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Dintheria tenuissima DE MAN, 1921 and *Stenonchulus troglodytes* SCHNEIDER, 1940
(Nematoda: Bastianiidae and Onchulidae) – two nematode species new for the
fauna of Ukraine and Poland

Abstract: The paper gives new data on the occurrence of *Dintheria tenuissima* DE MAN, 1921 and *Stenonchulus troglodytes* SCHNEIDER, 1940 in Europe. These two rare species are described and illustrated on the basis of material collected in Poland and Ukraine.

Key words: Nematoda, *Dintheria tenuissima*, *Stenonchulus troglodytes*, Poland, Ukraine

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INTRODUCTION

Two rare species, viz: *Dintheria tenuissima* DE MAN, 1921 and *Stenonchulus troglodytes* SCHNEIDER, 1940 were found in soil samples collected from Poland and Ukraine. This is a first record of these species in both countries.

In 1921 DE MAN erected the monotypic genus *Dintheria*. Description of the type species *Dintheria tenuissima* was based on a single male recovered from soil about the roots of *Primula* sp. collected near village Dinther in The Netherlands. The only second record of this species was published by EROSHENKO (1977), who found and described two females of this remarkable genus.

Stenonchulus troglodytes, the type and single species of the genus, was originally described on the basis of a single female from the cave "Krška jama" in Slovenia (SCHNEIDER 1940). It was subsequently reported from Italy (ANDRÁSSY 1962, 1964, 1971, ZULLINI 1982), Germany (RIEMANN 1966, RITTERBUSCH 1974, STURHAN 1975).

The Netherlands (DAO 1970, BONGERS 1988), Hungary (ANDRÁSSY 1973), Austria (EDER 1975), Azores (STURHAN 1973, 1975) and from Madeira and Canary Islands (STURHAN 1975). Present paper is based on the specimens that were collected in Ukrainian Carpathians and in central and south part of Poland.

MATERIALS AND METHODS

Ukrainian specimens were extracted by modified BAERMANN funnel method, relaxed by gentle heat and fixed in cold TAF. Polish specimens were extracted by decantation and sieving method with final separation on extraction sieves with filters, fixed in hot 4% formaldehyde. All specimens were processed to pure glycerine by slow evaporation method and mounted on permanent slides in glycerine with paraffin as a support for the cover slide.

