RESEARCH NOTE

The Occurrence of *Stenurus australis* Tantalean and Sarmiento, 1991 (Nematoda: Metastrongyloidea) in the Porpoise *Phocoena spinipinnis* (Burmeister, 1865) on the Southern Coast of Chile

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In Chilean territorial waters, including the Antarctic territory, there are about 46 marine mammal species (W Sielfeld 1983 *Mamíferos Marinos de Chile,* Ediciones de la Universidad de Chile, Santiago, 199 pp.). Among these is the coastal cetacean *Phocoena spinipinnis* (Burmeister, 1865), which lives in the South Pacific, from Paita (Perú) up to Cabo de Hornos and in the South Atlantic and from the southern part of Brazil to Tierra del Fuego (Sielfeld *loc. cit.*, M Pinedo et al. 1992 *Cetáceos e Pinnípedes do Brasil,* Manaus UNEP/FUA 213 pp.).

Research on parasites of Chilean marine mammals is scarce (J Fernández 1987 *Parasitol al Día 11:* 120-125), and regarding *P. spinipinnis* only one paper is recorded on gastrointestinal helminths, in which the nematodes *Anisakis simplex* (Rudolphi, 1809, det. Krabbe, 1878) and *Pseudoterranova* sp., the acanthocephalan *Polymorphus* (*Polymorphus*) *cetaceum* (Johnston and Best, 1942) and the trematode *Sinthesium tursionis* (Marchi, 1873), were found (P Torres et al. 1992 *J Wild Dis 28:* 313-315).

The present study reports the prevalence and mean intensity of infection by the nematode *Stenurus australis* Tantalean and Sarmiento, 1991, in 33 specimens of *P. spinipinnis,* accidentally entangled in gillnets near Queule (39°22'S, 73°13'W), on the coast of southern Chile. The cetaceans were collected between 1990 and 1991 and examined either immediately or after being kept up to three months at 20°C; the necropsy was carried out according to K Norris (1966 *J Mammal 42:* 471-476).

The nematodes were isolated from the auditive ducts and nasal and pterygoid sinuses, fixed in 70% ethanol and cleared in lactophenol for morphological study. Some specimens were dehydrated in an ascending series of ethanol, treated with acetone-ether, air dried and coated with gold palladium to be examined with a Scanner Nanolab 2000 (Bausch and Lomb Instruments). The prevalence and mean intensity terms were used according to L Margolis et al. (1982 *J Parasitol 68:* 131-133).

The length (cm)/weight (kg) of the cetaceans (mean ± standard deviation) was of 170 ± 8.5/78 ± 17.3 for the mature females and of 147.2 ± 5.2/51.4 ± 7.3 for the immature specimens. In the mature males the length/weight was of 174 ± 7.6/80.4 ± 10.4 and in the immature ones were 143 ± 6.9/46.8 ± 2.5.

In this study the presence of *S. australis* in *P. spinipinnis* is recorded for the first time on the Chilean coast. Previously, this species had only been registered from this same host on the Peruvian coast (T Tantalean, L Sarmiento 1991 *Publ Mus Hist Nat UNMSM 36:* 1-4). Observations of *S. australis* with a scanning electron microscope (SEM) are reported for the first time (Figs 1-4). The morphological characteristics of *S. australis* specimens were similar as described, with optical microscopy, by Tantalean and Sarmiento (*loc. cit.*). These authors did not describe the presence of two lateral papillae in the external circle of papillae that surrounds the mouth of nematodes, but our observations with SEM in Chilean and Peruvian material of *S. australis* confirm their existence, as described in other *Stenurus* spp.

Morphological characteristics and measurements (in micrometers, unless otherwise indicated) of 20 nematodes of each sex were the following:

General - Anterior extremity of body stout with posterior half tapering. Buccal cavity with thick walls. Mouth surrounded by inner circle with six papillae and external circle consisting of two lateral and four submedian papillae. Longitudinal cuticular ridges arise posterior to the cephalic region.

