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Centrorhynchus bethaniae sp. n. (Acanthocephala: Gigantorhynchidea) from Bird, *Accipiter badius* (Gmelin) of Kerala, India

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Abstract

Centrorhynchus bethaniae sp. n. is the first record of genus from birds in Kerala, India. It is characterized by long proboscis, armed at the anterior region with 30–35 longitudinal rows, each with 10–14 hooks and posterior part with 32–38 longitudinal rows, each with 16–20 spines. The salient features of the species are short lemnisci, four tubular cement glands and larger embryonated eggs.

Key words: Acanthocephala, *Centrorhynchus* from bird, *Accipiter badius*.

Introduction

The acanthocephalan genus *Centrorhynchus* contains more than 85 species of worms parasitic in various vertebrates. Majority of them are intestinal parasites of carnivorous birds. Amphibians and reptiles serve as paratenic hosts. Several species of *Centrorhynchus* have been reported from India (Datta, 1932; Das, 1950; Datta and Soota, 1955). This is the first record of *Centrorhynchus* from birds of Kerala.

Materials and Methods

The birds, *Accipiter badius* (Gmelin) were caught from Bethany Hills at Trivandrum. Ten host birds were autopsied to recover the worms. The intestine was cut open lengthwise and the worms were transferred to physiological saline. After washing in saline, they were sexed and fixed in 70% ethanol. The eggs were collected from the gravid female by pricking the body wall. Whole mount preparations were made using Harris' haematoxylin and eosin. Figures were drawn to scale with help of camera lucida. Measurements are given in microns unless otherwise stated.

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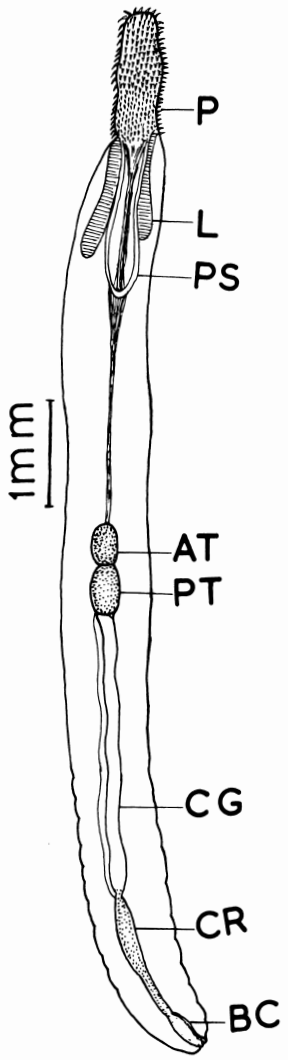
Description

Centrorhynchus bethaniae sp. n. (Measurements based on 10 worms)

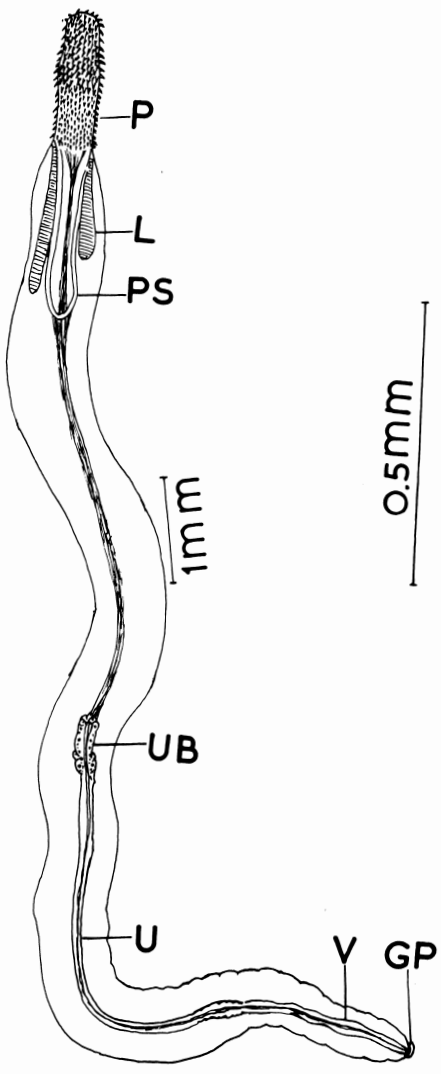
Sexual dimorphism well marked. Pseudosegmentation apparent at the posterior region of the trunk in both sexes. Proboscis cylindrical and long, with swelling in the middle. Proboscis armed at the anterior part with 30–35 longitudinal rows of hooks, each row with 10–14 and posterior part with 32–38 longitudinal rows of spines, each row with 16–20. Hooks measured 35–55 x 16–30, root 30–36 and spines 20–30 x 6–10. Hooks have backwardly directed root and spines with basal papillae and without manubrium. Proboscis armature identical in both sexes. Proboscis sac narrow proximally and swollen distally. It is double layered, inner layer being thin. Brain situated in the middle part of proboscis sac. Neck short. Lemnisci two, unequal, filiform and do not extend beyond the proboscis sac. Trunk aspinose, slender, broad anteriad and narrow posteriad. Genital pore terminal in both sexes.