DESCRIPTIONS

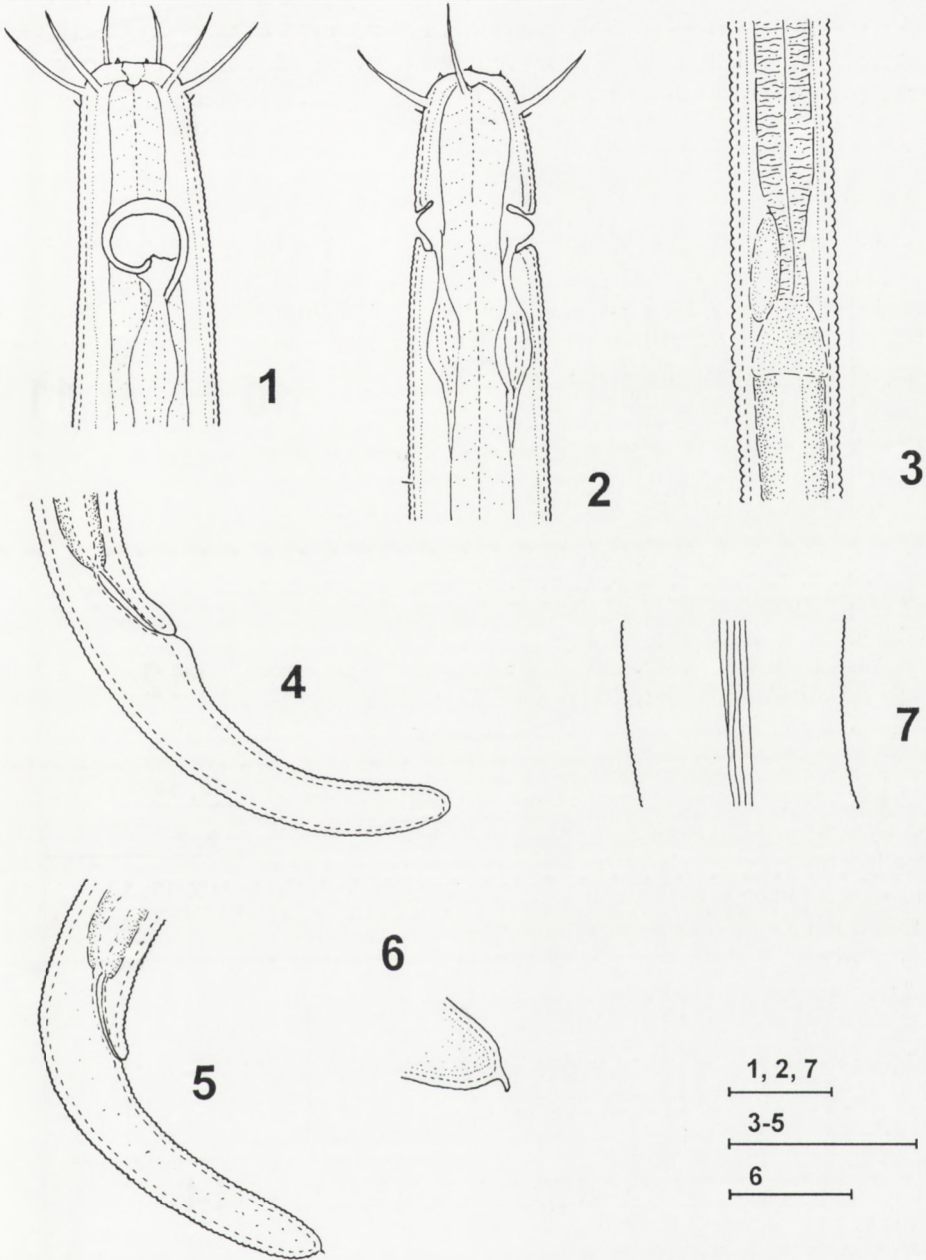
Dintheria tenuissima DE MAN, 1921 (Figs 1–14)

Measurements. See Table 1.

