

***Paratrophurus acristylus* sp. n. and
Tylenchorhynchus graciliformis sp. n. (Nematoda: Tylenchida)
from Wheat Fields in Libya**

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ABSTRACT: *Paratrophurus acristylus* sp. n. and *Tylenchorhynchus graciliformis* sp. n. are described from wheat fields in Libya. *Paratrophurus acristylus* has a slender (18–21- μ m-long) spear with small basal knobs 2.5–3.2 μ m across, a subclavate female tail with terminal 21–28% hyaline, a postanal intestinal sac filling about three-quarters of tail cavity, and 22.5–23- μ m-long spicules. *Tylenchorhynchus graciliformis* is slender ($a = 40$ –49 in females, 45–52 in males) and has a knoblike lip region with 5–6 distinct annules, a 17–18.5- μ m-long spear with large basal knobs 4.5–5 μ m across, female tail with 16–20 annules, and spicules 19–21 μ m long.

During a 1980–1981 survey of Libyan wheat fields for plant-parasitic nematodes made by one of us (Z.A.S.), two new species belonging to the family Dolichodoridae were found. These are described here as *Paratrophurus acristylus* sp. n. and *Tylenchorhynchus graciliformis* sp. n. The nematodes were heat-killed, fixed in a 3% solution of formaldehyde, and mounted in dehydrated glycerine after processing them through warm lactophenol. All the measurements were taken from glycerine-mounted specimens.

***Paratrophurus acristylus* sp. n.
(Fig. 1A-E)**

MEASUREMENTS: Holotype ♀: L = 0.69 mm; $a = 33$; $b = 5.6$; $c = 18$; $c' = 2.5$; V = 58; spear 20 μ m. Paratypes: 6 ♀: L = 0.58–0.73 (0.65) mm; $a = 31$ –38 (34); $b = 4.9$ –5.7 (5.3); $c = 17$ –20 (18.5); $c' = 2.2$ –2.8 (2.5); V = 55–59 (57); spear 18–21 (20) μ m. 2 ♂: L = 0.64–0.72 mm; $a = 39$ –40; $b = 5.7$ –5.9; $c = 18$ –19; $c' = 2.6$ –2.7; T = 50–52; spear 18–21 μ m; spicules 22.5–23 μ m; gubernaculum 11–12 μ m.

DESCRIPTION: FEMALE: Body arcuate, cuticle thick with fine transverse striae averaging 1.2 μ m apart, abnormally thickened (8–12 μ m) on tail tip. Lateral fields with 4 smooth, equidistant incisures, $\frac{2}{5}$ – $\frac{1}{3}$ body width. Lip region continuous, anteriorly conoid rounded; framework lightly sclerotized. Spear extremely slender, sharply pointed (hence the species name); conus 52–57% (54%) of spear length; knobs minutely rounded, 2.5–3.2 μ m across. Orifice of dorsal esophageal gland 2.5–3.5 μ m behind spear base. Median esophageal bulb rounded, 11.5–12.5 μ m \times 9–10 μ m, with distinct valve plates. Basal bulb small 12–17 μ m \times 7–10 μ m, with base offset or slightly extending over intestine. Esophago-intestinal valve large, rounded. Distance from anterior end of body to center of median bulb 60–68 (65) μ m or 53–54% of esophageal length. Excretory pore 2–3 annules behind hemizonid, 90–110 (102) μ m from anterior end. Vulva transverse. Vagina about $\frac{1}{2}$ body width long. Both branches of reproductive organs well developed, symmetrical, outstretched. Spermatheca with sperm in most females. Ovaries with oocytes in a row. Rectum about $\frac{1}{2}$ anal body width long. Postanal intestinal sac 17–23 μ m long, extending into tail cavity for about $\frac{3}{4}$ of its length or 50–62%

