



Spauligodon timbavatiensis n. sp. (Nematoda: Pharyngodonidae) from *Pachydactylus turneri* (Sauria: Gekkonidae) in the Northern Province, South Africa

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ABSTRACT

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Spauligodon timbavatiensis n. sp. (Nematoda: Pharyngodonidae) from the large intestine of *Pachydactylus turneri* (Sauria: Gekkonidae) in the Northern Province (RSA) is described and illustrated. It is the fifth species in the Ethiopian region, the others being *Spauligodon smithi* from *Pachydactylus bibronii* and *Spauligodon petersi* from *Mabuya sulcata*, both in the Northern Cape Province, South Africa, *Spauligodon morgani* from *Mabuya striata* in Malawi, and *Spauligodon dimorpha* from *Chamaeleo pardalis* in Madagascar.

The males of the new species differ from *S. smithi* in that the adcloacal papillae are single (bifid in *S. smithi*), from *S. petersi* in the presence of a spicule and having narrow lateral alae (wide and triangular in *S. petersi*) and from *S. dimorpha* and *S. morgani* in having a spicule. Furthermore, *S. timbavatiensis* differs from *S. morgani* in lacking spines on the tail. The females of the new species have a long tail and truncated egg ends as opposed to the short, spiky tail and pointed eggs of *S. morgani*; a spiny tail and truncated eggs as opposed to the smooth tail and pointed eggs of *S. petersi* and a longer oesophagus than *S. smithi*. Furthermore, the females of *S. dimorpha* and *S. morgani* are much larger than those of *S. timbavatiensis*. In addition, the excretory pore opens behind the posterior end of the oesophageal bulb in the new species, while in *S. smithi* and *S. dimorpha* it opens at the level of the end of the oesophageal bulb.

Keywords: Gekkonidae, nematode, *Pachydactylus turneri*, Pharyngodonidae, reptiles, South Africa, *Spauligodon timbavatiensis* n. sp.

INTRODUCTION

As part of a study on the parasites of reptiles, several species of Sauria were collected from the Klaserie Private Game Reserve, Northern Province, South Africa. Among these were two specimens of *Pachydactylus turneri*, a common large gecko in southern Africa. They occur on rocky outcrops, un-

der loose tree bark and sometimes on houses. The geckos are gregarious and are often found in colonies. Their prey consists of a variety of insects including ants, termites, beetles and grasshoppers, and even smaller lizards are consumed on occasion (Branch 1998). The *Pachydactylus bibronii-laevigatus* complex was recently revised (Benyr 1995), but Branch (1998) does not accept this revision.

The genus *Spauligodon* was created when the genus *Pharyngodon* Diesing, 1861 was divided into three new genera: *Pharyngodon*, *Parathelandros* Baylis, 1930 and *Spauligodon* Skrjabin, Schikhobalova & Lagodovskaja, 1960 (Skrjabin, Schikhobalova & Lagodovskaja 1960). Thirty-four *Spauligodon* species have as yet been described, four of which occur in the Ethiopian region (Burseley, McAllister & Freed 1997).

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In this paper the fifth species, recovered from the large intestine of the geckos and for which the name *Spauligodon timbavatiensis* n. sp. is proposed is described and illustrated.

MATERIAL AND METHODS

Two geckos were collected by hand in the Klaserie Private Game Reserve and taken back alive to the laboratory. They were euthanized, weighed and measured, and the internal organs removed. The trachea, lungs, liver, oesophagus, stomach, small intestines, large intestines and rectum were placed in phosphate buffered saline (PBS) in separate petri dishes, and examined for helminths under a stereoscopic microscope. In order to obtain clean specimens, nematodes were removed from the ingesta, placed in another petri dish in PBS for 20–30 min, whereafter they were fixed in boiling 70% ethanol. For detailed light microscopic studies they were transferred to a 50% lactophenol-water solution and examined while clearing. The material was studied under a Nikon compound microscope and drawings made with a drawing tube. Measurements were made by measuring the drawings. Measurements are those of the holotype and allotype and, where available, followed by those of the paratypes (in parentheses). All measurements are given in millimeters (mm).