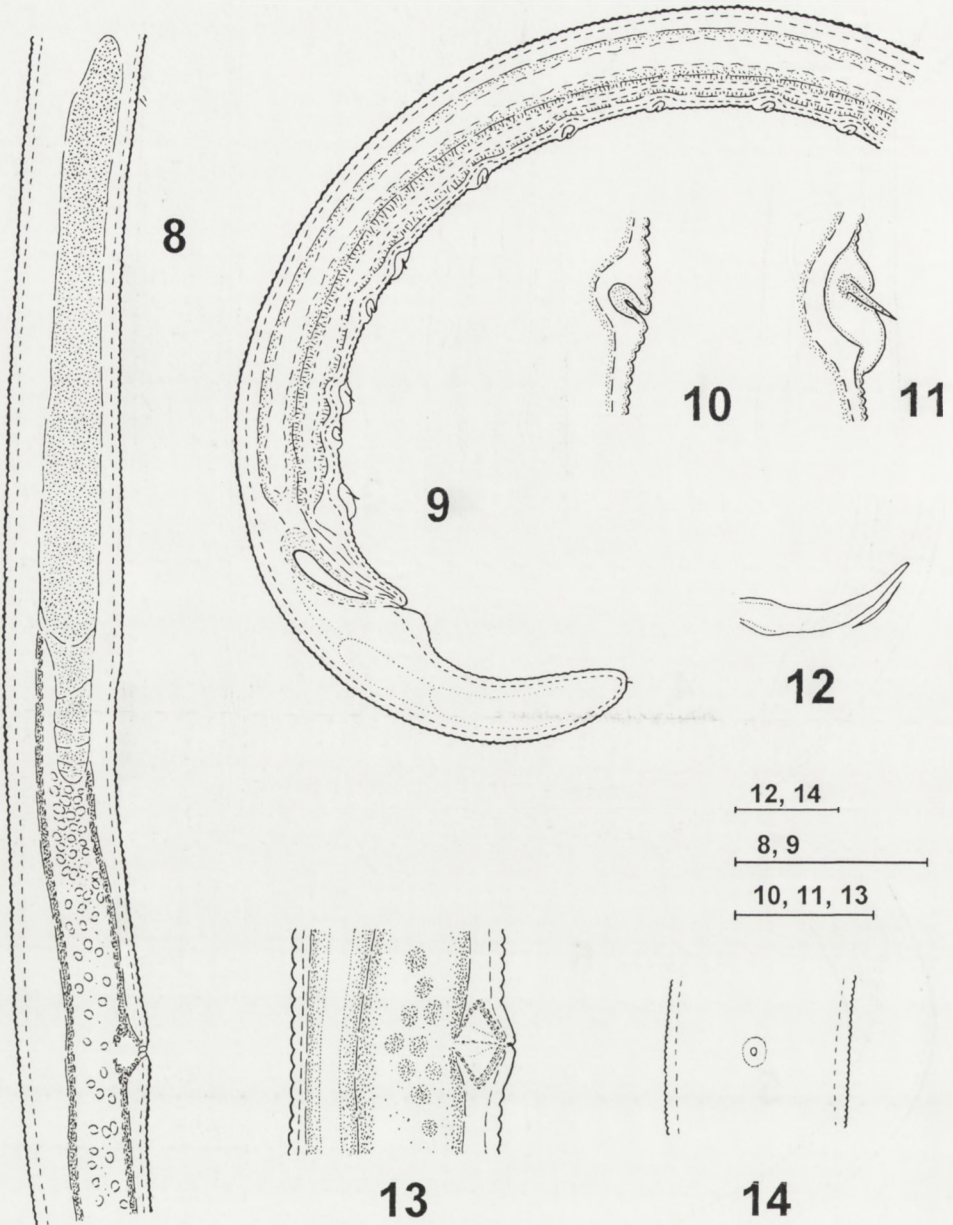
Body long and very slender, ventrally curved when heat relaxed, more so in posterior part. Cuticle thin, 1.7–3.0 μm thick, finely divided into 1.5–2.1 μm annuli. Lateral field not marked. On the ventral and the dorsal side occur 4–5 longitudinal incisures. Body setae in small numbers, scattered. Head truncate, continuous with body contour. Labial papillae small. Cephalic setae arranged in two weakly separated circlets. A first circlet of six long (5.5–10.2 μm) and conical setae is situated just posterior to the lips, 2 μm below occurs a second circlet of four shorter (2 μm) and thinner setae. Mouth cavity very small. Amphids dorsally spiral, 5.9–8.5 μm wide and 4.7–6.2 μm high, 0.6–0.9 times as corresponding body diameter. Amphidial pouches long. Pharynx cylindrical, strongly muscular. At the junction between the pharynx and the intestine two elongate glands or cell bodies can be seen. Nerve ring surrounds pharynx 72–82 μm from anterior end.

Female. Reproductive system didelphic, amphidelphic, ovary branches symmetrical, reflexed. Anterior ovary 58–159 μm long, distance from anterior end to vagina 126–226 μm , posterior ovary 36–148 μm long, distance from posterior end to vagina 87–250 μm . Spermatheca as a separate division of the oviduct undeveloped, however all of observed females have sperm in the uterus. Vulva pore like. Vagina oblique, 1/3 as long as body diameter. No eggs were present in female reproductive system. Rectum equal to slightly longer than anal body diameter. Tail short, completely cylindrical, ventrally curved with rounded terminal part bearing a small mucro on its tip (except one female) that is often curved dorsad. Tail furthermore with four caudal setae: a pair subdorsal level with the anus or somewhat posteriorly and a pair subventral at posterior one fifth of the tail.

Male. Reproductive system diorchic. Anterior testis 126–228 μm , posterior testis 66–145 μm long, reflexed. Spicules moderately ventrally curved, weakly sclerotized.



Figs 1-7. *Dintheria tenuissima*. 1 – anterior end of male, lateral view; 2 – anterior end of female, ventral view; 3 – cardiac region, 4, 5 – female tail; 6 – tail terminus, 7 – longitudinal incisures on dorsal side of body. Scale bars: 1, 2, 6, 7 = 10 μ m, 3 – 5 = 30 μ m)



Figs 8–14. *Dintheria tenuissima*. 8 – female genital branch; 9 – male posterior body region; 10 – anteriormost supplement; 11 – posteriormost supplement; 12 – spicula and gubernaculum; 13 – vaginal region; 14 – vulval region, ventral view. Scale bars: 8, 9 = 30 μm , 10–14 = 10 μm).