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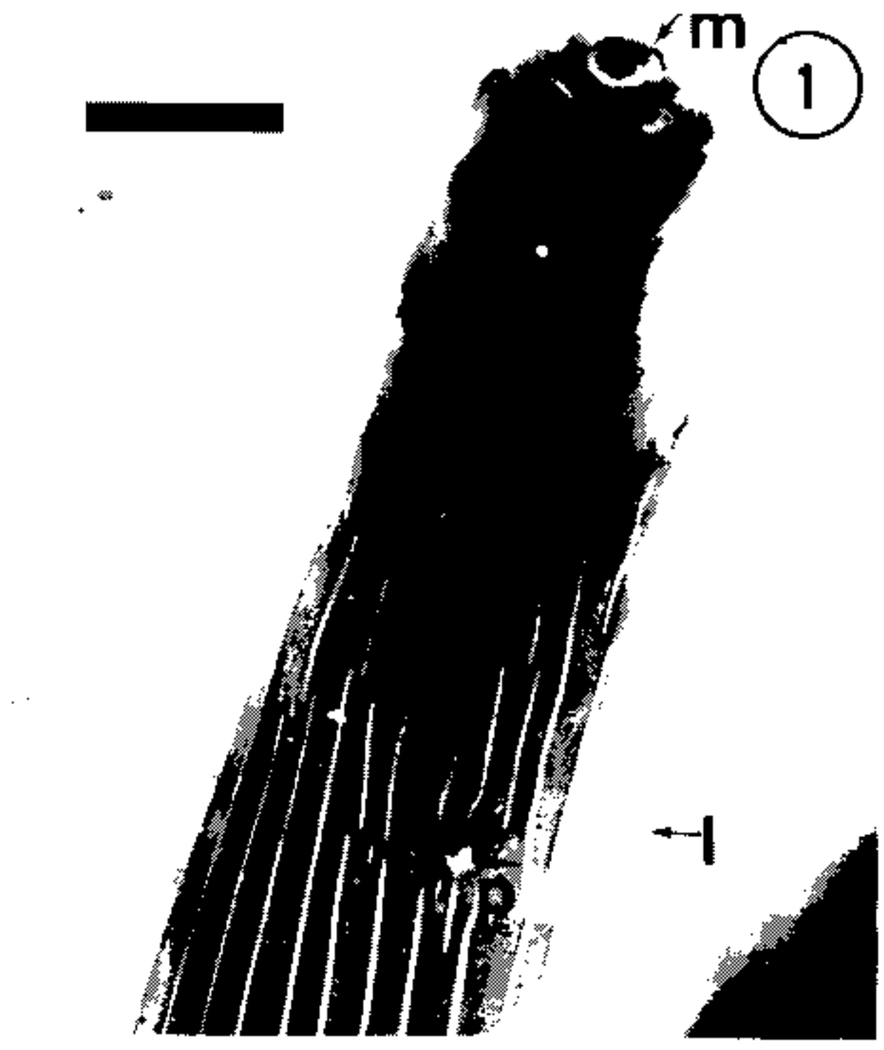

