FOUR NEW SPECIES OF *HELICOTYLENCHUS* STEINER (HOPLOLAIMINAE: TYLENCHIDA) AND A REDESCRIPTION OF *H. CANADENSIS* WASEEM, 1961

BY

PICK H. YUEN  
Rothamsted Experimental Station, Harpenden, Herts., England

The following five species of the genus *Helicotylenchus* Steiner from Broadbalk Wilderness are described, with a brief note on their distribution and specific status: *H. broadbalkiensis* n. sp.; *H. vulgaris* n. sp.; *H. paxilli* n. sp.; *H. varicaudatus* n. sp.; and *H. canadensis* Waseem, 1961.

In studying the nematode fauna of Broadbalk Wilderness, Rothamsted Experimental Station, Harpenden, five species of *Helicotylenchus* Steiner were collected. The following names are now proposed for the new species: *Helicotylenchus broadbalkiensis* n. sp.; *H. vulgaris* n. sp.; *H. paxilli* n. sp., and *H. varicaudatus* n. sp. *H. canadensis* Waseem, 1961 also found in Broadbalk Wilderness is re-described.

Broadbalk Wilderness is an acre strip which grew wheat from 1843 to 1882 and was then fenced off and left uncultivated. One half of the area is now regenerated woodland and will be referred to as “wooded”. The dominant species are *Crataegus monogyna* Jacq.; *Quercus* sp., *Fraxinus excelsior* L., and *Acer pseudoplatanus* L.; the ground cover is mainly *Glechoma hederacea* L. The other half is cleared of bushes every winter and the vegetation now consists predominantly of coarse grasses (*Alopecurus pratensis* L., *Dactylis glomerata* L., *Poa pratensis* L., *Trisetum flavescens* (L.) Beauv., *Zerna ramosa* (Huds.) Lindm., and *Arrhenatherum elatius* (L.) J. & C. Presl.) *Heracleum spondylium* L., *Agrimonia eupatoria* L., *Urtica dioica* L., *Epilobium montanum* L., *Anthriscus sylvestris* (L.), and *Centanrea nigra* L. Since 1957 half of the cleared area has been grazed by sheep. The ungrazed half will be referred to as “grass-ungrazed”.

*Helicotylenchus canadensis* and *H. broadbalkiensis* were found only in the site “grass-ungrazed” especially near and under the shade of the oak tree, whereas *H. paxilli* and *H. varicaudatus* were found only in the “wooded” half. By contrast, *H. vulgaris* which is abundant in the grass-ungrazed also occurs in parts of the wooded area. It also occurs in several other localities at Rothamsted and has been reported from Holland. According to Seinhorst (personal communication) it occurs on sandy loam soils in pastures and on arable land. Sher (personal communication) says that *H. vulgaris* occurs in many localities in Europe and appears to be especially prevalent in France. Hence the specific name “vulgaris”.

Nematologica X
Many specimens were examined. These were killed either by gentle heat or by hot 0.5% acetic acid; then fixed in T.A.F. or F.A.:1. The rapid lactophenol method (Franklin & Goodey, 1949) and the modified Baker's method (Goodey, J. B., 1963) were particularly suitable for producing specimens with distinct dorsal oesophageal gland orifices and spears; while Seinhorst's method (Seinhorst, 1959, 1962) produced specimens with well defined gonads.

**HELCOTYLENCHUS BROADBALKIENSIS N. SP.**

**Fig. 1**

Measurements: 18 ♀♀ L = 640-760 μ (713.8 μ); a = 20-25; b = 5.3-6.1; b' * = 4.1-4.8; c = 38-51; spear = 26-29 μ (27.4 μ); O = 31-39 (34.6); V = 17.3060-64 (61) 19-31.

Holotype: L = 658 μ; a = 22; b = 5.5; b' = 4.2; c = 51; spear = 27 μ; O = 34; V = 276426.

Body slender, with maximum body width at vulval region and tapering gradually towards both extremities. When killed, body usually coiled in a one and a half spirals. Head small, marked by four or occasionally five narrow annules, is almost square and slightly smaller than diameter of the first body annule (Fig. 1D). It has six lips. Lateral lips slightly broader than the rest which are equal in size (Fig. 1E). A faint spot on each lateral lip suggests the presence of a pair of amphids. No cephalic papillae were observed.

Cephalic framework consists of six well sclerotised vertical and six radiating horizontal pieces. The vertical pieces support the wall of the stoma, and their distal ends spread obliquely outwards subtending the hexagonal labial disc. The six radiating horizontal pieces which form the basal plate also extend posteriorly for two to three annules (Fig. 1D). The dorsal and ventral horizontal arms of the basal plate are divided distally and are slightly broader than the rest which are equal in size (Fig. 1F).

Cuticle distinctly annulated with annules approximately 1.5 μ apart. Lateral field consists of four clearly defined longitudinal incisures which extend to the tail and occupies about one-quarter the body width at region of vulva. Each lateral field begins with three incisures near base of spear guide. Median incisure divides at position of median bulb. All incisures are interrupted by transverse annules anterior to division of median incisure. Areolation then becomes confined to outer bands of lateral field but extends well beyond the base of the oesophageal glands.

Spear strongly developed with fore and aft parts approximately equal in length. Basal knobs massive and slightly concave anteriorly (Fig. 1D), and the dorsal oesophageal gland orifice is at 8-11 μ behind spear base.

Oesophageal glands contain three nuclei, overlap intestine ventrally, laterally and dorsally but the greatest overlap is on ventral side (Fig. 1G). Oesophageal-intestinal junction is usually situated posterior to excretory pore but is occasionally anterior

* b' = \(\frac{\text{Body length}}{\text{Distance from head-base of oesophageal gland.}}\)