Annales de Parasitologie (Paris), t. **45**, 1970, n° 1, pp. 13 à 19

Parasites of the relict fauna of Ceylon

I. *Acanthocephalus serendibensis* sp. nov. from the Ceylon Horn-nosed Lizard, *Ceratophora stoddarti* Gray

by **H. CRUSZ** and **E. V. MILLS**

Department of Zoology, University of Ceylon, Peradeniya, Ceylon

Summary

A new species of Echinorhynchid Acanthocephalan, *Acanthocephalus serendibensis,* is described from the intestine of the relict, agamid mountain-lizard, *Ceratophora stoddarti* Gray, from Nuwara Eliya, Ceylon, 6185 feet above mean sea level. This species closely resembles *Acanthocephalus madagascariensis* Golvan from a Malagasy tree-frog, but differs from it in its much smaller size, in having 12 longitudinal rows of three proboscis hooks, in its cement glands being in two groups of three each, and in having bursal rays and eggs devoid of spines.

Résumé

Nous décrivons une nouvelle espèce d'Acanthocéphale échinorhynchide, *Acanthocephalus serendibensis,* trouvée dans l'intestin de *Ceratophora stoddarti* Gray, lézard agame relique de montagne provenant de Nuwara Eliya (Ceylan), altitude 1885 m. Cette espèce ressemble beaucoup à *Acanthocephalus madagascariensis* Golvan, provenant d'une grenouille arboricole de Madagascar, mais elle en diffère par sa plus petite taille, par la présence de 12 rangs longitudinaux de trois crochets proboscidiens, par la répartition de ses glandes cémentaires en deux groupes de trois, et par la présence de rayons sur sa bourse copulatrice et d'œufs dépourvus d'épines.

Introduction

« We must stress the desirability of further investigations into the parasites of relict hosts of various types. Their zoogeographical and ecologo-parasitological interest is great. »

V.-A. DOGIEL, 1964.

In the course of a study of the parasites of Ceylon's relict fauna, an interesting new species of *Acanthocephalus,* resembling somewhat a form recorded from *Rhacophorus* sp. from Mt. d'Ambre in Madagascar, was discovered in the intestine of the horn-nosed lizard, *Ceratophora stoddarti,* several specimens of which were caught in Nuwara Eliya, 6185 feet above mean sea level. Also recovered from the same site of infection were 176 specimens of the nematode *Meteterakis baylisi* Inglis, 1958.

A total of 48 specimens of the acanthocephalan was collected, comprising 37 males and 11 females, from seven male lizards and five female lizards. The description of the new species is based on a study of live worms, of whole mounts stained in acetic acid alum carmine or borax carmine, and of tranverse sections, eight microns thick, stained in Ehrlich's haematoxylin and eosin.

Acanthocephalus serendibensis sp. nov.

(*Acanthocephala : Echinorhynchidae*)

Description.

The body of the worm is small, nearly cylindrical and narrower and bluntly rounded at the ends. The males (fig. 1) are 3.06-3.55 mm. long and 0.68-1.04 mm. in maximum diameter. The females (fig. 2), which are bigger than the males, are 3.55-7.92 mm. long and 0.86-1.49 mm. in diameter.

The trunk is aspinose and pseudosegmented, and carries an eversible proboscis, which is short, cylindrical and armed with 12 longitudinal and 6 circular rows of hooks arranged in quincuncial fashion (fig. 3). The hooks increase in size towards the middle of the proboscis and then become smaller. The dimensions of the proboscis and its hooks are set out in Table I. The root of the proboscis hook (fig. 4) is simple and sunken in the proboscis wall. There is a short neck between proboscis and trunk.

