

# Freshwater nematodes from South Africa. 8. New and known species of Actinolaimoidea

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*Afractinolaimus* Andrassy, 1970 is regarded as valid, its diagnosis slightly emended, and the following species transferred to it: *Paractinolaimus capensis*, *P. minor*, *P. zairensis* and *P. magaliesmontanus*. The name of the type species thus becomes *A. magaliesmontanus*, since it has priority and is regarded as conspecific with *A. noblei*, the designated type. Additional biometrical data and distribution records are presented for *A. magaliesmontanus*. *A. zairensis* is reported from South Africa. Information is given for several populations of *P. microdentatus*. Two new species of *Neoactinolaimus* are described: *N. brachydorus* n. sp. is characterized by an exceptionally short and stout odontostyle, and *N. barbieri* n. sp. is distinguished from the closely related *N. vaalensis* by a thicker cuticle, more prominently set-off head, corrugated vestibule, longer oesophagus and several other minor morphological differences. *Egtitus* Thorne, 1967 is regarded as valid, and the following combination proposed: *Egtitus zealandicus* (Clark, 1963) n. comb. (synonym: *Actinolaimus zealandicus*). *S. Afr. J. Zool.* 1984, 19: 135 – 140

*Afractinolaimus* Andrassy, 1970 word as geldige genus beskou, die diagnose effens gewysig, en die volgende spesies daarheen oorgeplaas: *Paractinolaimus capensis*, *P. minor*, *P. zairensis* en *P. magaliesmontanus*. Volgens die wet van prioriteit word die naam van die tipe-spesie *A. magaliesmontanus*, aangesien dit 'n sinoniem is van die aangewese tipe *A. noblei*. Aanvullende biometriese data en verspreidingsrekords word verskaf vir *A. magaliesmontanus*, en *A. zairensis* word ook uit Suid-Afrika aangemeld. Inligting word verskaf oor verskeie bevolkings van *P. microdentatus*. Twee nuwe *Neoactinolaimus*-spesies word beskryf, naamlik *N. brachydorus* n. sp. wat gekenmerk word deur 'n besonder kort en stewige odontostekel, en *N. barbieri* n. sp. wat van die naverwante *N. vaalensis* onderskei word deur 'n dikker kutikula, meer afgebakende kop, vestibulum met ribbe, langer esofagus en verskillende ander klein morfologiese verskille. *Egtitus* Thorne, 1967 word as geldige genus beskou, en die volgende kombinasie voorgestel: *Egtitus zealandicus* (Clark, 1963) n. comb. (sinoniem *Actinolaimus zealandicus*). *S.-Afr. Tydskr. Dierk.* 1984, 19: 135 – 140

This is a further paper in the series on freshwater nematodes from South Africa, based on material in the collection of the Department of Zoology of the Rand Afrikaans University, and collected from freshwater habitats in many parts of the country. All specimens were killed by the gentle application of heat, fixed in FAA and processed into glycerine by Thorne's slow method. Measurements and drawings were made from glycerine-mounted specimens by means of a camera lucida.

## Family Paractinolaimidae Thorne, 1967

### Genus *Afractinolaimus* Andrassy, 1970

In 1970 Andrassy described *Afractinolaimus noblei* from South Africa, as type and only species of a new genus *Afractinolaimus* in the family Paractinolaimidae. In his diagnosis the new genus was characterized by very large size; strong odontostyle, not fused dorsally; double guiding ring; many denticles present in the mouth cavity besides the large onchia, arranged in transverse rows; female gonads very long with multiple flexures; supplements arranged in two fascicles; tail with sexual dimorphism: long and thin in females, short and rounded in males.

Andrassy's *A. noblei* closely resembled *Paractinolaimus magaliesmontanus* Heyns & Argo, 1969, the description of which had certainly not yet reached him when his paper went to press.

In 1975, Baqri, Coomans & van der Heiden described a new species of *Paractinolaimus* from Zaïre, *P. zairensis*, which shared some characters with the species described by Andrassy, namely the arrangement of male supplements in fascicles, the length of female gonads and the rows of cheilostomal denticles. On these grounds they questioned the validity of the genus *Afractinolaimus*.

A reconsideration of the whole situation convinced us that the kind of arrangement of supplements, in an evenly spaced ventral series or in fascicles, is a significant character to separate genera, even though it can result in practical problems when males are absent. Therefore we consider *Afractinolaimus* as a valid genus and propose the transfer to it of all those species formerly assigned to *Paractinolaimus*, in which the supplements are arranged in fascicles.

