

Research Note

First Record of *Streptocara formosensis* (Nematoda: Acuariidae) from the Chubut Steamerduck, *Tachyeres leucocephalus*, Endemic to the Patagonian Coast, Southwest Atlantic

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1 ABSTRACT: *Streptocara formosensis* (Nematoda: Acuariidae) is recorded for the first time from South America (Chubut Province, Argentina) and from the Chubut steamerduck, *Tachyeres leucocephalus* (Aves: Anatidae), enlarging its host and geographical distribution. To our knowledge, this is the first record of a parasite in this bird species.

KEY WORDS: *Streptocara formosensis*, Nematoda, Acuariidae, Chubut steamerduck, *Tachyeres leucocephalus*, Patagonia, Chubut, Argentina.

Streptocara Railliet, Henry & Sisoff, 1912 (Nematoda: Acuariidae), is a cosmopolitan genus of worms found under the gizzard lining of aquatic birds, mainly of the orders Anseriformes and Gaviiformes (McDonald, 1969). Only 6 of its more than 20 species, subspecies, and varieties described are currently recognized as valid. These are *Streptocara californica* (Geddoelst, 1919); *Streptocara crassicauda* (Creplin, 1829); *Streptocara formosensis* Sugimoto, 1930; *Streptocara incognita* Gibson, 1968; *Streptocara longispiculata* Gibson, 1968; *Streptocara recta* (Linstow, 1879) (see Gibson, 1968; Diaz and Kinsella, 2006). One of these species, *S. formosensis*, was erected base on specimens recovered from the common duck, *Anas platyrhynchos*, from Taiwan (formerly Formosa). The species was later reported in several species of Anseriformes (e.g., *Bucephala clangula*, *Melanitta deglandi*, *Mergus merganser*) in both North America and Eastern Europe (Gibson, 1968).

The aim of this note is to document the presence of *Streptocara formosensis* in the Chubut steamerduck (*Tachyeres leucocephalus*) on the central Patagonian coast, Chubut Province, Argentina, which provides evidence for the enlargement of its host and geographical distribution.

A duck was seen moribund on the marine coast and was found dead 2 d later. The bird was necropsied, and the nematodes found were preserved in 70% ethanol and studied in temporary mounts of 25% glycerine–alcohol. Drawings were made with the aid of a camera lucida. Measurements are given as the range followed by the mean in parentheses and are in micrometers, unless otherwise indicated. Several specimens were critical point dried, examined by scanning electron microscopy with a JEOL JSV 6063 LV[®], and photographed. Voucher specimens were deposited in the Helminthological Collection of the Museo de La Plata (MLP), La Plata, Argentina, and in the Parasitological Collection of the Centro Nacional Patagónico (CNP-Par), Puerto Madryn, Argentina.

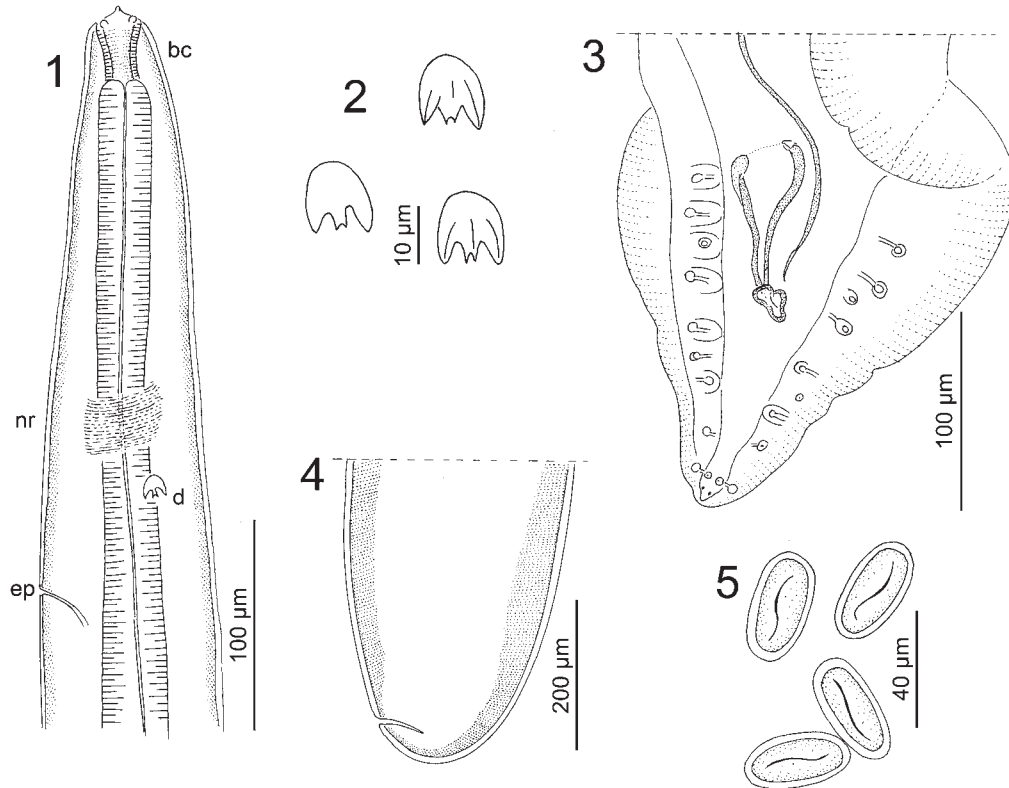
***Streptocara formosensis* Sugimoto, 1930
(Figs. 1–9)**

