

TWO NEW NEMATODE SPECIES OF THE GENUS *XIPHINEMA*  
(NEMATODA, LONGIDORIDAE) FROM THE NORTHERN CAUCASUS

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In the foothills of the northern Caucasus on the banks of the rivers Argudan and Cherek (Kabardino-Balkarskaya ASSR), two new species of nematode from the family Longidoridae have been discovered. Specimens from which measurements and drawings were made were fixed in a solution of hot triammonium phosphate, and mounted in glycerine. The holotype and several paratypes are kept at the Helminthological Museum of the All-Union Institute of Helminthology, and paratypes are in the museum of the Helminthology Laboratory of the AN USSR (Moscow).

*Xiphinema artemisiae* Chizhov, Tiev & Turkina, sp.n.  
(Fig. 1)

Type specimens. Holotype ♀; L = 4.96 mm; a = 63.3; b = 10.2; c = 95.0; c' = 1.0; V = 45%; stylet 210 μm (123±87); width of body 75 μm; length of tail 52 μm; anal body diameter, 52 μm.

Paratypes, 14♀♀: L = 4.42-5.12 (4.74) mm; a = 62.9-79.0 (70.8); b = 7.3 -11.7 (9.7); c = 95.0-132.7 (110.5); c' = 0.8-1.1 (1.0); V = 45-51 (48)%; stylet = 202-215 (123-131 + 76-94) μm; width of body, 58-78 (67) μm; length of tail 40-52 (46) μm; anal body diameter, 40-52 (46) μm.

10 ♂♂: L = 3.96-4.64 (4.19) mm; a = 61.5-83.8 (72.4); b = 7.4-9.1 (8.3); c = 76.8-113.8 (93.2); c' = 0.9-1.1 (1.0); T = 54-67%; stylet = 191-211 (112-131 + 71-89) μm; spicules = 64-75 (70) μm; lateral guiding pieces = 14 -16 (15) μm; greatest body width = 49-75 (59) μm; tail length, 35-55 (44) μm; anal body diameter = 37-49 (45) μm.

Juvenile IV stage: (n = 6): L = 2.89-4.03 (3.44) mm; a = 65.3-70.3 (67.4); b = 6.6-9.8 (7.7); c = 58.7-78.8 (69.1); c' = 1.1-1.4 (1.2); stylet = 162 -171 (168) μm; odontostyle, 94-103 (99) μm.

The type locality is a meadow pasture on the upper reaches of the river Cherek, Soviet area Kabardino-Balkarskaya ASSR.

The host plant is the wormwood of the plain (*Artemisia campestris*).

Description: Female and male body usually in C-shape, occasionally curved ventrally, curving more pronounced in the posterior half of the body. Labial area 14 -19 μm wide, more or less flat and separated from the body by a shallow constriction, with the amphidial openings in the shape of an inverted stirrup. Cuticle thickness in the middle part of the body 3.0-3.5 μm. Width of the lateral chord 10-15 μm broadening towards the tail. Nerve ring 225-240 μm from the anterior end. Hemizonid and hemizonion inconspicuous. Stylet guiding sheath located 105-130 μm from the anterior end. Oesophagus 400-600 (490) μm long. Oesophageal bulb 100-130 x 22-32 μm. Nuclei of the dorsal glands in the oesophagus located in the anterior end of the oesophageal bulb. Length of prerectum 320-600 μm, and rectum 32-43 μm.

