

# New records of Tylenchida, Araeolaimida and Enoplida from the Kruger National Park, with an addendum to the check list of nematode species in the park

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Botha, Annelize and J. Heyns. 1993. New records of Tylenchida, Araeolaimida and Enoplida from the Kruger National Park, with an addendum to the check list of nematode species in the park. *Koedoe* 36(1): 61–65. Pretoria. ISSN 0075-6458.

New distribution records are given for *Hemicycliophora labiata* Colbran, 1960, *Helicotylenchus africanus* (Micoletzky, 1916), *Scutellonema brachyurum* (Steiner, 1938), *Plectus cirratus* Bastian, 1865 and *Ironus ignavus* Bastian 1865. A check list of all the nematode species recorded from rivers in the Kruger National Park is included.

Key words: *Hemicycliophora*, *Helicotylenchus*, *Scutellonema*, *Plectus*, *Ironus*, check list, Kruger National Park.

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## Introduction

This paper concludes the series on nematodes from rivers in the Kruger National Park, and deals with the remaining species not included in previous papers, viz. *Hemicycliophora*, *Helicotylenchus*, *Scutellonema*, *Plectus*, and *Ironus*.

In a previous check list (Botha & Heyns 1990) only freelifving and plant parasitic nematodes from terrestrial habitats were listed. A survey of nematodes in aquatic habitats has now been completed, and therefore a check list of all the species recorded from rivers in the Kruger National Park is included in the present paper. The list is arranged according to the classification system of Andr assy (1976) for the orders Monhysterida, Araeolaimida, Chromadorida, Rhabditida, Tylenchida and Enoplidae, Jairajpuri & Khan (1982) for Mononchida and Jairajpuri & Ahmad (1992) for Dorylaimida.

## Materials and Methods

For materials and methods see our previous paper (Botha & Heyns, 1991). All specimens are in the collection of the Department of Zoology, Rand Afri-

kaans University, Johannesburg. All measurements in micrometers, except body length in millimeters.

## Descriptions

Family: Criconematidae Taylor, 1936

*Hemicycliophora labiata* Colbran, 1960

Measurements:

Female: ( $n = 4$ ): L = 0,77 mm (0,75–0,79); a = 18,1 (17–19,3); b = 5,2(5,1–5,2); c = 9,4 (8,2–10,3); o = 9,8 and 14,5; V = 84,2(82,8–84,7); OV = 39,6(35,9–45)( $n = 3$ ); stylet = 68  $\mu$ m (66,5–70); R = 229(221–239); RSt = 23,5(23–24); ROes = 48(46–49); Rex = 46(44–48); RVan = 9,5(9–10); Ran = 33(29–35); PV/ABW = 3,3(3,1–3,3); T/ABW = 2,5(2,2–2,7); VA%T = 32(21,9–39,2); St%L = 8,9(8,7–9).

*Hemicycliophora labiata* was reported from a number of localities in the Transvaal, Cape Province, Orange Free State and Transkei by Loof & Heyns (1969), and from Natal, Cape Province and Transvaal by Van den Berg (1981). Although *H. labiata* is widespread in South Africa, this is the first report from the

Kruger National Park. The present specimens agree especially well with the populations reported by Loof & Heyns, differing only in a slightly smaller VA%T value (21,9–39,2 compared with 28–63). They differ from the specimens reported by Van den Berg in having slightly more body annules (R = 221–239 compared with R = 178–227), and slightly more annules between anterior end of body and base of oesophageal lobe (ROes = 46–49 compared with ROes = 32–41).

#### Locality and Habitat

Four females collected from sand in the bank of the Sabie River between the Nkuhlu picnic area and Lower Sabie Camp, collected by A. Botha and J. Heyns in February, 1990.

Specimens on slides W2554, W2555 and W2574.