Male (Figs. 1 and 5)

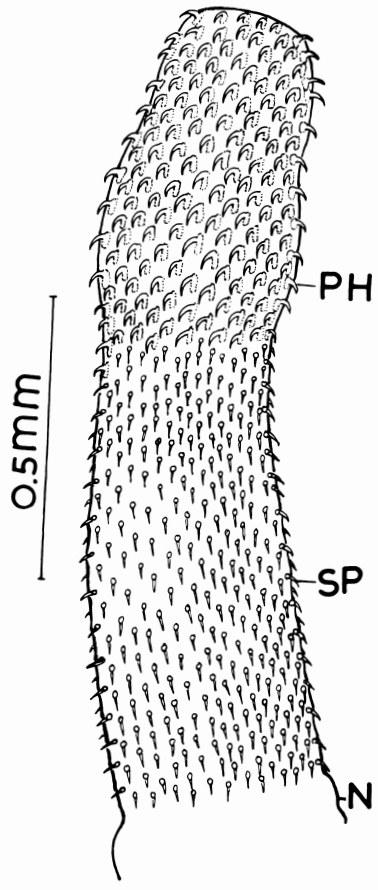
Males measured 10–30 x 0.5–2 mm; proboscis 0.8–1.2 x 0.33–0.38 mm; neck 310–350 x 226–250; proboscis sac 1.6–1.65 x 0.2–0.25 mm; lemnisci 0.975–1.025 x 0.1–0.18 mm and 0.9–1.0 x 0.2–0.25 mm; testes,



1. Male.



2. Female.



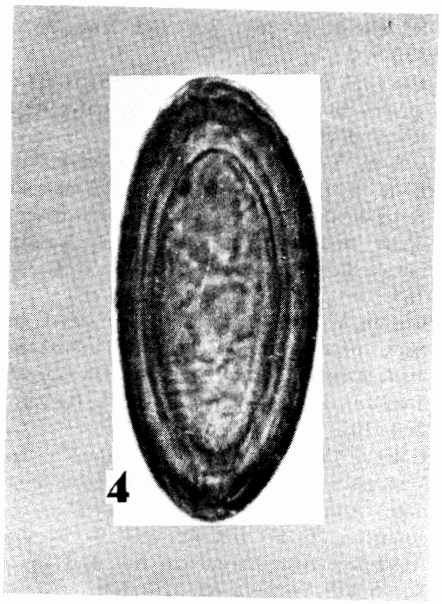
3. Proboscis of female.

Figs. 1–5 *Centrorhynchus bethaniae* sp. nov.

anterior 300–360 x 200–250 and posterior 376–400 x 200–260, cement gland reservoir 700–780 x 140–210 and bursa 860–900 x 460–500. Testes pre-equatorial, ovoid, unequal, tandem and closely placed. Cement glands 4 in number, tubular and connect immediately after the posterior testis. Cement reservoir swollen and terminate in copulatory bursa.

