

Two new nematode species of the subfamily Brittonematinae (Dorylaimida: Actinolaimidae)

I. ANDRÁSSY¹

Abstract. Two new species of actinolaimoid nematodes of the subfamily Brittonematinae are described and illustrated. *Actinca marisae* sp. n. from Brazil is characterized by the long (on average 2.92 mm) and slender body, 30–32 distinct longitudinal ridges on cuticle, narrow head, slender odontostyle, onchial tips facing each other, cylindrus occupying somewhat less than one-half of pharynx, broad vulval lips, and by medium long tail. *Afractinca eburnea* sp. n. from Côte d'Ivoire can be distinguished by a relatively long body (on average 1.88 mm), thin cuticle provided with 14 longitudinal ridges, cap-like offset labial ring, very slender odontostyle, long prerectum, vulva sunk in body contour, and by the elongate-conoid female tail. Main morphological structures of *Actinca* and *Afractinca* species are summarized. Some comments on further brittonematine species are added.

Actinolaimoid nematodes belonging to the subfamily Brittonematinae Thorne, 1967 are characterized by cuticle provided with longitudinal ridges, long and slender odontostyle, tripartite pharynx with non-muscular anterior section, not or weakly sclerotized vulval lips, in two fascicles concentrated male supplements, and by elongate female and predominantly shortly rounded male tail.

In Brittonematinae, five genera and 23 species have been considered valid so far.

In this paper, I add two further species to the subfamily that proved to be new to science. Moreover, I comment on the morphology and taxonomy of some species and genera of this subfamily.

Actinca marisae sp. n.

(Figs. 1 and 2)

Holotype female: L = 2.88 mm; a = 46; b = 4.6; c = 18.5; c' = 5.6; V = 45 %.

Paratype females (n = 2): L = 2.86–3.02 mm; a = 44–47; b = 4.7–5.0; c = 18–19; c' = 5.3–5.7; V = 46–49 %.

Paratype male: L = 2.20; a = 43; b = 4.8; c = 56; c' = 0.9.

General characters. Body long and slender, more or less curved or coiled upon fixation, 60–68 μm (female) or 50 μm (male) wide at middle. Cuticle 3.5–4.0 μm thick on mid-body. Longitudinal ridges well expressed, 30–32 in most regions of body, running at a distance of 5 μm from one another. Lip region 12–14 μm wide and 8–9 μm high, hardly offset by a slight depression; lips fused. Body at posterior end of pharynx 4.3–4.8 times as wide as head. Labial and cephalic sensillae minute. Amphids funnel-shaped with aperture about as wide as two-thirds of corresponding body diameter.

Vestibular ring weak, 4.5–5.0 μm wide. Vestibulum 5–6 μm broad; onchia with tips facing each other. Buccal capsule (measured from the oral field to the fixed guiding ring) 16–17 μm long, its lining weakly sclerotized. Odontostyle slender, thinner (1.5 μm) than cuticle (2 μm) at the same level, 23–25 μm long, 1.8–1.9 times as long as lip region width. Aperture occupying about one-fifths of stylet length. Pharynx 580–620 μm long, enlarged in two steps, at 44–48 and 52–55 % of its length, respectively. Anterior section of pharynx tubular, non-muscular, mid-section 38–42 μm long. Pharyngeal gland nuclei rather inconspicuous, AS nuclei not perceptible. Dorsal nucleus located at 54–58 % of pharyngeal length

¹Dr. István Andrásy, ELTE Állattrendszertani és Ökológiai Tanszék, MTA-ELTE Zootaxonomiai Kutatócsoport (Department of Systematic Zoology and Ecology of the Eötvös Loránd University, Systematic Zoology Research Group of the Hungarian Academy of Sciences), Pázmány Péter sétány 1/C, 1117 Budapest, Hungary.

or 11–12 % of total body length. PS1 = 79–80 %, PS2 = 80–82 %. Glandularium 230–260 µm long. Cardia short, rounded, glossa absent.

Female. Distance between posterior end of pharynx and vulva as long as or somewhat longer (1.2 times) than pharynx. Prerectum 6–8, rectum 1.6–2.0 times the anal body width long. Genital apparatus didelphic, well-developed. Each branch 5.8–7.0 times as long as body diameter or occupying 12–14 % of body length. Vulva longitudinal, its slightly sclerotized lips 16–18 µm wide. Vagina 30–35 µm long, penetrating halfway in body width. Distal part of vagina somewhat heart-shaped with rounded inner contours, practically not sclerotized, occupying about one-third of entire length of vagina. Uterine eggs one to four at a time, 70–95×35–42 µm. Eggshell smooth. Vulva–anus distance equals 8.8–9.2 tail lengths. Tail elongate-conoid, 145–164 µm long or occupying 5.1–5.6 % of entire length of body. Tip of tail pointed or very finely rounded.

Male. Unfortunately, the only male specimen is in rather bad condition with hardly discernible inner structure. Testes diorchic. Spicula slender, about 60 µm long. Adanal pair of supplements large. Ventromedial supplements concentrated in two fascicles probably with 5–6 elements in each; fascicles 94 and 184 µm apart from cloaca, respectively. Copulatory hump well developed. Prerectum indistinct. Tail short, 40 µm, occupying only 1.8 % of body length, its terminus conoid-rounded.

Diagnosis and relationships. A long (on average 2.92 mm) and slender species, the longest within the genus, with 30–32 distinct longitudinal ridges on cuticle, narrow head, slender odontostyle, onchial tips facing each other, pharynx enlarged in two steps, cylindrus occupying somewhat less than one-half of pharynx, broad vulval lips, and with medium long female tail.

The genus *Actinca* Andrásy, 1964 comprises five species, one of which living in Africa and four in Central and South America. The former species

is *A. gracillima* Andrásy, 1964. Because of its distribution, *Actinca marisae* sp. n. can be compared with the latter species, namely with *A. bidentata* (Loof & Zullini, 2000) Vinciguerra & Clausi, 2003, *A. dicastrii* Andrásy, 1968, *A. fusiformis* (Thorne, 1967) Andrásy, 1970 and *A. memorabilis* Andrásy, 1968. It simply differs from *A. memorabilis* by the essentially longer body (2.9–3.0 vs. 1.4–1.6 mm). For the body length (2.9–3.0 vs. 2.3–2.6 mm in females) and number of cuticular ridges (30–32 vs. 24–26) it also differs from the other three species. Furthermore, it is distinguishable from *A. bidentata* by the simple onchia (vs. two-tipped), the longer odontostyle (23–25 vs. 20 µm), the more anterior position of the dorsal pharyngeal nucleus (54–58 vs. 62–63 %), and by the other shaped male tail (narrowly vs. broadly rounded); from *A. fusiformis* by the tips of onchia facing each other (vs. anteriorly directed), the longer prerectum (6–8 vs. 3 anal body widths long) and the shorter tail (145–164 vs. 210 µm); from *A. dicastrii* (known only in male) by the longer male body (2.2 vs. 1.8 mm) and the less slender shape ($a = 43$ vs. 70).