#### Family: Hoptolaimidae Filipjev, 1934

*Helicotylenchus africanus* (Micoletzky, 1916) Andrassy, 1958  
Syn: *Tylenchus africanus* Micoletzky, 1916  
*Tylenchorhynchus robustus* var. *africanus* Micoletzky, 1922

#### Measurements

Female: ( $n = 3$ ): L = 0,72 mm (0,64–0,80); a = 28,5 (26,5–29,8); b = 6,7 (5,8–7,5); b' = 6,1 (4,8–7,3); c = 41,6 (37,6–44,4); c' = 1,2 (1,1–1,2); o = 31,8 (28,6–34); V = 61,8 (60,3–63,3); OV<sub>1</sub> = 18; OV<sub>2</sub> = 15; Stylet = 27 µm (26–28); Lip region width = 7 µm (6,5–7); Tail length = 17 µm (17–18); Number of annules on tail = 14.

*Helicotylenchus africanus* was first reported from South Africa by Sher (1966). The present specimens, the first to be reported from the Kruger National Park, agree well with Sher's (1966) description, but differ slightly in having a shorter tail, resulting in a higher c-ratio (c = 37,6–44,4 compared with c = 25–36), and smaller c'-ratio (c' = 1,1–1,2 compared with c' = 1,6–2,3). They also agree quite well with the specimens reported from

the Northern Transvaal by Van den Berg & Heyns (1975), differing only in having a slightly more robust body, resulting in a smaller a-ratio (a = 26,5–29,8 compared with a = 29,5–42,0).

#### Locality and habitat

Specimens collected from two different localities in the Sabie River: from sand among the roots of *Phragmites* near the weir east of the Lower Sabie Camp and in river sediment near the confluence of the Nwatindlophospruit and Sabie River. Collected by A. Botha and J. Heyns in February, 1990.

Specimens on slides W2586, W2594 and W2618.

*Scutellonema brachyurum* (Steiner, 1938)  
Andrassy, 1958

#### Measurements

Female ( $n = 4$ ): L = 0,77 mm (0,69–0,83); a = 26,3 (24,8–28,7); b = 7,1 (5,9–7,8); b' = 5,9 (4,6–6,6); c = 90,2 (76,7–105); c' = 0,7 (0,5–1,0); V = 57,5 (56–59,4); OV<sub>1</sub> = 16,7 ( $n = 1$ ); OV<sub>2</sub> = 16 ( $n = 1$ ); o = 18,8 (16,7–22,8); Stylet = 29 µm (28,5–30,5); Lip region width = 9 µm (8,5–9); Tail length = 8,5 µm (7,5–9); Number of annules on tail = 8–12.

*Scutellonema brachyurum* is widespread in South Africa, and was first reported from the Kruger National Park by Van den Berg & Heyns (1973). Our specimens agree well with those of Van den Berg & Heyns, which were found in soil among the roots of various host plants.

#### Locality and habitat

Specimens collected from the Sabie River in sand among the roots of *Phragmites* near the weir east of the Lower Sabie Camp. Collected by A. Botha and J. Heyns in February, 1990.

Family: **Plectidae Öerly, 1880**

*Plectus cirratus* Bastian, 1865

Syn: *Plectus africanus* Daday, 1908

#### Measurements

Female ( $n = 4$ ): L = 1,19 mm (1,03–1,44); a = 29,8 (21,8–36,6); b = 4,7(4,6–4,8); c = 8,4 (8,1–9,4); c' = 5,6 (5,1–6,4); V = 47 (46,1–47,9); Lip region width = 14  $\mu\text{m}$  (12–15,5); Stoma length = 26  $\mu\text{m}$  (23–29); Amphids from anterior end = 10–15  $\mu\text{m}$ ; Tail length = 141  $\mu\text{m}$  (128–158); Spinneret length = 3  $\mu\text{m}$  (2,5–3,5).