Table 1. Morphometric data of *Dintheria tenuissima* (all measurements in μm except L in mm; n = number of individuals)

| Population | I | | II | | III | IV | V | VI | VII | VIII |
|--------------------------------------------|------------|------|------|------|-----------------------|------------------|------|------|------|------|
| n | 2♀♀ | 1♂ | 1♀ | 1♂ | 5♀♀ | 4♂♂ | 1♀ | 1♀ | 1♀ | 1♀ |
| L | 1.41; 1.45 | 1.51 | 1.63 | 1.45 | 1.39+0.06 (1.34–1.48) | 1.56 (1.39–1.72) | 1.28 | 1.76 | 1.75 | 1.80 |
| a | 76; 78 | 86 | 72 | 88 | 64+5.8 (60–72) | 83 (80–90) | 57 | 51 | 64 | 69 |
| b | 5.3; 5.4 | 5.1 | 6.2 | 6.6 | 5.7+0.2 (5.4–6.0) | 5.5 (5.2–5.8) | 5.6 | 6.5 | 6.3 | 6.1 |
| c | 23; 25 | 34 | 27 | 32 | 27+3.2 (24–31) | 34 (29–36) | 28 | 28 | 25 | 28 |
| c' | 4.2; 4.3 | 2.7 | 3.5 | 2.7 | 3.7+0.5 (3.1–4.2) | 2.7 (2.5–3.1) | 3.0 | 3.2 | 3.5 | 3.5 |
| V or T (%) | 58; 59 | 48 | 52 | ? | 58+1.8 (55–59) | 47 (44–51) | 60 | 56 | 56 | 53 |
| G ₁ (%) | 8.9; ? | | 8.6 | | 11.6 | | 10.9 | 12.8 | 13.3 | 10.6 |
| G ₂ (%) | 7.3; ? | | 10.6 | | 11.1 | | 6.8 | 14.2 | 11.1 | 10.7 |
| Lip region width (LRW) | 7.8; 8.5 | 8.5 | 9.0 | 8.5 | 8.9+0.4 (8.5–9.5) | 8.9 (8.5–9.2) | 8.8 | 9.5 | 10.0 | 11.0 |
| Maximal body width | 18.5; 18.7 | 17.5 | 22.8 | 16.4 | 21.6+2.5 (18.5–23.9) | 18.7 (16.8–19.9) | 22.3 | 34.4 | 27.5 | 26.0 |
| Anal body width (ABW) | 14.9; 13.7 | 16.6 | 17.1 | 16.8 | 13.7+0.2 (13.5–14.0) | 17.0 (15.0–18.0) | 14.9 | 19.4 | 19.7 | 18.0 |
| Pharynx length | 265; 268 | 295 | 265 | 219 | 245+7.6 (232–251) | 283 (268–301) | 230 | 270 | 279 | 295 |
| Tail length | 63; 58 | 44 | 60 | 46 | 51+5.6 (43–57) | 46 (44–47) | 45 | 62 | 69 | 63 |
| Ant. end to amphid | 12.1; 14.2 | 13.0 | 17.5 | 10.0 | 13.2+1.5 (11.1–15.2) | 12.1 (10.7–13.0) | 12.3 | 12.3 | 14.5 | 15.0 |
| Ant. end to amphid/LRW | 1.6; 1.7 | 1.5 | 1.9 | 1.2 | 1.5+0.2 (1.3–1.7) | 1.4 (1.3–1.5) | 1.4 | 1.3 | 1.5 | 1.4 |
| Vagina length | 8.3; 8.3 | | 9.5 | | 9.7 (9.5–10.0) | | 8.5 | ? | 10.7 | 9.0 |
| Rectum length | 15.9; 17.3 | | 20.4 | | 17.4+0.8 (16.4–18.0) | | 18.5 | 19.2 | 20.4 | 15.0 |
| Rectum length / ABW | 1.1; 1.3 | | 1.2 | | 1.3+0.06 (1.2–1.4) | | 1.2 | 1.0 | 1.0 | 0.8 |
| Distance vulva–anus/tail length | 8.5; 9.2 | | 12.1 | | 10.5+1.3 (9.0–12.4) | | 10.4 | 11.6 | 10.2 | 12.5 |
| Spicules length | | 19.4 | | 17.5 | | 17.8 (16.1–19.4) | | | | |
| Distance anteriormost supplement to cloaca | | 162 | | 140 | | 149 (143–155) | | | | |

