

## Two new and a known species of the family Tripylidae (Nematoda: Enoplida) from the tropics

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**Abstract.** Two new species of the genus *Tripyla* and *Tripylella*, respectively, as well as a known but rare species of the genus *Tripylina* are described and illustrated. *Tripyla pulchella* sp. n. from Papua New Guinea belongs to the smallest members of the genus, and is characterized by the narrowed anterior end, the well developed cephalic setae, the sclerotized vulval lips, the medium long, conical tail and the long terminal spinneret. *Tripylella iucunda* sp. n. from La Réunion is the shortest species within the genus possessing short cephalic setae, discoidal cardia and dorsally abruptly narrowed tail. *Tripylina stramenti* was found in São Tomé and is redescribed for the first time after the original description.

Two new and a known but rare nematode species of the family Tripylidae found in tropical regions of Earth are presented and described. They belong to the genera *Tripyla*, *Tripylella* and *Tripylina*, respectively.

The specimens of the new species were collected in Papua New Guinea and La Réunion, respectively, those of the known species in São Tomé, during three collecting trips of Hungarian zoologists. The samples were fixed *in situ* in 4 % formaldehyde solution, and the nematodes transferred in the lab in anhydrous glycerine by a slow method. The permanent glass slides are preserved in the collection of the author, later they will be deposited at the Zoological Department of Hungarian Natural History Museum, Budapest.

### *Tripyla pulchella* sp. n.

(Fig. 1 a–e)

*Holotype female:* L = 0.71 mm; a = 20; b = 4.6; c = 6.2; c' = 5.0; V = 55 %.

*Paratype females* (n = 2): L = 0.70–0.82 mm;

a = 19–21; b = 4.3–4.7; c = 6.1–6.4; c' = 4.7–5.2; V = 54–59 %.

*General description.* A small and stout nematode, irregularly bent or twisted after fixation; body 36–42 µm wide at mid-region. Cuticle 1.5–2.0 µm thick; finely annulated, annules 1.0–1.5 µm wide; annulations most conspicuous at vulval region and tail. Labial region 18–19 µm wide, narrower than adjacent body. Body at posterior end of oesophagus 2.2–2.5 times as wide as head. Inner labial papillae small. Cephalic setae 6+4, arranged in two separate circles; the six longer setae 5–6 µm, 1/4 to almost 1/3 labial width long, the four smaller setae quite thin, situated nearly one length of a longer seta from the anterior circle. Amphids caliciform, apertures occupying one-sixth to one-fifth of corresponding body diameter.

Mouth opening somewhat dorsally shifted. Dorsal tooth small, lying in a small buccal pouch, and located about one labial width from anterior end. Oesophagus cylindrical, muscular, strongly gathered, 155–175 µm long. Distance between posterior end of oesophagus and vulva 1.5–1.6 times as long as oesophagus. Cardia disc-like. Intestine showing undulated walls and broad lumen.

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Rectum as long as or somewhat shorter than anal body width.

*Female.* Genital system amphidelphic. Vulval lips sclerotized, vagina occupying one-fourth to one-third of corresponding body width. Gonads rather short, each 72–88  $\mu\text{m}$ , occupying 9–12 % of entire length of body. Mature eggs not observed. Vulva–anus distance 1.6–1.9 times as long as tail. The latter 112–130  $\mu\text{m}$  long, 15–16 % of body length, conical, evenly tapered and ventrally curved. Caudal glands three. Spinneret strongly developed, 10–11  $\mu\text{m}$  long, in first half conoid, in second cylindroid.

*Male.* Not observed.

*Differential characters and relationships.* *Tripyla pulchella* sp. n. is characterized by the small and plump body (it is one of the smallest representatives of the genus), the head narrower than neck, the fairly long cephalic setae, the small dorsal tooth, the sclerotized vulval lips, the medium long, conical tail, and by the unusually long terminal spinneret.