Comparison of the type material of *P. magaliesmontanus* and *A. noblei* confirmed that they are conspecific. Therefore the name of the type species of *Afractinolaimus* becomes *Afractinolaimus magaliesmontanus* (Heyns & Argo, 1969) n. comb.

In view of the above-mentioned considerations an emended diagnosis of the genus *Afractinolaimus* and a key to its species are provided here.

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### Genus *Afractinolaimus* Andr ssy, 1970

Diagnosis emended: Paractinolaimidae. Body size variable. Odontostyle not dorsally fused. Guiding ring double. Many denticles present in the mouth cavity besides the four large onchia, more or less arranged in transverse rows. Female gonads generally very long, sometimes with multiple flexures. Supplements arranged in two fascicles. Tail different in the two sexes: elongate-conoid to filiform in females, short and bluntly rounded in males.

The genus *Afractinolaimus* differs from *Paractinolaimus* Meyl, 1957, which has a similar stomal structure, essentially in the arrangement of the supplements, which in the latter are not grouped in fascicles.

Type species: *Afractinolaimus magaliesmontanus* (Heyns & Argo, 1969) n. comb.

syn. *Afractinolaimus noblei* Andr ssy, 1970 (new synonymy)

Other species:

*A. capensis* (Heyns & Argo, 1969) n. comb.

syn. *Paractinolaimus capensis* Heyns & Argo, 1969

*A. minor* (Vinciguerra & De Francisci, 1973) n. comb.

syn. *Paractinolaimus minor* Vinciguerra & De Francisci, 1973

*A. zairensis* (Baqri, Coomans & Van der Heiden, 1975) n. comb.

syn. *Paractinolaimus zairensis* Baqri, Coomans & Van der Heiden, 1975

### Key to species of *Afractinolaimus*

1. Male supplements closely contiguous, in two distinct fascicles, with or without isolated supplements between the fascicles ..... 2  
Supplements in anterior fascicle less closely adjacent than in posterior one, always with one or more isolated supplements between fascicles ..... 3
2. Body large (L > 5 mm); lip region set off; no supplements between fascicles ..... *A. magaliesmontanus*  
Body smaller (L < 5 mm); lip region confluent; with solitary supplements between fascicles ..... *A. zairensis*
3. Onchia simple; 12 supplements ..... *A. minor*  
Secondary smaller onchium behind each large one; 16–20 supplements ..... *A. capensis*

*Afractinolaimus magaliesmontanus* (Heyns & Argo, 1969) n. comb.

Syn. *Afractinolaimus noblei* Andr ssy, 1970

#### Material examined

One female one male seven juveniles from pool with clear water and gravelly base in the Kloof, Rustenburg, Jan. 1975.

Female: L = 5,56 mm; a = 43; b = 3,5; c = 12,9; V = 45

Male: L = 7,66 mm; a = 43; b = 4,5; c = 97

One male from the Barrage in the Vaal River, March 1973.

L = 6,30 mm; a = 45; b = 5,5; c = 110

The specimens agree closely with the descriptions of Heyns & Argo (1969) and Andr ssy (1970), except for somewhat smaller size of the female.

*Afractinolaimus zairensis* (Baqri, Coomans & Van der Heiden, 1975) n. comb.

Syn. *Paractinolaimus zairensis* Baqri, Coomans & Van der Heiden, 1975 (Figure 1–10)

#### Material examined

Five females two males two juveniles from various samples in different tributaries of the Maitland River near Port Elizabeth, Aug. 1975.

Females: L = 3,79–4,15 mm; a = 64–76; b = 5,8–6,7; c = 14–17; V = 40–44

Males: L = 3,65–3,85 mm; a = 67–71; b = 5,5–5,8; c = 146–197

One female one male one juvenile about 3 m below the surface from the side of the Wondergat at Mafeking, Feb. 1974.

Female: L = 2,80 mm; a = 51; b = 4,8; c = 12,5; V = 42

Male: L = 2,46 mm; a = 64; b = 4,3; c = 77

One female from the Emmerentia Dam, Johannesburg, July 1975.

L = 3,14 mm; a = 65; b = 6; c = 16; V = 43

One juvenile (moulting male) from a stream near Vaalwater, Transvaal, March 1978.