*Plectus cirratus* has been reported by several authors from various parts of the world. Maggenti (1961) described specimens from several localities in the United States and the Netherlands. The present specimens are the first record from the Kruger National Park and agree well with the description of the species given by Maggenti, except for a more slender body, resulting a higher a-ratio (a = 21,8–36,6 compared with a = 18,8–26); a slightly higher c'-ratio (c' = 5,1–6,4 compared with c = 5); a slightly longer stoma (23–29  $\mu\text{m}$  compared with 20–26  $\mu\text{m}$ ); and a slightly smaller egg (46–47  $\mu\text{m}$  x 23,5  $\mu\text{m}$  compared with 43–56  $\mu\text{m}$  x 26–29  $\mu\text{m}$ ). The shape of the lip region and stoma is similar to that described for the United States and Netherlands populations. The cuticle is also marked by fine transverse striations, which are interrupted by two longitudinal alae on each side of the body.

#### Locality and habitat

Three specimens collected from two different localities in the Crocodile River namely: one female collected from sediment near the confluence of the Mvovovenispruit and Crocodile River and two females collected from sediment near the weir of the Van Graan Dam; collected by A. Botha and W. Liebenberg in November, 1990. One female collected from sand in Olifants River just west of Olifants Camp; collected by J. van Vuren in June, 1990. Specimens from Crocodile River on slides W2781 and W2793.

Specimen from Olifants River on slide W2756.

Family: **Ironidae De Man, 1876**

*Ironus ignavus* Bastian, 1865

#### Measurements

Female ( $n = 1$ ): L = 1,65 mm; a = 52,4; b = 3,9; c = 9; V = 54; Lip region width = 12,5  $\mu\text{m}$ ; Stoma length = 113  $\mu\text{m}$ ; Stoma width = 4  $\mu\text{m}$ ; Tail length = 173,5  $\mu\text{m}$ ; Body width = 32  $\mu\text{m}$ .

*Ironus ignavus* has been reported from various localities in the world. The present specimen, collected from the Kruger National Park agrees especially well with the description given by Andrásy (1968), except for a slightly larger stoma (113  $\mu\text{m}$  compared with 84  $\mu\text{m}$ ). Andrásy (1964) described specimens with a stoma length of 120–150  $\mu\text{m}$  which agrees better with the stoma length of 113  $\mu\text{m}$ , of the present specimen. This is the first record from South Africa.

#### Locality and habitat

Sediment in the Olifants River, just west of the Olifants Camp, collected by J. van Vuren in June, 1990. Specimen on slide W2701.

