A new freshwater species of *Theristus* from South West Africa/Namibia (Nematoda: Xyalidae)

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Theristus tessae n. sp. is described from the Fish River in South West Africa/Namibia. The new species is characterized by a slender, cylindroid body, outer labial setae slightly shorter than lip region diameter, amphideal fovea one third corresponding body diameter, elongate-conoid tail equal to about three fourths the vulva-anus distance, absence of posterior uterine sac. The spicules are equal, slightly bent and barely longer than anal body diameter. *T. tessae* n.sp. is compared with the cosmopolitan *Theristus agilis* (de Man, 1880) as well as with all other known athallasic species.

Theristus tessae n.sp. word uit die Visrivier in Suidwes-Afrika/Namibië beskryf. Die nuwe spesie word gekenmerk deur 'n slanke, silindriese liggaam, buitenste kring van labiale setae slegs effens korter as die lipdeursnit, amfiedopeninge een derde die ooreenstemmende liggaamsdeursnit, konies-verlengde stert gelyk aan driekwart die vulva–anus afstand, afwesigheid van postuterine sak, spikulums eenders, effe gebuig en slegs ietwat langer as die anale liggaamsdeursnit. *T. tessae* word vergelyk met die kosmopolitiese *Theristus agilis* (de Man, 1880) sowel as alle bekende limnetiese spesies.

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During July 1986 the authors collected several soil samples in South West Africa/Namibia, as a follow-up of a similar survey for nematodes undertaken in this territory by the first author some years earlier. During the second survey, benthic samples were also taken by one of the team members, L.J. Jacobs. The material obtained during these surveys is being studied jointly at the Rijksuniversiteit Gent and the Rand Afrikaans University.

The benthic samples were taken by scraping up the top few centimetres of sediment from streams or ponds, sieving these through a 1-mm sieve to remove debris and then a 25 μm sieve to remove fine silt. The sediment was then concentrated by decantation and fixed on the spot with hot formaldehyde (70°C) to a final concentration of about 4%. Specimens were afterwards extracted in the laboratory with standard extraction techniques involving centrifugation-flotation using silicagel, then processed into anhydrous glycerine and mounted on aluminium double-coverslip slides (Southey 1970).

***Theristus tessae* n.sp.** (Figure 1)

Holotype ♀: L = 1,10 mm; a = 46; b = 6,3; c = 7,1; c′ = 8,1; V = 59,5; tail = 154 μm (somewhat foreshortened); vulva–anus distance = 292 μm.

Female (*n* = 5: *holotype plus paratypes*): L = 1,01 (0,95–1,11) mm; a = 43 (41–46); b = 5,8 (5,5–6,3); c = 6,3 (5,6–7,1); c′ = 9,3 (7,6–10,8); V = 59,5 (58–60,5); tail = 162 (126–188) μm; vulva–anus distance = 245 (222–292) μm; tail/vulva–anus distance = 0,67 (0,53–0,82); vulva–anus distance/tail = 1,53 (1,22–1,90); body width at base of pharynx = 20,5 (20–21) μm; at widest point = 23,6 (20–27) μm; at anus = 17,5 (16–19) μm.

Paratype ♂: L = 0,94 mm; a = 47; b = 6,2; c = 8,9; c′ = 6,8; tail = 106 μm; body width: at base of pharynx = 18,5 μm; at widest part = 20 μm; at anus = 15,5 μm.

Female

Body slender, cylindroid, of about equal width from neck to anus. Cuticle about 1 μm thick, annulated; annules about 1,3 μm wide over greater part of body, but finer towards lip region and tail: about 1,1 μm wide behind lip region and 0,9–1,1 μm on tail. Somatic setae about 3,5–4 μm long, sparse, arranged in four longitudinal rows. Lip region truncate in general appearance, 12–13 μm in diameter, flatly rounded and almost confluent with neck. Labial and cephalic sensilla setiform; the six inner labial setae short and stout, only about 1,5 μm long; the six outer labial setae slender, about 10–11 μm long (i.e. about 0,8 times the lip region diameter); the four cephalic setae at the same level as the outer labials, about 6,5 μm long.