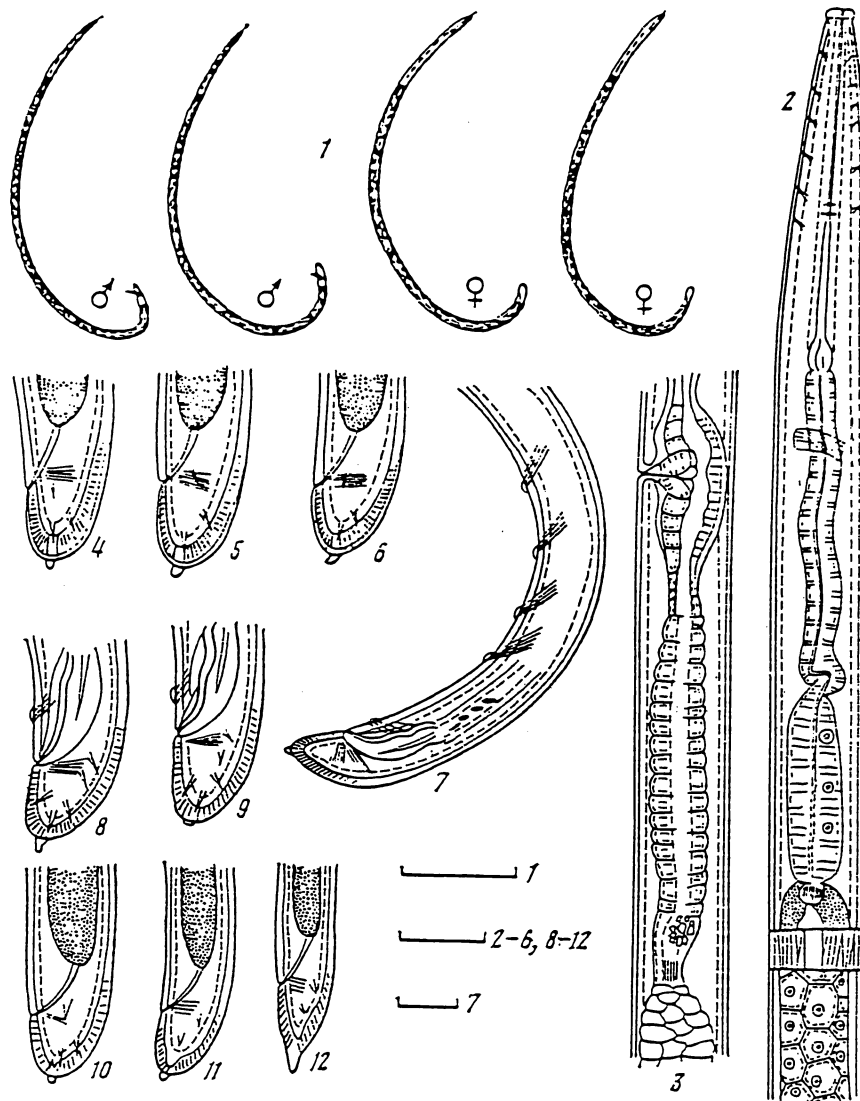


Fig. 1. *Xiphinema artemisiae* sp.n.: 1: habitus; 2: anterior end; 3: female reproductive system; 4-6: female tails; 7: male posterior end; 8-9: male tails; 10-12: juvenile tails (J2, J3, J4). Scale (in  $\mu\text{m}$ ): 1: 1200; 2-12: 50.

Female: Two symmetrical reproductive tracts anterior and posterior to the vulva with the anterior 600-750  $\mu\text{m}$  and posterior 500-750  $\mu\text{m}$  in length. The nuclei of the oocytes 8-10  $\mu\text{m}$  in diameter. The ovary is connected by a narrow oviduct, distended where it joins the uterus. The uterus is separated from the oviduct by a sphincter and is differentiated. Its expanded uterine section is connected by a constriction with a much narrower section, the length of which is 170-256  $\mu\text{m}$ . The expanded section of the uterus is often filled with spermatozoons. At the start of the narrow part of the uterus is the pseudo-organ 'Z', consisting of 4-10 inclusions that are strongly refractive to light, 3-10  $\mu\text{m}$  in diameter and arranged in a compact group.

The tail is conical, with a short (3-9  $\mu\text{m}$  in length) finger-shaped mucro occasionally displaced to the ventral side but which does not serve as an extension of the hyaline part of the tail. Sometimes it is seen in the shape of a protuberance. The thickness of the hyaline part of the tail from the dorsal side is 9-14  $\mu\text{m}$ . The tail contains 3 pairs of caudal papillae.

Male: Spicules crescent shaped, 20-24  $\mu\text{m}$  wide; lateral guiding piece curves slightly. Supplements: 4-5 plus an adanal pair and at this level the body cuticle is thickened ventrally. Spermatozoons have a long oval shape, 8-9 x 3-4  $\mu\text{m}$ . Tail conical with a finger-shaped mucro somewhat shorter than the female's. 3-5 pairs of caudal papillae present on the tail.