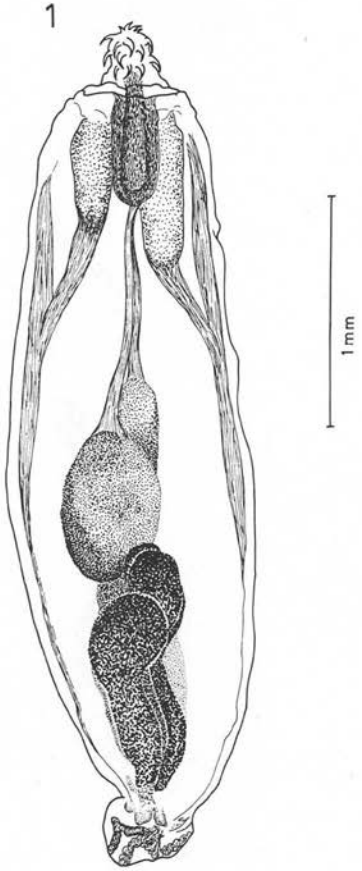

FIG. 1. — *Acanthocephalus serendibensis* sp. nov. Male

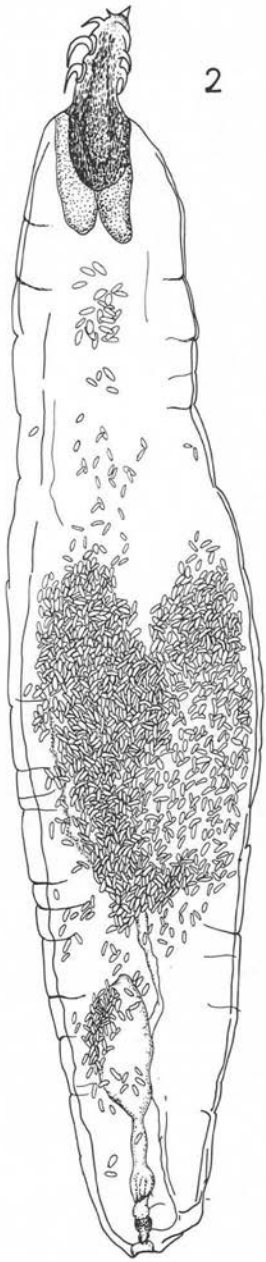

FIG. 2. — *Acanthocephalus serendibensis* sp. nov. Female

Tranverse sections of worms show numerous, small, hypodermic nuclei, lacunar spaces and a pseudocoel. The proboscis receptacle is saccate and double-walled, with the nerve ganglion at its base.

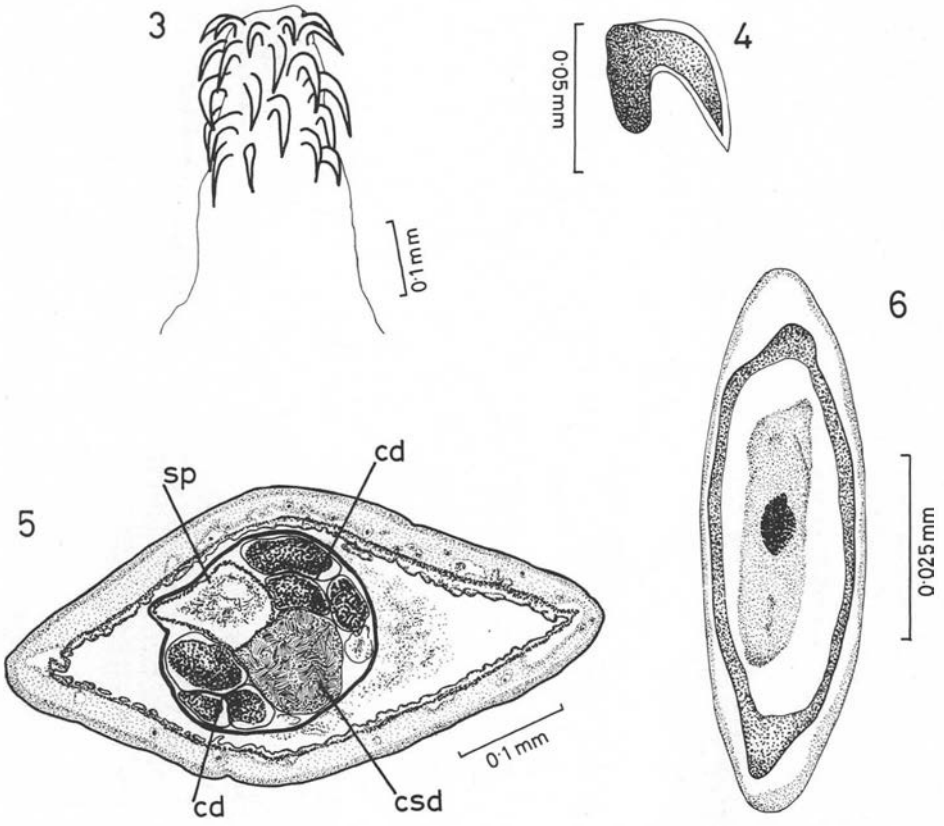

FIG. 3. — *Acanthocephalus serendibensis* sp. nov. Everted proboscis showing quincuncial arrangement of hooks

FIG. 4. — *Acanthocephalus serendibensis* sp. nov. Proboscis hook

FIG. 5. — *Acanthocephalus serendibensis* sp. nov. T.S. through the posterior region of male

FIG. 6. — *Acanthocephalus serendibensis* sp. nov. Egg
sp : Saefftigen's pouch, cd : cement ducts, csd : common sperm duct

Leminisci are long, digitiform and not much longer than the proboscis receptacle. They have lacunar spaces and few giant nuclei. The neck retractors embrace the leminisci as compressors of the leminisci. Some of their fibres continue beyond the free ends of the leminisci and attach the latter to the trunk wall.