Amphideal fovea circular, about 6 μm in diameter which is more than one third the corresponding body diameter, its anterior rim 14–21 μm (or 1–1,5 lip diameters) from anterior end.

Stoma dome-shaped, with shallow funnel-shaped base leading to pharyngeal lumen. Wall of broadest part of stoma heavily cuticularized. Only the shallow funnel-shaped part of the stoma is surrounded by pharyngeal tissue. Pharynx 172–194 μm long, measured from anterior end of body, cylindroid, without basal bulb, and

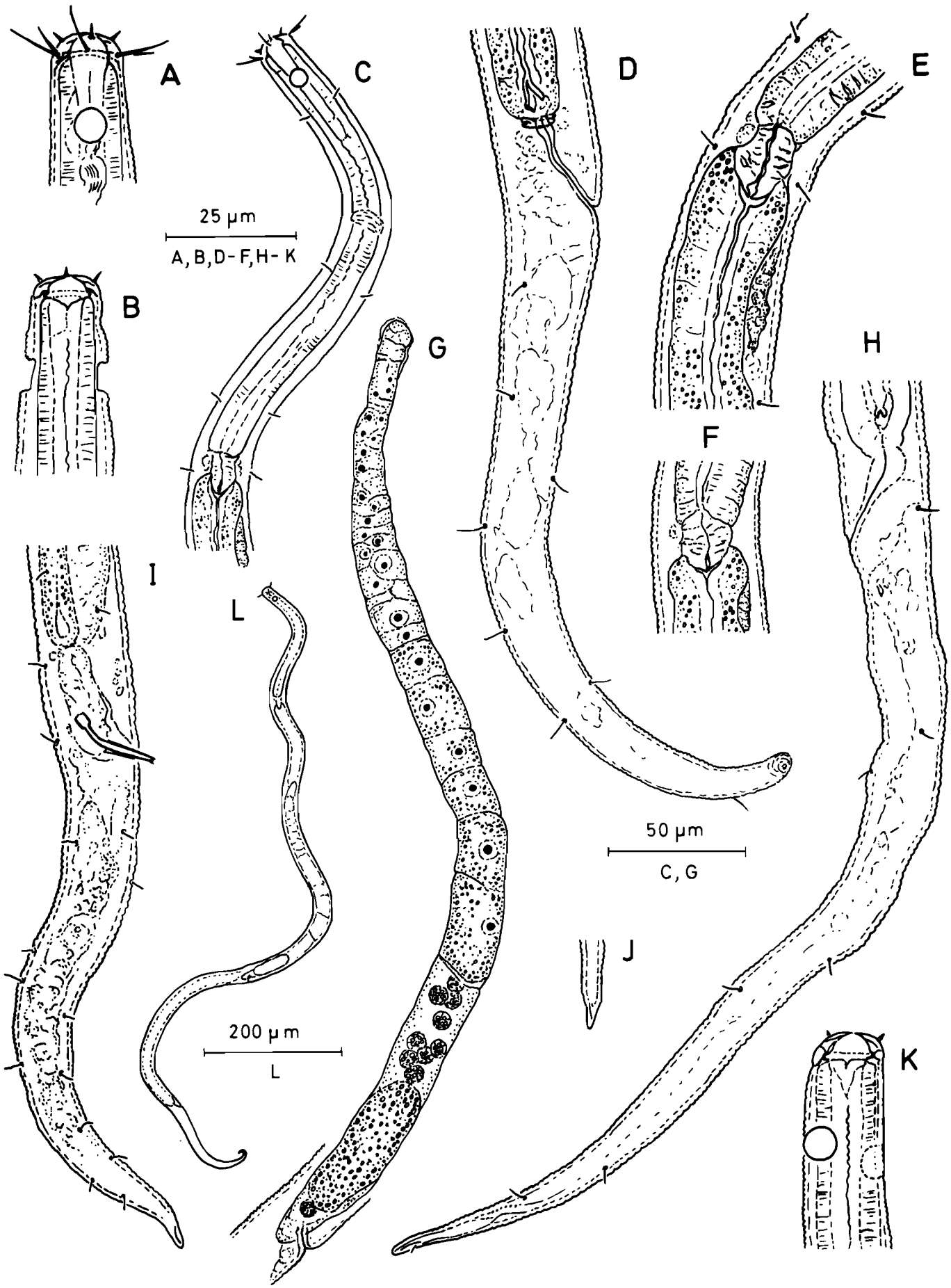

Figure 1 *Theristus tessae* n.sp. A. Head end, surface view; B. Head end, dorso-ventral view, showing optical section through stoma; C. Anterior part of body; D. Female tail, with tail terminus turned upwards towards viewer; E. & F. Cardia region, showing ventral gland, in two specimens; G. Female reproductive system; H. Female tail; I. Male tail; J. Tail terminus; K. Head end of another female, showing structure of stoma and position of amphideal fovea; L. Entire female.

muscular throughout its length. Nuclei of pharyngeal glands not observed. Nerve ring 71–84 µm from anterior end, encircling the pharynx at 37–47% of its length. Cardia somewhat variable in shape in different specimens (*cf.* Figures 1E & F), perhaps owing to fixation, about 15 µm long and 9 µm broad, its posterior half surrounded by the anterior enlarged intestinal cells (progaster). Outer part of intestinal cells containing numerous dark granules, inner part towards lumen distinctly demarcated and clear of granules (Figures 1D & E). Ventral gland conspicuous, constricting intestine ventrally about one body diameter posterior to base of pharynx (Figures 1C, E & F). Intestine with a tongue-shaped valve projecting into its lumen at its junction with the rectum (Figure 1D). Rectum slightly longer than anal body diameter.

Tail elongate-conoid, with bluntly rounded terminus. No terminal setae, but one very small seta observed subterminally in one specimen only (Figure 1H). Tail with tendency to bend sideways, so that lateral view of terminal part of tail is not obtained (Figure 1D). Caudal glands inconspicuous, perhaps owing to poor fixation.

