

Xiphinema pyrenaicum Dalmaso, 1964 and its synonyms (Nematoda : Longidoridae)

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Summary – Examination of paratypes of *Xiphinema pyrenaicum* Dalmaso, 1964 and of five species described by Lamberti *et al.* (1992) – *X. sphaerocephalum*, *X. nuragicum*, *X. adenyostherum*, *X. cohnii* and *X. macrogastrum* – revealed no differences able to be considered at species level. Consequently the five Lamberti's *et al.* (1992) species are proposed as junior synonyms of *X. pyrenaicum*.

Résumé – *Xiphinema pyrenaicum* Dalmaso, 1964 et ses synonymes (Nematoda : Longidoridae) – L'examen de paratypes de *Xiphinema pyrenaicum* Dalmaso, 1964 et de cinq espèces décrites par Lamberti *et al.* (1992) – *X. sphaerocephalum*, *X. nuragicum*, *X. adenyostherum*, *X. cohnii* et *X. macrogastrum* – n'a révélé aucune différence susceptible d'être prise en compte au niveau spécifique. En conséquence les cinq espèces décrites par Lamberti *et al.* (1992) sont proposées comme synonymes mineurs de *X. pyrenaicum*.

Key-words : nematodes, synonymy, taxonomy, *Xiphinema*.

Lamberti *et al.* (1992) described five new didelphic *Xiphinema* species, characterized by a hemispherical tail and a uterus devoid of Z differentiation but showing spiniform structures. These five species were all identified from around roots of trees and perennial plants in the Mediterranean region : *X. sphaerocephalum* Lambert *et al.*, 1992 (*Quercus faginea* Lam., Coto Rios, Sierra de Cazorla, Spain), *X. nuragicum* Lambert *et al.*, 1992 (*Vitis* sp., Guspini, Cagliari, Italy), *X. adenyostherum* Lambert *et al.*, 1992 (unidentified tree, Setif, Constantine, Algeria), *X. cohnii* Lambert *et al.*, 1992 (*Quercus* sp., Meron Mountain, Galilee, Israel), *X. macrogastrum* Lambert *et al.*, 1992 (*Prunus amygdalus* Batick, Besni, Gaziantep, Turkey).

Two of these species, *X. nuragicum* and *X. cohnii*, are based on populations previously attributed to *X. turcicum* Luc & Dalmaso, 1963 from which they differ by the structure of the uterus which has no pseudo Z organ, whereas this organ is present in *X. turcicum*. However, these five species were not clearly differentiated from each other, either by the measurements (Table 1) or in the diagnoses (Table 2), and all appear to be close to *X. pyrenaicum* Dalmaso, 1964.

Through courtesy of Dr. D. J. Hooper, female paratypes of the five new species have been examined, as well as paratypes of *X. pyrenaicum* from the Paris Museum Collection.

These observations failed to reveal any differences that could justify six different species. The slight differ-

ences observed in morphometrics (Table 1) and morphology (Fig. 1) do not exceed the intraspecific variations common in the genus.

In all females observed, spiniform structures are present in the uterus (a new finding for *X. pyrenaicum*). They can vary in number and length (2-12 µm), but often these variations are greater between two paratypes of the same species than between two different species. The "glandular structures" recorded by Lamberti *et al.* (1992) in *X. adenyostherum* and *X. cohnii* are in fact the protruding nuclei of the somewhat collapsed uterus wall cells, as previously described by Roca and Bravo (1993) for two Portuguese populations of *X. sphaerocephalum*.

The tail is subhemispherical to hemispherical in all the specimens (Fig. 1 L-U), without bulge or terminal mucro. However, in some females (Fig. 1 O, P, T), a thinning of the most external layer(s) of the cuticle can be seen at the extremity of the tail; when focusing during examination such a structure can easily appear as a terminal bulge. The blind canal can be present or absent and this character is not species dependant : one of the two paratypes of *X. pyrenaicum* (Fig. 1, T-U) is provided with a blind canal, the other is not. This appears to be an exceptional character, such variability has not been previously recorded in any other species of the genus.

Anterior end (head) profile is similar in the six species. Examination of that character was difficult as the majority of the specimens observed were not in perfect lateral view. In any case the general head shape appears

Table 1. Morphometrics of six *Xiphinema* species (all measurements in mm, except L).