Specimens for scanning electron microscopy were dehydrated through graded ethyl alcohol and critical point dried. They were sputter coated with gold and examined with a Leica Stereoscan 420 scanning electron microscope at an accelerating voltage of 5 kV.

The geckos were deposited in the herpetological collection of the Transvaal Museum (TM. 81535 and TM. 81536).

RESULTS

Characterization of the genus *Spauligodon* Skrjabin, Schikhobalova & Lagodovskaja, 1960

Pharyngodonidae with a triangular mouth opening, each lip partially or completely divided into two. Excretory pore behind the oesophageal bulb, in females always near the vulva. Oesophageal bulb with a well-sclerotized valvular apparatus. Lateral alae are present. The cloacal papillae of the males are clearly separated into precloacal, adcloacal and postcloacal pairs. Papillae of the last named pair are well separated from each other and usually only a short distance from the adcloacal pair and never rosette-shaped. The protruding genital cone may be supported by sclerotized structures, but the pre- and adcloacal pairs of papillae are never situated on the cone. Caudal alae are always present, but never support

the last pair of papillae. Spicules are often absent. The usually long and tapering tail may be spinose or aspinose (amended from Skrjabin *et al.* 1960 and Petter & Quentin 1976). Parasites of carnivorous reptiles.

DESCRIPTION OF THE SPECIES

Spauligodon timbavatiensis n. sp. (Fig. 1 and 2)

Small nematodes with a cylindrical body, tapering at both ends. In both sexes lateral alae are present and the nerve ring surrounds the oesophagus in the anterior half, more or less at the commencement of the lateral alae. The conspicuous excretory pore always lies posterior to the oesophageal bulb and is a transverse slit surrounded by a chitinous rim. The tail is long and flexible.

MALES

Small nematodes, 2,24 (1,74–2,05) long and 0,19 (0,12–0,14) wide at mid-body. Three well-developed lips surround a triangular mouth opening. Each lip is incompletely divided in two lobes with a shallow notch in each lobe. Cephalic papillae were not seen. Behind the anterior margin of the lips, on their inner side, two tooth-like structures are visible.

Narrow lateral alae start at 0,09 (0,12–0,18) and 0,14 (0,12–0,15), respectively, from the anterior end, and are 1,54 (1,49–1,83) and 1,49 (1,47–1,82) long.

The oesophagus consists of a fairly short, clavate corpus, 0,26 (0,26–0,35) long, before it joins the slightly oval bulb that is 0,09 (0,07–0,08) long and 0,07 (0,07–0,08) wide. The nerve ring and excretory pore are situated 0,15 (0,12–0,15) and 0,65 (0,56–0,65), respectively, from the anterior end.

The cloacal papillae comprise a pair of pre-cloacal papillae, a pair of adcloacal papillae and a pair of post cloacal papillae. Caudal alae have a finely sculptured inner surface. A characteristic genital cone surrounded by an ornate, folded membranous lip is present. Only one very weakly sclerotized spicule measuring 0,08 is visible. The tail is 0,25 (0,17–0,24) long and aspinose.

FEMALES

Females are larger than males, 3,49 (2,13–2,41) long and 0,22 (0,21–0,27) wide at mid-body. As in the males, there are three well-developed lips surrounding a triangular mouth opening. Each lip is divided into two lobes and tooth-like structures are borne on the inside of each lip. Cephalic papillae were not seen.

The lateral alae start at 0,14 (0,09–0,12) from the anterior end and are 2,54 (2,15–2,46) long and 0,02 wide.

