

Parasites of South African freshwater fish. III
***Rhabdochona (Rhabdochona) versterae* n. sp.**
(Nematoda: Rhabdochonidae) from the spot-tailed robber,
***Alestes imberi* Peters 1852**

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ABSTRACT

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A new species of *Rhabdochona* was recovered from the spot-tailed robber, *Alestes imberi* Peters 1852 in the Sabie River, Kruger National Park. It differs from its nearest relative, *Rhabdochona moravecii* Puylaert 1973 in that it has shorter spicules and fewer prostomal teeth. The new species also shows affinities with *Rhabdochona paski* Baylis 1928 and *Rhabdochona congolensis* Campana-Rouget 1961, but differs from the first-named species in that it has shorter spicules and fewer precloacal papillae. It differs from the last-named species in the number and arrangement of the labial and cephalic papillae, and the absence of finger-like processes on the tip of the female tail.

The subgenus *Rhabdochona* Moravec 1972 is characterized by the absence of filaments or floats on the mature eggs. These structures are also lacking in the new species, which is therefore described here as *Rhabdochona (Rhabdochona) versterae* n. sp.

INTRODUCTION

The genus *Rhabdochona* Railliet, 1916 consists of more than 60 species world-wide, 7 of which have been recorded from freshwater fish in Africa (Moravec 1972a; Puylaert 1973; Mashego 1990). Of these *Rhabdochona congolensis* Campana-Rouget, 1961, *Rhabdochona esseniae* Mashego, 1990, *Rhabdochona paski* Baylis, 1928 and *Rhabdochona moravecii* Puylaert, 1973 belong to the subgenus *Rhabdochona* Railliet, 1916 which is characterised by the absence of filaments or floats on the surface of the mature eggs. Only *R. esseniae* has been recorded from South Africa, and was

recovered from *Barbus lineomaculatus* Boulenger, 1903, *Barbus marequensis* Smith, 1814, *Barbus paludinosus* Peters, 1852 and *Barbus trimaculatus* Peters, 1852 from Lebowa and Venda (Mashego 1989, 1990).

During a survey of the parasites of freshwater fish at several localities in the Kruger National Park, a new species of this genus was recovered from the spot-tailed robber, *Alestes imberi* Peters, 1852. The worms were present in the stomach or intestine of 11 of the 30 spot-tailed robbers examined. Only a few parasites were recovered from the fish that harboured them, the most being 5 males and 8 females from a spot-tailed robber caught in the Sabie River.

In this paper these parasites are described as *Rhabdochona (Rhabdochona) versterae*, n. sp., and their affinities and differences with other members of the genus in Africa are discussed.

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DESCRIPTION OF *RHABDOCHONA* (*RHABDOCHONA*) *VERSTERAE*

Type host

Alestes imber Peters, 1852 from the Sabie River, Kruger National Park, South Africa.

Material examined

Holotype male and allotype female, No. MNHN 607 BC. Paratypes, 5 males and 5 females, No. MNHN 608 BC, from *A. imber* from the type locality.

Description of the species

The principal measurements are presented in Table 1.

Small to moderately sized worms. The mouth opening is hexagonal and 4 internal labial and 4 cephalic papillae are present. The amphids are large and a pair of what could be cuticular adjournments are present close to each amphid (Fig. 1). The prostomium is funnel-shaped and basal teeth are present; their number, however, could not be determined. Longitudinal ridges in the prostomium of both sexes form 8 forwardly directed teeth anteriorly (Fig. 2). The deirids are small setose structures close to the anterior extremity (Fig. 2). The tip of the tail is smooth and rounded in both sexes (Fig. 3a, b).

Males

The spicules are unequal and weakly sclerotised. The shorter right spicule is simple and bears 2 small protuberances on the ventral aspect. Membranous alae are present on the proximal half (Fig. 4a). The longer left spicule is curved and its distal

tip is shaped like a claw, with several indistinct, weakly sclerotised structures between the pinchers (Fig. 4b–d). The ratio of the right to left spicule is 1:2,11–2,74.

The number of pre-cloacal subventral papillae varies from 11 on the one side and 13 on the other to 14 on the one side and 15 on the other. The most commonly encountered combination is 12 on the one side and 13 on the other. The first lateral pre-cloacal papillae arise approximately at the level of the 3rd subventral papillae (Fig. 5). The number of lateral pre-cloacal papillae varies from 2 on either side to 3 on the one side and 5 on the other. The most commonly encountered combination, however, is 3 on either side. There are 6 pairs of post-cloacal papillae; the 2nd pair lies laterally and the remaining pairs subventrally (Fig. 3b & 5). Their number and arrangement were constant in all the specimens examined.

Females

The vulva is situated in the posterior half of the body and is a simple transverse slit. The vagina runs perpendicular to the long axis of the body for a short distance; it then curves sharply backwards to join the caudally directed ovejector (Fig. 6). Eggs are elongated ovoid and devoid of any structures on the shells; they contain a fully formed larva when laid (Fig. 7).