General morphology

Acuarioidea, Acuariidae, Seuratiinae, *Streptocara* Railliet, Henry and Sisoff, 1912. Cuticle with fine, transverse striations. Anterior end, very thin with pseudolabia ending in conspicuous dentiform processes. Amphids at base of pseudolabia. Two pairs of prominent, cephalic papillae at short distance from posterior to pseudolabia (Figs. 1, 6). Collarlet absent. Buccal capsule thick-walled and strongly cross-striated. Deirids large, with 3–6 teeth located well behind the posterior end of the buccal capsule, posterior to nerve-ring (Figs. 1, 7). Esophagus divided into muscular and glandular portions.

Male ($n = 5$): Total length, 8.0–10.0 (9.2) mm. Maximum width, 120–190 (163). Buccal capsule, 30–38 (34) long. Nerve-ring, 180–185 (183); deirids, 190–210 (200); and excretory pore, 260–280 (271) from anterior end. Deirids, 10–12 (10.8) long. Muscular esophagus, 800–1030 (898) and glandular

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Figures 1–5. Adult of *Streptocara formosensis* **1.** Anterior extremity showing buccal capsule (bc), deirids (d), nerve ring (nr), and excretory pore (ep), lateral view. **2.** Detail of deirids. **3.** Caudal region of male showing papillae arrangement and spiculae, ventral view. **4.** Tail of female, lateral view. **5.** Eggs.

esophagus 2.6–3.0 (2.7) mm long. Caudal region slightly spiraled, ventrally and laterally curved, with 4 pairs of precloacal and 6 pairs of postcloacal papillae; 5 first pairs, pedunculate; last pair, sessile, smaller, and located laterally to phasmids (Figs. 3, 8). Left spicule, 350–420 (387) long, consisting of a cylindrical proximal portion and a guttered distal part with a complex tip. Right spicule, 85–95 (91) long, with tapering distal end and rounded tip (Fig. 3). Tail, 100–120 (110) long.

Female ($n = 3$): Total length, 19.4–21.0 (20.4) mm. Width, 320–350 (338) at vulva level. Buccal capsule, 30–40 (35) long. Nerve-ring, 190–200 (195), deirids, 210–220 (215) and excretory pore, 276–295 (287) from anterior end. Deirids, 11–12 (11.7) long. Muscular esophagus, 1.17–1.18 (1.175) and glandular esophagus, 3.7–4.1 (3.9) mm long. Vulva, 11.8–13 (12.5) mm from anterior end, representing 60%–61% of total length. Vagina divided into short vagina vera and large vagina uterine. Tail, very short, 40–50

(55) (Fig. 4). Eggs larvated with thick membranous shell, 38–40 × 20–21 ($n = 45$) (Figs. 5, 9).

Taxonomic summary

Type host and type locality: *Anas platyrhynchos* L., Taiwan.