Gubernaculum distinct, 6–7 μm long. Supplements mammiform, 9–10 in number; first, third and fifth (numbered from cloaca towards anterior end) with strong setose projection. The anteriormost lying at a distance of 140–162 μm from cloaca, the posteriormost at the level of head of spicules. Tail short, completely cylindrical, ventrally curved with rounded terminal part. 4 males among 6 studied have small mucro on tail tip.

Material examined:

Ukraine, The Carpathians, population: **I.** – Tchernivtsi Prov., Putyl' Distr., Sarata Vill., subalpine meadow, 02.08.1991, leg. A. SUSULOVSKY; **II.** – Ivano-Frankivsk Prov., Nadvirna Distr., Yaremche Town. Khomiak Mountain, subalpine meadow, 24.06.1992, leg. A. SUSULOVSKY; **III.** – Ivano-Frankivsk Prov., Nadvirna Distr., Vorokhta Vill., Hoverla Mountain, meadow, 20.08.1993, leg. A. SUSULOVSKY; **IV.** – Ivano-Frankivsk Prov., Nadvirna Distr., Vorokhta Vill., Bretskul mountain, slope, marsh, 20.08.1993, leg. A. SUSULOVSKY; **V.** – Ivano-Frankivsk Prov., Nadvirna Distr., Bystrytsia Vill., "Gorgany" Natural Reserve, Djurdjij Stream, moss, 01.04.1999, leg. R. HODUN'KO; **VI.** – Ivano-Frankivsk Prov., Verkhovyna Distr., Burkut Vill., Al'byn stream, soil around roots of *Petasites sp.*, 16.08.1990, leg. A. SUSULOVSKY; **VII.** – L'viv Prov., Skole Distr., Kamianka Vill., Zelemin mountainous ridge, meadow, 25.10.1989, leg. A. SUSULOVSKY; Poland, population **VIII.** – Rawka river ad Skierniewice, organic soil, *Alnus sp.* and grasses, 20.11.1990, leg. M. W. BRZESKI;

