

Research note

First record of *Longidorus intermedius* Kozłowska and Seinhorst, 1979 (Nematoda: Longidoridae) from the Czech Republic

S. KUMARI, M. CHALOUPKOVÁ, M. JOKES

Research Institute of Crop Production, Division of Plant Medicine, Drnovská 507, Ruzyně, 16106 Prague 6,
Czech Republic, E-mail: kumari@vurv.cz

Summary

Longidorus intermedius Kozłowska and Seinhorst, 1979 was recorded in the Czech Republic for the first time in the rhizosphere of *Robinia pseudoacacia* at Dolní Bojanovice and *Carpinus betulus* - *Euonymus europaeus* - *Quercus* sp. at Strážovice. The morphological and morphometrical characteristics are studied.

Key words: *Longidorus intermedius*; Nematoda; Czech Republic

Longidorus intermedius Kozłowska and Seinhorst, 1979 has been recorded from several European countries e.g., The Netherlands and Germany (Kozłowska & Seinhorst, 1979), Italy (Roca *et al.*, 1985), Spain (Andrés & Arias, 1987), Belgium (Waele & Coomans, 1990), Bulgaria, Macedonia and Turkey (Peneva *et al.*, 2001), Slovakia (Lišková & Brown, 2003), Austria (Tiefenbrunner & Tiefenbrunner, 2004) and former Yugoslavia (Barsi & Lamberti, 2004).

In this research note we present morphological and morphometrical data of *L. intermedius* from the Czech Republic based on females and all juvenile stages.

During our routine survey of longidorid nematodes from the rhizosphere of grapevine and fruit trees, soil samples were also collected from the rhizosphere of *Carpinus betulus* L., *Euonymus europaeus* L., *Quercus* sp. and *Robinia pseudoacacia* L. at three localities (Černé Voděradky, Dolní Bojanovice, Strážovice). Samples were taken from a depth of 0 – 40 cm. Nematodes were extracted from soil by the sieving and decanting method, heat killed and fixed in TAF, and processed and mounted in anhydrous glycerin. Nematode identification was made using an Olympus BX-51 light microscope, equipped with a digital camera C4040 and differential interference contrast (DIC, Nomarski), which was used further to illustrate and photograph pictures; measurements were made with the aid of imaging soft-

ware (Olympus DP-soft).

Longidorus intermedius Kozłowska and Seinhorst, 1979

L. intermedius was found at Dolní Bojanovice (48° 51' 27" N 17° 1' 47"E) associated with *Robinia pseudoacacia* and Strážovice (49° 00' 48" N 17° 03' 58"E) associated with *Carpinus betulus* - *Euonymus europaeus* - *Quercus* sp. At Dolní Bojanovice, 9 females and 17 juveniles were found in 500 g soil whereas at Strážovice 25 females and 125 juveniles were found.

Morphometrics of females and juveniles are given in Table 1 and photomicrographs are presented in Fig.1.

All juvenile development stages (JDS) were found. They resemble adults except in size. Tail length of juveniles does not change significantly. As compared to adult females the mean value of tail length of juveniles is slightly higher. Tail of JI has a more digitate terminus in some specimens and less digitate in others (Fig. 1G, H). Body diameter at lip region, at guiding ring, at base of pharynx, at mid body and at beginning of hyaline tip increased gradually from JI to JIII. Mean odontophore length of JII is shorter than JI. Morphometrics of all JDS correspond well with juvenile stages described from Bulgaria by Peneva *et al.* (2001) and show a very similar development pattern. Based on the description by Peneva *et al.* (2001) and the data presented here, it is obvious that *L. intermedius* has only three development stages. They were identified by lengths of body, odontostyle and replacement odontostyle (Fig. 2).

The morphology and morphometric data of females of Czech populations of *L. intermedius* are similar to those described in the original description of the species (Kozłowska & Seinhorst, 1979) and by Peneva *et al.*, (2001). Compared to the type material and Bulgarian populations (Peneva *et al.*, 2001), adult females from the Czech have a shorter odontostyle. Other morphometric characters closely

agree with the original description (Kozłowska & Seinhorst, 1979) and comprehensive description of the species by Peneva *et al.*, (2001).

We assume that a comprehensive survey in the Czech forest may show a more wide occurrence of the species in the Czech Republic.