Head confluent with body. The odontostyle which is not dorsally fused, is 21–22  $\mu\text{m}$  long in the population from Mafeking Wondergat and 27–31  $\mu\text{m}$  in that from Maitland River, with the aperture 1/3 its length. Denticles in the mouth cavity generally numerous and well-developed, arranged in transverse rows. Female gonads very long, reflexed only once. Many eggs, even nine, often present in the uteri. Posterior end of male broader than rest of body and generally hooked. Supplements very close together, arranged in two fascicles, each with 5–8 elements, with 1 or 2 in between.

This species is characterized by an unusually large variability both in size and in the development of denticles in the buccal cavity, as already pointed out by Baqri *et al.* (1975). Specimens of the various populations of *A. zairensis* from Za re were available for comparison. Our specimens are long and thin, like the populations from Gando, Ndalaga Lake and Kamande, but the cheilostomal structure and the number and arrangement of denticles are quite similar to those of the type (Kimboho) population.

### Genus *Paractinolaimus* Meyl, 1957

*Paractinolaimus microdentatus* (Thorne, 1939) Meyl, 1957

A single female and juvenile of this species have previously been recorded from South Africa by Heyns & Argo (1969). Several more populations have now been found, and the identification confirmed through comparison of our material with Thorne's type specimen. The general morphology and cheilostomal structure also correspond well with Andr ssy's (1964) description of *P. microdentatus* from the Dead Sea area, except that our specimens are generally somewhat smaller. No males have been found in any of the South African populations.

#### Material examined

Five females two juveniles from the Elands River near Port Elizabeth, Aug. 1975.

Female: L = 2,42–2,65 mm; a = 35–41; b = 4,4–4,5; c = 10–11; V = 45–47; odontostyle = 23–26  $\mu\text{m}$

Two females from the Van Stadens River in the Van Stadens Pass, west of Port Elizabeth, Aug. 1975.

L = 2,61–2,67 mm; a = 38; b = 4,0–4,3; c = 9–10; V = 44–47; odontostyle = 24–25  $\mu\text{m}$

Three females five juveniles from a small tributary of the Vaal River in Parys, O.F.S., April 1977.

Female: L = 2,48–3,42 mm; a = 44–47; b = 4,1–4,8; c = 11–13; v = 46–47; odontostyle = 24–25  $\mu\text{m}$