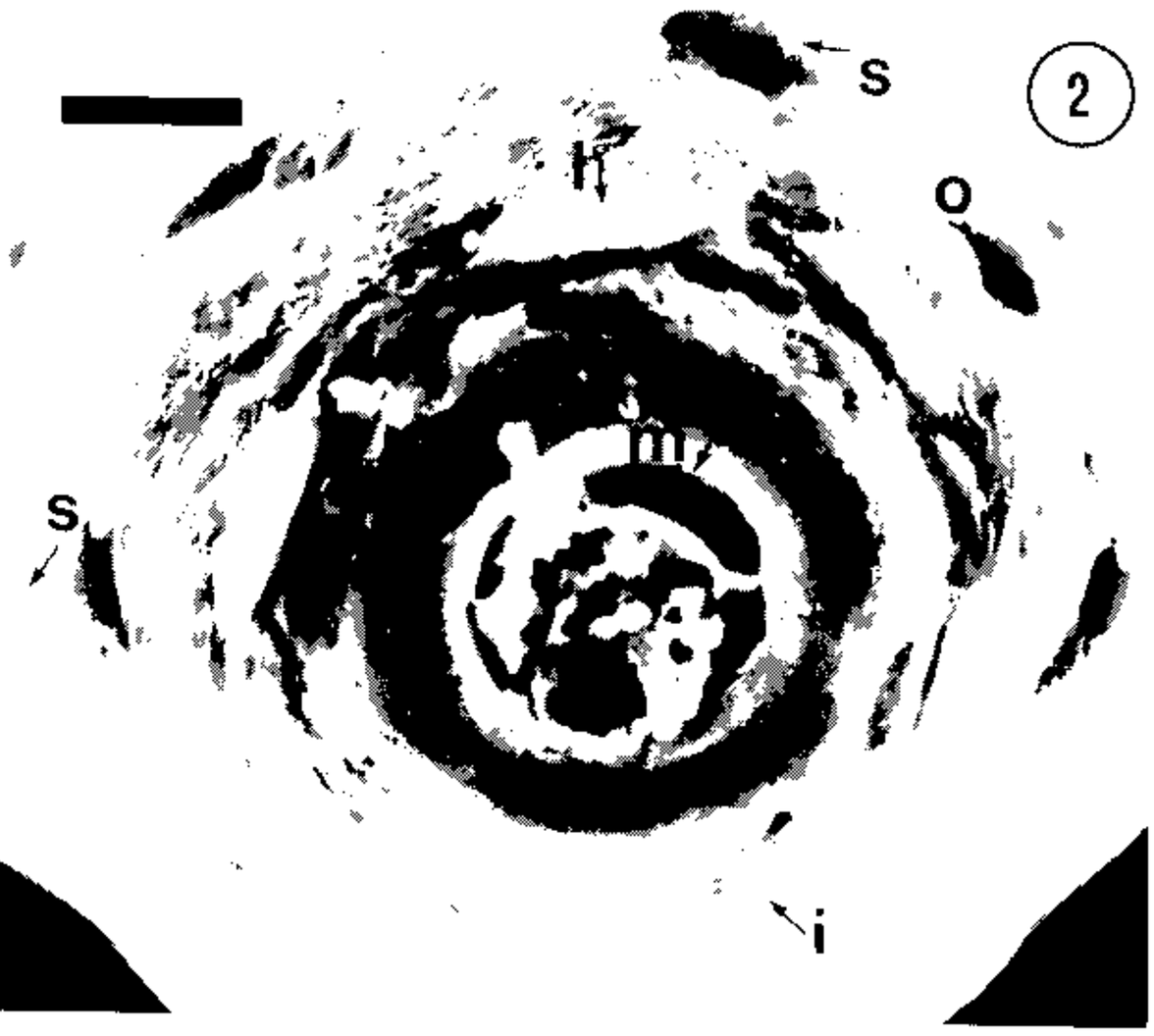

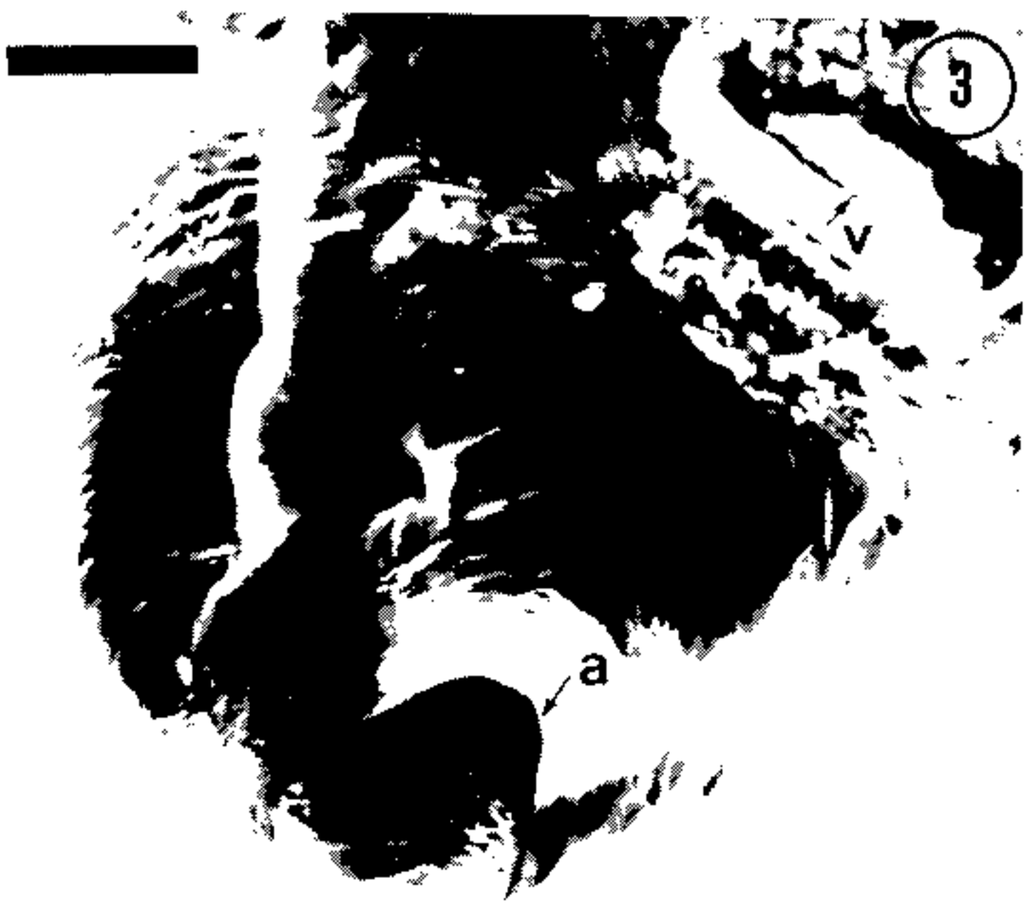

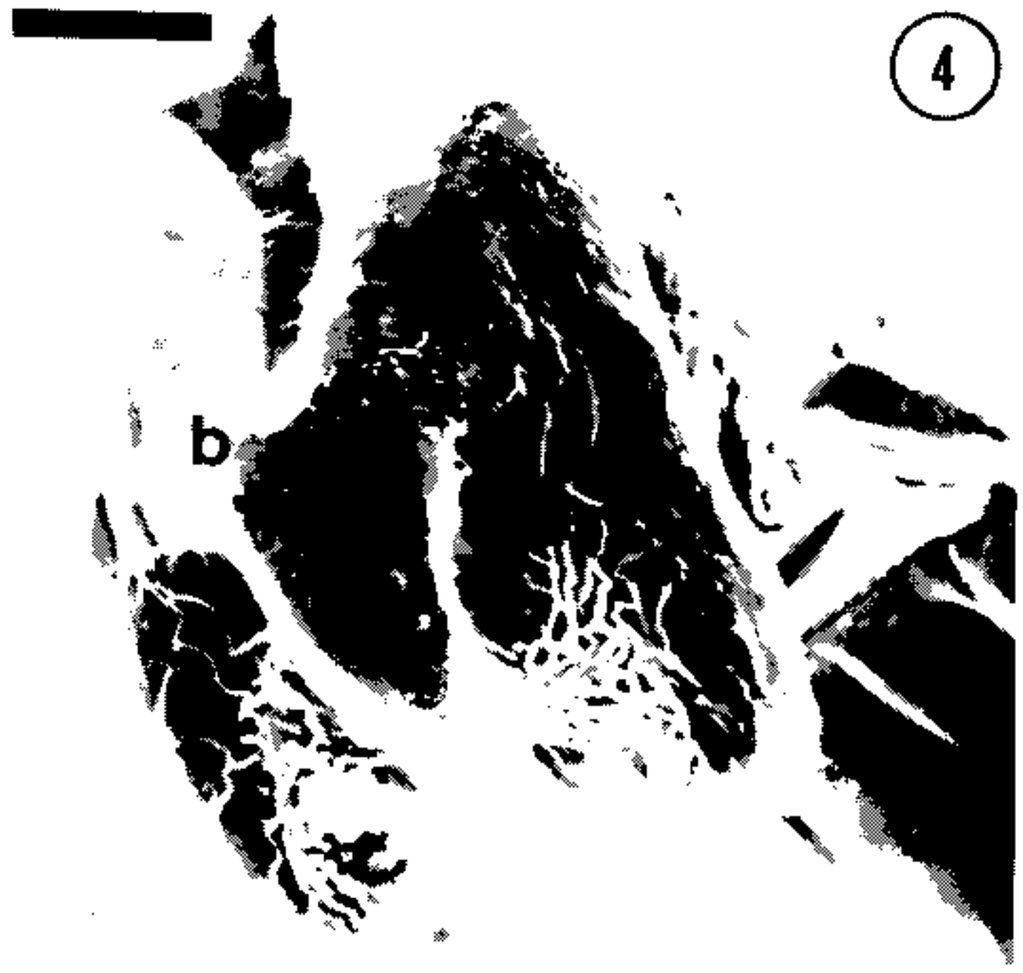

Scanning electron micrographs of *Stenurus australis* infecting *Phocoena spinipinnis* from coast of Chile. Fig. 1: cephalic extremity. Mouth (m), longitudinal cuticular ridges (l), cervical papila (p). Bar = 48 µm. Fig. 2: face view. Mouth (m), inner circle of papillae (i), outer circle of lateral (o) and submedian (s) papillae. Bar = 8 µm. Fig. 3: female caudal extremity, ventral view. Vulva (v), anus (a). Bar = 6 µm. Fig. 4: male caudal extremity, dorsal view. Bursa copulatrix (b). Bar = 17 µm.

