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FIRST REPORT OF A HELMINTH INFECTION FOR BRYDE'S WHALE, *BALAENOPTERA EDENI* ANDERSON, 1878 (CETACEA, BALAENOPTERIDAE)

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Abstract – Acanthocephalans represented by *Bolbosoma capitatum* (von Linstow, 1880) Porta, 1908 were recovered from a single specimen of Bryde's whale (*Balaenoptera edeni*) from the coast of the state of Rio de Janeiro, Brazil. This is a new host record for the parasite and the first case of infection by helminths in Bryde's whales.

Resumo – Acantocéfalos representados por *Bolbosoma capitatum* (von Linstow, 1880) Porta, 1908 foram coletados de um exemplar de baleia-de-Bryde (*Balaenoptera edeni*) na costa do estado do Rio de Janeiro, Brasil. Este é um novo registro de hospedeiro para o parasita e o primeiro caso de infecção por helmintos registrado na baleia-de-Bryde.

Key words: Helminths, whales, *Balaenoptera edeni*, acanthocephalans, *Bolbosoma capitatum*, Brazil.

Introduction

Despite their large size making necropsies difficult and the fact that they are protected by law against capture, sampling of helminths parasitizing whales, in Brazil and other countries, are relatively frequent.

The present paper deals with the report of an acanthocephalan species, *Bolbosoma capitatum* (von Linstow, 1880) Porta, 1908, parasitizing a specimen of Bryde's whale (*Balaenoptera edeni* Anderson, 1878) from the Brazilian coast.

According to Nowak (1999), certain populations of this whale live in waters of high productivity near shore, whereas others are mainly pelagic. Specimens of *B. edeni* have a tendency to approach ships and are relatively deep divers. They feed mainly on small schooling fish, but in some areas their diet consists extensively of shrimp-like crustaceans.

No parasites have been previously recorded from this particular host species. The acanthocephalan *Bolbosoma capitatum* has been recorded in the short-finned pilot whale (*Globicephala melas*), the false killer whale (*Pseudorca crassidens*), the rough-toothed dolphin (*Steno bredanensis*) and the sperm whale (*Physeter macrocephalus*) occurring in the Atlantic Ocean and Mediterranean Sea. The intermediate hosts of this parasite are unknown (Petrochenko, 1971).

Material and Methods

On February 26, 2004, a single specimen (sex not confirmed) of Bryde's whale (*Balaenoptera edeni*), 9.50 m long, was found stranded dead on the beach near Lagoa do Paulista, Quissamã (22°06'24"S, 41°28'20"W), state of Rio de Janeiro, Brazil. The carcass was examined for parasites. The worms were preserved uncompressed in 70°GL ethanol, *in situ*. Under laboratory conditions, some were processed for study, unstained, dehydrated in alcohol (80°-100°GL), clarified in glacial acetic acid and phenol and reversibly returned to the original preservative. Photomicrographs were obtained from a Zeiss bright-field microscope in a Differential Interference Contrast (DIC) system. Classification of the acanthocephalans follows Amin (1998) and that of the host is in accordance with Mead and Brownell (1993) and Nowak (1999). Measurements taken are in millimetres (mm) unless otherwise indicated. Some specimens were deposited in the Helminthological Collection of the Oswaldo Cruz Institute (CHIOC), Rio de Janeiro.

Results

Seventy-four acanthocephalans identified as *Bolbosoma capitatum* were recovered from the digestive tract of the Bryde's whale. This is the first case of a helminth infection in this host.

Bolbosoma capitatum (von Linstow, 1880) Porta, 1908 (Figures 1a-d).

Brief morphometric data based on five adult males and five adult females: Polymorphidae. Body stout, 2-3cm long in males and 3-4cm in females. Width of body at the middle region, 2.1 to 2.3 in males and 2.4 to 3.6 in females. Proboscis cylindrical, truncated-rounded anteriorly, broadest near its base, with 16 to 18 rows of 9 to 10 hooks each. Bulbous posterior cephalic bulb 0.90-1.15 long, 2.8 to 3.0 wide, with 7 to 12 circles of at least 34 to 52 spines, each measuring 0.09 to 0.17 long. Trunk constriction 1.80 to 2.4 long. Ripe eggs fusiform with polar prolongation of fertilization membrane, 0.12 to 0.15 long, 0.02 to 0.03 wide.

***Taxonomic summary*:**

Definitive host: *Balaenoptera edeni* Anderson, 1878, Cetacea, Balaenopteridae; common name: Bryde's whale- NHR.

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Site of infection: intestine

Locality: Praia da Lagoa do Paulista, Quissamã, state of Rio de Janeiro, Brazil.

Specimens deposited: CHIOC no. 35304 (wet material) 36449 a-c (whole mounts).