Female (Figs. 2, 3 and 4)

Females measured 15–46 x 1–3 mm; proboscis 1.2–1.45 x 0.3–0.456 mm; neck 350–400 x 240–300; proboscis sac 1.63–1.67 x 0.23–0.27 mm; lemnisci 0.97–1.1 x 0.1–0.18 mm and 0.93–1.0 x 0.1–0.18 mm; uterine bell 370–410 x 120–160; uterus proper 2.5–4.2 x 0.09–0.12 mm and vagina 200–343 x 100–120. Uterine bell wide and pre-equatorial, attached to the ligament sac. Uterus long and vagina tubular. Genital pore terminated in small prominence. Ovarian balls and embryonated eggs found in the pseudocoel.



4. Egg.

Eggs measured 48–56 x 20–26 and embryos 36–40 x 14–18. Eggs covered by three shells and outer shell sculptured with longitudinal ridges. One pole of egg slightly pointed.

Definitive host	: *Accipiter badius* (Gmelin).
Site of infection	: Posterior part of small intestine.
Locality	: Bethany Hills (Trivandum).
Rate of infection	: 3–5 worms/host.
Paratype specimens	: Nos. 64 and 65, Dept. of Zool. Mar Ivanios College, Trivandrum.
Holotype specimens	: Z.S.I. Nos. 312 and 313.

Discussion

Morphologically, the present species is more or less allied to *C. madagascariensis* (Golvan, 1957) recovered from a hawk and *C. spilornae* Schmidt and Kuntz, 1969 from serpent eagle but it differs from them in smaller size and larger number of proboscis hooks and spines. *C. spilornae* possesses conspicuous

5. Hooks and spine.

vacuoles in the testes, 2 tubular cement glands, bursal rays in male and terminal papillae in female while they are lacking in the new species.

C. amphibius Das, 1950 and *C. falconis* (Johnston et Best, 1943) Schmidt and Kuntz, 1969 are characterized by two tubular cement glands, slightly overlapping testes and large lemnisci extending beyond the proboscis sac whereas the present species has a pair of testes slightly separated and the lemnisci not extending beyond the proboscis sac. The egg of new species is slightly larger than those of the above species. *C. falconis* and *C. indicus* Golvan, 1956 differ from *C. bethaniae* in having terminal papillae in female and bursal rays in male.

Variations in the possession of cement glands have been noted in different *Centrorhynchus* spp. Usually 3–4 cement glands exist

in the genus but Golvan (1965) reported the existence of 2 cement glands. Difference in the cement gland number has been reported, one in *C. brevicanthus* Das, 1950; two in *C. spilornae*; *C. amphibius* and *C. falconis*; 3–4 in *C. madagascariensis*; four in *C. macrorchis* Das, 1950 and *C. bethaniae.*

The present species resembles *C. clitorideum* (Meyer, 1931) in regard to the prominence at the genital pore. It also agrees with *C. knowlesi* Datta et Soota, 1955 and *C. bengalensis* Datta et Soota, 1955 in the position of the testes whereas it differs from them in the body size, proboscis armature and the nature of testes.

The new species agrees with *C. spinosus* (Kaiser, 1893) Van Cleave, 1924 and *C. kuntzi* (Schmidt and Neiland, 1966) Nickol, 1983 in proboscis swelling, sculptured outer egg shell and four cement glands but the present species differs from above species in the number of hooks, absence of trunk swelling at the anterior region and flattened papilla at the posterior end of female worm.

The present species distinguishes itself from other known species of the genus in proboscis armature, smaller lemnisci and absence of bursal rays. Therefore, it is assigned to the status of a new species *C. bethaniae* under the genus *Centrorhynchus.*

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Avvreviations:

AT. anterior testis; BC. bursal cap; CG. cement gland; CR. cement gland reservoir; GP. genital pore; L. lemniscus; N. neck; P. proboscis; PH. proboscis hook; PS. proboscis sac; PT. posterior testis; SP. spine; U. uterus; UB. uterine bell; V. vagina