Finally, *Actinca marisae* sp. n. differs from the aforementioned African species, *A. gracillima*, in having a longer body (2.9–3.0 vs. 2.3–2.6 mm), thicker cuticle (3.5–4.0 vs. 1.0–1.5 µm) and a broader lip region (12–14 vs. 6–8 µm).

Type specimens. Holotype female on slide No. A-15007. Paratypes: two females, one male and three juveniles; in the nematode collection of Department of Systematic Zoology and Ecology of the ELTE University, Budapest.

Type habitat. Mud with roots of water plants from a small rivulet at the Iguaçú Waterfalls, Iguaçú National Park, Paraná State, Brazil; collected in December 1965 by the present author.

Etymology. I dedicate this species to my dear friend, Professoressa Maria Teresa (Marisa) Vinciguerra (Catania, Italy), the outstanding nematologist and special expert of the actinolaimoid nematodes.

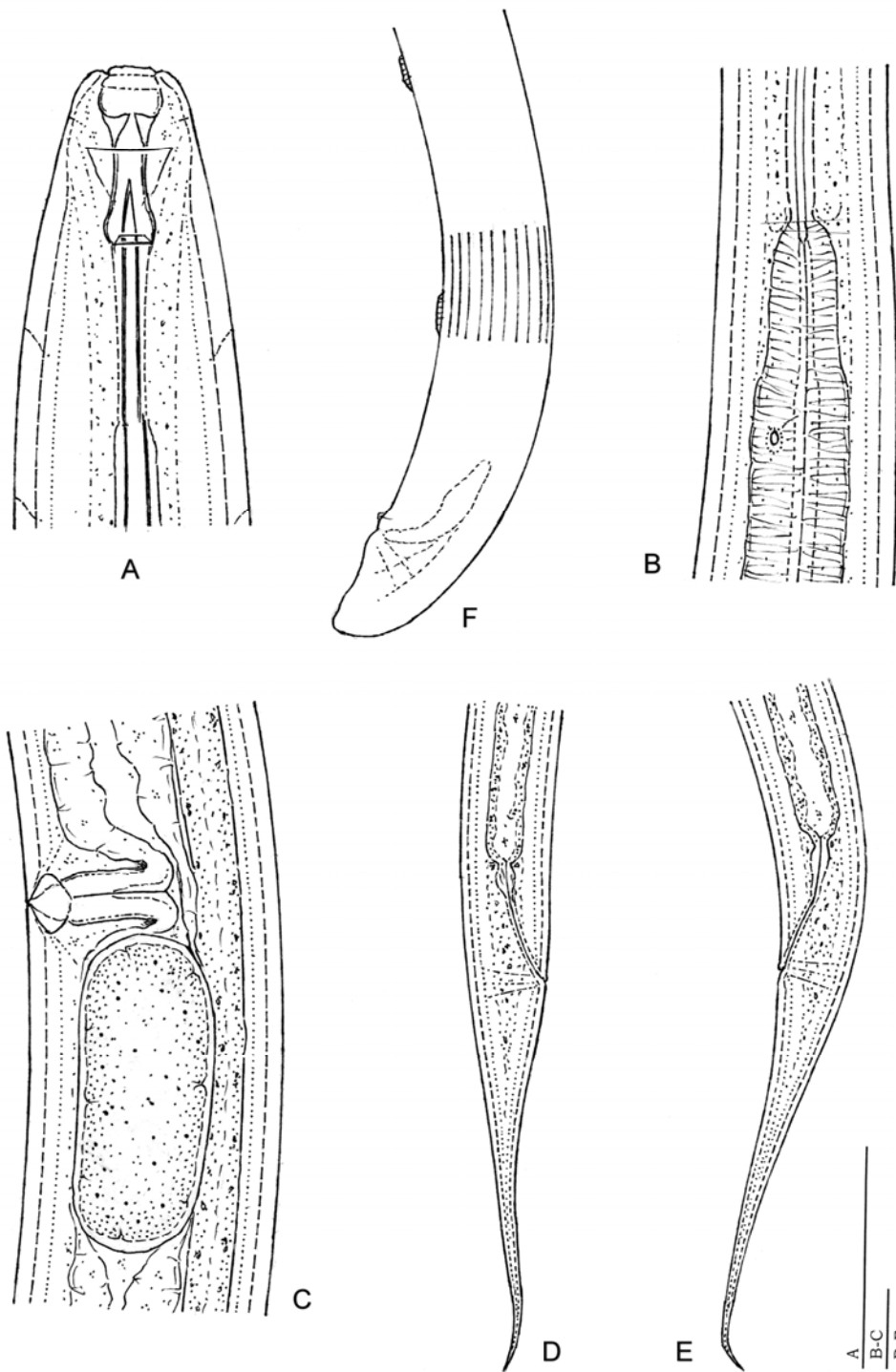


Figure 1. *Actinca marisae* sp. n. A: anterior end; B: mid-region of pharynx; C: vulval region; D–E: female posterior end; F: posterior end of male (a wounded specimen). (Scale bars 20 μ m each)

