

# *Longidorus latocephalus* Lamberti, Choleva & Agostinelli, 1983, a junior synonym of *L. pisi* Edward, Misra & Singh, 1964 (Nematoda : Dorylaimida)

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## SUMMARY

In the original description of *Longidorus latocephalus* Lamberti, Choleva & Agostinelli, 1983 the species was differentiated from *L. pisi* Edward, Misra & Singh, 1964 the most similar species, by several morphometrical and morphological characters. Subsequently information was published which suggested that these two species could not be readily differentiated as previously described. Type specimens of *L. latocephalus* and further specimens, collected from eight populations in Bulgaria which originally had been identified as being *L. latocephalus* were examined. This material was compared with specimens of *L. pisi* from Iraq, the Ivory Coast and Malawi. The *L. latocephalus* and *L. pisi* specimens studied could not be consistently differentiated by morphometrical or morphological features, including body and odontostyle lengths, position of guiding ring or amount of expansion of the labial region. Prerectal objects considered a constant feature in populations of *L. pisi* were observed in all specimens of *L. latocephalus* examined. We therefore consider *L. latocephalus* to be a junior synonym of *L. pisi*. Also, the original description of a male *L. latocephalus* probably refers to a male of an undescribed *Longidorus* species similar to *L. attenuatus*.

## RÉSUMÉ

*Longidorus latocephalus* Lamberti, Choleva & Agostinelli, 1983, synonyme mineur de *L. pisi* Edward, Misra & Singh, 1964 (Nematoda : Dorylaimida)

D'après sa description originale, *Longidorus latocephalus* Lamberti, Choleva & Agostinelli, 1983 est différencié de l'espèce la plus proche, *L. pisi* Edward, Misra & Singh, 1964, par plusieurs caractères morphométriques et morphologiques. Des données complémentaires publiées depuis suggèrent toutefois que ces deux espèces ne peuvent être aussi aisément séparées que primitivement assuré. Les spécimens types de *Longidorus latocephalus* et d'autres spécimens appartenant à huit populations de Bulgarie identifiées originellement comme *L. latocephalus* ont été examinés. Ce matériel a été comparé à des spécimens de *L. pisi* provenant d'Irak, de Côte d'Ivoire et du Malawi. Les spécimens de l'une et l'autre espèces étudiés n'ont pu être différenciés de façon assurée en s'appuyant sur diverses données morphométriques et morphologiques, en particulier les longueurs du corps et du stylet ou le degré d'expansion de la région labiale. Des « objets prérectaux », considérés comme un caractère constant des populations de *L. pisi*, ont été observés chez tous les spécimens de *L. latocephalus* examinés. Nous considérons donc *L. latocephalus* comme un synonyme mineur de *L. pisi*. De plus, la description originale du mâle de *L. latocephalus* se rapporte vraisemblablement au mâle d'une espèce non décrite de *Longidorus*, proche de *L. attenuatus*.

During a survey of longidorid nematodes from Bulgaria specimens from the rhizosphere of grapevine (*Vitis* sp.) at Petrich were identified as representing a new species which was described as *Longidorus latocephalus* Lamberti, Choleva & Agostinelli, 1983. Subsequently this species was identified from six other localities, including a forest nursery (Peneva & Choleva, 1987, 1991) in Bulgaria. *L. latocephalus* was differentiated from *L. pisi* Edward, Misra & Singh, 1964, the most similar species and which earlier had been reported as *L. siddiqi* from Bulgaria (Choleva-Abadzhieva, 1975), by having longer body and odontophore lengths, a more posterior guiding ring and a more expanded labial region.

Concurrently but independently of the report by Lamberti, Choleva and Agostinelli (1983) the association of *Longidorus* species with sugar cane (*Saccharum officinarum*) in Natal, South Africa was reported by Jacobs and Heyns (1983) who found *L. pisi* was the most common and widely distributed species and they gave morphometric data from 58 females and one male specimen. These data extended the ranges of the measurements reported for other populations of *L. pisi* from Cameroun, India and Malawi (Brown, Hooper & Saka, 1982).