	<i>X. adeno-hytherum</i>	<i>X. cohni</i>	<i>X. macrogastrum</i>	<i>X. nuragicum</i>	<i>X. sphaerocephalum</i>			<i>X. pyrenaicum</i>	Overall range
					Lamberti <i>et al.</i> 1992	Roca & Bravo 1993 (pop. Arruda)	Roca & Bravo 1993 (pop. Oeiras)		
n	7	12	6	18	7	5	10	15	
L (mm)	4.4 ± 0.31 (3.9-4.7)	4.1 ± 0.33 (3.6-4.6)	4.6 ± 0.18 (4.4-4.9)	4.0 ± 0.37 (3.3-4.5)	3.9 ± 0.30 (3.3-4.3)	4.5 ± 0.16 (4.4-4.8)	3.9 ± 0.19 (3.6-4.2)	4.01 (3.50-4.52)	3.3-4.9
a	68.5 ± 3.15 (65.2-73.3)	59.0 ± 5.70 (51.0-68.3)	61.8 ± 2.67 (58.9-65.5)	65.6 ± 6.18 (55.1-76.1)	57.9 ± 5.92 (54.3-65.0)	73.5 ± 3.4 (68-77)	68.5 ± 3.52 (62-75.5)	69.0 (56-79)	51-79
b	7.6 ± 0.39 (6.9-8.2)	7.1 ± 0.53 (6.2-8.3)	6.9 ± 0.26 (6.7-7.4)	7.7 ± 0.63 (6.7-8.9)	7.3 ± 0.78 (6.1-8.3)	7.7 ± 0.31 (7.4-8.2)	7.5 ± 0.35 (6.9-8)	8.6 (7.1-11.1)	6.1-11.1
c	136.1 ± 10.76 (126.8-149.6)	95.7 ± 11.95 (82.6-115.2)	111.2 ± 10.57 (91.1-118.3)	104.4 ± 13.05 (79.1-123.4)	109.1 ± 12.6 (94.0-125.4)	132.5 ± 8.76 (121.3-143.8)	99.2 ± 8.47 (85.5-110.5)	98.4 (90-126)	79.1-149.6
c'	0.75 ± 0.06 (0.7-0.8)	0.9 ± 0.11 (0.8-1.1)	0.8 ± 0.09 (0.7-1.0)	0.8 ± 0.06 (0.7-0.9)	0.8 ± 0.08 (0.7-0.9)	0.75 ± 0.06 (0.7-0.8)	0.93 ± 0.08 (0.8-1.0)	0.81 (0.73-0.93)	0.7-1.1
V	52 ± 1.66 (49-53)	49 ± 1.54 (47-51)	47 ± 0.78 (46-48.5)	50.0 ± 1.44 (47-53)	48 ± 0.98 (47-50)	48.7 ± 0.86 (47.5-49.5)	50 ± 1.8 (47-53.2)	48 (45-52)	45-53
Odontostyle	149 ± 2.83 (143.5-152)	164 ± 8.56 (149.5-174)	160 ± 3.53 (155.5-165.5)	144 ± 3.28 (137-150)	150 ± 10.19 (143.5-168)	162 ± 3.36 (158-164.5)	153.5 ± 3.63 (150-162.5)	137 (127-149)	127-174.1
Odontophore	84.5 ± 2.85 (79.5-88)	93.4 ± 7.43 (81-101)	99.2 ± 3.51 (93.5-102.5)	81.7 ± 2.47 (77-87)	89.9 ± 4.19 (84.5-97.5)	85.5 ± 1.1 (84-86.5)	85.5 ± 3.09 (82-90.5)	82 (76-90)	76-102.5
Stylet	228.5, 233.5**	268.5, 271.5**	249, 249**	219*	207, 239**	247.5 ± 2.74 (242-250.5)	239 ± 4.24 (232.5-246)	219 (211-230)	207.1-271.5
Guide	135.4 ± 3.98 (127-140.5)	148.7 ± 7.34 (137.5-161)	150.2 ± 3.52 (147-156)	127.1 ± 2.89 (124-135.5)	140.4 ± 3.10 (126-162)	145 ± 4.72 (141.5-153)	127 ± 5.99 (112-133)	123 (108-136)	108-161.8
Tail length	31.9 ± 2.52 (29.5-35.5)	42.8 ± 4.24 (36.5-48)	42.1 ± 5.91 (37.5-54)	38.3 ± 2.78 (32.5-42)	35.9 ± 4.41 (32.5-44.5)	34.5 ± 2.37 (30.5-37)	39.5 ± 3.52 (33.5-44.5)	38 (34-41)	29.4-54.1

*, **: measurements of paratypes, n = 1 and 2, respectively.

common and it is characterized by a rounded anterior profile, with the lip area separated from the posterior part of body by a slight depression. The amphidial slit is of similar length (about 8 mm or 50 % of head diameter) and always situated in front of the depression (Fig. 1, A-K), an unfrequent character in the genus.

Consequently, the six species are considered conspecific. *X. pyrenaicum* is the valid name, with the following synonymy :

X. pyrenaicum Dalmasso, 1964

= *X. sphaerocephalum* Lamberti, Castillo, Gomez-Barcina & Agostinelli, 1992 n. syn.