The genus *Tripyla* Bastian, 1865 contains 24 valid species (Andrássy, 2007). The present new species can easily be identified among them. There are only two members of the genus which are nearly so small as our species: *T. pygmaea* Micoletzky, 1922 and *T. minuta* (Brzeski, 1963) Brzeski & Winiszewska-Ślipińska, 1993. The new species differs from *T. pygmaea* by the longer body (0.7–0.8 vs 0.4–0.5 mm), the well developed cephalic setae (vs quite small, papilloid), and by the much longer tail (110–130 vs 20  $\mu\text{m}$ , or  $c' = 5$  vs 1). It differs from *T. minuta* by the more developed cephalic setae (5–6 vs 3  $\mu\text{m}$ , or 1/4–1/3 vs 1/6–1/5 labial width), and especially by the shape of the tail which abruptly narrows at mid-region in *T. minuta*.

In its general appearance, *Tripyla pulchella* resembles the common species *T. setifera* Bütschli, 1873, but clearly differs from that by having a shorter body (0.7–0.8 vs 1.0–1.6 mm), separated head, much shorter cephalic setae (5–6 vs 20–25  $\mu\text{m}$ ), shorter vulva–anus distance (1.6–1.9 vs 2.3–

3.0 tail lengths), and by the much more developed terminal spinneret.

*Type specimens.* Holotype female on slide No. 13015. Paratypes: two females. All in the collection of the author.

*Type habitat and locality.* Leaf litter and humus from a secondary rain forest, Masham River, Wau, Papua New Guinea; collected in September 1968 by J. Balogh (Budapest).

*Etymology.* The species epithet *pulchella* (Latin) means: pretty or nice-looking.

### ***Tripylella iucunda* sp. n.**

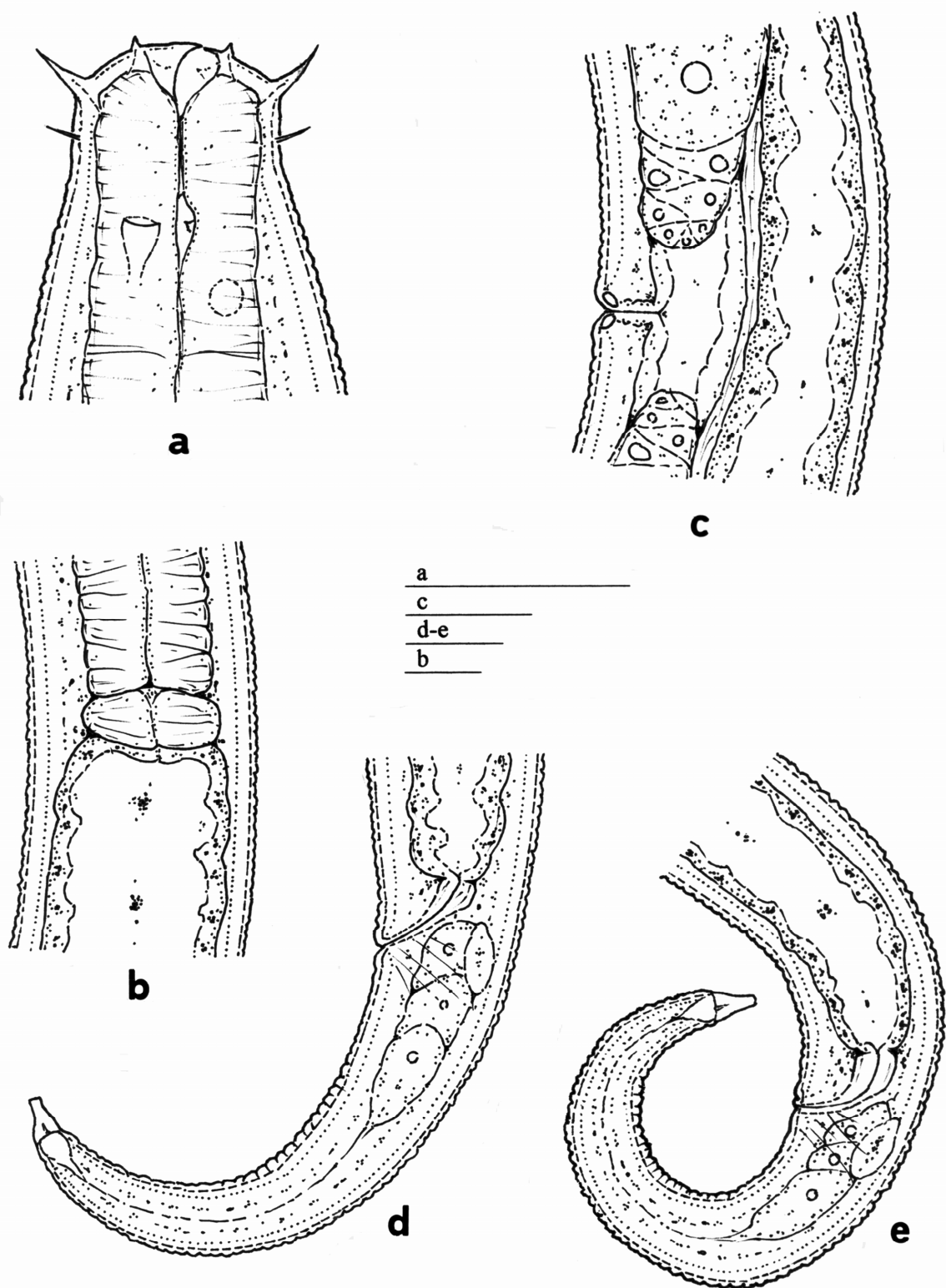
(Fig. 2 a–e)