#### Check list

Order: Monhysterida De Coninck & Sch. Stekhoven, 1933

Family: Monhysteridae De Man, 1876

Genus: *Monhystera somereni* Allgén, 1952  
Botha & Heyns, 1992c: 17

Order: Araeolaimida De Coninck & Sch. Stekhoven, 1933

Family: Leptolaimidae Öerly, 1880

Genus: *Chronogaster africana* Heyns & Coomans, 1980  
Botha & Heyns, 1992c: 23

Family: Rhabdolaimidae Chitwood, 1951

Genus: *Rhabdolaimus terrestris* De Man, 1880  
Botha & Heyns, 1993: 58

- Family: Plectidae Öerley, 1880  
 Genus: *Plectus cirratus* Bastian, 1865  
 Botha & Heyns, this paper: 63
- Order: Chromadorida Chitwood, 1933  
 Family: Cyatholaimidae Filipjev, 1918  
 Genus: *Achromadora ruricola*  
 (De Man, 1880)  
 Botha & Heyns, 1992c: 15
- Order: Tylenchida Thorne, 1949  
 Family: Hoplolaimidae Filipjev, 1934  
 Genus: *Scutellonema brachyurum*  
 (Steiner, 1938)  
 Botha & Heyns, this paper: 62  
 Genus: *Helicotylenchus africanus*  
 (Micoletzky, 1917)  
 Botha & Heyns, this paper: 62  
 Family: Criconematidae Taylor, 1936  
 Genus: *Hemicyclophora labiata* Colbran,  
 1960  
 Botha & Heyns, this paper: 61
- Order: Enoplida Chitwood, 1933  
 Family: Tobrilidae Filipjev, 1918  
 Genus: *Eutobrilus annetteae* (Joubert &  
 Heyns, 1979)  
 Botha & Heyns, 1992c: 11  
 Family: Ironidae De Man, 1876  
 Genus: *Ironus ignavus* Bastian, 1865  
 Botha & Heyns, this paper: 63  
*I. longicaudatus* De Man, 1884  
 Botha & Heyns, 1992c: 24
- Order: Mononchida Jairajpuri & Khan, 1982  
 Family: Mononchidae Filipjev, 1934  
 Genus: *Mononchus aquaticus* Coetzee, 1968  
 Botha & Heyns, 1992c: 20  
*M. truncatus* Bastian, 1865  
 Botha & Heyns, 1992c: 20  
 Family: Mylonchulidae Jairajpuri, 1969  
 Genus: *Mylonchulus minor* (Cobb, 1893)  
 Botha & Heyns, 1992c: 20
- Order: Dorylaimida Pearse, 1942  
 Family: Dorylaimidae De Man, 1876  
 Genus: *Dorylaimus deaconi* Botha & Heyns,  
 1991  
 Botha & Heyns, 1991: 1
- Genus: *Mesodorylaimus aegypticus*  
 (Andrássy, 1958)  
 Botha & Heyns, 1992a: 40  
*M. sp. cf. paralitoralis* Basson &  
 Heyns, 1974  
 Botha & Heyns, 1992a: 27  
*M. potus* Heyns, 1963  
 Botha & Heyns, 1992a: 29  
 Genus: *Laimydorus africanus* spec. nov.  
 Botha & Heyns, 1993: 54  
*L. olifanti* Botha & Heyns, 1991  
 Botha & Heyns, 1991: 3  
 Genus: *Thornenema baldum* (Thorne, 1939)  
 Botha & Heyns, 1992a: 25
- Family: Aporcelaimidae Heyns, 1965  
 Genus: *Aporcelaimellus glandus* Botha &  
 Heyns, 1991  
 Botha & Heyns, 1991: 12  
*A. micropunctatus* Botha & Heyns,  
 1990  
 Botha & Heyns, 1991: 18
- Family: Qudsianematidae Jairajpuri, 1965  
 Genus: *Discolaimus major* Thorne, 1939  
 Botha & Heyns, 1991: 22  
*D. monoplanus* Heyns, 1963  
 Botha & Heyns, 1991: 22
- Family: Nordiidae Jairajpuri & Siddiqi, 1964  
 Genus: *Lenonchium fimbriicaudatum* Swart  
 & Heyns, 1991  
 Swart & Heyns, 1991: 413  
 Botha & Heyns, 1991: 11
- Family: Actinolaimidae Thorne, 1939  
 Genus: *Afractinolaimus zairensis* (Baqri,  
 Coomans & Van der Heiden, 1975)  
 Botha & Heyns, 1992b: 50
- Family: Xiphinematidae Dalmaso, 1969  
 Genus: *Xiphinema italiae* Meyl, 1953  
 Botha & Heyns, 1991: 22
- Family: Belondiridae Thorne, 1939  
 Genus: *Dorylaimellus (Axodorylaimellus)*  
*caffrae* (Kruger, 1965)  
 Botha & Heyns, 1993: 53  
 Genus: *Oxydirus gangeticus* Siddiqi, 1966  
 Botha & Heyns, 1993: 49
- Family: Leptonchidae Thorne, 1935  
 Genus: *Proleptonchus krugeri* Botha &  
 Heyns, 1992  
 Botha & Heyns, 1992b: 44

