

Description of *Caprionchulus diversipapillatus* n.gen., n.sp. from Caprivi, Namibia (Nematoda: Onchulinae)

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Caprionchulus diversipapillatus n.gen., n.sp. was found in a small fresh-water pond in eastern Caprivi. The new genus differs from all other genera within the subfamily Onchulinae Andr ssy, 1963 in the almost barrel-shaped stoma containing a single dorsal tooth, an elongated cardia comprising three vertical rows of four cells each and peculiar supplements consisting of two conspicuous adanal setae and a row of six to eight papilloid supplements, the last four of which are in pairs. The spicule shape is also different from other members of the Onchulinae.

Caprionchulus diversipapillatus n.gen., n.sp. is in 'n varswaterpoel in Oos-Caprivi, Namibi  gevind. Die nuwe genus verskil van alle ander genera binne die subfamilie Onchulinae Andr ssy, 1963 in die amper vaatjievormige stoma met slegs een dorsale tand, die verlengde kardia wat bestaan uit drie rye van vier selle elk, die vorm van die spikulum en die eienaardige supplement re organe. Hierdie organe bestaan uit twee opvallende adanale setae en 'n ry met ses tot agt papil-vormige supplement re organe waarvan die laaste vier parig is.

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The seven recognized genera of the subfamily Onchulinae, *Cyathonchus* Cobb, 1933; *Kinonchulus* Riemann, 1972; *Limonchulus* Andr ssy, 1963; *Onchulus* Cobb, 1920; *Paronchulus* Altherr, 1972; *Pseudonchulus* Altherr, 1972 and *Stenonchulus* Schneider, 1940 can be separated from each other mainly in the shape and armature of the stoma; the number and arrangement of labial and cephalic setae, morphology of the cardia and stratification of the tail (Andr ssy, 1963 and 1964; Altherr, 1972; Riemann, 1972; Schneider, 1940). The species herein described does not fit into any of the existing genera, and we accordingly propose a new genus for its reception.

Material and Methods

Descriptions, measurements and drawings were made from specimens killed and fixed in hot FAA (70 C) and mounted in anhydrous glycerine. Coiled and curved structures were measured along the median line. The stoma width was taken at the widest part of the stoma and includes the width of the sclerotized walls. Stoma length, position of the amphid aperture and nerve ring and the length of the oesophagus were all measured from the anterior end. The tails of some specimens are broken and L'-, a'-, b'- and V'-values (where tail length is not taken into account), are given additionally. All mounts are deposited in the nematode collection of the Rand Afrikaans University. For SEM, specimens were killed with gentle heat, fixed in buffered 2.5% glutaraldehyde, post-fixed in buffered 1% OsO₄ and dehydrated in a graded ethanol-amylacetate series. They were sputter-coated with gold and viewed at 10 kV.

Caprionchulus n.gen.

Generic diagnosis: Onchulinae

Body almost straight in female, ventrally curved in tail region of male. Head truncate, not offset. Six well-developed

lips, each bearing a well-developed seta. Second whorl of six long labial setae situated just posterior to lips. Third whorl of four cephalic setae occurs more posteriorly, more than halfway between anterior end and amphid apertures. Additional setae present in vicinity of third whorl of cephalic setae. Amphid apertures slit-like. Stoma barrel-shaped, tapering posteriad, especially in dorso-ventral view. Dorsal tooth prominent, situated in anterior part of stoma. Body setae in more or less sublateral positions. Oesophagus prominently stratified. Cardia elongated. Cervical papillae absent. Female reproductive system didelphic, amphidelphic; vulva transverse, vagina short. Male reproductive system diorchic, testis outstretched. Spicules curved ventrad, strongly cephalated, open at proximal end. Spicules enclosed in sheath-like tissue. Gubernaculum absent. Supplements consisting of two adanal setae followed by a mid-ventral row of papilloid supplements. Tails of both sexes filiform.

Type species: *Caprionchulus diversipapillatus* n.gen., n.sp.