*Holotype female:* L = 0.73 mm; a = 20; b = 4.6; c = 6.0;  $c' = 4.5$ ; V = 47 %.

*Paratype females* (n = 3): L = 0.68–0.75 mm; a = 20–21; b = 4.5–4.7; c = 6.0–6.5;  $c' = 4.2$ –4.6; V = 47–49 %.

*General description.* Body small and plump, curved upon fixation, 35–38  $\mu\text{m}$  wide at mid-region. Cuticle smooth and very thin, only 1  $\mu\text{m}$  thick. Labial region rounded, 15–16  $\mu\text{m}$  wide, slightly narrower than adjacent region. Body at posterior end of oesophagus 2.0–2.2 times wider than head. Inner labial papillae fine, setose. Cephalic setae 6+4, arranged in one circle; the six setae 2.0–2.5  $\mu\text{m}$  long, about 1/8–1/6 of labial diameter, the four setae very small and thin. Amphids caliciform, levelling with dorsal tooth, their aperture 1/5 of corresponding body diameter.

Dorsal tooth sharp, lying in a buccal chamber at one labial width from anterior body end. Oesophagus cylindrical, well folded, 150–158  $\mu\text{m}$  long, or 21–22 % of entire length of body. Distance between posterior end of oesophagus and vulva 1.1–1.2 times as long as oesophagus. Cardia discoidal, 17–20 $\times$ 9–12  $\mu\text{m}$ . Intestine thick-walled,



**Figure 1.** *Tripyla pulchella* sp. n. a: anterior end; b: cardiac region; c: vulval region; d–e: female tail. (Scale bars 20  $\mu$ m each)

strongly wrinkled, rectum thick, nearly as long as anal body width.

*Female.* Genital organ amphidelphic. Vulval lips sclerotized, heart-shaped, vagina short, occupying 1/4 to 1/3 of body width. Gonads rather short, each 50–80  $\mu\text{m}$  long, or 7–11 % of body length, containing few oocytes. Uterine egg not observed. Vulva–anus distance equal to 2.1–2.3 tail lengths. Tail 105–120  $\mu\text{m}$  long, occupying 15–17 % of body length, ventrally bent, in anterior half thick, hardly narrowed, then strongly tapered dorsally and becoming nearly cylindrical. Caudal glands three, well developed. Terminal spinneret short, 2.5–3.0  $\mu\text{m}$ .