Genus: *Tyleptus striatus* Heyns, 1963  
Botha & Heyns, 1992b: 43

Family: Nygolaimidae Thorne, 1935

Genus: *Aquatides thornei* (Schneider, 1937)  
Botha & Heyns, 1992b: 47

## References

- ANDRÁSSY, I. 1964. Süßwasser-nematoden aus den grossen Gebirgsgegenden Ostafrikas. *Acta Zoologica* 10(1-2): 1-59.
- ANDRÁSSY, I. 1968. Wissenschaftliche Ergebnisse der Ungarischen Zoologischen Expeditionen nach Tansanien. 12. Bodennematoden aus der III Expedition. *Acta Zoologica* 14(3-4): 240-257.
- ANDRÁSSY, I. 1976. *Evolution as a basis for the systematization of nematodes*. London: Pitman Publishing.
- BOTHA, ANNELIZE AND J. HEYNS. 1990. A preliminary check list of the free-living and plant-parasitic nematodes of the Kruger National Park. *Koedoe* 33(2): 73-76.
- BOTHA, ANNELIZE AND J. HEYNS. 1991. Dorylaimoidea (Nematoda) from rivers in the Kruger National Park. *Koedoe* 34(2): 1-24.
- BOTHA, ANNELIZE AND J. HEYNS. 1992a. Freshwater nematodes of the genera *Thornenema* and *Mesodorylaimus* from the Kruger National Park with a diagnostic species compendium for South African species of the genus *Mesodorylaimus* (Nematoda: Dorylaimida). *Koedoe* 35(1): 25-42.
- BOTHA, ANNELIZE AND J. HEYNS. 1992b. Species of *Tyleptus*, *Proleptonchus*, *Aquatides* and *Afractinolaimus* from rivers in the Kruger National Park (Nematoda: Dorylaimida). *Koedoe* 35(1): 43-54.
- BOTHA, ANNELIZE AND J. HEYNS. 1992c. Further records and descriptions of nematodes from rivers in the Kruger National Park (orders Enoplida, Chromadorida, Monhysterida, Mononchida and Araeolaimida). *Koedoe* 35(2): 11-25.
- BOTHA, ANNELIZE AND J. HEYNS. 1993. Species of the genera *Oxydirus*, *Dorylaimellus* (*Axodorylaimellus*) *Laimydorus* and *Rhabdolaimus* from rivers in the Kruger National Park (Nematoda: Dorylaimida and Araeolaimidae). *Koedoe* 36(1): 49-60.
- JAIRAJPURI, M.S. AND W. AHMAD. 1992. *Dorylaimida free-living, predaceous and plant-parasitic nematodes*. Leyden: E.J. Brill.
- JAIRAJPURI, M.S. AND W.U. KHAN. 1982. *Predatory nematodes (Mononchida) with special reference to India*. New Dehli, India: Associated Publishing Company.
- LOOF, P.A.A. AND J. HEYNS. 1969. Taxonomy of *Hemicycliophora* species from South Africa (Nematoda: Criconematoidea). *Nematologica* 15(4): 464-472.
- MAGGENTI, A.R. 1961. Revision of the genus *Plectus* (Nematoda: Plectidae). *Proceedings of the Helminthological Society of Washington* 28(2): 139-166.
- SHER, S.A. 1966. Revision of the Hoplolaiminae (Nematoda) VI. *Helicotylenchus* Steiner, 1945. *Nematologica* 12(1): 1-56.
- SWART, ANTOINETTE AND J. HEYNS. 1992. *Lenonchum fimbriicaudatum* n.sp. from South Africa, with a key to the species of *Lenonchium* (Nematoda: Nordiidae). *Revue de Nématologie* 14: 413-418.
- VAN DEN BERG, ESTHER. 1981. Further studies on the genus *Hemicycliophora* de Man, 1921 in South Africa (Nematoda: Hemicycliophoroidea) with a description of a new species. *Phytophylactica* 13(2): 181-194.
- VAN DEN BERG, ESTHER AND J. HEYNS. 1973. South African Hoplolaiminae 2. The genus *Scutellonema* Andrassy, 1958. *Phytophylactica* 5(1): 23-40.
- VAN DEN BERG, ESTHER AND J. HEYNS. 1975. South African Hoplolaiminae. 4. The genus *Helicotylenchus* Steiner, 1945. *Phytophylactica* 7(1): 35-52.