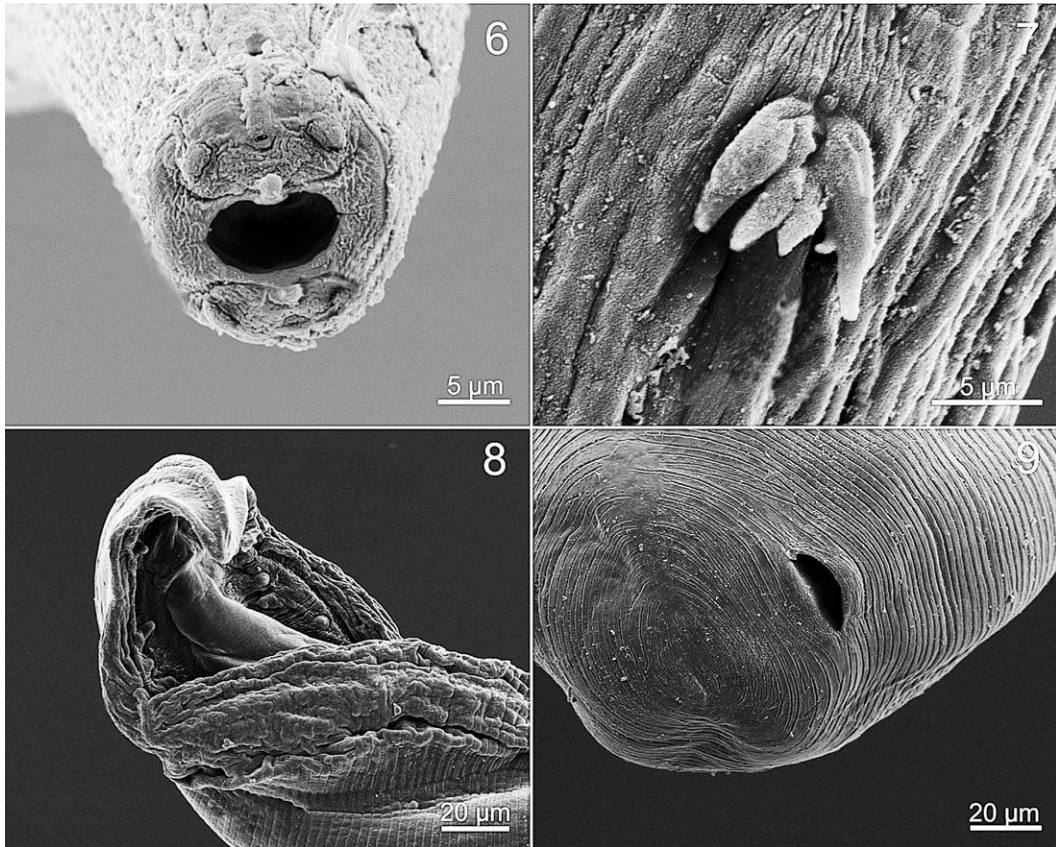
New host and locality: *Tachyeres leucocephalus* Humphrey and Thompson, 1981. Bahía Melo, 45°0.3'S; 65°53'W, Chubut Province, Argentina.

Site of infection: Under koilin lining of gizzard.

Specimens deposited: 6661 MLP and CNP-Par-60.

Remarks

Streptocara formosensis can easily be differentiated from the other 5 species in the genus by the absence of a collarette in both sexes. However, as was observed previously (Gibson, 1968), indistinct rudiments of the lateral and circular elements of the



Figures 6–9. Adult of *Streptocara formosensis*. **6.** Anterior extremity, apical view, showing the teeth, papillae, and amphids. **7.** Deirid. **8.** Posterior extremity of male, showing some papillae, ventral view. **9.** Posterior extremity of female.

collarrete are discernible in lateral and dorsoventral views. Additionally, *S. formosensis* possesses a buccal capsule longer than that in the other species in the genus (exceeded only by *S. californica*) and a more posterior position of the deirids. *Streptocara formosensis* differs also from *S. californica* because the latter has a much larger buccal capsule and larger simple tri-pronged deirids (Gibson 1968). We observe slightly differences in some measures of present specimens in relation with those reported previously (Gibson, 1968; Królaczyk et al., 2012). However, those differences could be due to intraspecific variations in different hosts and localities.

Streptocara formosensis appears to be an anatid specialist, having been reported in a large number of Anseriformes, mostly in the Northern Hemisphere (i.e., *Anas platyrhynchos*, *Aythya marila*, *Aythya fuligula*, *Aythya nyroca*, *Bucephala clangula*, *Bucephala islandia*, *Bucephala albeola*, *Cairina moschata*, *Clangula hyemalis*, *Melanitta fusca*,

Melanitta nigra, *Melanitta perspicillata*, *Mergellus albellus*, *Mergus merganser*, *Mergus serrator*, *Somateria mollissima*) (Gibson, 1968; Delacour, 1975; Carboneras, 1992; Królaczyk et al., 2012). Of these, only *A. platyrhynchos* and *C. moschata* have been recorded in Argentina (Carboneras, 1992, Agüero, personal observations). Taking into account that *Tachyeres leucocephalus* is an endemic and non-flying species from the marine Chubut coast, Patagonia, Argentina (Livezey and Humphrey, 1992; Agüero et al., 2012), it is possible that *A. platyrhynchos* and/or *C. moschata* has an important role in the dispersion of this nematode species to the Patagonian coast and to Chubut steamerducks. Larvae of this species were recovered from freshwater hosts (Hasegawa, 1978) but were not recovered in marine environments.

Kinsella and Forrester (1999) found common loons (*Gavia immer*, Gaviidae) in Florida infected with *S. formosensis*, but each infection consisted of a single,

nongravid female; so these may have been accidental infections (Diaz and Kinsella, 2006).

This is the first parasitic record in the Chubut steamerduck, *Tachyeres leucocephalus*, and the first record of *S. formosensis* in South America.

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