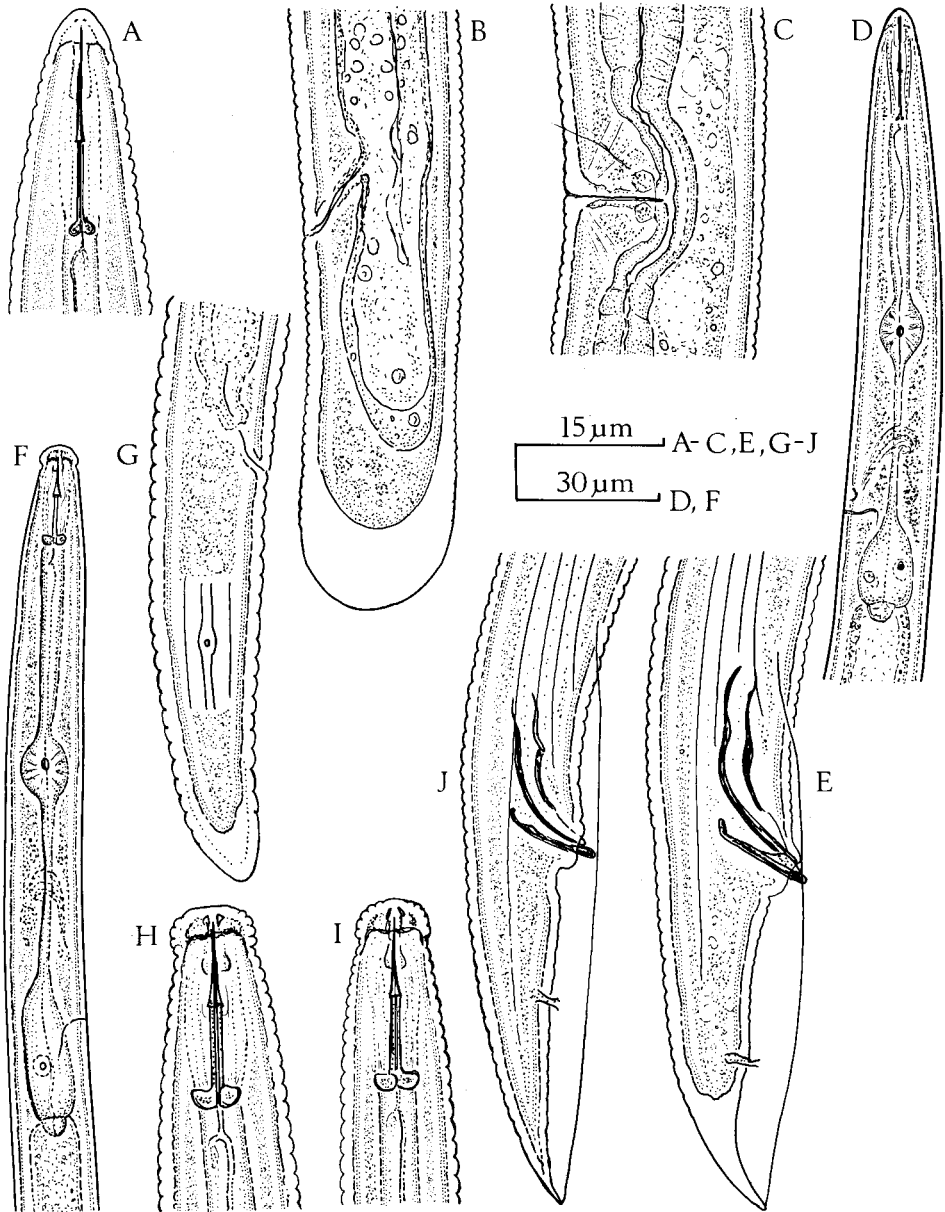


Figure 1. A-E. *Paratrophurus acristylus* sp. n. F-J. *Tylenchorhynchus graciliformis* sp. n. A and H. Head ends, female. B and G. Tail ends, female. C. Vulval region. D and F. Esophageal regions, female. E and J. Tail ends, male. I. Head end, male.

(54%) of tail length. Tail cylindroid at first, then slightly subclavate terminally where annules are indistinct; hyaline portion 21–28% of tail length; phasmids at about middle of tail.

MALE: Body C-shaped. Lip region, spear, and esophagus as in female. Testis outstretched. Spicules arcuate, prominently flanged distally. Gubernaculum large,

protrusible, with proximal end directed forward. Bursa enveloping tail, with smooth margins. Phasmids at middle of tail, extending into bursa.

TYPE HOST AND LOCALITY: Wheat (*Triticum aestivum* L.), Al'Azizia, Libya.

TYPE SPECIMENS: Holotype ♀ and 4 ♀ paratypes at C.I.P., St. Albans, England; 2 ♀ paratypes each at USDA Nematode Collection, Beltsville, Maryland, and Indian Agricultural Research Institute, New Delhi, India.