DISCUSSION

Moravec (1972b) divided the genus *Rhabdochona* into 3 subgenera depending on the presence or absence of floats or filaments on mature eggs. Thus, the subgenus *Rhabdochona* Railliet, 1916,

TABLE 1 The principal measurements of *Rhabdochona* (*Rhabdochona*) *versterae* n. sp.*

Measurements	Males		Females	
	Holotype	Paratypes	Allotype	Paratypes
Length (mm)	11,7	12,25 – 14,00	28,58	17,28 – 22,80
Maximum width	175	210 – 267	453	158 – 390
Prostomium, length	39	36 – 47	41	38 – 50
Prostomium, width	23	22 – 26	24	26 – 30
Length of prostomium and vestibulum	179	191 – 222	214	192 – 220
Length of muscular oesophagus	508	407 – 498	326	477 – 576
Length of glandular oesophagus	3 848	4 520 – 6 000	7 716	4 533 – 7 540
Distance of deirids from anterior end	76	64 – 70	103	56 – 67
Distance of nerve ring from anterior end	219	231 – 264	265	230 – 249
Distance of excretory pore from anterior end	319	356 – 394	435	332 – 358
Length of left spicule	186	225 – 246	—	—
Length of right spicule	74	82 – 108	—	—
Length of tail	250	247 – 296	289	200 – 308
Distance of vulva from posterior end (mm)	—	—	11,98	6,32 – 9,16
Eggs (in utero), length**	—	—	35	35 – 37
Eggs (in utero), width**	—	—	21	20 – 21

* All measurements given in μm unless otherwise stated

** Mean measurements of 3 eggs from each female

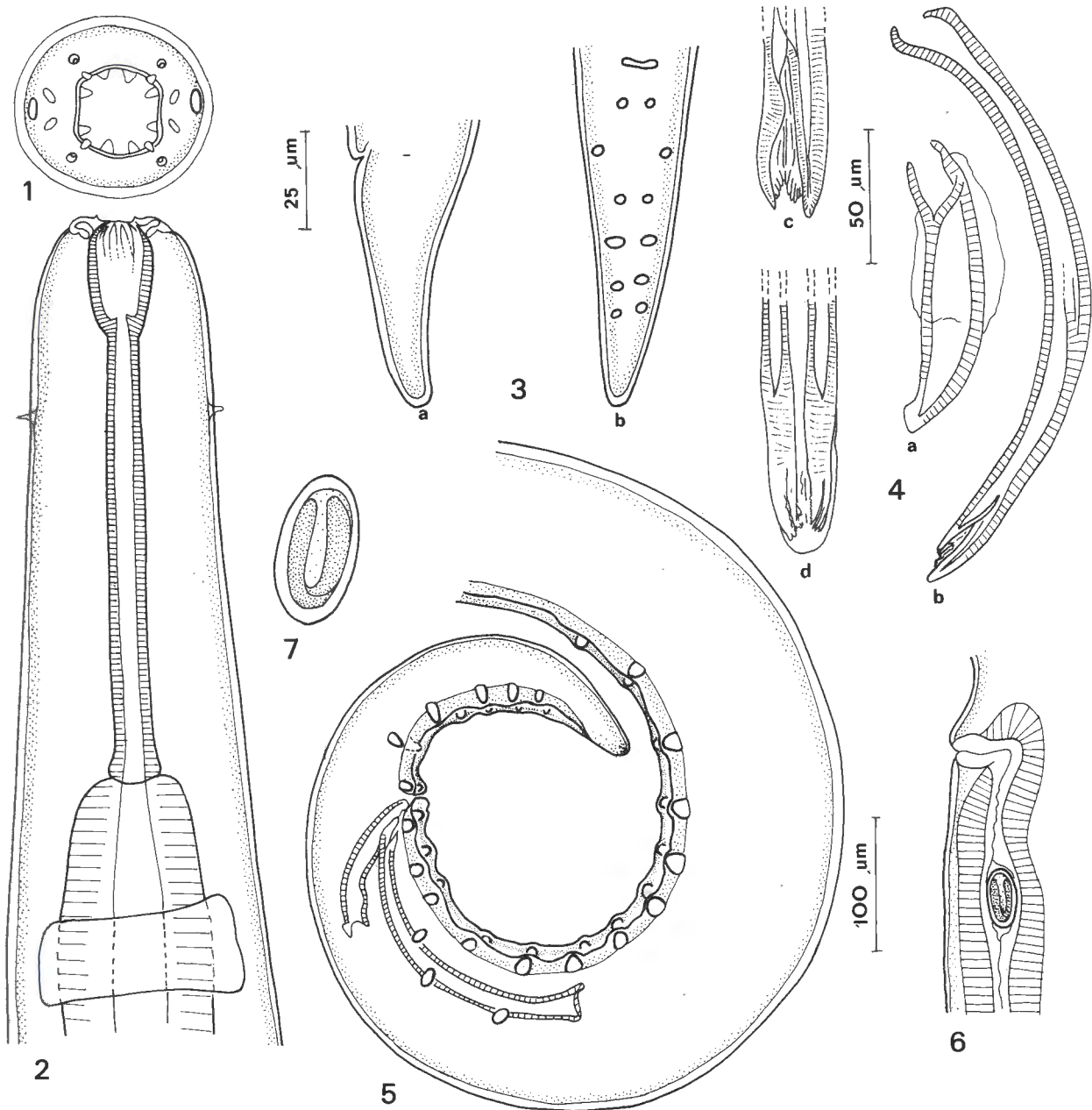


FIG. 1–7 *Rhabdochona versterae* n. sp.

