, 61, 143–156.
<http://dx.doi.org/10.1007/s11230-005-3131-0>
- Scholz, T., García, H.H., Kuchta, R. & Wicht, B. (2009) Update on the human broad tapeworm (genus *Diphyllobothrium*), including clinical relevance. *Clinical Microbiology Reviews*, 22, 140–160.
<http://dx.doi.org/10.1128/CMR.00033-08>
- Timi, J.T. (2007) Parasites as biological tags for stock discrimination in marine fish from South American Atlantic waters. *Journal of Helminthology*, 81, 107–111.
<http://dx.doi.org/10.1017/S0022149X07726561>
- Timi, J.T., Paoletti, M., Cimmaruta, R., Lanfranchi, A.L., Alarcos, A.J., Garbin, L., George-Nascimento, M., Rodríguez, D.H., Giardino, G.V. & Mattiucci, S. (2014) Molecular identification, morphological characterization and new insights into the ecology of larval *Pseudoterranova cattani* in fishes from the Argentine coast with its differentiation from the Antarctic

- species, *P. decipiens* sp. E (Nematoda: Anisakidae). *Veterinary Parasitology*, 199, 59–72.
<http://dx.doi.org/10.1016/j.vetpar.2013.09.033>
- Timi, J.T., Sardella, N.H. & Mattiucci, S. (2003) *Contracecum ogmorhini* s. s. Johnston et Mawson, 1941 (Nematoda: Anisakidae), parasite of *Arctocephalus australis* (Zimmermann, 1783) off the Argentinean coast. *Helminthologia*, 40, 27–31.
- Wilson, D.E. & Reeder, D.M. (2005) *Mammal Species of the World. A taxonomic and geographic reference. 3rd Edition*. Johns Hopkins Press, Baltimore, 142 pp.
- Wolf, K. (1903) Beitrag zur Kenntnis der Gattung *Braunina* Heider. *Sitzungsberichte der Königlichen Akademie der Wissenschaften*, 112, 603–626.