Differential diagnosis

Caprionchulus n.gen. differs from all other genera of the Onchulinae in the peculiar supplements and spicules in the male, the almost barrel-shaped stoma and the elongated cardia. From *Limonchulus* it differs further in the absence of denticles in the stoma and the number of cells constituting the cardia (12 in *Caprionchulus* vs nine in *Limonchulus*). *Caprionchulus* n.gen. differs from *Kinonchulus*, *Onchulus* and *Paronchulus* also in the absence of cervical papillae (present in males of the latter three genera) and from *Paronchulus* and *Pseudonchulus* in the non-stratified tail (stratified in *Paronchulus* and *Pseudonchulus*). From *Stenonchulus* it differs additionally in the presence of labial setae (absent in *Stenonchulus*). No further comparison with *Cyathonchus* could be made since the description of that

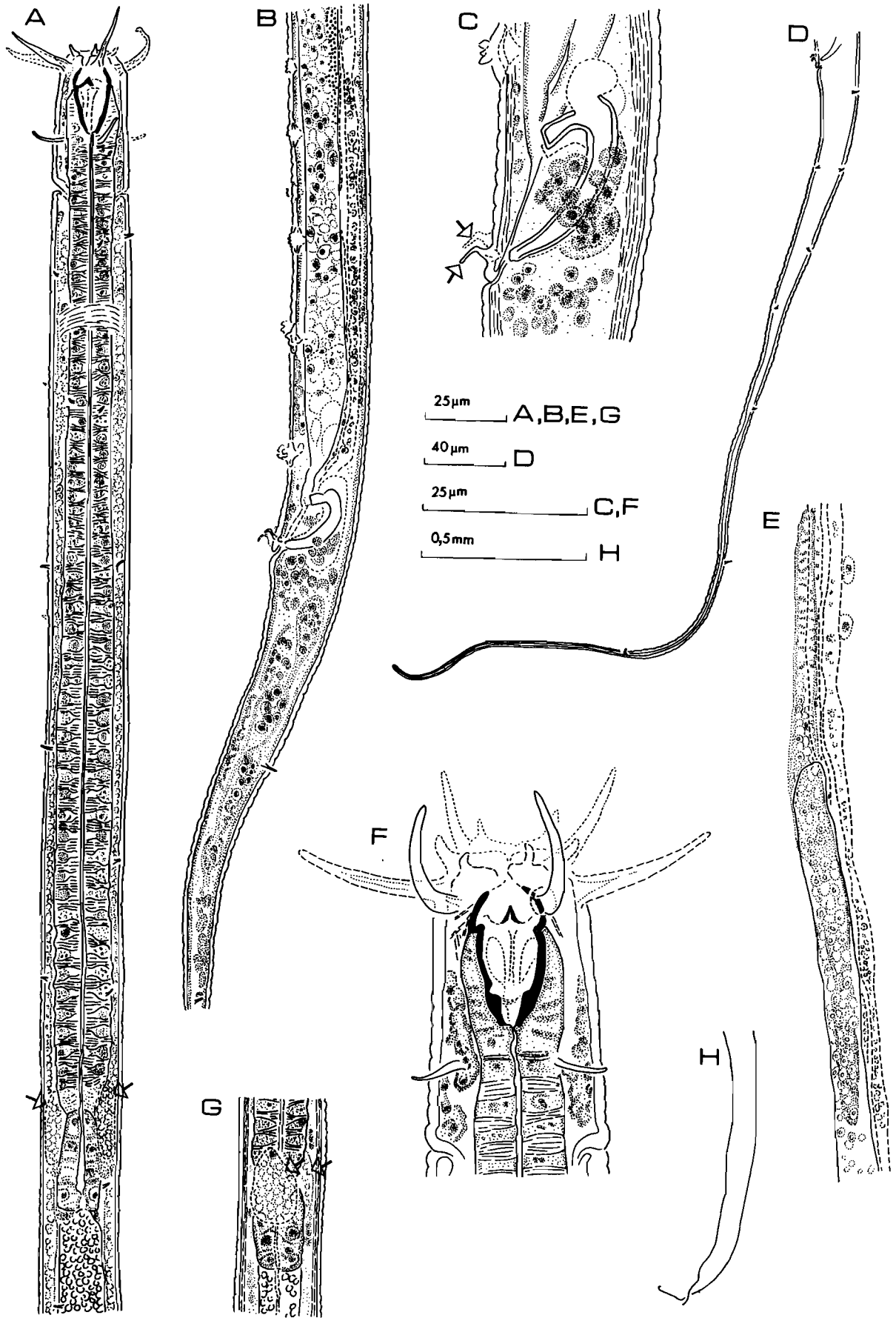


Figure 1 A–H *Caprionchulus diversipapillatus* n.gen., n.sp. A: Anterior region of holotype male, showing two glandular cells on the lateral sides of the oesophago-cardiac junction (arrows); B: Tail region of holotype male; C: Spicular apparatus of holotype male. Arrows show adanal setae; D: Tail of male; E: Testes; F: Ventral view of male head; G: Oesophago-cardiac junction, showing glandular cells (arrows); H: Heat-relaxed body posture of male.