Males - Body 13.6-19.1 (15.8) mm long, 228-319 (287) maximum wide. Buccal capsule 7-11 (10) long, 14-18 (15) wide. Esophagus 288-378 (324) long, 50-72 (60) maximum wide. Nerve ring 90-130 (110), cervical papillae 166-234 (202), and excretory pore 191- 241 (221) from anterior end, respectively. Bursa copulatrix with two lateral lobes more developed than dorsal lobe. The five rays of the bursa are distributed in two small and thin ventral rays 11-22 (15) long, two broad and trifid lateral rays 32-43 (39) long, with three distal papillae, and medial ventral papillae; and one dorsal ray 43-54 (48) long, with two lateral papillae, in distal region. Medial papilla on anterior lip of cloacal aperture. Spicules equal in size, similar in shape, 101-122 (112) long. Gubernaculum 43-61 (47) long.

Females - Body 20.0-28.4 (24.6) mm long, 455-592 (523) maximum wide. Buccal capsule 11-18 (14) long, 18-29 (24) wide. Esophagus 374-414 (394) long, 68-82 (77) maximum wide. Nerve ring 108-144 (131), cervical papillae 234-331 (237), and excretory pore 205-280 (268) from anterior end, respectively. Vulva 22-40 (34) from anus. Anus 22-32 (25) from posterior end. Vaginal sphincter 47-72 (58) long, 54-68 (62) wide. Vulva without appendages. Eggs (n=50) 78-112 (93) long, 43-76 (60) wide. Larvae (n=50) of first stage obtained from eggs 162-277 (215) long, 11-14 (13) wide.

TABLE

Prevalence and intensity of infection by *Stenurus australis* in *Phocoena* spinipinnis along the coast of southern Chile

Cetaceans	Infected/ examined	Prevalence	Mean intensity	(range)
Females				
mature	7/7	100	1254	(214-2549)
immature	4/5	80	1460	(311-3120)
total	11/12	91.6	1329	(214-3120)
Males				
mature	15/15	100	2221	(112-5178)
immature	4/6	66.6	198	(1- 535)
total	19/21	90.4	1795	(1-5178)
Total	30/33	90.9	1624	(1-5178)

All animals parasited by *S. australis* showed specimens in the auditive ducts and pterygoid sinuses. Worms at the level of the nasal sinuses were only observed in three hosts.

The prevalence and intensity of infection by *S. australis* are shown in Table. The prevalence of infection by *S. australis* with regards to the total number of animals of each sex turned out to be similar. The prevalence of infection was greater in mature specimens of both sexes. The mean intensity was greater in the males specimens.

The life cycles of *Stenurus* spp., are unknown. The diet of *P. spinipinnis* consists mainly of fish. Frequencies of 99.2% fish and 0.8% cephalopods were found in the stomach contents of 18 specimen of *P. spinipinnis* from Queule area (Torres et al. *loc. cit.*). This suggests that these prey, fishes particularly, could participate in the transmission of the infection by *S. australis* to cetaceans.

The infection by *Stenurus* spp. and other helminths of the auditive ducts have been considered as a potential factor of the stranding of cetaceans (S Ridgway & M Dailey 1972 *J Wild Dis 8:* 33-43, M Dailey & R Stroud 1978 *J Wild Dis 14:* 503-512, Heckmann et al. 1987 *Great Bas Nat 47:* 355-372, Morimitsu et al. 1992 *J Wild Dis 28:* 656-658). The presence of *Stenurus* spp. has been associated with obstruction of the auditive passages and osseous lesions in *P. phocoena* (Linnaeus, 1758), which would hinder their normal reaction to the sounds in the water (L Arvy 1982 *Inv Cet 14:* 233-335). Strandings of *P. spinipinnis* on the coast of Chile have not been reported and the possible pathogenicity of *S. australis* at present is unknown.

Voucher specimens were deposited in the collection of the Institute of Parasitology, Universidad Austral de Chile, Valdivia, Chile (IPUAT No. 0230-0232).

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