*Male.* Not found.

*Differential characters and relationships.* This new species is a small and stout representative of the genus. In addition to its size and shape it is characterized by the short cephalic setae, the anteriorly directed buccal tooth, the discoidal cardia, and especially by the shape of the tail.

The genus *Tripylella* Brzeski & Winiszewska-Ślipińska, 1993 has three species. They are *T. intermedia* (Bütschli, 1873) Brzeski & Winiszewska-Ślipińska, 1993, *T. maiuscula* Andrásy, 2006 and *T. minuscula* Andrásy, 2006. The new species at once differs from the two latter by the shape of the tail (abruptly narrowed before middle vs evenly tapered). It can be differentiated furthermore from *T. maiuscula* by the shorter body (0.7 vs 1.1–1.4 mm), the much shorter cephalic setae (2.0–2.5 vs 7–9  $\mu\text{m}$ ) and the discoidal cardia (vs spherical). Finally, *T. iucunda* can be distinguished from *T. intermedia* by the somewhat shorter body (0.7 vs 0.9–1.0 mm), the narrower head (15–16 vs 18–20  $\mu\text{m}$  wide), the more strongly developed cephalic setae (vs very small, papilliform), as well as by the shape of the tail (thicker in anterior third vs in more than half its length).

*Type specimens.* Holotype female on slide No. 14867. Paratypes: three females. All in the collection of the author.

*Type habitat and locality.* Fallen leaves and humus from a moss forest, Forêt de Bébour, La Réunion (Indian Ocean); collected in June 2000 by L. Hufnagel (Budapest).

*Etymology.* The species name *iucunda* (Latin) means: nice or charming.

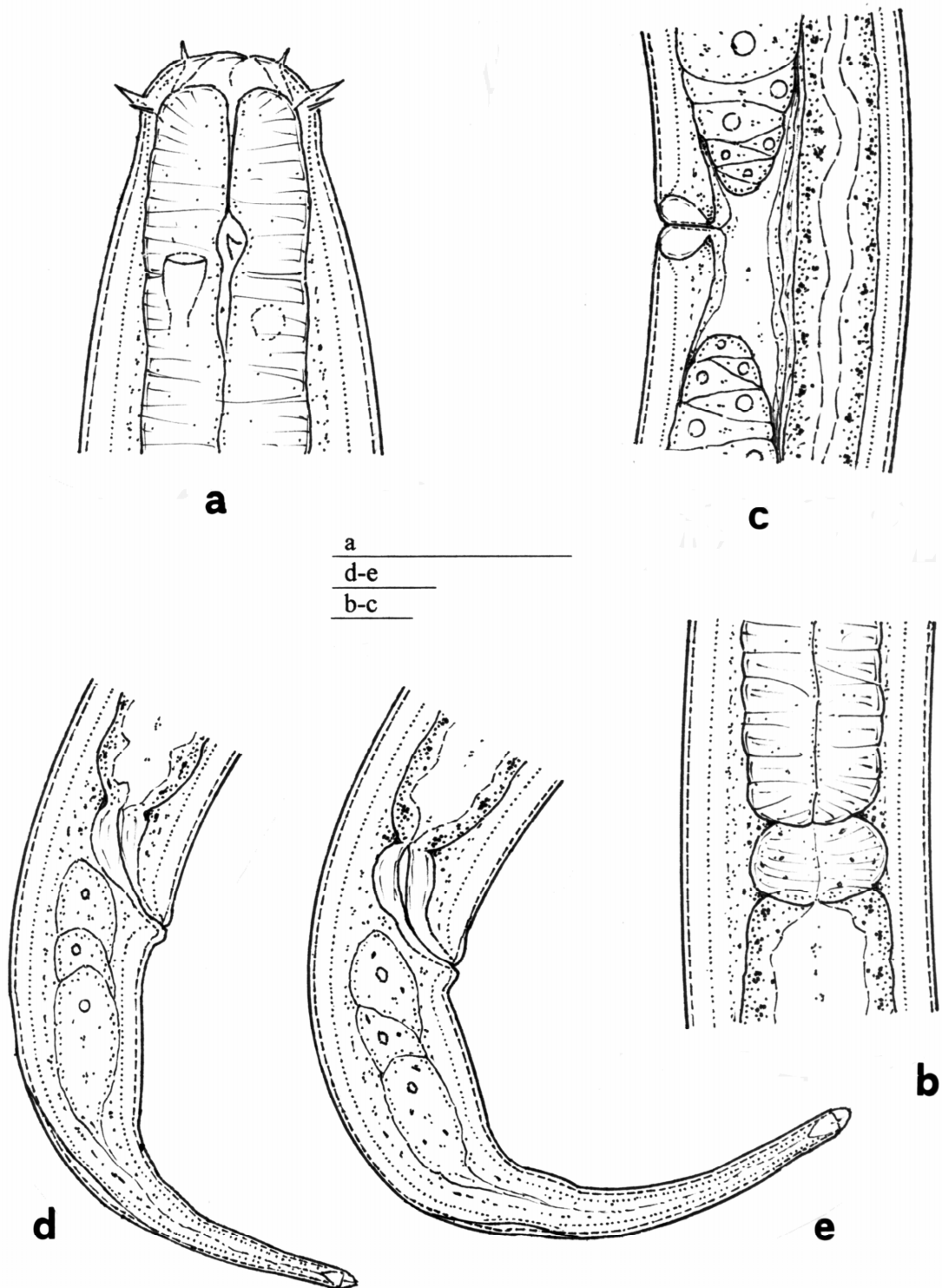
***Tripylina stramenti* (Yeates, 1971) Tsalolikhin, 1983**