Female monodelphic, prodelphic, with outstretched ovary reaching to 96–152 µm from base of pharynx. No intra-uterine eggs with egg shell observed; fully developed oocyte in proximity of vagina measures 155 × 18 µm. Spermatozoa present in uterus, large, about 6 µm in diameter. Vulva transverse; vagina inconspicuous, anteriorly directed. Uterus extending for a very short distance beyond the vagina, but no uterine sac is evident. Ventrally, posterior to the vulva, some associated cells can be seen, probably of glandular nature (Figure 1G). Entire reproductive system lying on the left side of the intestine.

Male

Similar to female in general appearance, except tail shorter, and pharynx only 152 µm long. With single outstretched testis, reaching to 62 µm from base of pharynx. Reproductive system lying on left side of intestine, except posterior part of vas deferens which is ventral of the intestine. Spicules similar, 17 µm long, measured along the curved median line, only slightly longer than the anal body diameter, ventrally bent at about one-third the distance from the strongly sclerotized, somewhat rectangular-shaped capitulum, the distal part straight, with the apex apparently slightly bifurcate. (The spicules may be more strongly bent than suggested by Figure 1I, which shows a somewhat ventrolateral view of the spicule.) Gubernaculum about 6 µm long, inconspicuous, apparently an unmodified sheath surrounding the spicules for about one third their length.

Diagnosis

An athallasic species with slender cylindroid body; longest labial setae slightly shorter than lip region diameter; large amphideal fovea, slightly more than one lip region diameter from anterior end; tail elongate-conoid, its length about three fourths the vulva–anus distance; no postuterine sac; spicules equal, short, barely longer than anal body diameter, only slightly bent.