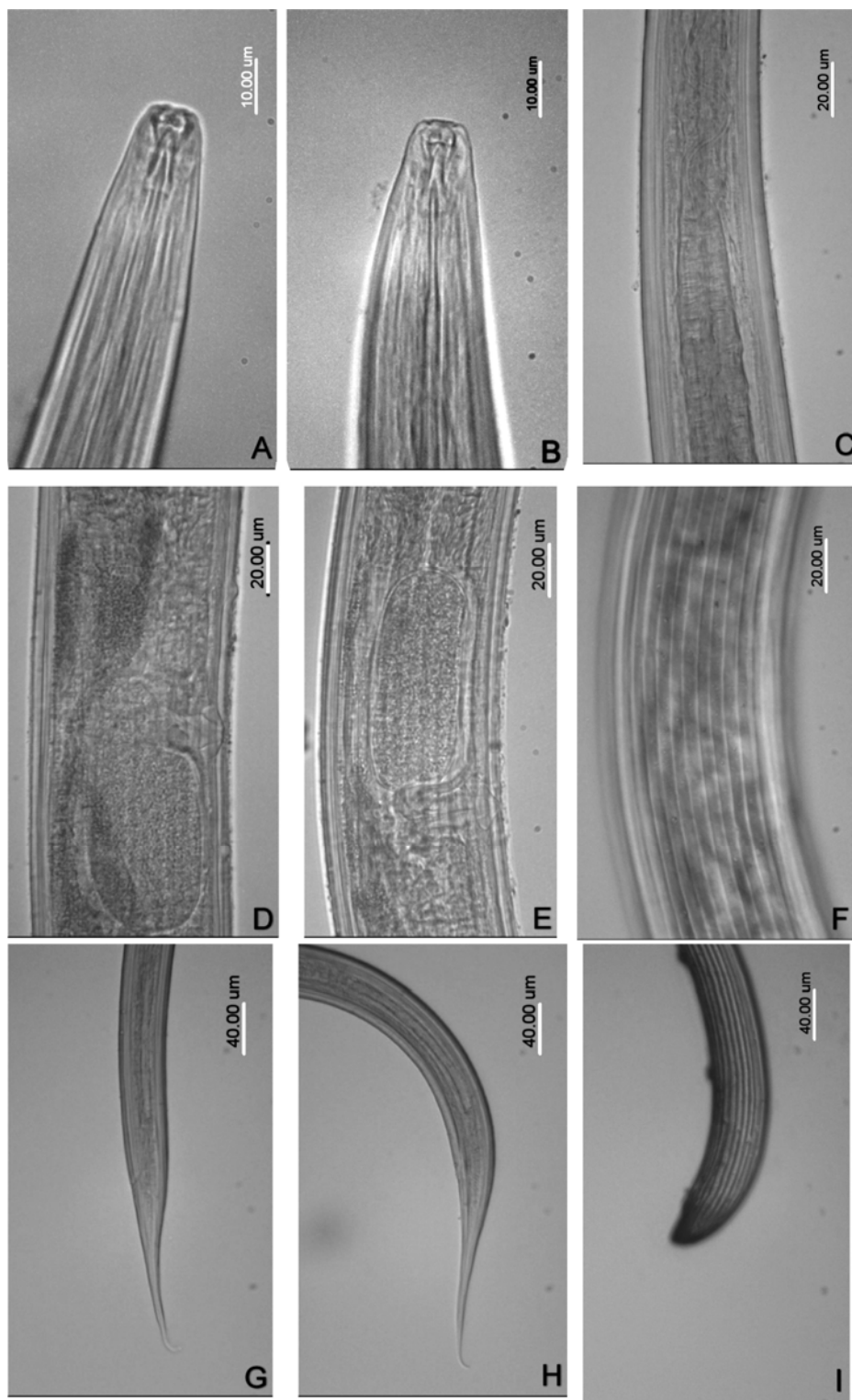


Figure 2. *Actinca marisae* sp. n. A–B: anterior end; C: medial section of pharynx; D–E: vulval region; F: mid-body showing cuticular ridges; G–H: female posterior end; I: male posterior end

Afractinca eburnea sp. n.

(Figs 3 and 4)

Holotype female: L = 1.96 mm; a = 40; b = 4.2; c = 20; c' = 4.6; V = 45 %.

Paratype female: L = 1.80 mm; a = 44; b = 4.3; c = 19; c' = 6.0; V = 46 %.

General characters. Body almost straight after fixation, strongly tapered towards both ends, 44–50 µm wide at mid-region. Cuticle 2.5–3.0 µm thick on most body, finely but conspicuously transversely striated, and provided with 14 well marked, about 3 µm thick longitudinal ridges the medial lines of which lying at a distance of 6–7 µm from one another. Cuticular pores minute, scattered. Lips fused, lip region continuous with adjoining neck, very narrow, 6–7 µm wide at apices of buccal onchia; body at posterior end of pharynx 5.7–6.5 times wider than head. Anterior end of lip region offset, narrower than sublial part and possessing a cuticular ring and the somewhat dome-shaped, 4 µm wide oral field. Labial papillae located on the vestibular ring, minute but discernible; cephalic papillae located just before the amphidial apertures, also discernible. Amphids pouch-shaped with aperture occupying more than three-fourths of corresponding body.

Vestibulum 4 µm broad, vestibular ring hardly sclerotized. Buccal cavity armed with four small onchia with anteriorly directed apices. Buccal capsule 8–9 µm long (from oral field to guiding ring), lined with slight sclerotization. Odontostyle 18–20 µm long, very narrow with hardly observable lumen, much thinner (0.8 µm) than cuticle (2 µm) at the same level. Odontophore wider than stylet, its posterior end not distinct. Pharynx 422–465 µm long; its anterior section tube-like, non-muscular, the mid-section short, gradually widened and weakly muscular, while the cylinder strongly muscular and occupying 47–49 % of pharyngeal length. Dorsal nucleus located at 56–57 % of pharyngeal length or 11–13 % of total body length. Other pharyngeal nuclei not observable. Glandularium 186–198 µm long. Cardia short, rounded.

Female. Prerectum 5.0–5.5 times, rectum 1.5–1.6 times as long as anal body diameter. Distance between proximal end of pharynx and vulva as long as or a little shorter than pharynx. Genital apparatus didelphic, moderately developed. Anterior genital branch 5.8–6.4 body widths long or occupying 8.0–8.6 % of body length, posterior branch 7.0–7.8 body widths long or occupying 9.2–9.7 % of body length. Vulva sunk in body contour, or more exactly the medioventral cuticular ridge is characteristically interrupted at vulva. Vagina 20–24 µm long, extending halfway of body width. Neither spermatozoa, nor eggs were observed. Vulva–anus distance equals 8.4–10.5 tail lengths. Tail elongate-conoid, 91–98 µm long or occupying 4.8–5.7 % of entire length of body, gradually tapered to the sharp terminus.

Male. Not observed.

Diagnosis and relationships. *Afractinca eburnea* sp. n. is characterized by a relatively long (on average 1.88 mm) body, thin cuticle with 14 longitudinal ridges, cap-like offset labial ring, very slender odontostyle, long prerectum, vulva sunk in body contour, and by the elongate-conoid female tail.

By virtue of the low number of cuticular ridges (14), it shares similarities with two of the four known species of the genus, viz. *Afractinca heynsi* (Coomans & Vinciguerra, 1989) Vinciguerra & Clausi, 2000 and *A. irmae* (De Ley & Coyne, 1997) Vinciguerra & Clausi, 2000. It simply differs from the former in having a longer body (1.8–2.0 vs. 1.1–1.3 mm) and a longer tail (91–98 vs. 58–68 µm). From the equally long latter species, which it resembles more, it differs in the shape of the lip region, the very narrow head (6–7 vs. 12–13 µm, or 1/5–1/6 vs. 1/2–1/3 of cardinal body width), the shorter odontostyle (18–20 vs. 28–31 µm), and in the structure of the vulva.

Type specimens. Holotype female on slide No. A-5267. Paratypes: one female and one juvenile; in the nematode collection of Department of Systematic Zoology and Ecology of the ELTE University, Budapest.

Type habitat and locality. Rice field at the foot of Collines (Mountains) Baoulé, close to the capi-

<i>Actinca</i>	<i>Afractinca</i>
Labial field with internal (sunken) sclerotized ring	Labial field with external (protruded) cuticular ring
Six inner labial papillae behind the labial ring	Six inner labial papillae on the labial ring
Cuticle with 24–32 longitudinal ridges	Cuticle with 14–22 longitudinal ridges
Cuticle between ridges smooth (under light microscope)	Cuticle between ridges transversely striated (under light microscope)
Vulva levelling with body surface, ventro-medial longitudinal ridge(s) continuous at vulva	Vulva sunk in body contour, ventro-medial longitudinal ridge interrupted at vulva
One species inhabiting East Africa, the other five Central and South America	All the five species inhabiting West Africa

tal Yamousoukro, Côte d'Ivoire (Ivory Coast), collected in 1968 by G. Merny.