(Fig. 3 a–f)

*Females* (n = 7): L = 1.53–1.60 mm; a = 30–36; b = 5.7–6.2; c = 13.0–16.8; c' = 3.3–3.5; V = 62–64 %.

*General description.* Body relatively large, moderately slender, 44–51  $\mu\text{m}$  wide at mid-region, C- or G-shaped upon fixation, more strongly curved in posterior half. Cuticle thin, 1.5–2.0  $\mu\text{m}$ , smooth. Labial region rounded, not separated from neck, 26–28  $\mu\text{m}$  wide. Body at posterior end of oesophagus 1.4–1.5 times as wide as head. Inner labial papillae setose. Cephalic setae 6+4, arranged in a whorl; the six setae 13–15  $\mu\text{m}$  long, about half the labial diameter, the four setae 6–8  $\mu\text{m}$  long. Amphids one head width from anterior end with apertures occupying 1/5 of corresponding body width.

Dorsal tooth small, located at less than one head diameter from anterior end, subventral denticles minute. Oesophagus cylindrical, somewhat widened at buccal region, strongly striated, 258–268  $\mu\text{m}$  long, or 16–17 % of body length. Distance between posterior end of oesophagus and vulva 2.5–2.8 times as long as oesophagus. Two thin ventral setae present in the neck region; the anterior 97–110  $\mu\text{m}$  from body end, or at 36–40 % of oesophagus length, the posterior 294–316  $\mu\text{m}$  from anterior end, or at 60–68 % of oesophagus length. Cardia lobe-like, often wider than intestine. Intestine with broad lumen. Rectum nearly equal to anal body diameter.



