

Phyt

**HIRSCHMANNIA N.G. DIFFERENTIATED FROM RADOPHOLUS
THORNE, 1949 (NEMATODA: TYLENCHOIDEA)**

BY

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Re-examination of a specimen of *Tylenchorhynchus spinicaudatus* Sch. Stek., 1944 showed it to be conspecific with *Radopholus lavabri* Luc, 1957. This is made the type of *Hirschmannia* n.g. which also contains *H. gracilis* n. comb. and *H. oryzae* n. comb. The lectotype of *H. spinicaudata* is redescribed and *Radopholus* redefined.

Schuurmans Stekhoven (1944) described two female nematodes, from material collected in the Albert National Park, former Belgian Congo, as *Tylenchorhynchus spinicaudatus*. The species has been overlooked by nematologists and subsequently not dealt with in either general or specialised papers, though Tarjan (1961) records it. One of us (M.L.) has recently examined one of the original specimens and found that, in two important respects, the original description was inadequate: 1) there is a considerable overlap of oesophagus and intestine instead of an abutted junction as figured by Schuurmans Stekhoven (Fig. 1 a, c); 2) the lateral field is 2/7 of the body-width and is areolated so that each of the four incisures is crenate (Schuurmans Stekhoven reported the lateral fields at 1/8 of the body-width and not crenate). These clarifications of the form of the oesophagus, combined with the shape of the head, spear and tail, indicate that the species should be transferred from *Tylenchorhynchus* to *Radopholus*. Further, a comparison of Schuurmans Stekhoven's specimen with types of *Radopholus lavabri* Luc, 1957 show that *Tylenchorhynchus spinicaudatus* and *Radopholus lavabri* are conspecific, though there are slight differences which can be attributed to geographic variation.

Thorne (1949) established *Radopholus*, with type *R. similis*, "to receive those didelphic species which most clearly resemble the genus *Pratylenchus*". An appraisal of the species at present contained in *Radopholus* indicates that there are two separate groups. With *R. similis* go *R. inaequalis* and *R. neosimilis* and the second group comprises *R. lavabri*, *R. gracilis*, *R. oryzae* and *R. mucronatus*. For the latter group we propose the name *Hirschmannia* in honour of Dr Hedwig Hirschmann whose work on *Radopholus gracilis* did much to clarify its status and synonymy (Hirschmann, 1955).

The differences between the two groups are indicated in Table I.

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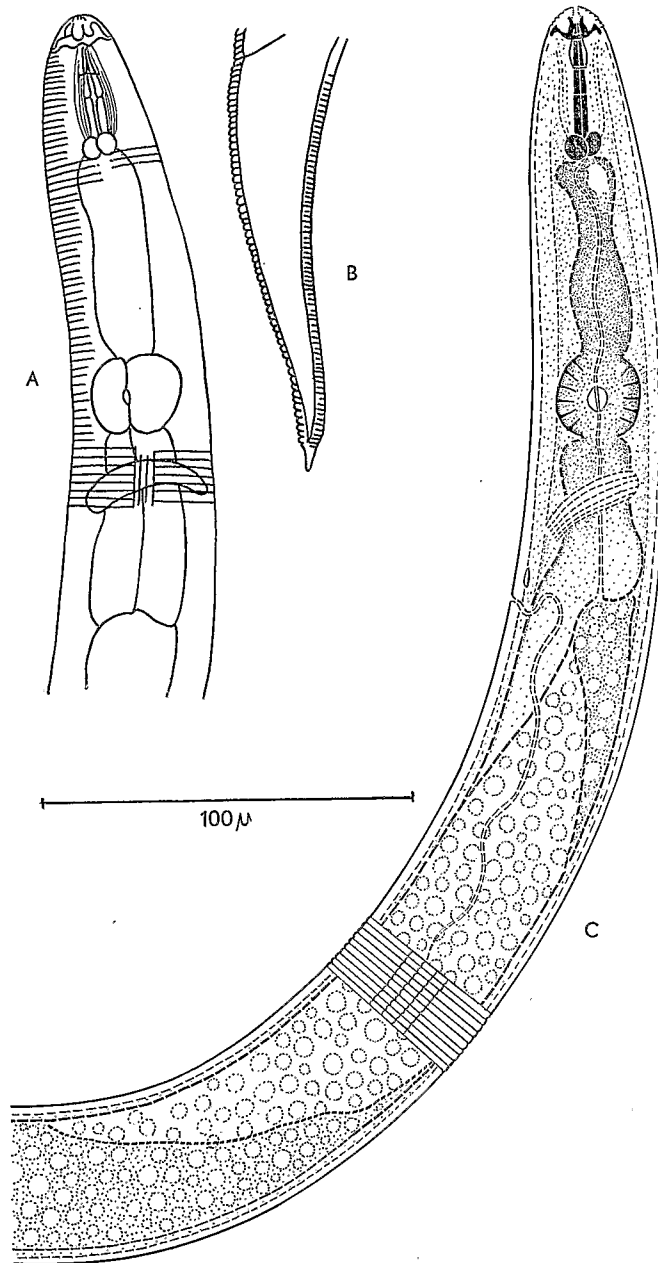


Fig. 1. *Hirschmannia spinicaudata* (Sch. Stek., 1944) n. comb. holotype female. *a*, anterior part; *b*, tail; *c*, anterior part. (*a* & *b* after Schuurmans Stekhoven, 1944; *c*, original).