Fourteen females 15 juveniles from various samples in small

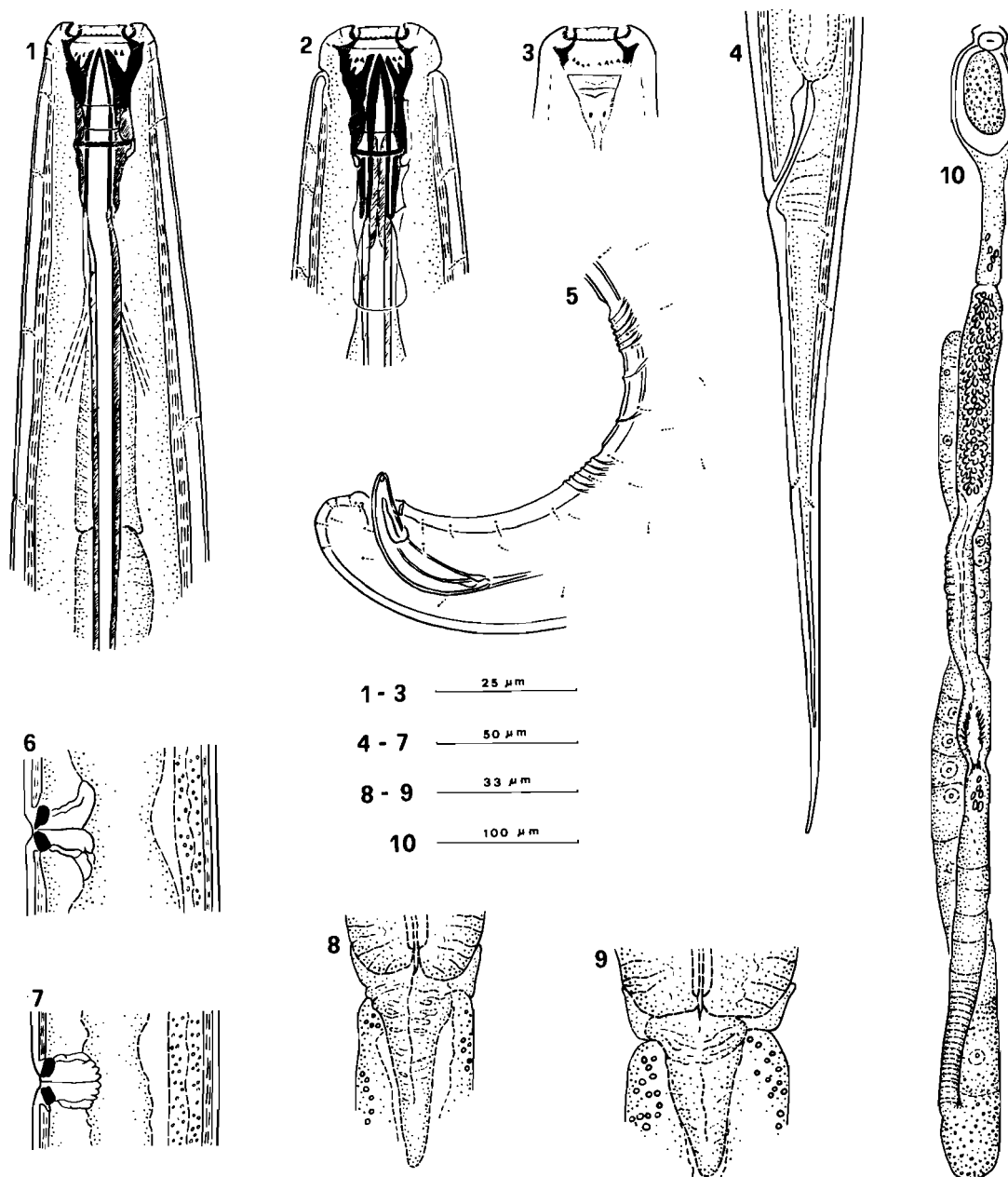


Figure 1-10 *Afractinolaimus zairensis* Baqri *et al.* 1975 from Maitland River. 1. Lateral view of head. 2. Dorso-ventral view of head. 3. Lateral view of head, showing amphid. 4. Female tail. 5. Male tail. 6 & 7. Vulva and vagina of two specimens. 8 & 9. Cardiac region of two specimens. 10. Posterior gonad of female.

streams in the Dwars River, Driehoek and Noordpoort areas in the Cedarberg, Clanwilliam district, April 1975.

Female: L = 2,11-2,84 mm; a = 29-47; b = 3,3-4,4; c = 9-13; V = 44-49; odontostyle = 22-29  $\mu$ m

Five females three juveniles from the Palmiet River near Kleinmondstrand, Caledon district, April 1975.

Female: L = 2,12-2,62 mm; a = 34-40; b = 3,5-4,1; c = 10-11; V = 46-49; odontostyle = 21-28  $\mu$ m

One female two juveniles from the Krom River between Humansdorp and Cape St. Francis, Dec. 1974.

Female: L = 2,21 mm; a = 32; b = 3,8; c = 9; V = 47; odontostyle = 26  $\mu$ m

Four females one juvenile from the Eerste River, Stellenbosch, April 1975.

Female: L = 2,04-2,66 mm; a = 30-39; b = 3,5-3,9; c = 9-12; V = 46-48; odontostyle = 25-29  $\mu$ m

One female from the Apies River, near Onderstepoort, Pretoria, April 1975.

Female: L = 2,43 mm; a = 38; b = 4,0; c = 9; V = 47;

odontostyle = 23  $\mu$ m

One female from Bon Accord Dam, Pretoria, April 1975.