Table 1. Morphometrics of *Longidorus intermedius* Kozłowska and Seinhorst, 1979. Measurements in μm (in form): mean $\pm$ standard deviation (range)

Locality	Strážovice				Dolní Bojanovice
Host	<i>C. betulus</i> - <i>E. europaeus</i> - <i>Quercus</i> sp.				<i>R. pseudoacacia</i>
Specimens	II	JII	JIII	Females	Females
n	20	12	11	24	9
L	1241 $\pm$ 62 (1152 – 1394)	1939 $\pm$ 189 (1635 – 2187)	2793 $\pm$ 290 (2410 – 3304)	3993 $\pm$ 254 (3425 – 4528)	4081 $\pm$ 328 (3655 – 4552)
a	53.6 $\pm$ 2.58 (50.1 – 59.1)	62.1 $\pm$ 3.37 (57.5 – 69.0)	64.9 $\pm$ 6.78 (57.8 – 77.1)	69.2 $\pm$ 3.83 (61.2 – 78.8)	73.1 $\pm$ 4.13 (67.8 – 80.9)
b	4.3 $\pm$ 0.47 (3.4 – 5.5)	6.4 $\pm$ 0.67 (5.6 – 7.8)	8.2 $\pm$ 1.19 (6.2 – 10.9)	9.5 $\pm$ 0.90 (7.8 – 11.3)	10.7 $\pm$ 1.13 (9.1 – 12.9)
c	28.7 $\pm$ 2.57 (24.7 – 35.2)	44.9 $\pm$ 3.53 (40.3 – 52.2)	67.0 $\pm$ 9.31 (53.6 – 82.6)	105.8 $\pm$ 9.33 (92.0 – 122.8)	107.5 $\pm$ 11.59 (91.4 – 126.0)
c'	2.83 $\pm$ 0.30 (1.96 – 3.36)	1.99 $\pm$ 0.12 (1.78 – 2.25)	1.47 $\pm$ 0.20 (1.16 – 1.88)	1.06 $\pm$ 0.10 (0.92 – 1.22)	1.10 $\pm$ 0.09 (0.97 – 1.24)
V/spicule	–	–	–	46.9 $\pm$ 1.39 (43.9 – 49.7)	47.3 $\pm$ 1.12 (45.8 – 49.5)
Replacement odontostyle	81 $\pm$ 2.26 (75 – 85)	91 $\pm$ 4.74 (84 – 99)	109 $\pm$ 2.84 (103 – 114)	–	–
Odontostyle	75 $\pm$ 2.95 (67 – 79)	81 $\pm$ 1.70 (79 – 85)	93 $\pm$ 4.39 (87 – 99)	110 $\pm$ 2.80 (103 – 114)	109 $\pm$ 3.59 (103 – 117)
Odontophore	40 $\pm$ 2.23 (36 – 43)	34 $\pm$ 4.19 (25 – 41)	42 $\pm$ 4.21 (34 – 50)	45 $\pm$ 2.82 (37 – 52)	45 $\pm$ 2.52 (41 – 49)
Total stylet length	115 $\pm$ 4.21 (104 – 120)	115 $\pm$ 4.28 (107 – 121)	134 $\pm$ 7.54 (125 – 148)	155 $\pm$ 3.42 (147 – 162)	154 $\pm$ 3.16 (150 – 160)
Oral aperture to guide ring	20 $\pm$ 1.03 (19 – 23)	24 $\pm$ 1.35 (22 – 26)	29 $\pm$ 1.91 (26 – 32)	33 $\pm$ 1.81 (29 – 37)	33 $\pm$ 1.24 (31 – 35)
Pharyngeal bulb length	63 $\pm$ 2.74 (58 – 69)	73 $\pm$ 5.38 (64 – 81)	87 $\pm$ 5.70 (80 – 99)	97 $\pm$ 6.09 (82 – 108)	99 $\pm$ 4.89 (92 – 106)
Pharyngeal bulb diam.	13 $\pm$ 0.99 (12 – 15)	17 $\pm$ 2.15 (13 – 20)	20 $\pm$ 1.61 (17 – 22)	27 $\pm$ 2.24 (23 – 31)	24 $\pm$ 3.18 (19 – 29)
Tail length	43 $\pm$ 3.84 (36 – 52)	43 $\pm$ 3.97 (39 – 51)	42 $\pm$ 3.46 (37 – 49)	38 $\pm$ 3.61 (34 – 47)	38 $\pm$ 2.37 (35 – 42)
Length of hyaline tip	10 $\pm$ 1.39 (7 – 12)	8 $\pm$ 1.43 (5 – 11)	10 $\pm$ 1.54 (8 – 13)	12 $\pm$ 1.94 (8 – 17)	13 $\pm$ 1.83 (9 – 15)
Anterior genital branch*	–	–	–	320 $\pm$ 40.34 (232 – 376)	–
Posterior genital branch*	–	–	–	321 $\pm$ 32.90 (266 – 385)	–
Body diam. at lip region	6 $\pm$ 0.41 (6 – 7)	8 $\pm$ 0.62 (7 – 9)	9 $\pm$ 0.54 (8 – 12)	11 $\pm$ 0.78 (10 – 13)	11 $\pm$ 0.60 (10 – 12)
at guiding ring	14 $\pm$ 0.55 (13 – 16)	16 $\pm$ 0.75 (15 – 17)	20 $\pm$ 0.90 (19 – 22)	24 $\pm$ 1.23 (21 – 26)	24 $\pm$ 1.17 (22 – 26)
at base of pharynx	23 $\pm$ 1.10 (21 – 26)	30 $\pm$ 2.35 (26 – 34)	39 $\pm$ 4.52 (34 – 45)	49 $\pm$ 3.28 (43 – 54)	47 $\pm$ 3.86 (40 – 52)
at mid body/at vulva	23 $\pm$ 1.33 (21 – 27)	31 $\pm$ 3.75 (25 – 38)	43 $\pm$ 5.84 (35 – 54)	58 $\pm$ 4.01 (52 – 67)	56 $\pm$ 6.81 (48 – 64)
at anus	15 $\pm$ 0.69 (14 – 16)	22 $\pm$ 2.18 (19 – 26)	29 $\pm$ 5.84 (24 – 32)	36 $\pm$ 3.26 (30 – 41)	35 $\pm$ 1.81 (33 – 38)
at beginning of hyaline tip	7 $\pm$ 0.72 (6 – 8)	10 $\pm$ 1.38 (7 – 12)	15 $\pm$ 1.73 (12 – 18)	21 $\pm$ 2.37 (16 – 26)	22 $\pm$ 2.24 (18 – 26)