RELATIONSHIP: *Paratrophurus acristylus* sp. n. differs from *P. loofi* Arias, 1970 in having a more slender spear, a longer postanal intestinal sac, and shorter spicules (intestinal sac very slightly or not extending into tail cavity, spicules 26–27 µm long in *P. loofi*). It can be differentiated from *P. kenanae* Decker and El-Amin, 1978 by its slender spear having smaller basal knobs (4.5–5 µm across in latter), smaller hyaline portion of tail (12–16 µm long in latter), and a well-developed postanal intestinal sac.

Tylenchorhynchus graciliformis sp. n.

(Fig. 1F–J)

MEASUREMENTS: Holotype ♀: L = 0.8 mm; a = 47; b = 5.7; c = 19; c' = 3.6; V = 22–57–19; spear 18 µm. Paratypes: 15 ♀: L = 0.67–0.83 (0.78) mm; a = 40–49 (45); b = 5.7–6.8 (6); c = 18–25 (20); c' = 2.3–3.7 (3); V = 53–60 (57); spear 17–18.5 (18) µm. 6 ♂: L = 0.68–0.78 (0.72) mm; a = 45–52 (50); b = 4.8–6.1 (5.3); c = 20–22 (21); c' = 2.6–3.1 (2.8); T = 40–56 (46); spear 16.5–18 (17.5) µm; spicules 19–21 (20) µm; gubernaculum 10–12 (11) µm.

DESCRIPTION: FEMALE: Body very slender (hence the species name), slightly arcuate; maximum width 15–18 µm. Cuticle coarsely annulated, annules averaging 2.1 µm wide near midbody. Lateral fields wide, about 1/3 body width, with 4 equally spaced incisures, not areolated; lip region offset knoblike, with 5 or 6 (usually 5) distinct annules, 1/3 as high as wide, framework lightly sclerotized, with basal plate conspicuously pushed into lip region cavity (Fig. 1H). Spear robust, with conus 7.5–8.5 µm, or less than 1/2 its length, and large basal knobs 4.5–5 µm across and having flattened to concave anterior surfaces. Orifice of dorsal esophageal gland 3–3.5 µm behind spear base. Excretory pore 104–122 (112) µm from anterior end, 1–3 annules behind hemizonid. Median esophageal bulb strongly muscular, 12–15 µm × 9–10 µm, at 44–48% of esophagus. Basal bulb elongate-saccate, 26–33 µm × 10–12 µm; esophago-intestinal valve large, rounded. Vulva transverse. Vagina about 1/2 body width long. Spermatheca spherical to elongate oval, with sperm in fertilized females. Ovaries outstretched with oocytes in a row. Rectum about anal body width long. Tail elongate-conoid to subcylindrical, with a smoothly rounded tip and 16–20 (18) annules ventrally. Phasmids near or just anterior to middle of tail.

MALE: Body straight to arcuate. Cuticle, lip region, spear and esophagus as described for female. Spicules cephalated, ventrally arcuate, with large distal flanges. Gubernaculum protrusible, with proximal end directed anteriorly. Bursa enveloping tail.

TYPE HOST AND LOCALITY: Wheat (*Triticum aestivum*), Tarhunah, Libya. Also collected around wheat roots in Abu Ayesha and Abu Shoeb, Libya.

TYPE SPECIMENS: Holotype ♀ and 11 ♀, 4 ♂ paratypes at C.I.P., St. Albans, England; 2 ♀, 1 ♂ paratypes each at USDA Nematode Collection, Beltsville, Maryland, and Indian Agricultural Research Institute, New Delhi, India.

RELATIONSHIP: *Tylenchorhynchus graciliformis* sp. n. comes close to *T. cylindricus* Cobb, 1913, but differs in having a smaller body, spear, and spicules, the basal plate of the labial framework conspicuously pushed into the lip region cavity, and the larger spear knobs with flattened to concave anterior surfaces. According to the redescription by Lewis and Golden (1981), *T. cylindricus* has ♀ L = 0.721–1.179 (1.009) μm ; ♀ spear 25.1–29.5 (27.4) μm long with rounded knobs sloping posteriorly; and spicules 27.7–32.7 (29.8) μm long. This new species also resembles *T. aduncus* de Guiran, 1967, *T. latus* Allen, 1955, and *T. brassicae* Siddiqi, 1961, but differs from them in having a slender body, lip region one-third as high as wide and a robust spear with large knobs 4.5–5 μm across.

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