Etymology. Latin *eburnea* (feminin in gender) means: ivory, or: of ivory, and refers to the name of the country, Ivory Coast, where this species was found.

ACTINCA AND AFRACTINCA

As for their general morphology, *Actinca* and *Afractinca* are closely related genera within the subfamily Brittonematinae. Nevertheless, there are morphological structures that well characterize them as is seen above.

At the same time, *Actinca* (6 species) and *Afractinca* (5 species) can be differentiated from the other four genera of Brittonematinae as follows. From *Brasilaimus* Lordello & Zamith, 1957 (7 species) by the thinner cuticle, generally lower number of cuticular ridges (14–32 vs 30–40), absence of a pharyngeal glossa and, mainly, by the structure of the distal part of vagina (with small sclerotized lateral pieces or “lips” vs massive, lacking lateral pieces). From *Parastomachoglossa* Coomans & Loof, 1986 (3 species) by the lower number of cuticular ridges (14–32 vs 32–40), the always thin odontostyle (vs rather robust) and the short medial portion of pharynx (vs long). From *Brittonema* Thorne, 1967 (3 species; see in Remarks) by the weak cheilostomal sclerotization (vs very heavy) and the simple male tail (vs with a

filiform appendix). Finally, from *Practinocephalus* Andrássy, 1974 (1 species) by the lower number of cuticular ridges (14–32 vs 100), the normal (not strongly widened) head, the weak cheilostomal sclerotization (vs heavy) and the simple male tail (vs with appendix).

As far as is known, the representatives of the subfamily Brittonematinae show a special distribution pattern inasmuch as they are restricted to two continents, Africa and Central/South America. Among 25 species regarded as valid, 9 have been reported from Africa and 16 from America. Thus, the species of *Actinca* occur in East Africa (Kenya, Uganda) and Central and South America (Puerto Rico, Costa Rica, Brazil, Paraguay), those of *Afractinca* in West Africa (Côte d'Ivoire, Burkina Faso, Cameroon; Fig. 5), species of *Brasilaimus* in Central and South America (Mexico, St. Lucia, Puerto Rico, Costa Rica, Ecuador, Galapagos, Bolivia, Brazil, Paraguay), members of *Parastomachoglossa* in West (Côte d'Ivoire), East (Ethiopia, Tanzania) and South Africa, species of *Brittonema* in Central and South America (Puerto Rico, Ecuador, Peru), while the only species of *Practinocephalus* inhabits Central America (Puerto Rico).

Actinca Andrássy, 1964

The following six species are considered valid (type species underlined).

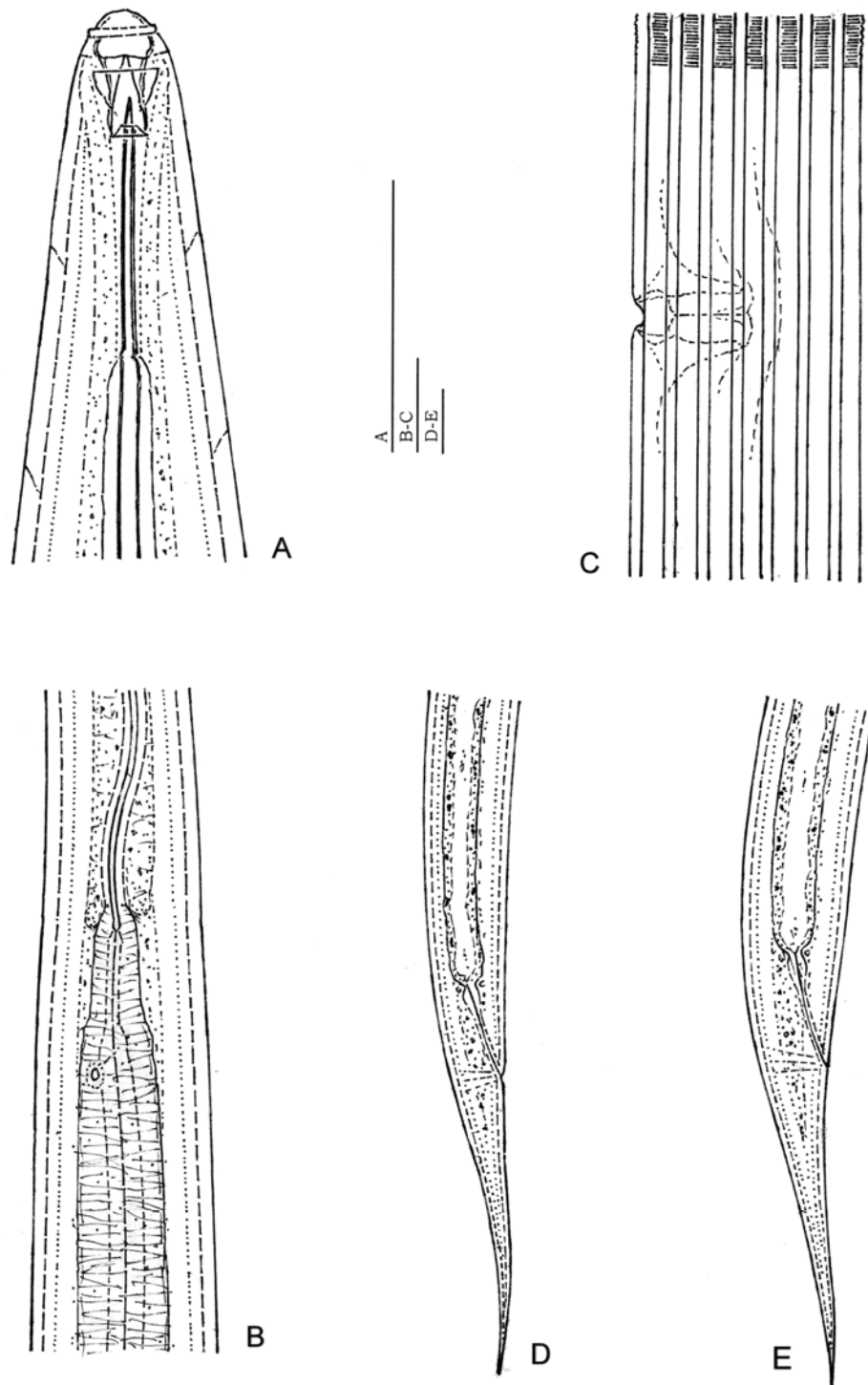


Figure 3. *Atractinca eburnea* sp. n. A: anterior end; B: mid-region of pharynx; C: vulval region showing cuticular structure and vagina; D–E: female posterior end. (Scale bars 20 μ m each)