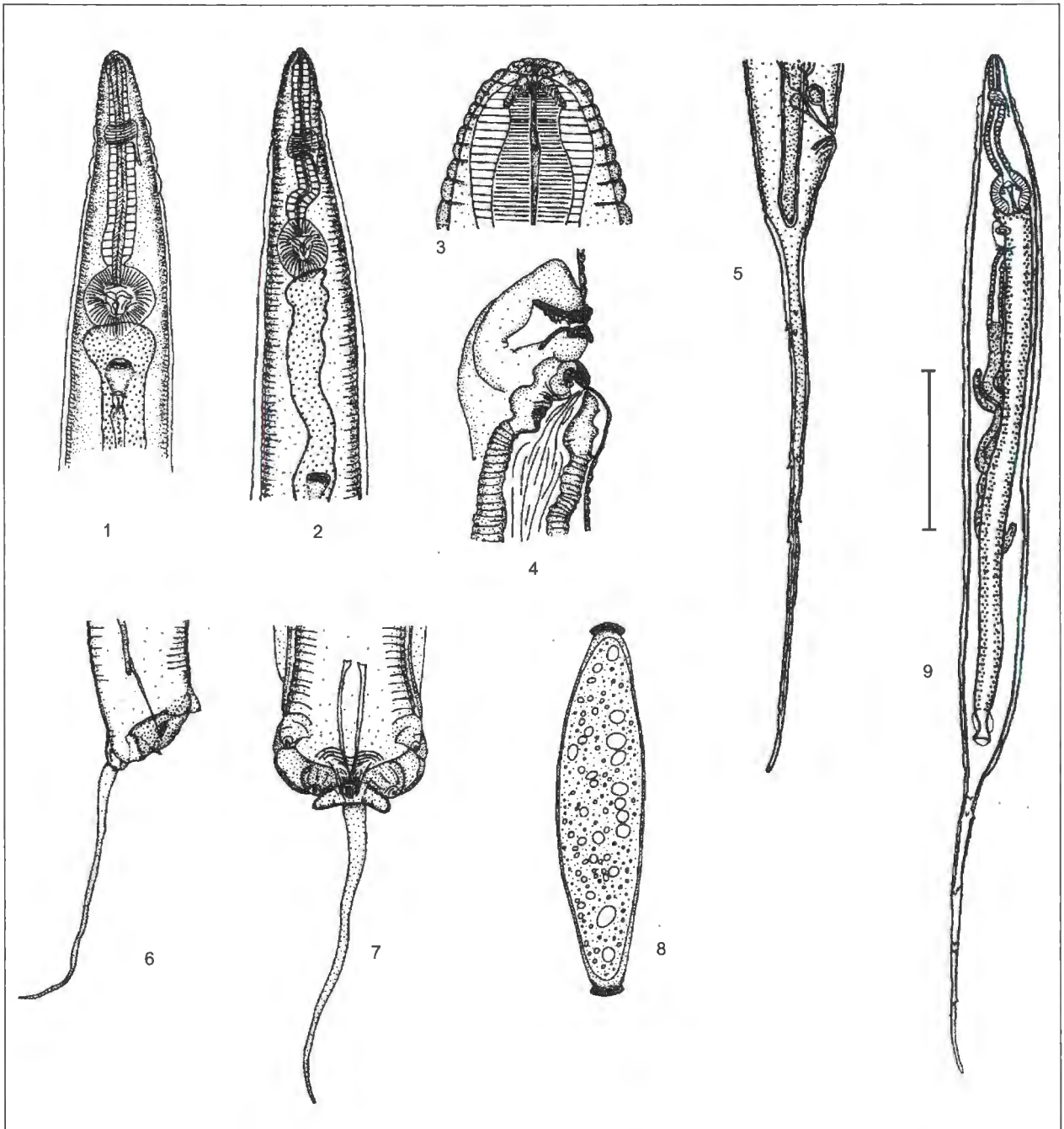


FIG. 1 *Spauligodon timbavatiensis* n. sp.

1. Anterior part, ventral view, paratype male (bar = 0,1 mm)
2. Anterior part, ventral view, paratype female (bar = 0,1 mm)
3. Detailed anterior part, ventral view, paratype female (bar = 0,05 mm)
4. Vulva and excretory pore, lateral view, paratype female (bar = 0,1 mm)
5. Posterior end, lateral view, paratype female (bar = 0,05 mm)
6. Posterior end, lateral view, paratype male (bar = 0,1 mm)
7. Posterior end, ventral view, paratype male (bar = 0,1 mm)
8. Egg (bar = 0,1 mm)
9. Entire, lateral view, paratype female (bar = 0,5 mm)