Brown and Taylor (1987) suggested that as the morphometrics of the South African specimens of *L. pisi* overlapped with those of *L. latocephalus*, and as the two

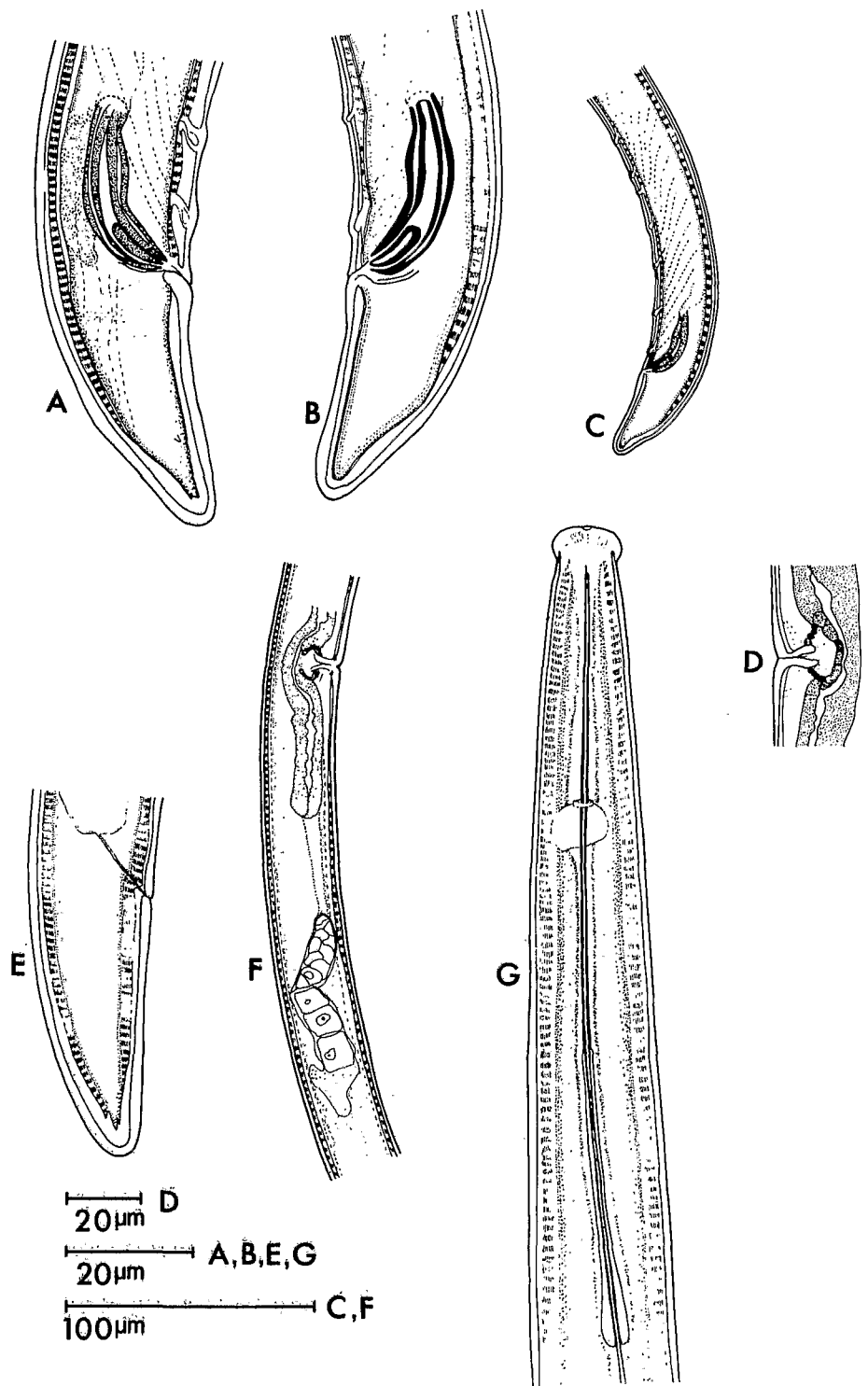


Fig. 1. *Longidorus latocephalus*, a junior synonym of *L. pisi*. Drawings of Bulgarian specimens. A, B, C : Posterior part of body (males); D : Vulval region; E : Posterior part of body (female); F : Vulva and posterior genital branch; G : Anterior part of body (female).