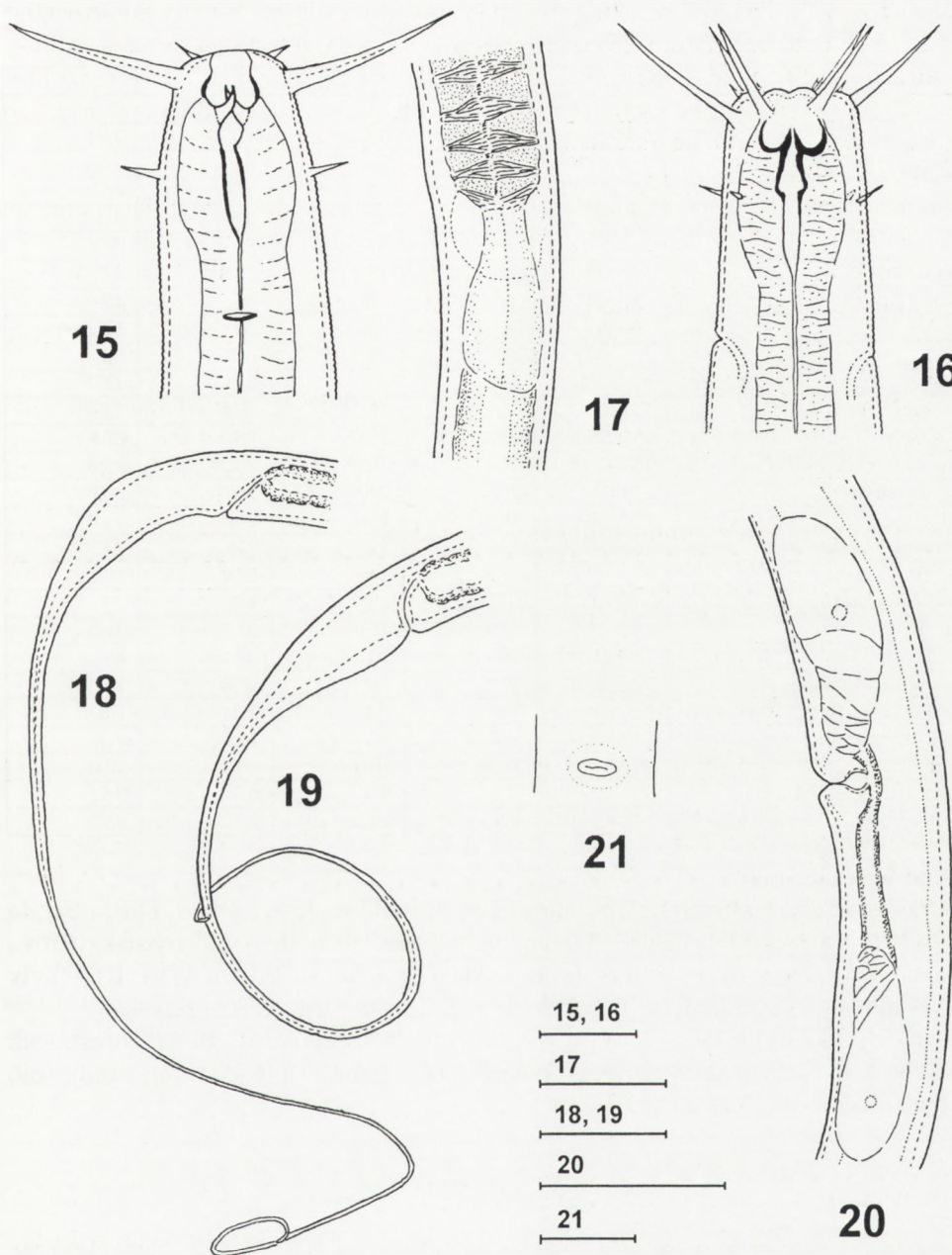
Stenonchulus troglodytes SCHNEIDER, 1940 (Figs 15–21)

Measurements. See Table 2.

Body of heat relaxed specimens arcuate, more curved ventrad at posterior end. Cuticle thin, about 1.5–2.0 μm thick, delicately annulated. Cuticular annuli rounded, 0.8–1.1 μm wide at middle of body. Head anteriorly flattened, slightly demarcated. Labial sensillae relatively long (2.0–2.5 μm) and conical. Cephalic setae arranged in two well separated circles. A first cirlet of six, 12–15 μm long and conical setae is situated just posterior of the lips, 11–13 μm below occurs a second cirlet of four shorter (5–6 μm) and thinner setae. Stoma funnel-shaped with thickened walls. The anterior part of stoma armed with three large teeth equal in size – one dorsal and two subventral. They are hook-shaped and forwardly directed. Posterior to them, in the subventral walls situated two tooth-like projections. Amphid aperture oval, 4–6 μm wide, corresponding body diameter 19–21 μm . Fovea funnel-shaped. Pharynx with transverse muscle bands. Anterior part of pharynx, at the level of stoma, distinctly widened. At the junction between pharynx and cardia occur two large and oval cell bodies or glands. Nerve ring surrounds pharynx 70–80 μm from anterior end of body.

Female. Reproductive system didelphic, amphidelphic, ovary branches symmetrical, reflexed. Anterior ovary 43–50 μm long, distance from anterior end to vagina 47–72 μm , posterior ovary 37–55 μm long, distance from posterior end to vagina 35–80 μm . Vulva transverse, vulval lips protruding from body contour. Vagina oblique, about 1/3 as long as body diameter. No eggs and sperm cells were present in female reproductive system. Tail long, filiform, ending in a fine tip.

Male. Not found.



Figs 15–21. *Stenonchulus troglodytes*. 15 – anterior end, lateral view; 16 – anterior end, ventral view; 17 – cardiac region; 18, 19 – tail; 20 – reproductive system; 21 – vulval region, ventral view. Scale bars: 15, 16 = 10 µm, 17, 21 = 20 µm, 18–20 = 30 µm.