**Figure 2.** *Tripylella iucunda* sp. n. a: anterior end; b: cardiac region; c: vulval region; d–e: female tail. (Scale bars 20 μm each)

*Female.* Genital organ prodelphic, without posterior uterine sac. Vulva slightly sclerotized, vagina very short, hardly 1/5 of corresponding body width. Gonad 294–312 µm long, occupying 19–20 % of body length. Ovary reflexed to near vulva. Uterine egg one at a time, 132–138×46–48 µm, about three times the body width long. Vulva–anus distance equal to 3.9–4.8 tail lengths. Tail 96–120 µm long, or 6.2–7.6 % of entire length of body, evenly tapered, S-shaped, first ventrally then dorsally curved, usually showing a break. Caudal glands three, large. Terminal spinneret short and thin

*Remarks.* Yeates described this species from New Zealand under the name *Trischistoma stramenti* Yeates, 1971. Tsalolikhin (1983) transferred it to the genus *Tripylina* which was then accepted by Brzeski and Winiszewska-Ślipińska (1993), Zullini (2006) and Andrássy (2007). *Tripylina stramenti* is a rare tripylid species, reported now for the first time since its description.

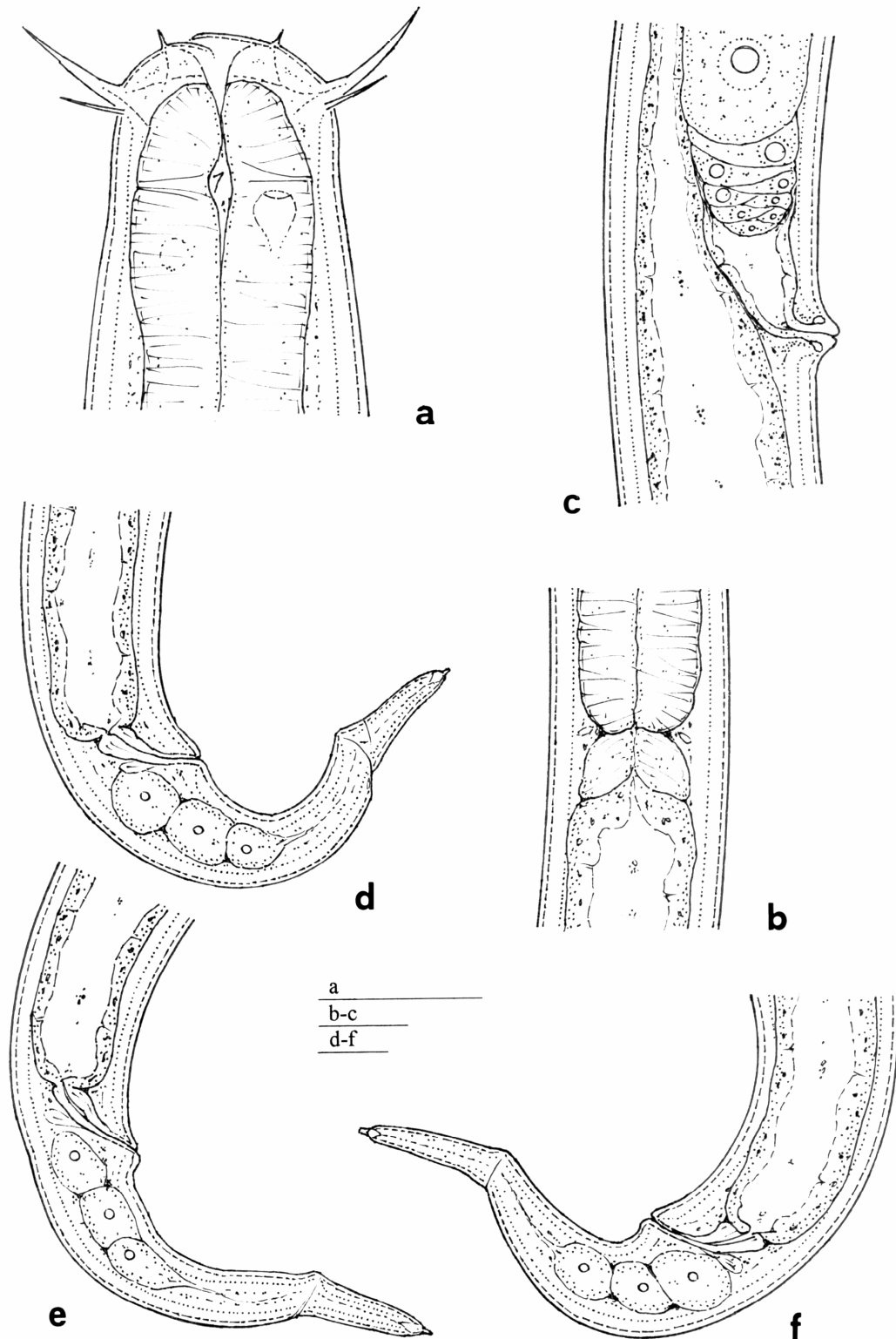
The present specimens (13 females and 1 juvenile) correspond well to the description by Yeates, with the only exception that the six cephalic setae are longer than originally measured (13–15 vs 10 µm). This small difference may be regarded as an intraspecific variation, particularly if we take the great geographical distance between the two localities (New Zealand and western Africa) into consideration.