Table 1

Morphometrics of males and females of *Longidorus pisi* (syn. *L. latocephalus*) from India, South Africa and Bulgaria

		India		South Africa			Bulgaria								
		(Edward, Misra & Singh, 1964)		(Jacobs & Heyns, 1983)			(Choleva, 1985)	(Lamberti, Choleva & Agostinelli, 1983)		Parvomai	Petrich	Petrich	Parvomai	Petrich	Kolarovo
		(Paratypes)		Petrich	Petrich		<i>Vitis vinifera</i>	<i>V. vinifera</i>	<i>Lycopersicon esculentum</i>						
		♀	♂	♀	♂	♂*				♀	♀	♀	♂	♀	♀
n		30	58	1	10	18	1	9	5	13	7	3	7	3	2
L	mm	(2.7-3.62)	(2.66-4.1)	3.58	4.1	4.1	6.2	3.91	3.79	3.91	3.63	3.66	4	3.98	3.8
a		(123-144)	(103-109)	163	115	136	195	127	132	130	112	130	125	130	153
b		(10-15)	(8.7-19.9)	11.4	13.6	12.5	16.8	12.9	10.7	11.8	11.8	12.5	11.5	10	10.8
c		(80-118)	(60-112)	93	98	98	125	96	93	101	108	99.3	99	94	109
c'		(2.4-2.6)	(1.6-3)	1.9	1.7	2	2.0	1.9	2.1	1.9	1.45	2	1.9	2	1.5
V/T		(49-54)	(40-53)	na	50	49	na	50	51	50		49	49	50	—
Odontostyle	µm	(56-61)	(68-86)	78	79	79	76	75	75	77	76	74	74	76	76
Odontophore	µm	(35-43)	(33-50)	43	47	49	44	48	52	49	53	49	51	50	(50-53)
Anterior to guide ring	µm	(31-35)	(36-52)	40	(43-45)	(39-45)	22	43	43	43	42	42.6	42	44	41
Tail length	µm	35**	(34-53)	39	—	42	50	41	41	39	33	38	40	40	35
Width : lip region	µm	7.5	(8-10)	8.9	—	11	12	10	10	10	9.6	10	10	10	10
Width : guide ring	µm	14	—	—	—	18	15	16.8	17	16.8	18	17	—	17.6	15
Width : h		—	—	—	—	5	15	4.5	5.6	4.5	—	3.5	5	5	(3-5)
Width : oesophageal junction	µm	27	—	—	—	27	28	(3.5-5)	(4-8)	(3-5)	26	(2.5-5)	27	25	25
Width : vulva mid-body	µm	27	—	—	—	(23-32)	32	(25-32)	(n = 3)	(25-28)	(25-28)	(26-27)	(25-28)	(25-28)	(24-25)
Width : anus	µm	15	—	—	—	31	25	31	29	30	—	28.6	32	31	25
Spicules						(28-37)	44	(27-32)	(28-30)	(29-33)	—	(29-30)	(29-33)	(29-33)	30
Supplements						(18-23)	1 + 13	(17-22)	(18-21)	(19-23)	—	(17-20)	(21-23)	(20-23)	1 + 6
															1 + 6

\* Male specimen probably not *L. pisi*; possibly an undescribed species similar to *L. attenuatus*. \*\* Values in italics from Brown, Hooper and Saka (1982).

species could not be differentiated, *L. latocephalus* could be considered a junior synonym of *L. pisi*. However, Lamberti (in Brown & Taylor, 1987) suggested that although the morphometric ranges overlapped, the mean values consistently distinguished two groups which supported the validity of the two species. To resolve these contradictory views as to whether *L. latocephalus* can be differentiated from *L. pisi*, specimens from populations originally identified by Lamberti, Choleva and Agostinelli (1983) as *L. latocephalus* were collected and examined. Specimens of *L. pisi* from several countries (Brown, Hooper & Saka, 1982), Iraq and the Ivory Coast also were examined and the results of this study are reported here.