Table 2. Morphometric data of *Stenonchulus troglodytes* (all measurements in μm except L and L' in mm; n = number of individuals)

| Population | I | II | III | IV | V |
|---------------------------------|-----------|------|------|------|------|
| n | 3 ♀♀ | 1 ♀ | 1 ♀ | 1 ♀ | 1 ♀ |
| L | 1.35 | 1.18 | 1.24 | 1.17 | 1.71 |
| L' (head-anus length) | 1.07-1.08 | 0.94 | 0.97 | 0.95 | 1.46 |
| a | 53 | 53 | 44 | 47 | 46 |
| b | 4.7 | 4.7 | 4.3 | 4.9 | 4.3 |
| c | 5 | 5 | 5 | 5 | 7 |
| c' | 13.4-17.8 | 13.7 | 13.5 | 10.8 | 9.7 |
| V (%) | 43 | 43 | 42 | 43 | 45 |
| V' (%) | 51-54 | 54 | 53 | 52 | 52.4 |
| G ₁ (%) | ? | 7.7 | 4.8 | 6.5 | 5.2 |
| G ₂ (%) | ? | 4.3 | 6.0 | 4.7 | 4.7 |
| Lip region width (LRW) | 15.6-15.9 | 16.6 | 14.0 | 13.0 | 16.0 |
| Maximal body width (MBW) | 25.4-25.6 | 22.5 | 28.0 | 25.0 | 37.0 |
| Anal body width (ABW) | 18.7-20.6 | 17.8 | 20.0 | 20.0 | 25.0 |
| Pharynx length | 279-289 | 251 | 290 | 238 | 393 |
| Cardia | 27.5-28.0 | 19.9 | 16.0 | 20.0 | 19.0 |
| Tail length | 261-332 | 244 | 270 | 216 | 242 |
| L'/MBW | 41.8-42.7 | 41.7 | 34.6 | 38.0 | 58.6 |
| L'/Pharynx length | 3.8-3.9 | 3.7 | 3.3 | 4.0 | 3.7 |
| Stoma length | 22.3-23.0 | 19.9 | 22.0 | 21.0 | 21.0 |
| Dorsal tooth/Stoma (%) | 78-80 | 69 | 78 | 67 | 81 |
| Ant. end to amphid | 31.5-33.2 | 42.2 | 34.0 | 28.0 | 28.0 |
| Ant. end to amphid/LRW | 2.0-2.1 | 2.5 | 2.4 | 2.2 | 1.8 |
| Vagina length | 10.2 | 9.5 | 8.0 | 10.0 | ? |
| Rectum length | 16.4-17.1 | 12.3 | 15.0 | 10.0 | 13.0 |
| Rectum length/ABW | 0.8-0.9 | 0.7 | 0.8 | 0.5 | 0.5 |
| Distance vulva-anus/tail length | 1.7-1.9 | 1.8 | 1.7 | 2.1 | 2.9 |

Material examined:

Ukraine, The Carpathians, population: **I.** - Tchernivtsi Prov., Putyl' Distr., Sarata Vill., subalpine meadow, 02.08.1991, leg. A. SUSULOVSKY; **II.** - Zakarpatska Prov., Sval'ava Distr., Berezhnyky vill., beech litter, 20.06.1993, leg. A. SUSULOVSKY; **III.** - Lviv Prov., Skole Distr., Kamjanka vill., beech litter, 25.10.1989, leg. A. SUSULOVSKY;

Poland, population: **IV.** - Beskid Sądecki Mts, Jaworzyna Mt., beech forest, soil, 16.08.1984, leg. G. WINISZEWSKA; **V.** - Wegrów near bank of Liwiec river, sandy soil, 9.09.1995, leg. M. W. BRZESKI;

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STRESZCZENIE

[Tytuł: *Dintheria tenuissima* DE MAN, 1921 i *Stenonchulus troglodytes* SCHNEIDER, 1940 (Nematoda: Bastianiidae i Onchulidae) – dwa gatunki nowe dla fauny Ukrainy i Polski

W pracy zamieszczono opisy i rysunki dwóch gatunków nicieni: *Dintheria tenuissima* DE MAN, 1921 i *Stenonchulus troglodytes* SCHNEIDER, 1940 nowych dla fauny Ukrainy i Polski.