Comment: Taking into account that the worms were fixed uncompressed, other morphological parameters could not be properly evaluated. Nevertheless, present results related to the two most important specific characters, the interbulbar spines and proboscis armature, are in accordance with data previously referred for *B. capitatum*.

Discussion

In Brazil, helminth surveys of cetacean hosts refer to the nematodes *Anisakis insignis*, *A. typica*, *Halocercus brasiliensis* parasitizing the boto (*Inia geoffrensis*) and the tucuxi (*Sotalia fluviatilis*), respectively (Vicente *et al*., 1997), *Anisakis physeteris*, *Pseudoterranova* sp., *Crassicauda crassicauda* in the pygmy sperm whale (*Kogia breviceps*), the sperm whale (*Physeter macrocephalus*), the sei whale (*Balaenoptera borealis*) as well as in the fin whale (*B. physalus*) (Santos and Lodi, 1998; Muniz-Pereira *et al*., 1999), and *A. simplex* in the false killer whale (*Pseudorca crassidens*) (Santos *et al*., 1996; Andrade *et al*., 2001).

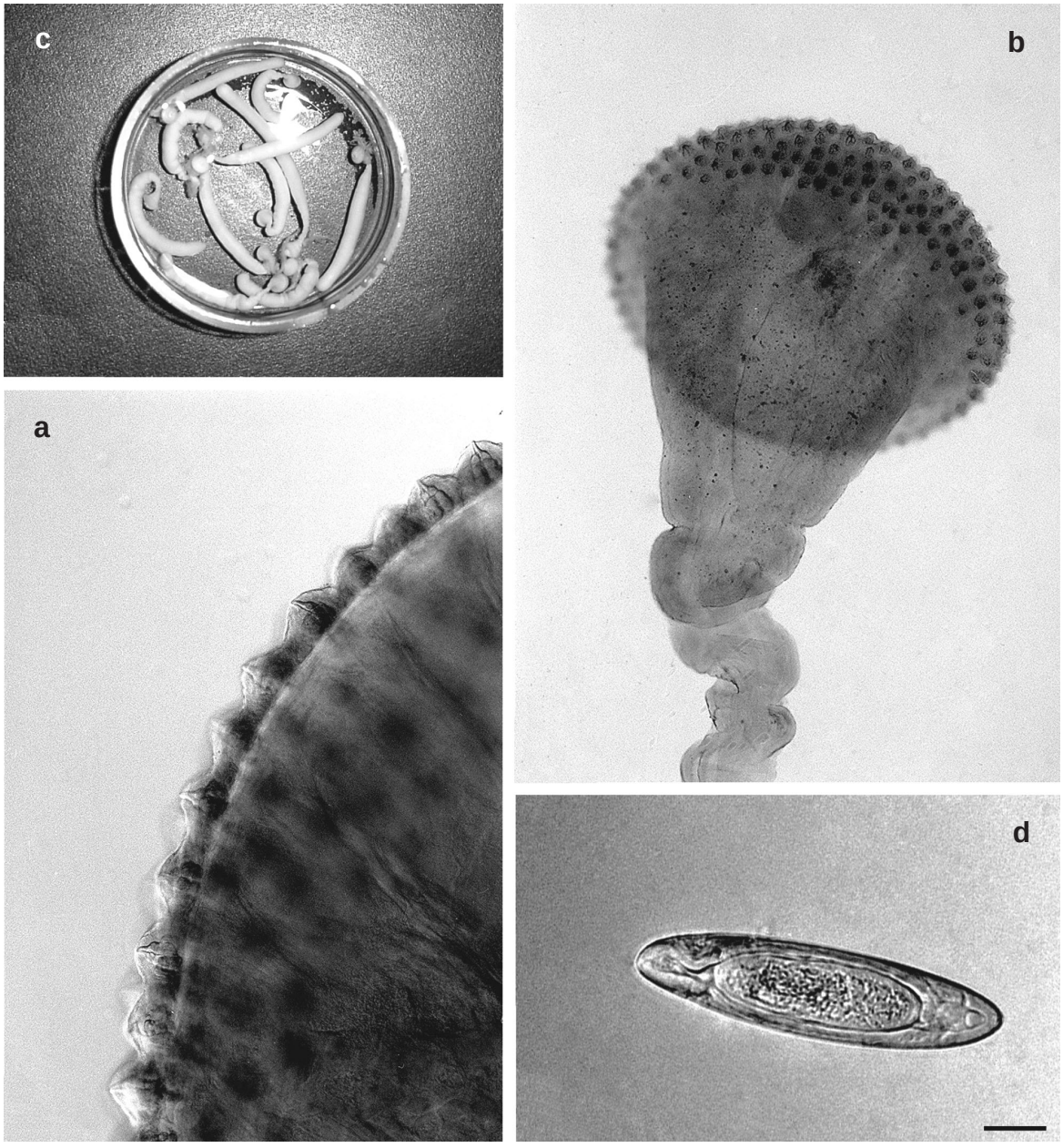

Figure 1. *Bolbosoma capitatum*. (a) adult unmounted specimens, bar = 0.8mm; (b) proboscis, bar = 0.5mm; (c) detail of spines of the proboscis, bar = 0.02mm; (d) egg, bar = 0.02mm. (Bar of 1d is common to figures 1a-c).