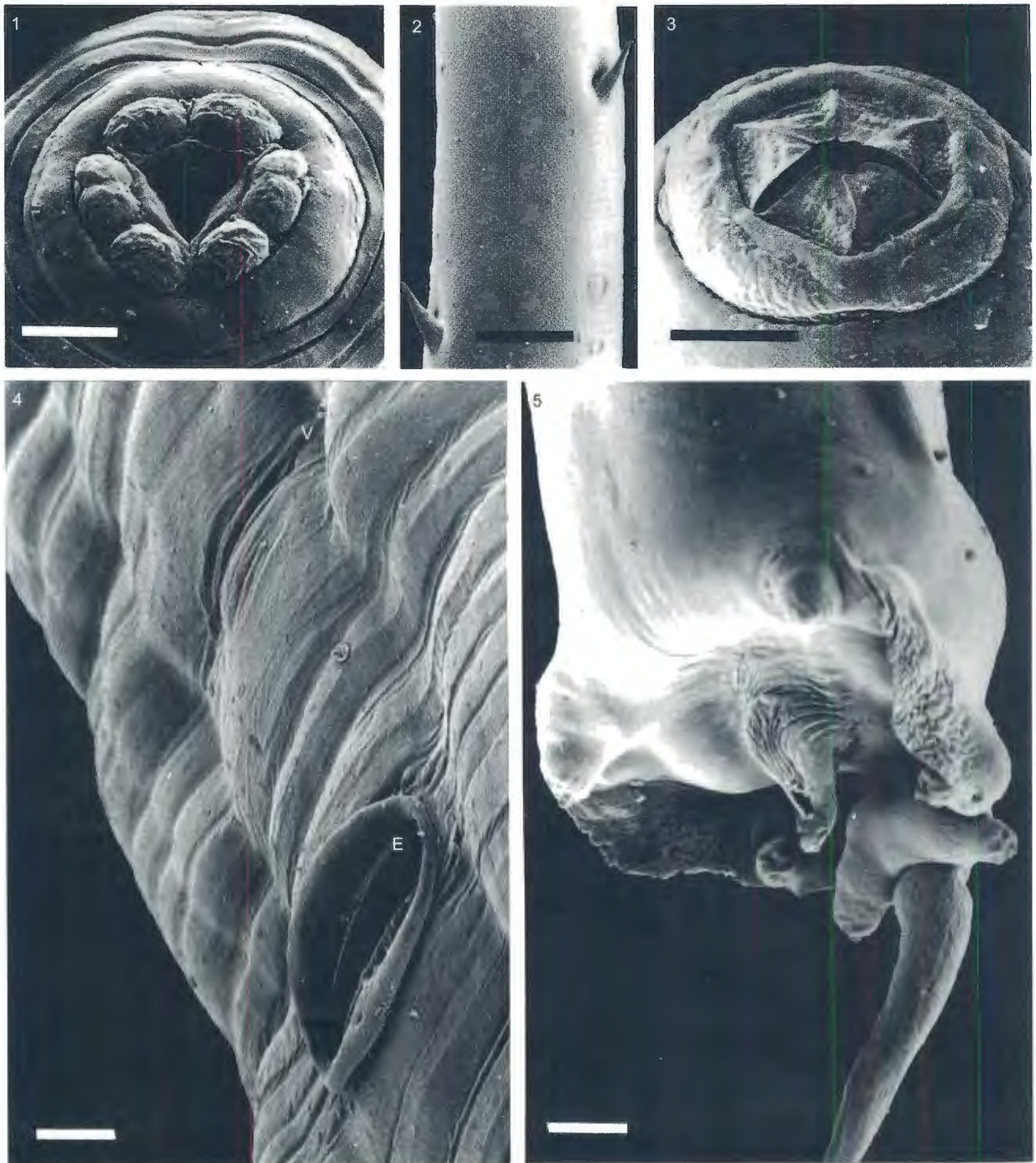


FIG. 2 *Spauligodon timbavatiensis* sp. n.