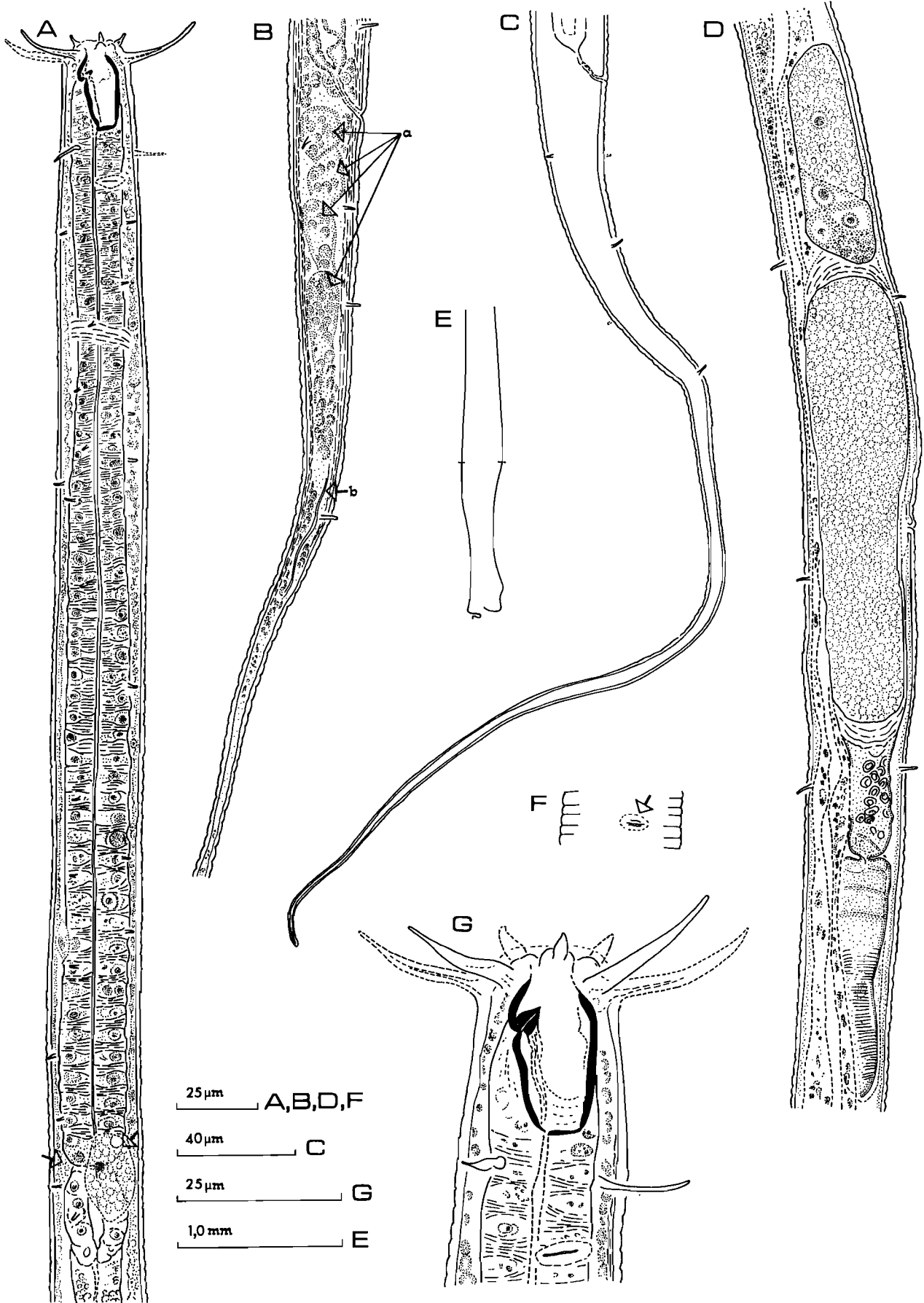


Figure 2 A–G *Caprionchulus diversipapillatus* n.gen., n.sp. A: Anterior region of female, showing glandular cells in the region of the oesophago-cardiac junction (arrows); B: Tail region of female, showing glandular cells in tail (arrow a) and remnants of a tubule (arrow b); C: Tail of female; D: Female reproductive organs; E: Heat-relaxed body posture of female; F: Vulval opening (arrow); G: Head of female — lateral view.