Relationships

The new species resembles *T. agilis* (de Man, 1880) which has been widely reported from Europe, with isolated reports also from North and South America, Africa and Japan. De Man's specimens were restudied by Loof (1961), who found that the female on slide H159 is 1,55 mm long, has ten 'cephalic setae', the longer ones of which are one third the head diameter in length. The female on slide H160 is only 0,84 mm long, and has lost all but one of its cephalic setae. In both specimens the vulva–anus distance is twice the tail length. The only known record from Africa is a single juvenile recorded by Schuurmans Stekhoven (1951) from the Belgian Congo (Zaïre). This specimen has twelve 'cephalic setae', the longer ones of which are 69% the head diameter. Schuurmans Stekhoven's illustration (his Figure 29A) shows a relatively small amphideal fovea, about one fourth the corresponding body diameter.

According to Andrássy (1984) *T. agilis* is a cosmopolitan species with the following characteristics: ♀ L = 1,2–1,6 mm; a = 31–45; b = 5–7; c = 7–9; c′ = 6–7; V = 60–64; ♂ L = 1,0–1,5 mm; a = 40–50; b = 5–7; c = 7–10; spicules = 27–31 µm. It has twelve 'labial setae', the longer ones of which are 11–13 µm, and the shorter lateral ones (cephalic) may be indistinct. The vulva–anus distance is more than twice the tail length.

In view of the above, and especially the vulva–anus distance compared with tail length, which according to both Loof and Andrássy is at least twice the tail length in *T. agilis*, whereas only 1,53 (1,22–1,90) in our specimens, as well as the much shorter spicules in our specimen, we do not regard our species as conspecific with *T. agilis*. Moreover, it differs from de Man's specimens in body length and length of labial setae, and from Schuurmans Stekhoven's specimen in size of amphideal fovea and number of cephalic setae (four versus six).

Other athallasic species with which *T. tessae* n.sp. should be compared are *Theristus vesentiniae* Andrássy, 1962, *T. athesinus* Andrássy, 1962, *T. wegelinae* Andrássy, 1962, *T. ruffoi* Andrássy, 1959 and *T. kaszabi* Andrássy, 1977. *T. wegelinae* and *T. athesinus* are larger species (L = 1,51–1,81 mm and 1,26–1,48 mm respectively) with much longer labial setae (outer labial setae 19–24 µm and 20–22 µm respectively) and longer spiculae (49–55 µm and 45–47 µm respectively). *T. vesentiniae* has an additional (lateral) pair of cephalic setae, the outer labial setae are shorter than in *T. tessae* (7,0–9,5 µm compared with 10–11 µm), the lip region is narrower than the adjoining body and the gubernaculum is longer (15–17,5 µm compared with 6 µm). *T. kaszabi* is smaller (0,66–0,70 mm), c′ = 14–15 (against 7,6–10,8) in female, and the tail is 2,2–2,3 times the vulva–anus distance (against 0,53–0,82 times). In *T. ruffoi* the amphideal fovea is smaller (4,6–5,0 µm in diameter compared with 6,0 µm) and further from the anterior end, and the spicules are 48–50 µm long, more than two and one half times the anal body diameter.

Type locality and habitat

Type population consisting of five females and one male from bottom sediment in shallow pools with clear water among reedbeds in the sandy course of the Fish River, opposite the restaurant in the Ai-Ais Restcamp at the southern entrance to the Fish River canyon, South West Africa/Namibia. Collected 31 July 1986 by L.J. Jacobs.

Type specimens

Holotype female, paratype male and two paratype females (slides Nos 28–31) in the Nematode Collection of the Instituut voor Dierkunde, Rijksuniversiteit Gent, Belgium, and two paratype females (type slide No. 287) in the Nematode Collection of the Department of Zoology, Rand Afrikaans University, Johannesburg, South Africa.

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