Female: L = 2,24 mm; a = 39; b = 3,9; c = 9; V = 47; odontostyle = 24  $\mu$ m

### Family Neoactinolaimidae

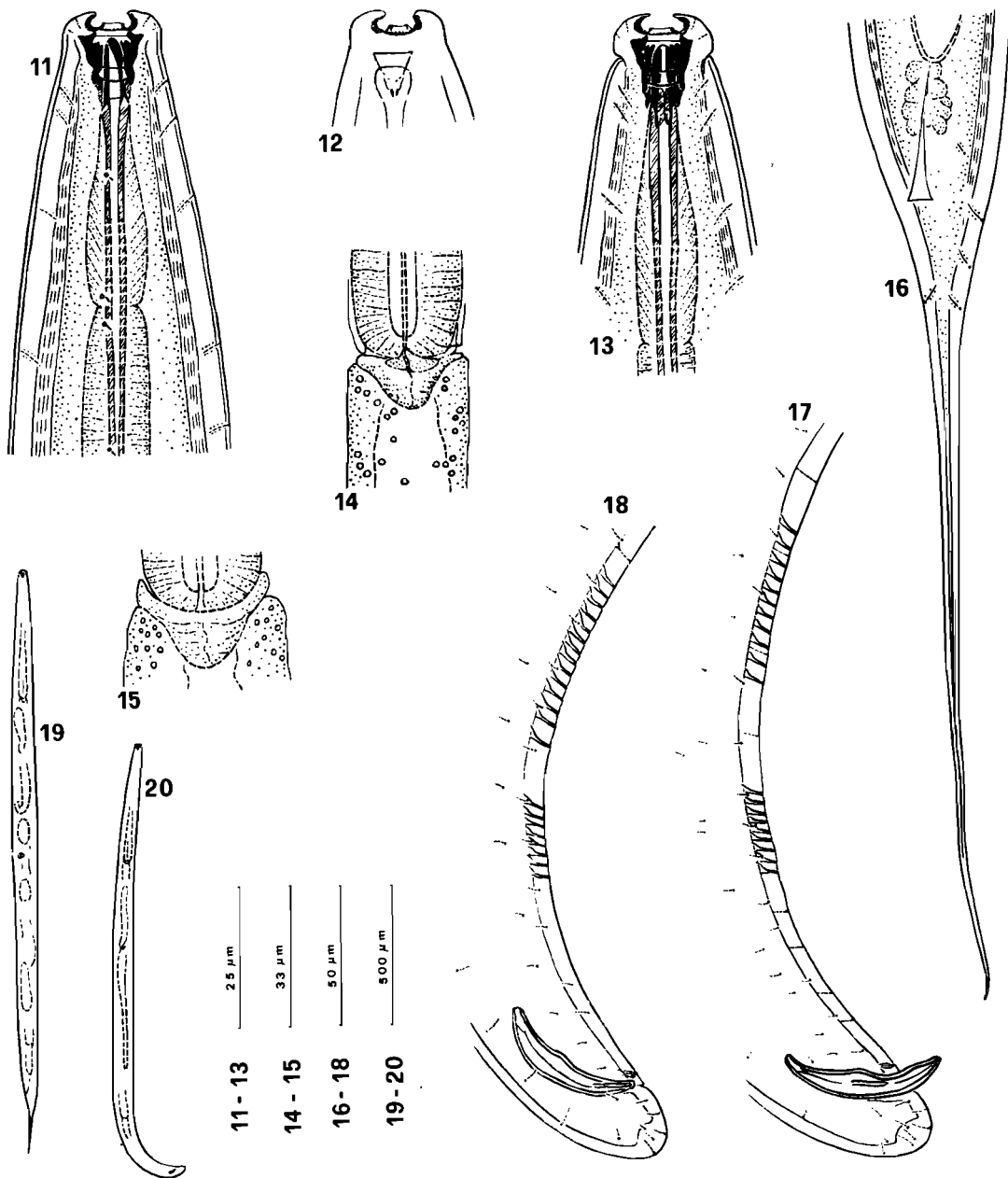
Genus *Neoactinolaimus* Thorne, 1967

*Neoactinolaimus brachydorus* n. sp. (Figure 11-20)

Holotype (female): L = 2,17 mm; a = 26; b = 4,8; c = 7,4; V = 47

Paratypes (four males): L = 1,66-1,88; a = 23-26; b = 3,9-4,5; c = 65-77

**Female.** Body straight upon fixation, tapering towards both extremities. Cuticle very finely transversely striated, 3  $\mu$ m thick at the level of the odontostyle (i.e. less than the odontostyle width), 4  $\mu$ m at mid-body, 7  $\mu$ m at the level of the anus. Several body pores, arranged in four longitudinal rows (ventral, dor-



**Figure 11–20** *Neoactinolaimus brachydorus* n. sp. 11. Head of paratype male, lateral view. 12. Head of paratype male, showing amphid. 13. Head of holotype female, dorso-ventral view. 14. Cardiac region of male paratype. 15. Cardiac region of holotype. 16. Tail of holotype female. 17 & 18. Tails of two paratype males. 19 & 20. Body posture of holotype female and paratype male, respectively.