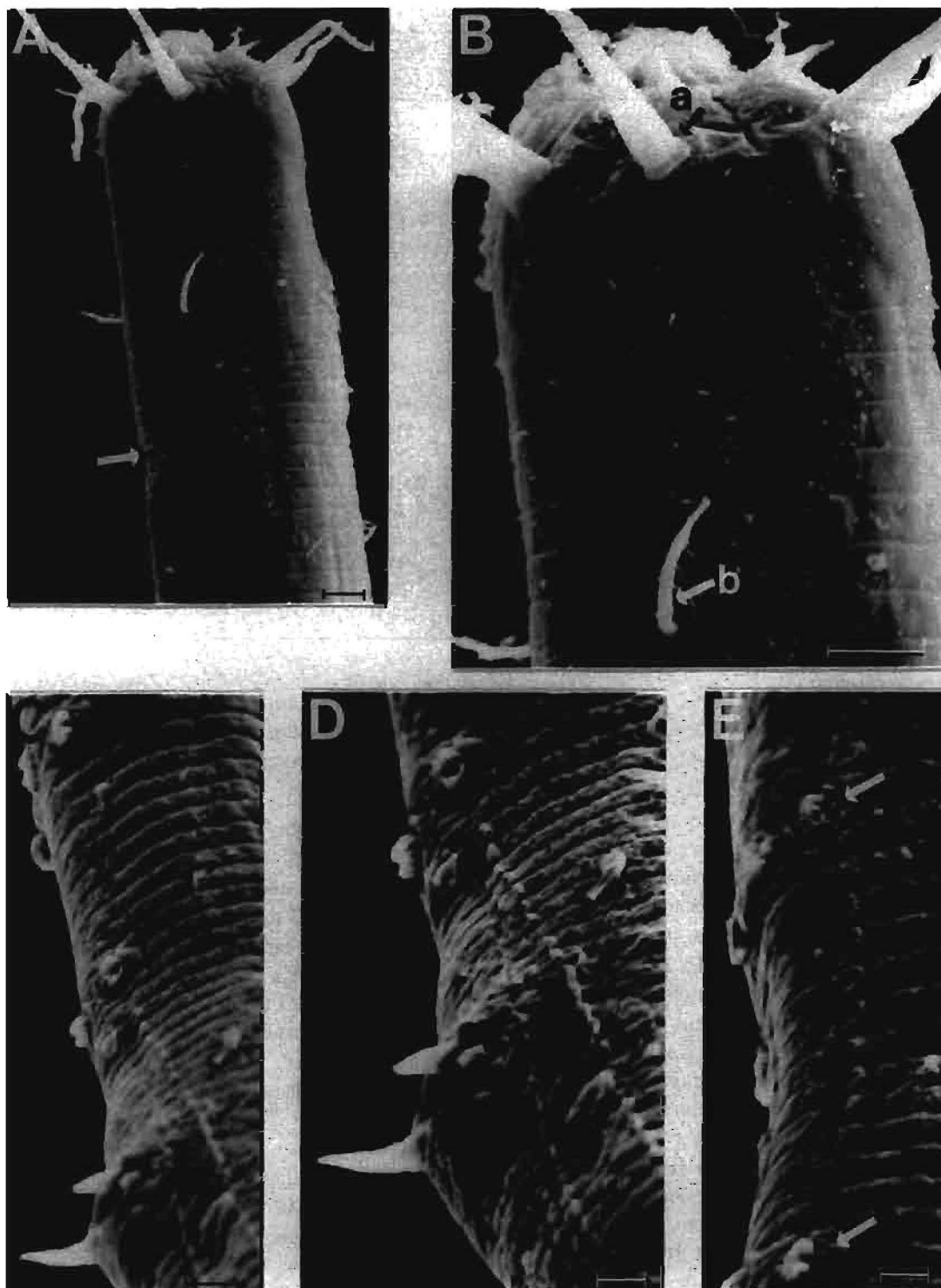


Figure 3 A–E *Caprionchulus diversipapillatus* n.gen., n.sp. A: Ventral view of female head. Arrow indicates amphid aperture; B: Head of female, showing second whorl of labial setae (arrow a) and third whorl of cephalic setae (arrow b); C: Male tail showing adanal setae (arrow a) and two pairs of ventromedian supplements (arrows); D: Male cloacal opening with adanal setae; E: Pairs of ventromedian supplements (arrows) and cuticular ornamentation in this region. Bar equals 5 μm .

genus (Cobb, 1933) lacks detail.

The name *Caprionchulus* is derived from the name of the place where the genus was found, viz. eastern Caprivi in Namibia.

Description

Caprionchulus diversipapillatus n.sp. (Figure 1A–H; 2A–G; 3A–E)

Measurements: See Table 1.

Male: Body almost straight but curved ventral in tail region. Tail filiform, curled in various postures. Head truncate, not offset. Cuticle annulated, annules 2–2,5 μm wide in neck region, 2,5–3 μm in mid-body and 2,5–4 μm on tail. Cuticle thin, 1–2 μm wide. Lateral chord 13–15 μm wide with body setae arranged unevenly in a sublateral row on either side of the chord. Head region 17–19,5 μm wide with