### Materials and methods

*L. latocephalus* specimens (44 females, 9 males) used in this study were extracted by a decanting and sieving method (Brown & Boag, 1988) from soil samples collected from six localities in Bulgaria. The nematodes were heat-killed, fixed in TAF and processed and mounted in anhydrous glycerin. The *L. latocephalus* holotype and twelve paratype females and specimens from other populations from Bulgaria, identified by Lamberti, Choleva and Agostinelli (1983), held in the nematode collection at the Istituto di Nematologia Agraria applicata Vegetale del CNR, Bari, Italy (INAAV) also were examined. Furthermore, *L. pisi* specimens from Malawi, identified by Brown, Hooper and Saka (1982), Iraq and three populations from the Ivory Coast were used in this study.

### Results

Morphometric data obtained by us from *L. latocephalus* specimens, including the paratypes, held at the INAAV agreed with that published by Lamberti, Choleva and Agostinelli (1983). These and similar data obtained from *L. latocephalus* specimens collected from six localities in Bulgaria overlap with data reported by Brown, Hooper and Saka (1982) and especially the data presented by Jacobs and Heyns (1983) and exhibit considerable intraspecific variability. We were unable to differentiate two consistent groups of populations viz. *L. latocephalus* and *L. pisi* based on differences in mean lengths of body and odontophore, position of guiding ring or degree of expansion of the labial regions. Hence such differences between the two species as reported by Lamberti, Choleva and Agostinelli (1983) are not valid.

The presence of prerectal objects in specimens of *L. pisi* from South Africa, Iran, Israel, the Camerouns and Nigeria were reported by Heyns *et al.* (1984). Furthermore, Heyns *et al.* (1984) established that the presence of these unknown objects was consistent in all specimens

from all populations of *L. pisi* which they examined whereas they were absent in 25 other longidorid species. Prerectal objects were present in specimens in the present study and also in *L. pisi* specimens used for the study by Brown, Hooper and Saka (1982) and from three populations from the Ivory Coast and a population from Iraq. These objects were not observed in three female and seven juveniles of *L. pisi* from about 100 specimens examined from the populations from Iraq and the Ivory Coast. These observations are in agreement with those of Heyns *et al.* (1984) that the presence of prerectal objects is a constant feature in populations of *L. pisi*, however, such objects may not be present or readily observed in every specimen.

Observations made of the holotype, twelve paratype females and the male allotype (see below) of *L. latocephalus* deposited in the INAAV collection confirmed the presence of prerectal objects, similar to those present in *L. pisi* specimens, as reported by Lamberti, Choleva and Agostinelli (1983). Also, all paratype specimens had weakly developed basal flanges on the odontophore which is a consistent feature in *L. pisi*.

Lamberti, Choleva and Agostinelli (1983) presented morphometric data and illustrations of a *L. latocephalus* male recovered from the rhizosphere of tomato (*Lycopersicon esculentum*) at Petrich, Bulgaria. A second male specimen, the allotype, recovered from the rhizosphere of grapevine (*Vitis* sp.), Petrich, Bulgaria, the type habitat and locality, was not reported. The morphology and morphometrics of the allotype are generally similar to those reported for other male of *L. pisi* (Cohn & Martelli, 1964; Brown, Hooper & Saka, 1982; Jacobs & Heyns, 1983). Morphometric data subsequently obtained from male specimens from several populations of *L. latocephalus* from Bulgaria also were similar to the data contained in these reports of male *L. pisi* (Table 1). However, we consider that the morphometric data and illustrations given by Lamberti, Choleva and Agostinelli (1983), confirmed during this study, for the male *L. latocephalus* from *L. esculentum* (Table 1) suggests that the specimen may be more correctly identified as representing a male of a possibly undescribed *Longidorus* species similar to *L. attenuatus* in which prerectal objects and basal flanges on the odontophore are absent.

We therefore consider *L. latocephalus* to be conspecific and thus a junior synonym of *L. pisi*. Also, the morphometric data, description and illustration of a male *L. latocephalus* reported by Lamberti, Choleva and Agostinelli (1983) refers to a male of an undescribed *Longidorus* species similar to *L. attenuatus*.

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