*n = 14

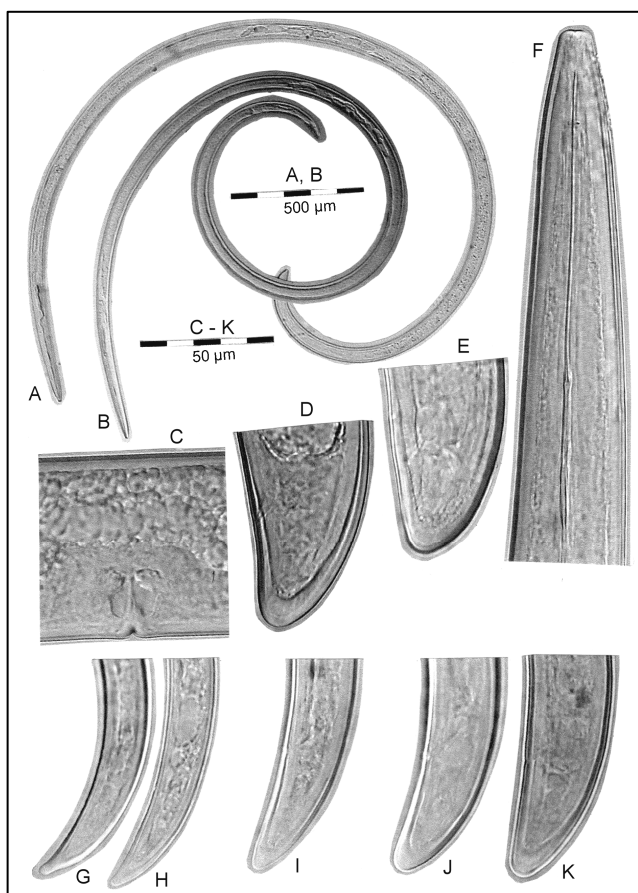


Fig. 1. *Longidorus intermedius* Kozłowska and Seinhorst, 1979
A, B – entire female; C – vulva; D, E – female tail; F – female
anterior; G–K – posterior region. G, H – JI; I – JII; J, K – JIII

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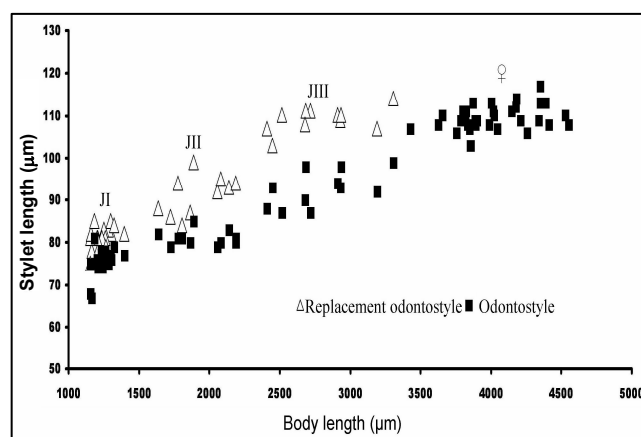


Fig. 2. Scatter diagram separating juveniles and females of *L. intermedius*

and juvenile stages of *Longidorus intermedius* Kozłowska & Seinhorst, 1979 (Nematoda: Dorylaimida) from the territory of the former Yugoslavia. *Russ. J. Nematol.*, 12, 2: 107 – 114

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