Differential diagnosis: The species resembling *X. artemisiae* n.sp. are *X. diversicaudatum* (Micoletzky, 1927) Thorne, 1939; *X. ingens* Luc & Dalmaso, 1943, *X. vuittenezi* Luc, Lima, Weischer & Flegg, 1964, and *X. phoenicis* Loof, 1982. It differs from *X. diversicaudatum* by having a short finger-shaped mucro terminally situated and separated from the contour of the tail, also in the shape and compact arrangement of the pseudo-organ 'Z' (in *X. diversicaudatum* the mucro is longer, displaced on the ventral side and serves as an extension of the hyaline section of the tail, also the pseudo-organ 'Z' consists of more transparent and diffusely arranged apophyses). It differs from *X. ingens* in its narrower tail with mucro (in *X. ingens*  $c' = 0.7-0.9$ ), shorter stylet (in *X. ingens* 225-277  $\mu\text{m}$ ) and smaller spicules and lateral guiding pieces (in *X. ingens* 90-100 and 25  $\mu\text{m}$  respectively). It differs from *X. vuittenezi* by having a longer body (in *X. vuittenezi* 2.6-3.8 mm) and the presence of a pseudo-organ 'Z'. It differs from *X. phoenicis* by having a smaller ratio 'a' (in *X. phoenicis*  $a = 92-126$ ), longer spicules (in *X. phoenicis* 48-66  $\mu\text{m}$ ), also in the shape of the tail and mucro (in *X. phoenicis* the mucro is displaced on the ventral side and serves as an extension to the hyaline section of the tail).

*Xiphinema aceri* Chizhov, Tiev & Turkina, sp.n.  
(Fig. 2)

Material: Holotype ♀; L = 3.72 mm; a = 75.5; b = 7.5; c = 91.7;  $c' = 1.2$ ; V = 49%; stylet = 201 (129 + 72)  $\mu\text{m}$ ; tail = 40  $\mu\text{m}$ . Paratypes, 9 ♀♀; L = 3.59-4.15 (3.78) mm; a = 65.1-81.7 (70.6); b = 6.7-9.8 (8.1); c = 91.7-110.3 (100.6);  $c' = 0.9-1.2$  (1.0); V = 48-50 (49)%; stylet = 195-210 (118-135 + 72-81)  $\mu\text{m}$ ; greatest body width 47-61 (54)  $\mu\text{m}$ ; tail = 35-42 (38)  $\mu\text{m}$ ; anal body diameter = 34-41 (36)  $\mu\text{m}$ . Eggs in the uterus: 240-256 x 40-47  $\mu\text{m}$ .

Males were not found.

The type locality is water meadows on the river Argudan in the area of broad-leaved deciduous trees (Urvan region of Kabardino-Balkarskaya ASSR). The nematode is found in the rhizosphere of field maple (*Acer campestre*).

Description: Female body C-shaped. Labial area flattened and separated from the body by a shallow constriction. Width of labial area 13-14  $\mu\text{m}$ . Tail short, conical, with 3 pairs of caudal papillae but without mucro. Hyaline section of the tail 8-10  $\mu\text{m}$  thick. Cuticle at mid-body 3-4  $\mu\text{m}$  thick. Lateral