The genus *Tripylina* Brzeski, 1963 consists of six species (Andrássy, 2007). Four of them have a lesser size, 0.8 to 1.3 mm, so that *T. stramenti* (1.5–1.7 mm) is easily differentiated from them. Concerning the body length, Yeates' species is close to *Tripylina longa* Brzeski & Winiszewska-Ślipińska, 1993, but the more anterior position of the vulva (60–64 vs 76–80 %) well distinguishes it from the related species.

*Habitat and locality.* Moss from rock, Lago Amelia, São Tomé and Príncipe, West Africa; collected in August 2000 by L. Hufnagel (Budapest).

## REFERENCES

- ANDRÁSSY, I. (2006): Three new species of the family Tripylidae (Penetrantia: Enoplida). *International Journal of Nematology*, 16: 208–216.
- ANDRÁSSY, I. (2007): *Free-living nematodes of Hungary (Nematoda errantia), II.* In: Csuzdi, Cs. & Mahunka, S. (eds.): *Pedozoologica Hungarica*, 4, 496 pp.
- BASTIAN, H. C. (1865): Monograph on the Anguillulidae or free nematoids, marine, land, and freshwater, with descriptions of 100 new species. *Transactions of the Linnaean Society of London*, 25: 73–184.
- BRZESKI, M. W. (1963): Nematode genera of the family Tripylidae (Nematoda: Enoplida). *Acta Zoologica Cracoviensia*, 8: 295–308.
- BRZESKI, M. W. & WINISZEWSKA-ŚLIPIŃSKA, G. (1993): Taxonomy of Tripylidae (Nematoda: Enoplida). *Nematologica*, 39: 12–52.
- BÜTSCHLI, O. (1873): Beiträge zur Kenntnis der freilebenden Nematoden. *Nova Acta Academiae Caesareae Leopoldino-Carolinae Germanicae Naturae Curiosorum*, 36: 1–144.
- MICOLETZKY, H. (1922): Die freilebenden Erd-Nematoden, mit besonderer Berücksichtigung der Steiermark und der Bukowina, zugleich mit einer Revision sämtlicher, nichtmariner, freilebender Nematoden in Form von Genus-Beschreibungen und Bestimmungsschlüsseln. *Archiv für Naturgeschichte*, 87 A: 1–650.
- TSALOLIKHIN, S. Y. (1983): *Nematodes of the families Tobrilidae and Tripylidae of the world fauna.* (In Russian.) Leningrad, 232 pp.
- YEATES, G. W. (1971): *Trischistoma stramenti* n. sp. (Nematoda: Enoplida) from leaf litter. *New Zealand Journal of Sciences*, 14: 897–900.
- ZULLINI, A. (2006): Order Triplonchida. In: *Eyualem-Abebe, Andrássy, I. & Traunspurger, W. (eds): Freshwater nematodes: ecology and taxonomy.* CABI Publishing, Wallingford, spec. p. 293–325.



**Figure 3.** *Tripylina stramenti* (Yeates, 1971) Tsalolikhin, 1983. a: anterior end; b: cardial region; c: vulval region; d–f: female tail. (Scale bars 20  $\mu\text{m}$  each)