sal and lateral), open at the cuticle surface. Head slightly set off from body and a little prominent laterally; lips amalgamated. Amphids stirrup-shaped; the aperture about half as wide as the corresponding body width. Vestibular ring corrugated. Cheilostomal wall strongly sclerotized, armed with four large onchia; with a small secondary tooth behind each onchium. Odontostyle unusually short and stout, 11  $\mu\text{m}$  long (0,6 times as long as the head width), 3,7  $\mu\text{m}$  wide; very strongly sclerotized, especially in anterior half; its aperture obscure, apparently very small. Guiding ring double. Odontophore 23  $\mu\text{m}$  long, more than twice the odontostyle length. A constriction is present at the junction of the swelling of the odontophore region with the anterior slender part of the oesophagus.

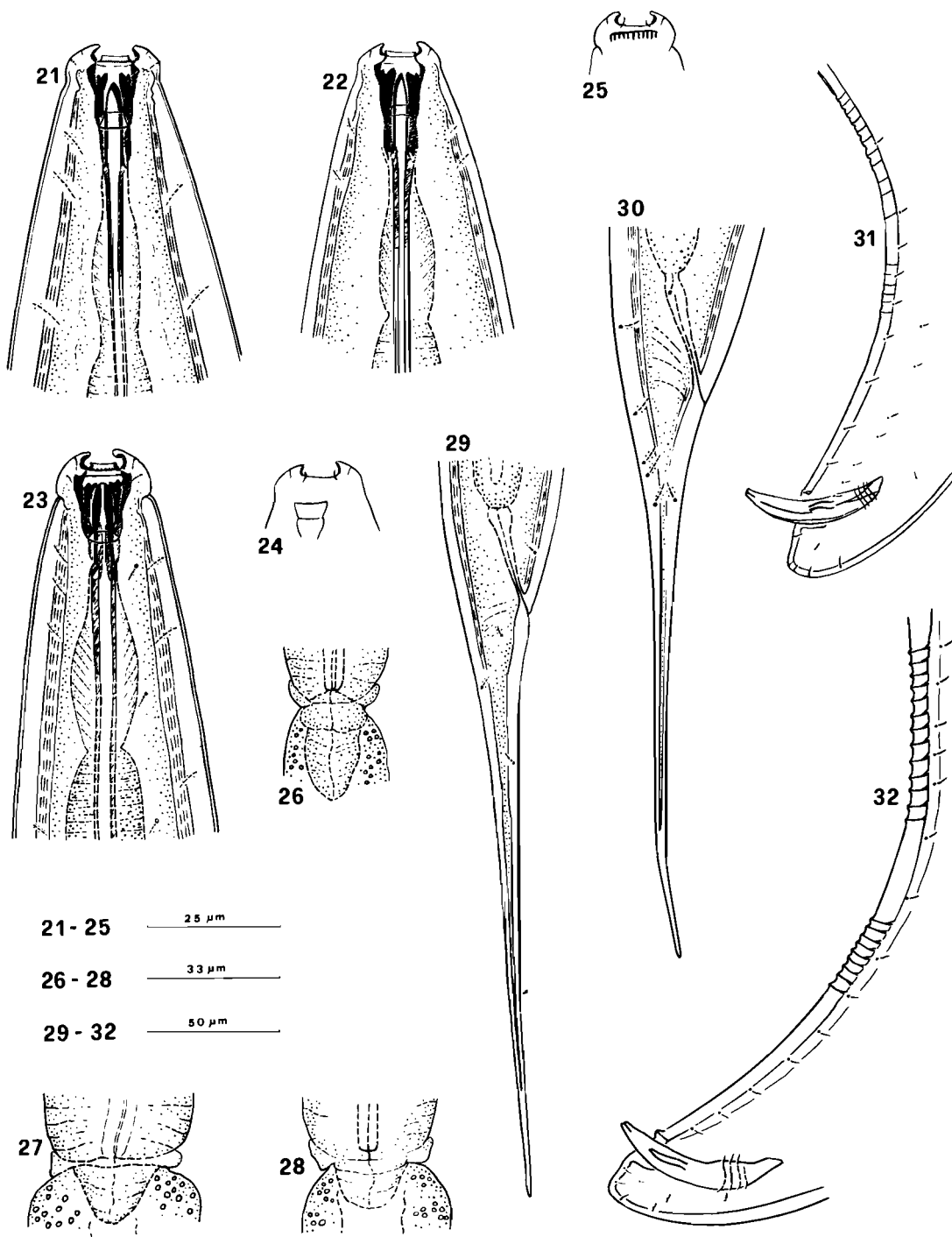
Oesophagus enlarging very gradually, attaining its maximum width at 73% of its length. A thin basal shield is present between oesophagus and intestine. Cardia short, conical, with blunt terminus. Intestinal content partially green. Prerectum five times as long as the anal body width; rectum not clearly visible. Vulva a small longitudinal slit; vagina sclerotized;

gonads paired, very long, reflexed twice; one egg present in each uterus, both eggs measuring  $80 \times 52 \mu\text{m}$ .