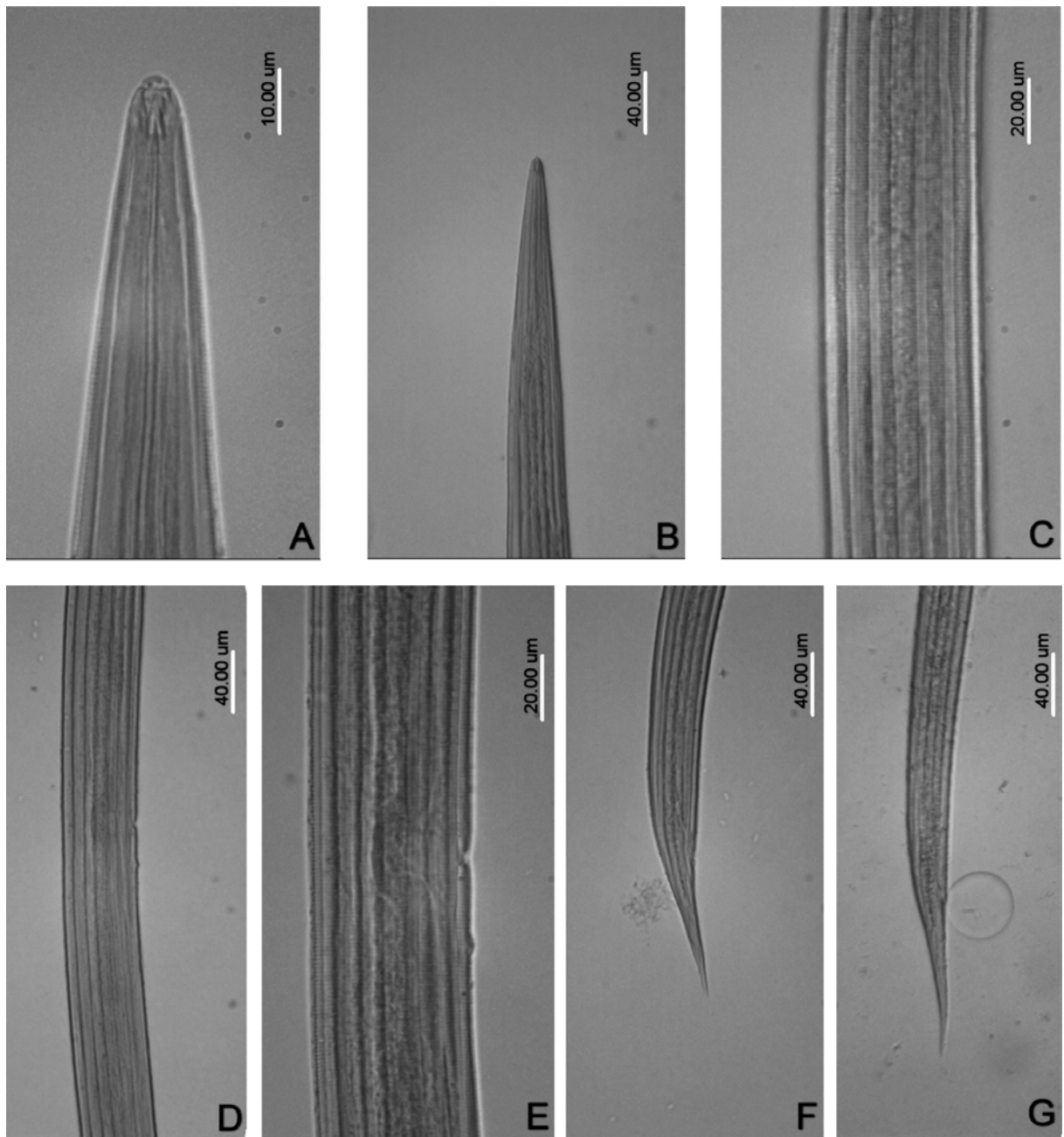


Figure 4. *Afractinca eburnea* sp. n. A: anterior end; B: anterior neck region; C: mid-body showing cuticular ridges; D: mid-body region; E: vulval region (note the interrupted ventral ridge at vulva); F-G: female posterior end