Table 1 Morphometrical data of *Caprionchulus diversipapillatus* n.gen., n.sp.

	Holotype (male)	Paratype (male)	Paratype (male)	Mean and range (Paratypes — female)	Standard deviation
Number of specimens	1	1	1	6	
L (mm)	1,9	1,6	1,5	1,98 (1,80–2,12)	0,13
L' (mm)	1,4	1,4	1,0	1,58 (1,30–1,70)	0,15
a	78,7	63,1	64,6	58 (48,9–70,8)	7,6
a'	60,1	52,5	43,3	46,5 (35–54,3)	6,6
b	5,8	5,3	4,7	5,7 (5,3–6,3)	0,4
b'	4,4	4,4	3,2	4,5 (3,9–5,0)	0,4
c	4,3	5,9	3,0	5,6 (3,6–9,9)	2,2
c'	20,2	10,6	20,0	15,5 (7,8–19,6)	4,2
V				51,2 (47,5–57)	3,5
V'				64,3 (59,6–68)	3,3
Tail length (µm)	444	276	499	391 (195–491)	110
Oesophagus length (µm)	324	313	324	332 (240–363)	47,3
Head width (µm)	18	19,5	17	20,8 (19–21,5)	0,9
Stoma width (µm)	10	11	11,5	12,9 (12–15,5)	1,5
Stoma length (µm)	25	24	23	25,9 (22,5–30)	2,5
Anterior to nerve ring (µm)	76	76	–	87,9 (80–106,5)	9,6
Anterior to amphid aperture (µm)	43	42,5	41	42,3 (41–44)	1,2
Spiculum length (µm)	36	30	34		
Number of supplements	2 + 8	2 + 6	2 + 8		

