CSIRO PUBLISHING

www.publish.csiro.au/journals/apdn *Australasian Plant Disease Notes*, 2008, **3**, 145–146

First record of *Hoplolaimus galeatus* in Australia

L. Nambiar[A,C], *M. Quader*[A] *and J. M. Nobbs*[B]

[A]Department of Primary Industries Victoria, 621 Burwood Highway, Knoxfield, Vic. 3180, Australia.
[B]South Australian Research and Development Institute Field Crops Nematology Unit, LMB 100, Glen Osmond, SA 5064, Australia.
[C]Corresponding author. Email: lila.nambiar@dpi.vic.gov.au

Abstract. *Hoplolaimus galeatus* was identified in turf samples from New South Wales and Western Australia. This is the first record of this species of plant-parasitic nematode in Australia.

In 2006, turf decline was observed in two bowling greens in Stockton and Beresfield, New South Wales (NSW) and one bowling green in Capel, Western Australia (WA). Affected turf (*Cynodon dactylon*) showed symptoms of stunting and yellowing in patches. Turf soil and root samples were submitted from the infested areas for diagnosis of plant-parasitic nematodes. Examination of roots showed a damaged root system with a small number of feeder roots and majority of the root-tips dead (Fig. 1). Nematodes from the roots were extracted using a marceration–filtration technique (Fallis 1943) and from soil using the Whitehead tray method (Whitehead and Hemming 1965). Nematodes were counted, assessed, fixed in formalin–acetic acid fixative (4 : 1 v/v) (Hooper 1970) and then transferred to glycerol using Seinhorst's (1959) technique. Permanent microscope slides were prepared for species identification and submitted (voucher nos VPRI 25747 and 25689 for NSW, and VPRI 25659, 25660, 25661, 25662, 25671, 25672, 25673 and 25674 for WA) to the Victorian Plant Pathology Herbarium reference collection of

Fig. 1. Healthy turf (*Cynodon dactylon*) roots (left) and damaged turf roots (right).

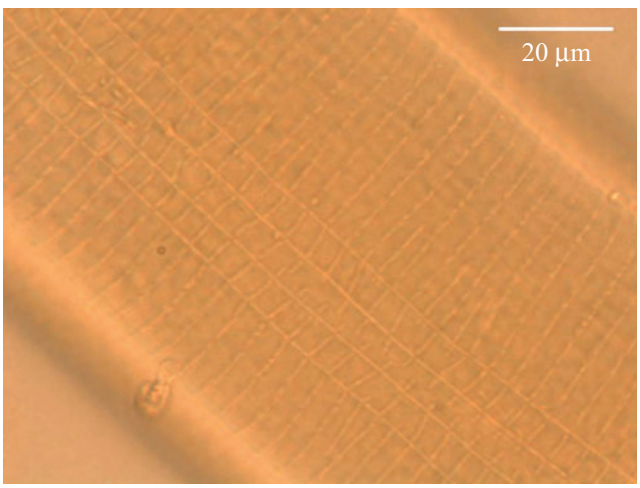

Fig. 2. Four incisures aerolated in the lateral field, *H. galeatus* VPRI No. 25660.

Fig. 3. Five annulations in the head region, *H. galeatus* VPRI No. 25671.

© Australasian Plant Pathology Society 2008
10.1071/DN08056 1833-928X/08/010145

Table 1. Comparison of three species of *Hoplolaimus* recorded in Australia
Measurements are from Handoo and Golden (1992)

Species	Body length (μm)	Stylet length (μm)	Lateral field	Lip annules	Tail annules	Males
H. pararobustus	950–1600	38–49	Reduced variable 2–3 incomplete incisures sometimes seen	4–5	7–15	Present
H. seinhorsti	1060–1560	40–49	Reduced, represented by a single incisure	4	10–15	Absent
H. galeatus	1240–1940	43–52	4 incisures, areolated	5	10–16	Present

Department of Primary Industries, Knoxfield Centre, Victoria, Australia.

Nematode specimens were identified using characters described by Orton-Williams (1973) for *Hoplolaimus galeatus* and the key to the species of Handoo and Golden (1992). These included (*a*) the presence of four incisures in the lateral field with areolation over the greater part of the body length (Fig. 2), (*b*) the cephalic region with usually five cuticular rings (Fig. 3), (*c*) the presence of a post-rectal sac and (*d*) three gland nuclei.

The main morphological characters used to differentiate these three species are presented in Table 1. *Hoplolaimus galeatus* has a longer body and stylet length compared with *H. pararobustus* and *H. seinhorsti. Hoplolaimus galeatus* also has four areolated incisures in the lateral field while *H. seinhorsti* has only one complete incisure and *H. pararobustus* has variable incisures in the lateral field with 2–3 incomplete incisures occasionally seen. Roughly equal numbers of males are present in *H. pararobustus* and *H. galeatus* whereas males are not detected in *H. seinhorsti*.

This new record brings the number of species of *Hoplolaimus* present in Australia to three. The other two species of *Hoplolaimus* recorded from Australia are *H. pararobustus* and *H. seinhorsti*.

Acknowledgements

The authors would like to thank Sportsturf Consultants Pty Ltd, Vic. and Turfgrass Technology Pty Ltd, Vic. for submitting turf samples to Crop Health Services for nematode diagnosis. The species identification/verification of *H. galeatus* was the result of the 'Australian Plant Pest Database/Data Capture and Validation' project 2007–2008.

References

Fallis AM (1943) Use of the Waring blender to separate small parasites from tissue. *Canadian Journal of Public Health* **34**, 44.

Handoo ZA, Golden AM (1992) A key and diagnostic compendium to the species of the genus *Hoplolaimus* Daday, 1905 (Nematoda: Hoplolaimidae). *Journal of Nematology* **24**, 45–53.

Hooper DJ (1970) Handling, fixing, staining, and mounting nematodes. In 'Laboratory methods for work with plants and soil nematodes, reference book 402'. (Ed. JF Southey) pp. 59–80. (Ministry of Agriculture, Fisheries and Food: London)

Orton-Williams KJ (1973) 'Hoplolaimus galeatus.' Descriptions of plant-parasitic nematodes. Set 2, No. 24. Commonwealth Institute of Helminthology (William Clowes & Sons Ltd: London)

Seinhorst JW (1959) A rapid method for the transfer of nematodes from fixatives to anhydrous glycerine. *Nematologica* **4**, 67–69.

Whitehead AG, Hemming JR (1965) A comparison of some quantitative methods of extracting small vermiform nematodes from soil. *The Annals of Applied Biology* **55**, 25–38. doi: 10.1111/j.1744-7348.1965.tb07864.x

Manuscript received 24 September 2008, accepted 3 November 2008