FIG. 1 Apical view of the head of a male

FIG. 2 Ventral view of the anterior part of a female

FIG. 3 Tail of (a) female, lateral view and (b) male, ventral view, showing the arrangement of the post-cloacal papillae

FIG. 4 Lateral view of (a) the right and (b) the left spicules, and the tip of the left spicule in lateral (c) and ventral (d) views

FIG. 5 Lateral view of the posterior end of the male, showing the arrangement of the pre- and post-anal papillae

FIG. 6 Lateral view of the vagina and ovejector

FIG. 7 Egg containing a larva

Scale bars: Fig. 1, 4c, 4d, 7 = 25 μm ; Fig. 2, 4a, 4b = 50 μm ; Fig. 3a, 3b, 5, 6 = 100 μm

has eggs that are either smooth or are covered with a thin, almost indistinguishable gelatinous layer, the subgenus *Filochona* Saidov, 1953 has eggs that are provided with filaments and the subgenus *Globochona* (Moravec 1972b) has eggs with hemispherical floats. Chabaud (1975) states that the floats or filaments have no phylogenetic importance, but serve as a useful means to separate the numerous species. From the above it follows that the absence of floats or filaments on the eggs or *R. versterae* places this species in the subgenus *Rhabdochona* (Moravec 1972b).

According to the description of Mashego (1990), *R. esseniae* has eggs without any floats or filaments and should therefore also be placed in the subgenus *Rhabdochona*.

R. versterae shows affinities with *R. moraveci* from *Aphyosemion cameronensis* Boulenger, 1903 from the Cameroon, as far as the structure of the mouth and the arrangement of the labial and cephalic papillae are concerned. In both species the mouth is hexagonal and external labial papillae are lacking. Puylaert (1973) illustrates what he believes are nerve bundles near the amphids, but we believe that structures in the same region of *R. versterae* are cuticular adjoinments. The 2 species can be easily separated, in that the left spicule of *R. moraveci* are approximately 3 × longer than that of *R. versterae*; consequently, the ratio of the right to left spicule is 1:5,9–7,7 in the former species and 1:2,1–2,7 in the latter. Furthermore, in apical view of the head, female *R. moraveci* have 12 and the males 14 prostomal teeth, some of which may be double (Puylaert 1973), while both male and female *R. versterae* have 8 teeth, none of which are double.

Moravec (1972a) comments on the similarity between *R. paski* and *R. congolensis* and states that the only difference that can be taken into account is the presence of about 10 finger-like processes on the tip of the female tail. The differences in the various measurements could be the result of the age of the parasite or the influence of the host, and, in addition, there is considerable variation in the number of subventral pre-anal papillae within a species (Moravec 1972a). Nevertheless, Moravec (1972a) considers *R. paski* and *R. congolensis* to be valid species.

R. versterae shows affinities to both *R. paski* Baylis, 1928 and *R. congolensis* in that the ratio of the right to left spicules overlaps, and that each of the 3 species has 8 prostomal teeth (Baylis 1928; Campana-Rouget 1961; Moravec 1972a).

R. paski differs from *R. versterae* in the longer spicules (108–140 µm and 282–300 µm, respectively in the former, and 74–108 µm and 186–246 µm, respectively in the latter), and in the different

configuration of the tip of the left spicule. In addition, the males of *R. paski* have a longer tail (405–411 µm) and have 16–19 pairs of subventral pre-anal papillae as opposed to the shorter tail (200–250 µm) and 12–15 pairs of subventral pre-anal papillae of *R. versterae*. Furthermore, the ratio of the length of the glandular oesophagus to the total body length is greater in *R. paski* (1:7,38–8,89 for the males and 1:6,00–8,14 for the females) than in *R. versterae* (1:1,95–3,64 for the males and 1:2,24–6,00 for the females), indicating that, on average, *R. versterae* has a longer glandular oesophagus.

R. versterae differs from *R. congolensis* in that the tail of the female of the former species is smooth, while that of the latter species has about 10 finger-like processes. The number and arrangement of the labial papillae of the last-named species, as illustrated by Moravec (1972a), also appears to be different in *R. versterae*.

R. versterae differs from *R. esseniae* in the number of subventral pre-anal papillae (12–15 pairs in the former, 8 pairs in the latter), the length of the spicules (74–180 µm and 186–246 µm, respectively in the former and 115–154 µm and 500–560 µm, respectively in the latter), and thus the ratio of the right to left spicules (1:2,1–2,7 in the former and 1:3,25–4,87 in the latter).

We believe that the above differences are sufficient to warrant the creation of a new species. The parasites are therefore described here as *Rhabdochona (Rhabdochona) versterae* n. sp., in honour of Prof. Anna Verster, in recognition of her extensive contribution to the study of helminths in South Africa.

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