Tail filiform, seven times as long as the anal body width.

**Male.** Similar to female in most respects. Posterior part of body ventrally curved. Odontostyle 10–11  $\mu\text{m}$  long. Male genital system typical. Spicules 51–52  $\mu\text{m}$  long, measured along the cord. Lateral guiding pieces 11  $\mu\text{m}$  long. Supplements consisting of an adanal pair and 21–22 ventromedian ones grouped in two fascicles: the posterior with 8–9 contiguous supplements, the anterior with 12–14 supplements slightly further apart; 1 or 2 additional supplements may be present between the two fascicles. Numerous subventral papillae, irregularly spaced, are also present. Prerectum 7–8 times and rectum 1,4 times as long as the anal body width. Tail shorter than the anal body width, rounded, with a characteristic cuticular thickening at its extremity and 8–9 pairs of papillae.

**Diagnosis.** *Neoactinolaimus brachydorus* n. sp. is a small species with slightly set-off head, very short and stout odon-



**Figure 21 - 32** *Neoactinolaimus barbieri* n. sp. 21. Head of holotype female from Mtunzini. 22. Head of paratype male from Groblersdal. 23. Dorsal-ventral view of head of paratype female from Waaikraal. 24. Amphid. 25. Ribbed or corrugated vestibule. 26-28. Cardiac region of females from Groblersdal, Mtunzini (holotype) and Groblersdal, respectively. 29. Tail of paratype female from Groblersdal. 30. Tail of holotype female. 31 & 32. Tails of paratype males from Groblersdal and Mtunzini, respectively.

tostyle, a secondary tooth behind each onchium, corrugated vestibular ring, supplements in two fascicles, characteristically arranged, male tail short and round, female tail long and filiform.

The new species can be easily distinguished from any other species of *Neoactinolaimus* with similar characteristics by its extremely short odontostyle.

**Type locality and habitat.** Collected in Sept. 1973 from the bottom sediment of a small tributary of the Bronkhorstspruit River at Waaikraal in the Delmas district, Transvaal.

**Type specimens.** Holotype female on slide RAU type 157, and two paratype males on slide RAU type 158, in the collection

of the Rand Afrikaans University, Johannesburg. Two paratype males in the collection of the University of Catania, Italy.

***Neoactinolaimus barbieri* n. sp. (Figure 21 - 32)**

Holotype female (from Mtunzini): L = 2,12 mm; a = 27; b = 4,6; c = 10; V = 44

Paratypes from Mtunzini:

Four females: L = 1,87 - 2,15 mm; a = 24 - 30; b = 4,5 - 4,8; c = 9 - 13; V = 44 - 48

Two males: L = 1,94 - 2,04; a = 23 - 24; b = 4,5 - 4,9; c = 84 - 85

Paratypes from Groblersdal:

Four females: L = 1,65 - 1,90 mm; a = 24 - 28; b =

4,2–4,7; c = 8–10; V = 44–48

Two males: L = 1,42–1,62 mm; a = 22–29; b = 3,7–4,0; c = 56–74

Paratype female from Waaikraal: L = 2,33 mm; a = 29, b = 5,4; c = 11; V = 44

Paratype female from Seekoei River: L = 1,98 mm; a = 28, b = 4,8; c = 10; V = 47

**Female.** Body almost straight upon fixation, tapering towards both extremities. Cuticle smooth, thicker in the specimens from Mtunzini and Seekoei River, 3–4  $\mu\text{m}$  thick, which is more than the odontostyle width, thinner in the specimens from Groblersdal and Waaikraal, 2,2–2,6  $\mu\text{m}$  thick at the level of the odontostyle, which is slightly thinner than the odontostyle width. Numerous body pores open at the cuticle surface. Head slightly yet clearly set off from body; lips amalgamated. Amphids stirrup-shaped, divided in two parts by a transverse constriction; the aperture less than half as wide as the corresponding body width. Vestibule with distinct corrugations or ribs; vestibular ring very faintly corrugated. Cheilostome armed with four massive onchia and a small secondary tooth behind each onchium. Odontostyle 14–17  $\mu\text{m}$  long, about as long as head width, 3  $\mu\text{m}$  wide; its aperture occupying half its length. Guiding ring double. Odontophore 19–22  $\mu\text{m}$  long, about 1,5 times the odontostyle length. Oesophageal constriction present. Oesophagus enlarging gradually, attaining its full width at 52–57% of its length. A thin basal shield is present between oesophagus and intestine. Cardia variable in length. Intestinal contents spotted green. Prerectum 4–5 times, rectum 1,5 times as long as anal body diameter. Vulva a longitudinal oval pore; vagina weakly sclerotized; gonads paired, opposed and reflexed; one or two eggs are present in the uteri of many females. Tail filiform, 7 times as long as the anal body diameter.

**Male.** Similar to female in most respects. Body slightly ventrally curved towards the posterior end. Spicules 55–67  $\mu\text{m}$  and lateral guiding pieces 11–15  $\mu\text{m}$  long. Supplements numbering 22 in the specimens from Mtunzini, 17–19 in those from Groblersdal, arranged in two fascicles and without any solitary supplements between the fascicles; the posterior fascicle with 8–9 and 6–7 supplements in the specimens from Mtunzini and Groblersdal respectively, the anterior one with 13–14 and 11–13 supplements respectively; supplements in posterior fascicle contiguous, those in anterior fascicle less closely adjacent. With 9–14 pairs of subventral papillae. Tail shorter than anal body width, convex-conoid, with blunt terminus and 6 pairs of papillae.

**Diagnosis.** *Neoactinolaimus barbieri* n. sp. is a relatively small species, with short odontostyle, a secondary tooth behind each large onchium, corrugated vestibule, amphids appearing double because of transverse constriction, vulva a longitudinal pore; and supplements arranged in two fascicles without intermediate elements. Male tail short, convex-conoid; female tail long and filiform.

The new species closely resembles *N. vaalensis* Andr ssy, 1970 in morphometric characters, odontostyle length, and cheilostomal structure. It differs from *N. vaalensis* in having a thicker cuticle, even in the populations from Groblersdal and Waaikraal, where it is less thick than in those from Mtunzini and Seekoei River; the head is slightly more prominently set off; the vestibule is distinctly corrugated or ribbed and the vestibular ring is not completely smooth; the shape of the sclerotized cheilostomal wall is different; the amphids are divided into anterior and posterior chambers by a transverse constriction; the oesophagus is relatively longer; and the male tail

is not hemispherical but bluntly convex-conoid.

The new species also resembles *N. crassidens* Heyns & Argo, 1969, but differs from it in the much more anteriorly situated vulva, in the different arrangement of the supplements, in the thinner cuticle of the male tail, and in the less strongly corrugated vestibular ring.

**Type locality and habitat.** Holotype female, four paratype females, four paratype males and five juveniles from the bottom sediment of the Ibati River near Mtunzini, Natal, August 1976. Four female, two male and several juvenile paratypes from a small stream between Groblersdal and the Loskop Dam, April 1974. One female paratype from the Seekoei River on the farm Platjiesdrif, Humansdorp district, Dec. 1974. All leg. J. Heyns. One female paratype from the same sample at Waaikraal where type material of *N. brachydorus* n. sp. was found.

**Type specimens.** Holotype on slide RAU type 149; paratypes on slides RAU type 150–156 and 159, collection of the Rand Afrikaans University, Johannesburg. One female and two male paratypes in the collection of the University of Catania, Italy.

**Note:** On the basis of the foregoing considerations regarding the distinction between *Paractinolaimus* and *Afractinolaimus*, the genus *Egtitus* Thorne, 1967 is here considered a valid genus, since its species can be distinguished by having the supplements arranged in a continuous non-contiguous ventral series, and not grouped in fascicles.

The following new combination is proposed:

*Egtitus zealandicus* (Clark, 1963) n. comb.

Syn. *Actinolaimus zealandicus* Clark, 1963

*Neoactinolaimus zealandicus* (Clark, 1963) Thorne, 1967

*Mactinolaimus zealandicus* (Clark, 1963) Andr ssy, 1970

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