Both sexes have ligament sacs occupying the centre of the pseudocoel and attached anteriorly to the proboscis sac and posteriorly to the gonads by ligament strands. In females these sacs often rupture with the onset of sexual maturity, so that the developing eggs float in the pseudocoel.

Table I

Specimen Number	Proboscis		Small hooks at tip of proboscis		Large hooks at middle of proboscis		Small hooks at base of proboscis	
	Length	Max. Width	Length	Max. Width	Length	Max. Width	Length	Max. Width
1 ♂	0,23	0,19	- —	- —	0,08	0,02	0,04	0,01
2 ♂	0,22	0,24	- -	- —	0,08	0,02	—	—
3 ♂	0,23	0,20	0,04	0,01	0,09	0,02	—	—
4 ♀	0,30	0,24	0,05	0,01	0,11	0,02	—	—
5 ♀	0,34	0,41	0,04	0,01	0,12	0,03	—	—
6 ♀	0,27	0,35	0,05	0,01	0,12	0,02	0,10	0,01

All measurements are in millimetres.

The male has two ovoid testes arranged *in tandem* in the ligament sac and placed at or about the equatorial region of the body. They are unequal in size, closely apposed and measure 0.68-0.77 mm. by 0.44-0.51 mm., and 0.37 by 0.20 mm., and are 1.5 mm. and 1.7 mm. away respectively from the tip of the proboscis. The sperm ducts arise from the middle of the testes and fuse posteriorly to form a common sperm duct. There are six cement glands a short distance behind the posterior testis. From the cement reservoirs, just beneath the cement glands, six cement ducts (two groups of three each) lead to a common sperm duct. The common sperm duct, the cement ducts and an elongated pouch (Saefftigen's pouch) are all enclosed in a muscular genital sheath (fig. 5) which leads into an eversible bursa lined by muscular bursal rays.

The female worms are in different stages of maturity. A single ligament sac leads to the uterine bell. The ovocytes are in ovarian balls. The uterus leads to the vagina. The ovocytes released from the ovarian balls after fertilization are passed into the ligament sac. This sac soon ruptures, releasing the fertilized eggs into the pseudocoel where further development takes place. The eggs are fusiform (fig. 6) and measure 54-72 microns by 18-25.2 microns. They have three membranes, of which the middle one has polar prolongations. The embryo is devoid of hooks and spines.

Specific diagnosis.

Body small, nearly cylindrical. Males, 3.06-3.55 mm. long, 0.68-1.04 mm. maximum diameter. Females, 3.55-7.92 mm. long, 0.86-1.49 mm. maximum diameter. Proboscis hooks quincuncially arranged in twelve longitudinal and six circular rows. Hooks increase in size towards middle of proboscis and then decrease in size. Proboscis receptacle double-walled. Leminisci unequal in length, not much longer than proboscis receptacle. Cement glands six, bunched together just below posterior testis, with their ducts leading from them in two groups of three each. Eggs fusiform, 54-72 microns by 18-25.2 microns, with polar prolongations of the middle membrane. Embryo unarmed.

Host.

Ceratophora stoddarti Gray, 1935, the Ceylon horn-nosed lizard. Genus peculiar to Ceylon and confined to highest hills.

Location.

Intestine.

Locality.

Nuwara Eliya, Ceylon, 6185 feet above mean sea level.

Type Specimens.

Holotypes and paratypes deposited in the Department of Zoology, University of Ceylon.

Discussion

The species described above resembles most closely *Acanthocephalus madagascariensis* Golvan, 1965, from the intestine of a tree-frog, *Rhacophorus* sp. in Madagascar, but differs from the Malagasy form in its much smaller size, in having twelve longitudinal rows of three proboscis hooks (as against 18-20 longitudinal rows of 5-6 hooks), in its cement glands being in two groups of three each, and in having bursal rays, and eggs devoid of spines.

The species from *Ceratophora stoddarti* is therefore considered to be a new species and named *Acanthocephalus serendibensis* (Serendib : an ancient Arabic name for Ceylon).

It is interesting to note that although a parasite of a terrestrial lizard, this species, like the one from *Rhacophorus* in Madagascar, has eggs provided with polar prolongations of the middle membrane : a feature normally associated with species from aquatic or semi-aquatic hosts. (Petrochenko).

Acknowledgments.

Our thanks are due to Mrs. V. Sanmugasunderam, Research Assistant in Zoology, for help in identifying the nematodes in the collection, Mr. Lionel Pereira for technical assistance and Miss S. Wimalasuriya for preparing the text-figures in final form for publication.

The advice of Professor Y.-J. Golvan is gratefully acknowledged.

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