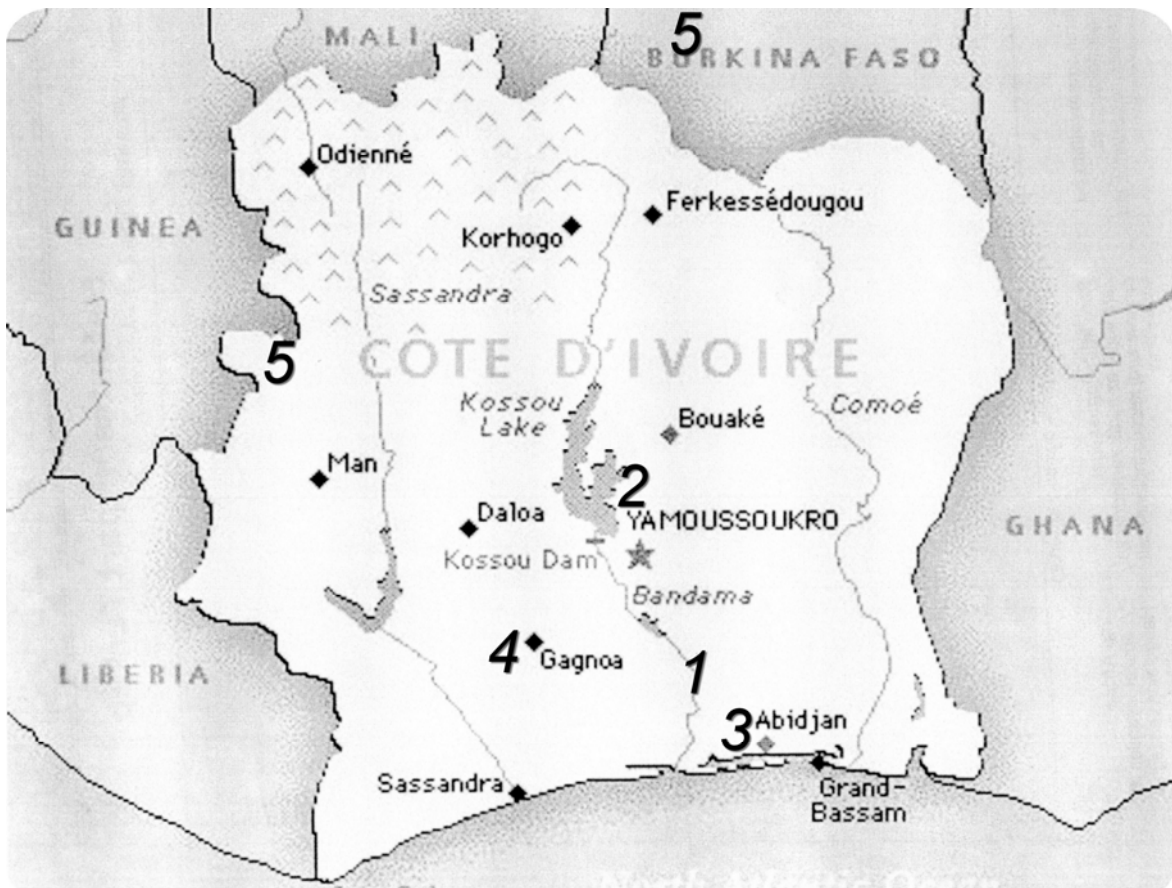


Figure 5. Distribution of *Afractinca* species in Côte d'Ivoire. 1. *A. andrassyi*: grass roots, Tiassalé, near Bandama River; 2. *A. eburnea*: rice field, Collines Baoulé near the capital Yamoussoukro; 3. *A. heynsi*: humid soil with decayed leaves, valley of Banco River, Abidjan; 4. *A. irmae*: rice field, Guessihio near Gagnoa; 5. *A. papillata*: liverworts at a waterfall of a rivulet, close to Touba. The latter species was also recorded from moss at a waterfall, Comoé River, Banfora, Burkina Faso

A. bidentata (Loof & Zullini, 2000) Vinciguerra & Clausi, 2003
Brasilaimus bidentatus Loof & Zullini, 2000

A. dicastrii Andrásy, 1968
Brasilaimus dicastrii (Andrásy, 1968) Vinciguerra, Zullini & Monteiro, 1999

A. fusiformis (Thorne, 1967) Andrásy, 1970
Brittonema fusiforme Thorne, 1967
Brasilaimus fusiformis (Thorne, 1967) Vinciguerra, Zullini & Monteiro, 1999

A. gracillima Andrásy, 1964
Brasilaimus gracillimus (Andrásy, 1964) Vinciguerra, Zullini & Monteiro, 1999

A. marisae sp. n.

A. memorabilis Andrásy, 1968
Brasilaimus memorabilis (Andrásy, 1968) Vinciguerra, Zullini & Monteiro, 1999

Uncertain species:

A. striata (Thorne, 1939) Andrásy, 1964 – inq.
Actinolaimus striatus Thorne, 1939
Paractinolaimus striatus (Thorne, 1939) Meyl, 1957
Brittonema striatum (Thorne, 1939) Vinciguerra, Zullini & Monteiro, 1999

A. tenuiaculeata (Kreis, 1924) Andrásy, 1964 – inq.

Dorylaimus tenuiaculeatus Kreis, 1924

Afractinca Vinciguerra & Clausi, 2000

The genus comprises the following five species (type species underlined).

- A. andrassyi* Vinciguerra & Clausi, 2000
- A. eburnea* sp. n.
- A. heynsi* (Coomans & Vinciguerra, 1989) Vinciguerra & Clausi, 2000
Actinca heynsi Coomans & Vinciguerra, 1989
Brasilaimus heynsi (Coomans & Vinciguerra, 1989) Vinciguerra, Zullini & Monteiro, 1999
- A. irmae* (De Ley & Coyne, 1997) Vinciguerra & Clausi, 2000
Actinca irmae De Ley & Coyne, 1997
Brasilaimus irmae (De Ley & Coyne, 1997) Vinciguerra, Zullini & Monteiro, 1999
- A. papillata* (Schneider, 1935) Vinciguerra & Clausi, 2000
Actinolaimus papillatus Schneider, 1935
Actinca papillata (Schneider, 1935) Andrásy, 1964
Brasilaimus papillatus (Schneider, 1935) Vinciguerra, Zullini & Monteiro, 1999

REMARKS

Brittonema sulcatum Thorne, 1967. Thorne (1967) erected a new actinolaimoid genus, *Brittonema*, and described its three species, *B. sulcatum*, *B. fusiforme* and *B. spicatum*. Meanwhile, two of these species have been transferred to other genera as *Actinca fusiformis* (Thorne, 1967) Andrásy, 1970 and *Brasilaimus spicatus* (Thorne, 1967) Vinciguerra, 1987. The third species, the type of the genus, *B. sulcatum* is characterized by a peculiar structure: the rounded tail of the male possesses a long filiform appendix. The male tail in other Brittonematinae species, where males are known, is simply rounded without any appendix, except for *Practinocephalus brzeskii* Vinciguerra & Clausi, 2000 where the male tail is also provided with a short filiform process.

The taxonomic position of *B. sulcatum* and the genus *Brittonema* itself has been discussed by several authors. They were common in that the filiform extension of the male tail was an anomaly. Therefore, Coomans and Loof (1986), and Jairajpuri and Ahmad (1992) synonymized *Brittonema* with *Actinca*, while Vinciguerra, Zullini and Monteiro (1999), Zullini and Vinciguerra (2000) as well as Andrásy (2009) placed it in synonymy with *Brasilaimus*. Nevertheless, a male tail possessing appendix does occur in other brittonematine species (*Practinocephalus brzeskii* and most probably also in the type species of this genus, *P. bizarrus*), what means the observations of Thorne can be accepted as real. As a consequence, there are two solutions. Either, *Brittonema* and *Practinocephalus* are considered one and the same genus, as already mentioned by Vinciguerra and Clausi (2003), and in this case the former name will be regarded as valid. Or, each would be accepted as good genus, where *Brittonema* includes three species with normal or slightly swollen head and 30–40 cuticular ridges (*B. sulcatum*, *B. secundum* and *B. brzeskii*¹), while *Practinocephalus* contains one species with greatly widened head (*P. bizarrus*) and a high number of cuticular ridges (about 100). For the present, I prefer the second option to vote.

Actinca intermedia Andrásy, 1968. I described this interesting species from Tanzania, and found it later also in South Africa. After restudying the original material and examining some further specimens originated from the type locality, I found that this species can not be left in the genus *Actinca* but it should better be transferred to the genus *Parastomachoglossa*. As is seen on the original figures here attached (Fig. 6) as well as on the microphotos (Fig. 7), the comparatively strong odontostyle, the long muscular part of the anterior section of the pharynx, and the shape of the vagina correspond to the criteria of the latter genus. Therefore, I transfer it herewith as *Parastomachoglossa intermedia* (Andrásy, 1968) comb. n.

¹ *Brittonema secundum* (Andrásy, 1986) comb. n.; syn. *Practinocephalus secundus* Andrásy, 1986. – *Brittonema brzeskii* (Vinciguerra & Clausi, 2000) comb. n.; syn. *Practinocephalus brzeskii* Vinciguerra & Clausi, 2000.