TABLE I

The differentiation of Radopholus from Hirschmannia

| | <i>Radopholus</i> | <i>Hirschmannia</i> |
|-------------------------------------|----------------------------------|---------------------------------|
| Head | offset, like <i>Pratylenchus</i> | high, hemispherical, not offset |
| Sclerotization of head framework | slight | well-developed |
| Overlap of oesophagus and intestine | dorsal | ventral |
| Tail tip | irregularly rounded, no mucro | mucronate |
| Sexual dimorphism | present | absent |
| Body length | < 0.8 mm | > 1 mm (up to 3.5 mm) |
| Habitat | parasites of land plants | parasites of marsh plants |

The two genera are now redefined:

RADOPHOLUS THORNE, 1949

Pratylenchinae: female gonads paired. Head region of female similar to that of *Pratylenchus* and clearly offset from body. Female stylet about 2 head-widths long, with basal knobs rounded or anteriorly pointed. Terminal lobe of oesophagus overlapping the intestine dorsally for some distance. Phasmids in both sexes on the tail some distance from the anus. Tail of both sexes elongate-conical with variously shaped tip but without mucro. Marked sexual dimorphism, the male with spherical head, stylet reduced with, at most, slight basal knobs, oesophagus degenerate, the median bulb reduced and valveless.

Type species: *Radopholus similis* (Cobb, 1893) Thorne, 1949

- syn. *Tylenchus similis* Cobb, 1893
T. (Cbitinotylenchus) similis Cobb, 1893 (Micoletzky, 1922)
T. (Tylenchorhynchus) similis Cobb, 1893 (Filipjev, 1934)
T. autocaudatus Zimmermann, 1898
T. biformis Cobb, 1909
Anguillulina similis (Cobb, 1893) T. Goodey, 1932
Rotylenchus similis (Cobb, 1893) Filipjev, 1936

Other species:

- R. inaequalis* Sauer, 1958
R. neosimilis Sauer, 1958

HIRSCHMANNIA GEN. NOV.

Pratylenchinae: gonads paired in female. Head sclerotization strongly developed. Head hemispherical and not offset from body. Spear massive with rounded basal knobs. Terminal, glandular part of oesophagus overlapping the intestine ventrally for some distance. Phasmids in both sexes some way from the anus on the tail. Tail in both sexes elongate-conical ending in a mucro. Little, of any, sexual dimorphism.

Type species: *Hirschmannia spinicaudata* (Schuermans Stekhoven, 1944) n. comb.

syn. *Tylenchorhynchus spinicaudatus* Sch. Stek., 1944
Radopholus lavabri Luc, 1957

Other species:

H. gracilis (de Man, 1880) n. comb.

syn. *Tylenchus gracilis* de Man, 1880

T. (Chitinotylenchus) gracilis de Man, 1880 (Micoletzky, 1922)

Tylenchorhynchus gracilis (de Man, 1880) Micoletzky, 1925

Anguillulina gracilis (de Man, 1880) T. Goodey, 1932

Tylenchus (Tylenchorhynchus) gracilis de Man, 1880 (Filipjev, 1934)

Ang. (Tylenchorhynchus) gracilis (de Man, 1880) T. Goodey, 1932 (Schneider, 1939)

Radopholus gracilis (de Man, 1880) Hirschmann, 1955

H. oryzae (v. Breda de Haan, 1902) n. comb.

syn. *Tylenchus oryzae* v. Breda de Haan, 1902

T. (T.) oryzae v. Breda de Haan, 1902 (Filipjev, 1934)

Rotylenchus oryzae (v. Breda de Haan, 1902) Fil. & Sch. Stek., 1941

Radopholus oryzae (v. Breda de Haan, 1902) Thorne, 1949

Tylenchus apapillatus Imamura, 1931

Anguillulina apapillata (Imamura, 1931) T. Goodey, 1932

Rotylenchus apapillatus (Imamura, 1931) Filipjev, 1936

Radopholus gigas Andrásy, 1954

R. mucronatus Das, 1960

Hirschmann (1955) synonymised *H. gracilis* and *H. oryzae* but as the original description and figures of *H. gracilis* make no mention of spermathecae and in the male the bursa surrounds the tail we reject her synonymy. We place *H. mucronatus* Das, 1960 into synonymy with *H. oryzae* because the characters by which Das separated his species, viz. form of bursa, form of lateral fields and body-width, come within the variation shown by *H. oryzae*. We have removed *Tylenchorhynchus behningi* Micoletzky, 1923 from synonymy with *H. gracilis* because the original description and figure suggest that they are not conspecific. *Radopholus zostericola* (Allgén, 1934) Allen, 1955 belongs in this genus but lacks sufficient detail. We, therefore, treat both as *species inquirendae* in this genus as follows:

H. behningi (Micoletzky, 1923) n. comb.

syn. *Tylenchorhynchus behningi* Micoletzky, 1923

Radopholus behningi (Micoletzky, 1923) Allen, 1955

H. zostericola (Allgén, 1934) n. comb.

syn. *Tylenchus (Chitinotylenchus) zostericola* Allgén, 1934

Tylenchorhynchus zostericola (Allgén, 1934) Filipjev, 1936

Halenchus zostericola (Allgén, 1934) Chitwood, 1951

Radopholus zostericola (Allgén, 1934) Allen, 1955

Schuermans Stekhoven (1944) did not indicate a holotype of *Tylenchorhynchus spinicaudatus* but of his two specimens the one examined recently is now designated lectotype and redescribed below. As *R. lavabri* Luc, 1957 is conspecific

with *H. spinicaudata*, the allotype male described by Luc (1957) becomes the allotype of *H. spinicaudata*.

HIRSCHMANNIA SPINICAUDATA (SCHUURMANS STEKHOVEN, 1944) N. COMB.

Lectotype female: l = 2.1 mm., a = 42; b = 5.4; c = 17; V = 155717

Head with six annules, hemispherical, not offset from body. Head framework strongly sclerotized. Stylet 40 μ long (anterior part 21 μ), basal knobs rounded. Procorpus large and cylindrical; orifice of dorsal oesophageal gland 3 μ from spear base. Median bulb rounded; hind, glandular part of oesophagus cylindrical as far as junction with intestine (174 μ from anterior end of body), then expanding and situated ventro-laterally to the right side, its end 385 μ from the anterior end; nuclei not seen. Nerve ring wide and situated a little behind median bulb. Excretory pore 178 μ from anterior end. Hemizonid spanning 2-3 annules and 2-3 annules anterior to excretory pore. Vulva a deep transverse slit, slightly posterior to middle of body. Paired, outstretched gonads; oocytes in single rows. Large spermathecae (anterior 81 \times 34 μ ; posterior 60 \times 26 μ) filled with oval sperms 4-5 \times 2-2.5 μ in size. No developing eggs seen. Cuticle annulated, annules about 2 μ at middle of body. Lateral field 2/7 body-width, with 4 crenate incisures and completely areolated by the transverse annulation of the body. Tail 120 μ long (3.7 anal-body-widths), regularly conical, ending in a fine mucro. Phasmids small, about 53 μ from tail end.

Type locality of female: Baie de Bitshumbi, Lac Edouard (Kivu-Congo). Réc. H. Damas.

Lectotype female: on slide marked *Tylenchorhynchus spinicaudatus* 1 ♀, deposited at L'Institut Royal des Sciences Naturelles de Belgique, Bruxelles.

Host and type locality of male: Roots of *Oryza* sp., from paddy on the borders of Logone, at Koko near to Yagoua, Cameroons.

Allotype male: slide no. 159-Ca-32 (ex tube no. 86) in collection of Laboratoire de Nématologie, I.D.E.R.T., Abidjan, Côte d'Ivoire.

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RÉSUMÉ

Hirschmannia n.g., différent de *Radopholus* Thorne, 1949 (Nematoda: Tylenchoidea)

Les auteurs donnent la définition du nouveau genre *Hirschmannia* lequel comprend les espèces suivantes appartenant jusqu' alors au genre *Radopholus* Thorne, 1949: *H. spinicaudata* (S. Stekhoven, 1944) n. comb. (= *Tylenchorhynchus spinicaudatus* S. Stekhoven, 1944 = *Radopholus lavabri* Luc, 1957), espèce type du nouveau genre dont le lectotype femelle est décrit et figuré; *H. gracilis* (de Man, 1880) n. comb.; *H. oryzae* (v. Breda de Haan, 1902) n. comb. (= *Radopholus mucronatus*, Das, 1960). Les espèces: *H. beninghi* (Micoletzky, 1923) n. comb. et *H. zostericola* (Allgén, 1934) n. comb. sont considérées comme *species inquirendae*.

Le genre *Radopholus* qui est redéfini, ne comprend plus que: *R. similis* (Cobb, 1893) Thorne, 1949; *R. neosimilis* Sauer, 1958 et *R. inaequalis* Sauer, 1958.

- Hirschmannia* gen. nov. diffère de *Radopholus* sensu stricto principalement par:
 — un dimorphisme sexuel très faible ou inexistant.
 — une queue mucronée et non arrondie à l'extrémité, chez la femelle.
 — le recouvrement ventral de l'oesophage sur l'intestin.

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