Digeneans were represented by *Braunina cordiformis* in *S. fluviatilis*, *B. cordiformis* and *Amphimerus lancea* in the common dolphin *Delphinus delphis*, *Lecithodesmus goliath* in the sei whale (*B. borealis*), *Ogmogaster antarticus* in sei and fin whales (*B. borealis* and *B. physalus*), respectively, *Nasitrema* sp. and *B. cordiformis* in *Tursiops truncatus* and *B. cordiformis* in *Steno bredanensis* (Travassos *et al*., 1969; Santos *et al*., 1996; Muniz- Pereira *et al*., 1999).

The only cestode species so far referred in Brazil is *Tetrabothridae* sp. in the false killer whale (Andrade *et al*., 2001).

The acanthocephalan *Bolbosoma capitatum* was referred in this latter host (Andrade *et al*., 2001) and in the long-finned pilot whale (Machado-Filho, 1964) whereas *B. turbinella* has been reported from the sei whale (Machado-Filho, 1964; Muniz-Pereira *et al*., 1999).

Overseas, acanthocephalans of the genus *Bolbosoma* have been regularly reported from cetaceans: *Bolbosoma* sp. has been recovered from the pygmy (*K. breviceps*) and dwarf sperm whales (*K. sima*), respectively, in the Caribbean (Cardona-Maldonado and Mignucci-Giannoni, 1999), from striped dolphins (*Stenella coeruleoalba*) on the Spanish Atlantic coast (Abollo *et al*., 1998), from belugas (*Delphinapterus leucas*) in the Gulf of St. Lawrence, Canada (Measures *et al*. 1995), and from the sperm whale in Prince Edward Island, Canada (Hoberg *et al*., 1993), from the blue whale (*B. musculus*) in the North Pacific Ocean (Measures, 1993). *Bolbosoma balaenae* has been reported from the eastern Pacific gray whale (*Eschrichtius robustus*) on the northern California coast (Dailey *et al*., 2000), from *B. musculus* in Antarctic and Arctic waters, North Atlantic Ocean and Tasman Sea (Measures, 1993). *Bolbosoma capitatum* has been reported from the false killer whale in West Australia, Katsumura Bay, Japan and off Vancouver Island, British Columbia, Canada (Edmonds 1987; Kicuchi and Nakagima 1993; Amin and Margolis, 1998), from long-finned pilot whales off the Faeroe Islands (Balbuena and Raga 1993, 1994), from sperm whales in Canada (Hoberg *et al*., 1993), from the short-finned pilot whale (*G. macrorhynchus*) in the Caribbean (Giannoni-Mignucci *et al*., 1998), and from the common dolphin on the coast of England and Wales (Gibson *et al*., 1998). *Bolbosoma nipponicum* has been recorded in the minke whale (*B. acutorostrata*) in the North-Western Pacific Ocean and *B. musculus* in the Northwest and Northeast Pacific Ocean (Uchida and Araki, 2000; Measures, 1993). *Bolbosoma turbinella* has been reported from the blue whale in Arctic and Antarctic waters, Northwest Pacific Ocean, Northwest Atlantic Ocean and North Atlantic Ocean (Measures, 1993), *Bolbosoma turbinella* and *B. physiteris* (= *B. capitatum*) from the sei, minke and sperm whales in the Antarctic Region (Dailey and Vogelbein, 1991); *Bolbosoma brevicolle* from blue whales in the North, Southeast, South, and Southwest Atlantic Ocean, Antarctic and Arctic waters (Measures, 1993); *Bolbosoma hamiltoni* from blue whales in the South Atlantic Ocean and Arctic waters, from the spinner dolphin (*Stenella longirostris*) in La Paz Bay, Baja California Sur, Mexico (Measures, 1993, Aguilar-Aguilar *et al*., 2001); *Bolbosoma paramuschiri* from blue whales in the Northwest Pacific Ocean (Measures, 1993); *Bolbosoma vasculosum* from pygmy killer whales (*Feresa attenuata*) in the Caribbean and common dolphins in Madeira, Portugal (Mignucci-Giannoni *et al*.,1998; Costa *et al*., 2000).

The finding of *B. capitatum* infecting the Bryde's whale specimen in Brazil represents a new host record for the parasite as well as it reports the first helminth infection in this whale species.

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