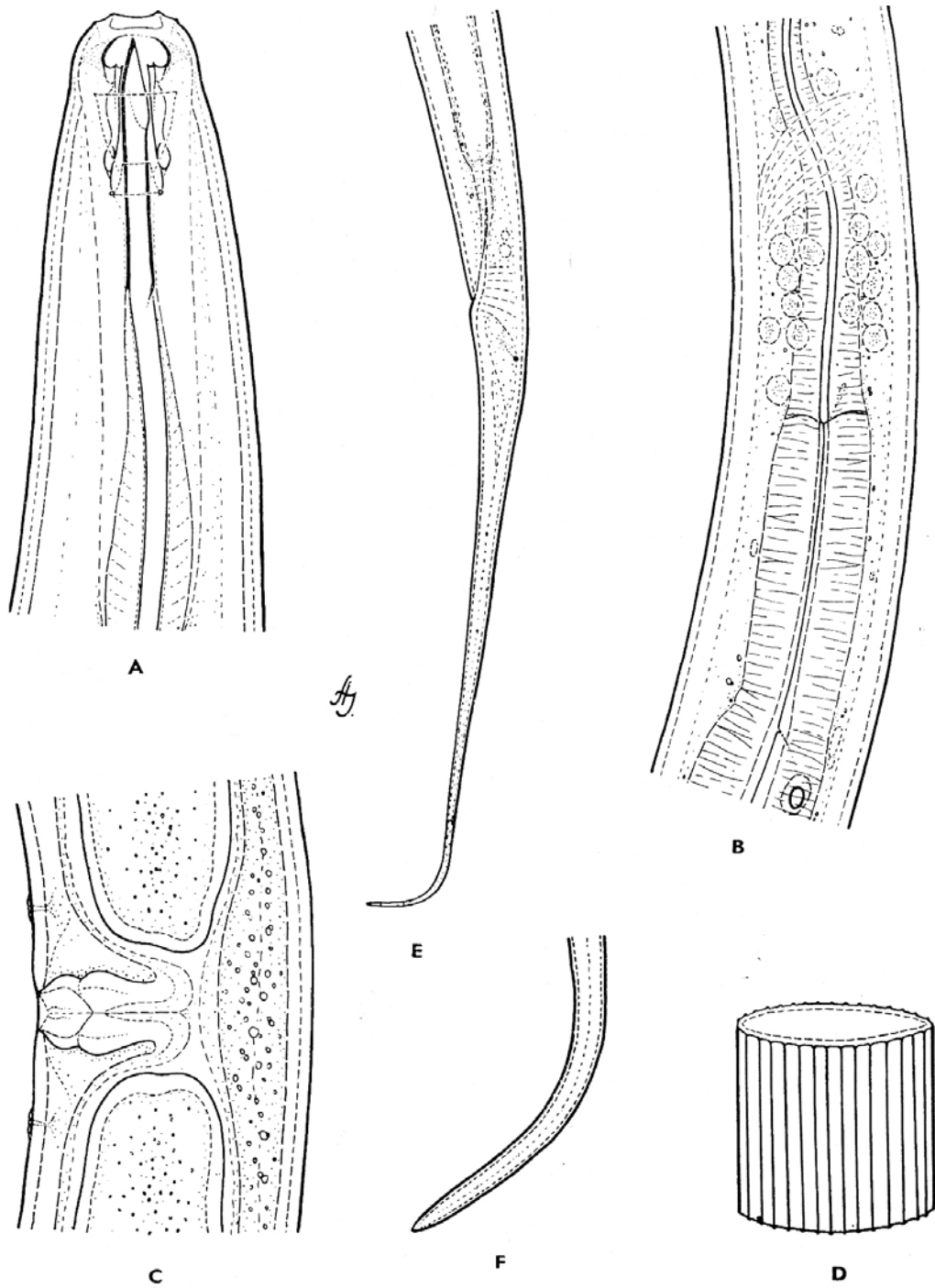


Figure 6. *Parastomachoglossa intermedia* (Andrássy, 1968) comb. n. A: anterior end; B: mid-region of pharynx; C: vulval region; D: longitudinal ridges; E: female tail; F: tip of tail (after Andrássy, 1968)

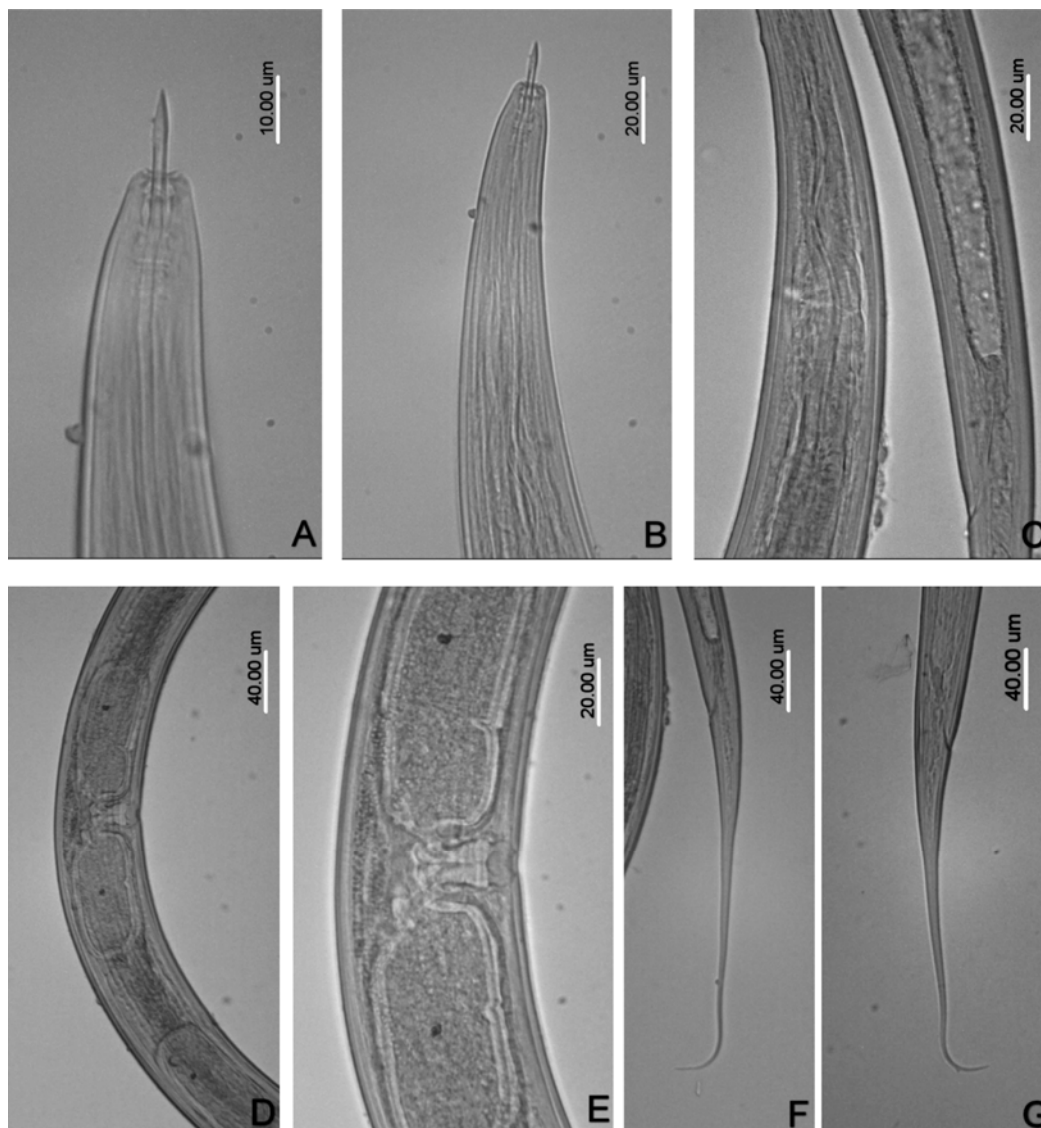


Figure 7. *Parastomachoglossa intermedia* (Andrássy, 1968) comb. n. A: anterior end; B: anterior body region; C: left: mid-region of pharynx, right: prerectum + rectum (of the same coiled specimen); D: mid-body with gonads; E: vulval region showing two uterine eggs; F–G: female posterior end