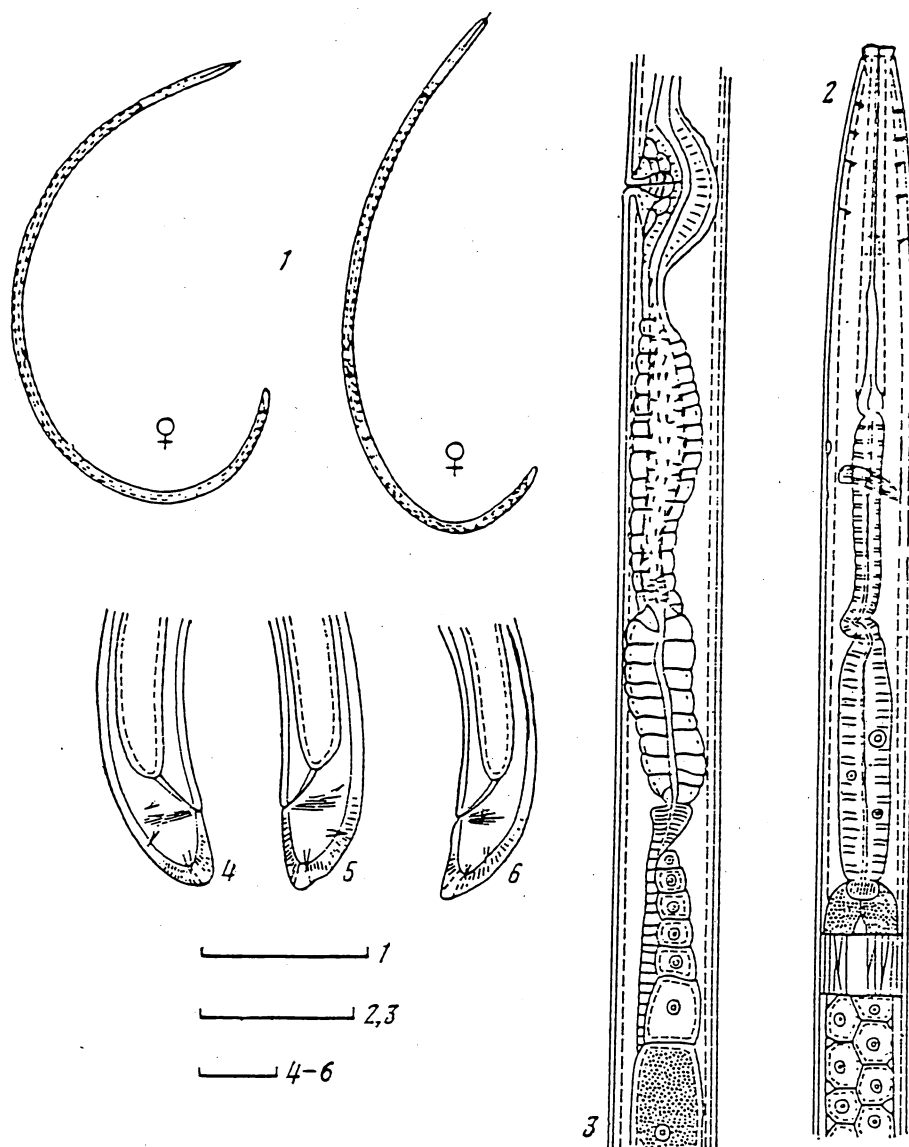


Fig. 2. *Xiphinema aceris* sp.n.: 1: habitus; 2: anterior end; 3: female reproductive system; 4-5: female tails; 6: IV stage juvenile tail. Scale ( $\mu\text{m}$ ): 1: 1000; 2 & 3: 100; 4-6: 40.

chord 6-9  $\mu\text{m}$  wide. Amphids in the shape of an inverted stirrup. Nerve ring 11-13  $\mu\text{m}$  wide, 225-250  $\mu\text{m}$  from the anterior end or 15-20  $\mu\text{m}$  posterior to the base of the odontophore. Hemizonid 6-7  $\mu\text{m}$  long and 190-220  $\mu\text{m}$  from the anterior end, hemizonion 3.5-4.0  $\mu\text{m}$  long, 25-35  $\mu\text{m}$  behind the hemizonid. Guide sheath 100-125  $\mu\text{m}$  from the anterior end. Basal thickenings of the odontophore 11-13  $\mu\text{m}$  wide. Oesophagus 376-534 (470)  $\mu\text{m}$  long, with the oesophageal bulb 115-136 x 20-26  $\mu\text{m}$ . Oesophageal dorsal gland nuclei situated in the anterior half of the oesophageal bulb. Intestine with 8 rows of cells. Prerectum 330-550  $\mu\text{m}$  long, rectum 31-38  $\mu\text{m}$  long.

Two reproductive tracts, symmetrical, with the anterior tract 340-630  $\mu\text{m}$  in length, posterior 480-590  $\mu\text{m}$ . Ovary connected to a thin section of the

oviduct, that broadens slightly, and separated from the uterus by a sphincter. The uterus is differentiated with a broader section, 60-85 x 29-42  $\mu\text{m}$ , immediately following a narrower section 140-175 x 15-23  $\mu\text{m}$ . Within this narrow section are 5-6 rows of spines, 3-5  $\mu\text{m}$  in length with the frequency of the arrangement of the spines increasing nearest to the broadest section of the uterus. Organ or pseudo-organ 'Z' absent.

Differential diagnosis. The species most resembling *X. aceri* n.sp. are *X. neovuittenezi* Dalmasso, 1969 and *X. pyrenaicum* Dalmasso, 1969, but it differs from *X. neovuittenezi* by having a longer body and a larger value for ratio 'a' (in *X. neovuittenezi*  $L = 2.55-3.16$  mm,  $a = 44-54$ ). It differs from *X. pyrenaicum* by having a broadened section of the oviduct and spines present in the narrow section of the uterus (in *X. pyrenaicum* spines are absent).

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#### English Summary

Two new species of nematodes from the family Longidoridae were found in the piedmont zone of the North Caucasus. *Xiphinema artemisiae* sp.n. differs from the related species (*X. diversicaudatum*, *X. ingens*, *X. phoenicis* and *X. vuittenezi*) by body size, by shape of the tail and the digitate terminus, as well as by shape and localization of the pseudo-organ 'Z'. *Artemisia campestris* is its plant-host. *Xiphinema aceri* sp.n. differs from the related species (*X. neovuittenezi* and *X. pyrenaicum*) by body size and by presence of spines in the narrow part of the oviduct. *Acer campestre* is its plant-host.