= *X. nuragicum* Lamberti, Castillo, Gomez-Barcina & Agostinelli, 1992 n. syn.

= *X. adeno-hytherum* Lamberti, Castillo, Gomez-Barcina & Agostinelli, 1992 n. syn.

= *X. cohni* Lamberti, Castillo, Gomez-Barcina & Agostinelli, 1992 n. syn.

= *X. macrogastrum* Lamberti, Castillo, Gomez-Barcina & Agostinelli, 1992 n. syn.

= *X. turcicum apud* Cohn (1968), Prota *et al.* (1971).

Males are generally absent, having been found only in the Spanish and Portuguese populations described by Lamberti *et al.* (1992) and Roca and Bravo (1993), respectively. As the females of these populations do not contain sperm in the genital tractus, *X. pyrenaicum* can be assumed to be parthenogenetic.

The codes (see Loof & Luc, 1990, 1993) for *X. pyrenaicum* should be modified as follows :

Group 6 : A4 - B3 - C7a, b - D(5)6 - E56 - F(3) 4 (5) - G3 (4) - H2 - I34 - J67 - K2 - L1 (2).

This new designation enlarges the distribution of *X. pyrenaicum*. Since its description in France (on *Prunus cerasifera* Ehrh., Ille-sur-Têt, Pyrénées Orientales)

Table 2: Characters used in the diagnoses of *Xiphinema sphaerocephalum*, *X. nuragicum*, *X. adeno-hysterum*, *X. cohni* and *X. macrogastrum*.

Species	L (mm)	V	Female genital branches	Uterine spines	Odontostyle (mm)	Lip region	Tail	Glandular structures in uterine wall
<i>X. sphaerocephalum</i>	ca 4 [3.3-4.3]*	slightly anterior [47-50]	equal	large	ca 150 [144-168]	offset	rounded with mamillate projection	absent
<i>X. nuragicum</i>	ca 4 [3.3-4.5]	mid-body [47-53]	equal	large	ca 144 [137-150]	continuous/ very slightly offset	bluntly rounded	absent
<i>X. adeno-hysterum</i>	ca 4.4 [3.9-4.7]	slightly posterior [49-53]	equal	large	ca 150 [143-152]	offset	bluntly rounded	present
<i>X. cohni</i>	ca 4 [3.6-4.6]	mid-body [47-51]	equal	large	ca 164 [149-174]	slightly offset	widely conoid rounded terminus	present
<i>X. macrogastrum</i>	ca 4.5 [4.4-4.9]	slightly anterior [46-48.5]	equal	present	ca 160 [155-165]	cylindrical and offset	bluntly rounded	present

* Figures between square brackets are those given in the text.

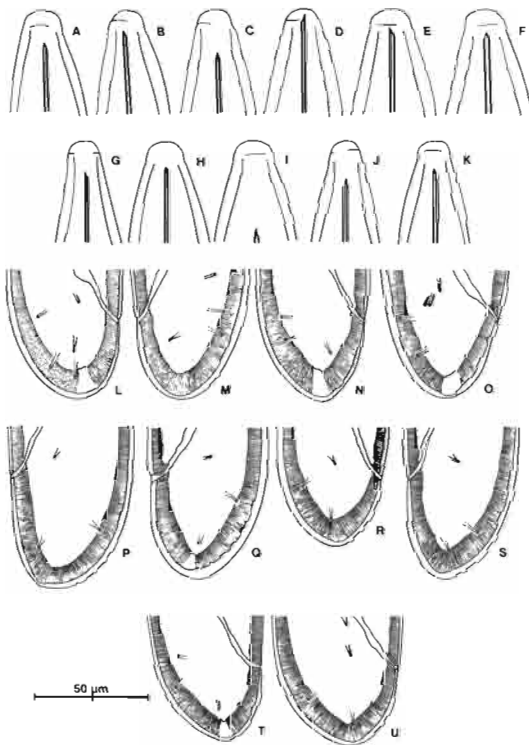


Fig. 1. Head (A-K) and tail (L-U) shapes of paratypes of *Xiphinema adeno-hysterum* (A, B, L), *X. cohni* (C, D, M, N), *X. macrogastrum* (E, F, O, P), *X. nuragicum* (G, Q), *X. sphaerocephalum* (H, I, R, S) and *X. pyrenaicum* (J, K, T, U).

X. pyrenaicum has only been recorded as such in Spain in several places (Arias, 1975, 1979; Arias *et al.*, 1985); these records has been confirmed by Dr. M. Arias (pers. comm.). The above synonymizations confirm the association of *X. pyrenaicum* with trees and perennial plants in the mediterranean area.

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