1. Anterior part, paratype female (bar = 0,05 mm)
2. Spines on tail of paratype female (bar = 0,05 mm)
3. Anterior part, paratype male (bar = 0,05 mm)
4. Midbody paratype female, V = vulva; E = excretory pore (bar = 0,05 mm)
5. Posterior part, paratype male (bar = 0,09 mm)

The body of the oesophagus is 0,41 (0,37–0,40) long, and the bulb 0,14 (0,11–0,14) long and 0,14 (0,14–0,15) wide. The nerve ring and excretory pore are situated 0,16 (0,13–0,17) and 0,62 (0,57–0,63) from the anterior end, respectively.

The vulva lies slightly behind the excretory pore, 0,68 (0,56–0,66) from the anterior end. The muscular ovejector extends posteriorly into a thin-walled common uterus, 0,33 long, into which join the anterior and posterior uteri. Thin-shelled eggs in the uterus measure 0,156 (0,133–0,162) x 0,033 (0,032–0,034), and are elongated and fusiform, with caps on each truncated end. They are unsegmented when laid. The long, flexible, filiform tail, 0,96 (0,83–1,11) long, always carries between seven and nine cuticular spines.

TYPE HOST

Pachydactylus turneri (Gekkonidae).

TYPE LOCALITY

Timbavati/Klaserie/Umbabat Private Nature Reserves (25°36'51,8''S; 28°01'30,5''E), Northern Province, Republic of South Africa.

TYPE MATERIAL

Holotype male, allotype female, ten paratype males and ten paratype females. The paratypes included immature males and females without eggs. The type specimens are deposited in the collection of the Museum National d'Histoire Naturelle, Paris, France, access number 579HF.

HABITAT

Mucosa of large intestine.

ETYMOLOGY

The species is named after the locality of the host.

DISCUSSION

The general morphology of the new species allows its inclusion into the family Pharyngodonidae. Only in the genera *Pharyngodon* (syn. *Neopharyngodon* Chakravarty & Bhaduri, 1948), *Skrjabinodon* Inglis, 1968 and *Spauligodon* does the vulva open just behind the post bulbar excretory pore in the anterior part of the body. In contrast to the males of *Pharyngodon*, which have well-developed caudal alae enveloping all genital papillae, *Skrjabinodon* males lack the caudal alae, while the males of *Spauligodon* have caudal alae that do not enclose the posterior pair of papillae. Based on the position of the vulva and the configuration of the caudal alae of the male, the new

species conforms to the description of the genus *Spauligodon*.

There currently are 34 species of *Spauligodon* that are separated on the presence or absence of spines on the tail and the shape of the eggs (Burse & Goldberg 1995). However, Chabaud & Brygoo (1962) suggested that the most important factor in speciation of reptilian oxyurids would be the geographical distribution. Only four *Spauligodon*-species have presently been described for the Ethiopian region. Three of these, *S. dimorpha*, *S. morgani* and *S. petersi* lack spicules. The females of *S. dimorpha* and *S. morgani* are much larger than those of *S. timbavatiensis*, their tails are short and the excretory pore of *S. dimorpha* is situated on the same level as the oesophageal bulb. *S. dimorpha* was described from *Chamaeleo pardalis* in Madagascar (Chabaud & Brygoo 1962). Furthermore, the males of *S. morgani* have a spinose tail and the species was described from *Mabuya striata* in Malawi (Fritzsimmons 1961).

The female of *S. petersi* lacks spines on the tail and the male has wide lateral alae. In addition, the eggs are pointed with smaller terminal plugs on each end and are flattened on one side. *S. petersi* was described from *Mabuya sulcata sulcata* in South Africa (Burse *et al.* 1997).

The remaining species, *S. smithi*, is very similar to *S. timbavatiensis* as regards the host and locality. The most conspicuous difference is that the adcloacal pair of papillae is bifid in *S. smithi* and single in *S. timbavatiensis*. Furthermore, the excretory pore and vulva of female *S. smithi* are situated more anterior than in *S. timbavatiensis*, although the body lengths are nearly the same. Both sexes of the last named species also have slightly oval oesophageal bulbs as opposed to the round bulb in both sexes of *S. smithi*.

We believe that the differences between the new and already described species are sufficient to warrant the creation of a new species, for which the name *S. timbavatiensis* n. sp. is proposed.

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