one whorl of six prominent labial setae (3–4 µm) and a second whorl of six long labial setae (18,5–20 µm) at about 5 µm from the anterior end. The third whorl of four cephalic setae (7–8 µm long) is situated just over halfway between the anterior end and the amphid aperture. Additional setae are sometimes found in the vicinity of the third whorl of cephalic setae. Amphid aperture transverse, slit-like, slightly sunken below the body contour. Stoma well sclerotized, barrel-shaped in lateral view, tapering posteriorly in dorso-ventral view (Figures 1A & F; 2A & G). Dorsal tooth situated in anterior one-third of stoma. Stoma clearly sclerotized in two parts, the anterior part being the widest but occupying only one-third of the total stoma length. Oesophagus cylindrical, stratified, but more prominently so in posterior two-thirds; partially surrounding stoma, reaching further forward on dorsal than on ventral side (Figure 2A & G); part of oesophagus surrounding stoma, very slightly swollen. Nerve ring surrounds oesophagus at about 25% of its length. Cardia prominent, elongated, 27–31 µm × 14–17 µm consisting of three vertical rows of four cells each. A huge gland-like cell present laterally on either side of oesophago-cardiac junction.

Male reproductive system diorchic, outstretched. Spermoduct not muscular, well defined, joining intestine at about 20 µm anterior to cloacal opening. Spermatozoa small, roundish (4–6 µm × 5–6 µm). Six to eight papilloid supplements present, each consisting of four to five small conical projections located within a biggish aperture (Figure 3C–E). The four supplements nearest to the cloacal opening are arranged in two pairs (Figure 1B, 3C). Adanal supplements in the form of a pair of stout setae (Figure 3C & D), 8–10 µm long. Spicules well developed, curved ventrad, prominently cephalated. The proximal part of each spicule seems to be open and attached to a sac-like structure (Figure 1C). Both spicules are covered by a cellular sheath. No

gubernaculum present.

Tail filiform, apparently without spinneret, but with five glandular cells present, arranged in tandem in the anterior portion of the tail.

Female: Description as for male with the following differences: Length of labial setae in second whorl around head, 18–22 µm and that of setae in third whorl, 8,5–10 µm. Cardia 26–33 µm × 17–26 µm. Tail with four or five glandular cells in tandem in region of tail just posterior of anus. Remnants of a small tubule were also observed in the tail of some females (Figure 2B).

Female reproductive system didelphic, amphidelphic. Vulva a transverse, slit-like opening. Vagina short, uterus well developed, usually filled with small roundish sperm cells, 3–4 µm × 2–3 µm. Each branch of reproductive system composed of a reflexed ovary, greatly extensible ovarian sac, very short oviduct, a sphincter and undifferentiated uterus. Uteri of both branches join above vagina. Uterus greatly extended when containing an egg (Figure 2D). The only intra-uterine egg observed measures 138 µm × 29 µm with shell 2–8 µm thick.

Type specimens

Holotype: Male on slide RAU 7186. *Paratypes:* Two males on slide RAU 7185 and six females on slides RAU 7170, RAU 7173 and RAU 7186.

Type locality and habitat

Samples taken from the sandy bottom of a small fresh-water pond about 1 km north of Nakatwa Camp, Mudumu Game Park in the eastern Caprivi, Namibia. Collected by A. Swart and A. Botha on 12 September 1991.

Diagnosis: As for genus.

Remarks

The two prominent gland-like cells surrounding the oesophago-cardiac junction are similar to those found in *Tobriloides* (Loof 1973; Swart & Heyns 1990), *Eutobrilus* (Swart & Heyns 1988) and in a new species of *Onchulus* (Swart & Furstenberg 1993). The significance and taxonomic implications of the presence of these structures are not yet clear.

No caudal glands, tubule or spinneret have so far been found in any members of the Onchulinae. The presence of four to five glandular cells (in tandem) and the remnants of a tubule in the tail of some specimens of the present species, suggest that such a system might have been present in the prototype. However, no indication was found of a spinneret.

Acknowledgements

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