Parastomachoglossa perplexa (Heyns & Argo, 1969) Vinciguerra & Coomans, 1988, described from South Africa, is likely identical with *P. intermedia*.

Some measurements of the newer specimens of *Parastomachoglossa intermedia* are in Tab. 3.

***Parastomachoglossa japonica* Tsalolikhin, 1999.** Tsalolikhin described under the name *Parastomachoglossa japonica* a new species from the Biwa Lake in Japan as first representative of the genus

living out of Africa. Recently (2009), he also reported this species, without description, from Thailand. However, this species essentially differs from the „real” members of *Parastomachoglossa* in having a more robust odontostyle, a pharynx not divided into three parts and male supplements not arranged in fascicles but in two simple groups. Moreover, Tsalolikhin writes: „Cuticle longitudinally striate, ridges 25–35 on midbody”. So wide range of cuticular ridges within the same species nowhere occur in brittonematine nematodes. By

virtue of the above mentioned structures and of the Asian occurrence, this species hardly can be left among the Brittonematinae, but it should be placed elsewhere within the actinolaimoid nematodes. For the present, Thalolikhin's species is better to be regarded as *incertae sedis*.

Table 3. *Parastomachoglossa intermedia*, measurements of 4 females

L	2.05–2.27 mm
a	36–38
b	4.0–4.5
c	8.8–9.0
c'	12–13
V	43–47 %
Body width	54–61 µm
Lip region width	10–11 µm
Odontostyle	21–23 µm
Pharynx	500–508 µm
D pharyngeal gland	52–55 %
AS ₂ pharyngeal gland	59–61 %
Rectum	2.3–2.5 abw
Prerectum	6.4–7.3 abw
Eggs	83–89×34–38 µm
Tail	233–250 µm

Actinolaimus papillatus Schneider, 1935. While describing the first *Actinca* species, *A. gracillima* Andrásy, 1964, I supposed that the species recorded by Altherr (1960) from Cameroon under the name *Actinolaimus papillatus* Schneider, 1935 was identical with *A. gracillima*. For the moment, I better think that Altherr's species belonged to the genus *Afractinca* (because of the head shape, broad cuticular ridges, transversely striated cuticle), and was likely identical with *A. papillata*. If so, this was the third occurrence of this *Afractinca* species: moss at the Waterfall Mpoumé on the Nyong River, Cameroon. Interestingly, all the three West African records of *Afractinca papillata* came from the vicinity of waterfalls.

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Table 1. Main morphometric characters of *Actinca* species

<i>Actinca</i> ♀ ♂	L mm	a	b	c	c'	V	Cuticle ridges	Labial width µm	Stylet µm	Tail µm	Suppl.	Spicula µm	Distribution
<i>bidentata</i>	2.3-2.6	47-57	4.2-4.6	13-15	7-8	43-45	24-26	12-13	20-23	192	6 + 6-7	60-65	Costa Rica Brazil*
	1.8-2.2	52-58	3.3-4.1	59-67	-	-	-	-	-	-	-	-	
<i>dicastrii</i>	-	-	-	-	-	-	24	7	20	-	7 + 6	42	Paraguay
	1.8	70	3.7	90	-	-	-	-	-	-	-	-	
<i>fusiformis</i>	2.3	35	4.3	11	6	42	24	10	22	210	-	-	Puerto Rico
	-	-	-	-	-	-	-	-	-	-	-	-	
<i>gracillima</i>	2.3-2.6	43-57	4.0-4.8	14-21	5-9	42-44	28	6-8	19-23	140-170	6-8+	54-60	Kenya Uganda
	1.8-2.5	47-63	3.6-4.6	50-85	-	-	-	-	-	-	5-7	-	
<i>marisae</i>	2.9-3.0	44-47	4.6-5.0	18-19	5.5-5.7	45-49	30-32	12-14	23-25	145-164	5-6+	60	Brazil
	2.2	43	4.8	56	-	-	-	-	-	-	5-6	-	
<i>memorabilis</i>	1.4-1.6	41-46	3.9-4.3	10-13	7.0-9.4	45-49	28	7-8	17-18	120-128	-	-	Costa Rica Paraguay Brazil*
	-	-	-	-	-	-	-	-	-	-	-	-	

*New data. *A. bidentata*: mud from the roots of waterplants in a small rivulet at Iguaçu Waterfalls, Iguaçu National Park, Brazil. *A. memorabilis*: wet fallen leaves on the bank of a rivulet, at Iguaçu Waterfalls, Iguaçu National Park, Brazil; both collected in December 1965 by the present author.

Table 2. Main morphometric characters of *Afracinca* species

<i>Afracinca</i>	L mm	a	b	c	c'	V	Cuticle ridges	Labial width µm	Tail µm	Stylet µm	Suppl.	Spicula µm	Distribution
<i>andrassyi</i>	1.6-1.7 -	29-36 -	4.2-4.6 -	11-12 -	6-7	41-42	20-22	8-10	138-142	21-22	-	-	Côte d'Ivoire
<i>eburnea</i>	1.8-2.0 -	49-50 -	4.2-4.3 -	19-20 -	4.6-6.0	45-46	14	6-7	91-98	18-20	-	-	Côte d'Ivoire
<i>heynsi</i>	1.1-1.3 1.2	30-35 31-38	3.1-3.3 3.0-3.3	19-25 38	2.7-3.1	47-50	14	4-5	58-68	27-29	5 + 5 (+ 1-2)	47-52	Côte d'Ivoire
<i>irmae</i>	1.6-1.8 1.5-2.0	43-49 46-60	3.3-3.7 3.4-4.3	16-22	4.4-5.6	44-49	14	12-13	74-100	28-31	9 + 8	43-48	Côte d'Ivoire
<i>papillata</i>	1.4-2.3 2.0-2.2	29-42 40-49	3.3-4.8 3.7-5.3	14-24 58-76	3.6-4.8	42-49	20	5-7	106-136	23-25	8-9 + 8-9	56-65	Côte d'Ivoire Burkina Faso

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