

# Redescription of *Actinolaimus costatus* Schneider, 1935 (Nematoda : Actinolaimidae), with observations on its pharyngosomatic muscles and discussion of its taxonomic position

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## SUMMARY

*Actinolaimus costatus* Schneider, 1935 is redescribed from type material, with special emphasis on stylet and pharynx musculature. A male is selected as lectotype. The subfamily Actincinae Andrassy, 1968 is recognized as valid, on account of the tripartite pharynx and elongate stomatal tube, but since the genus *Brittonema* Thorne, 1967 (considered by us a junior synonym of *Actinca* Andrassy, 1964) also shows these characters, the valid subfamily name is Brittonematinae Thorne, 1967. The genus *Stomachoglossa* Andrassy, 1968 is reduced to subgenus of *Actinca*. *A. costatus* belongs in the genus *Actinca*, but it differs in several respects from the species of the subgenera *Actinca* s. str. and *Stomachoglossa*, so that a third subgenus *Parastomachoglossa* is established for its reception.

## RÉSUMÉ

Redescription d'*Actinolaimus costatus* Schneider, 1935 (Nematoda : Actinolaimidae), observations sur sa musculature pharyngosomatique et discussion de sa position taxonomique

*Actinolaimus costatus* Schneider, 1935 est redécrit sur le matériel type, en insistant sur la structure du stylet et la musculature pharyngienne. Un mâle a été choisi pour lectotype. La sous-famille des Actincinae Andrassy, 1968 est reconnue valide en raison du pharynx tripartite et du tube buccal allongé, mais comme le genre *Brittonema* Thorne, 1967 (considéré ici comme synonyme mineur d'*Actinca* Andrassy, 1964) présente lui aussi ces caractères, le nom valide pour cette sous-famille est celui des Brittonematinae Thorne, 1967. Le genre *Stomachoglossa* Andrassy, 1968 n'est plus considéré que comme un sous-genre d'*Actinca*. *Actinolaimus costatus* appartient au genre *Actinca* mais diffère sur plusieurs points des espèces rangées dans les sous-genres *Actinca* s. str. et *Stomachoglossa*; en conséquence un troisième sous-genre, *Parastomachoglossa*, est proposé pour cette espèce.

For clarification of the identity of *Dorylaimus tenuistriatus* Schneider, 1935 we had loaned some of Schneider's slides from Dr. F. Schiemer, Vienna, Austria. Besides this species, the slides contained many specimens of *Actinolaimus costatus* Schneider, 1935 which have evidently the status of syntypes. The species shows some remarkable morphological features and is redescribed hereunder.

Schneider (1935) reported to have found 137 specimens from eight localities from Ivory Coast. Our material came from six of these, originally labelled as follows: "Man km 19-b" (1 female, 1 juv.), "Man km 21-a" (2 males, 9 fem., 2 juv.), "Man km 21-b" (17 males, 6 fem., 3 juv.), "Man km 21-c" (10 males, 5 fem., 3 juv.), "Man km 21-d" (3 males, 2 fem.) and "Man Ko" (6 males, 4 fem., 9 juv.).

## *Actinolaimus costatus* Schneider, 1935

### DIMENSIONS

See Table I.

### DESCRIPTION

Body straight or slightly curved ventrad; posterior fifth of male strongly curved. Cuticle with prominent longitudinal ridges which number about 40 in mid-body; they start at level of guiding ring and continue all over the body, becoming invisible in females in the proximal quarter of the tail. Cuticle thickness 7-9  $\mu\text{m}$ , increasing to 12  $\mu\text{m}$  ventrally in the supplement region in males. Lateral chord narrow, 1/8 to 1/10 body width. Body pores well visible; in the pharyngeal region

Table I  
Dimensions of *Actinca costata* adults and juveniles

	Females	Males	Lectotype	♂ 4	♂ 3/4
n	27	35	1	14	1
L	3.85 mm (3.07-4.38)	3.74 mm (3.13-4.18)	3.42 mm	2.39 mm (1.99-2.88)	1.70 mm
a	50 (42-64)	53 (43-60)	56	42 (30-48)	43
b	5.3 (4.5-5.8)	5.1 (4.5-5.9)	4.9	4.5 (3.9-5.1)	3.4
c	15.8 (12.8-18.8)	93 (76-110)	94	11.2 (10.0-13.1)	8.1
c'	5.8 (4.9-6.6)	0.8 (0.6-1.0)	0.8	6.4 (4.3-7.2)	7.2
V/VD	41 (38-47)	54 (51-58)	53	—	—
G <sub>1</sub>	13 (11-16)	14 (9-16)	16	—	—
G <sub>2</sub>	14 (11-17)	13 (8-16)	16	—	—
molted odontostyle	—	—	—	—	19 µm
odontostyle	33 µm (32-35)	33 µm (31-35)	33 µm	25 µm (24-28)	24 µm
spare odontostyle	—	—	—	33 µm (31-35)	40 µm (1)
pharynx	731 µm (674-785)	733 µm (671-796)	704 µm	516 µm (482-572)	506 µm
tail	241 µm (196-272)	41 µm (36-45)	36 µm	213 µm (174-235)	198 µm

(1) Not yet contracted (cf. Coomans & De Coninck, 1963).

there are 8-15 lateral ones (on each side) and 10-15 ventral ones; often the fourth and fifth from anterior are very close together (Fig. 1 A). Dorsal pores are only present near the anterior end.

Lip region 18-22 µm wide and 7-8.5 µm high, about 2.5 × as wide as high; offset by shallow depression. Labial and cephalic papillae arranged into three circlets: 6 + 4 + 6 (Fig. 2 A). Amphids with cup-shaped fovea, the aperture is about 10 µm wide in females, about 13 µm in males. Fusus small, 17-22 µm behind the aperture.

The round oral aperture is surrounded by sclerotized rings that are interconnected by radial spikes (Figs 1 A, 2 A). The cheilostomal wall then becomes quadrangular and develops four broad tooth-like structures: one dorsal, one ventral and two lateral (Figs 1 A, D-G; 2 B, C). Between the dorsal tooth and one of the laterals (usually the left one) there is a small denticle (Figs 1 A, D, F; 2 C). The hexaradiate labial framework starts below the anterior sclerotized ring and is only loosely connected with the cheilostomal wall.

Fixed guiding ring 19-22 µm from anterior end. Folded guiding sheath short when the odontostyle is retracted (Fig. 1 D) but becoming very long upon protrusion of the stylet (Fig. 1 E-G).

Odontostyle length about 1.8 × width of lip region. The aperture occupies one-third of the length. In medial view the odontostyle is somewhat widened in the aperture region, hence is somewhat axe-shaped (Fig. 1 L).

Odontophore weakly developed, only recognizable distinctly in the anterior part, on cross section (Fig. 2 G-I). Only in two specimens a break in the cuticular lining could be observed which may indicate the posterior end of the odontophore; this break lies at 32.5 and 33.5 µm behind the odontostyle; hence the odontophore would be 1-2 µm longer than the odontostyle (Cf. Fig. 1 A).

The anteriormost part of the pharynx proper is very slender and connected with the body wall by means of specialised stylet protractors. The structure of these protractors is very peculiar and differs markedly from the stylet protractors so far reported in dorylaids. They basically consist of eight bands which are anteriorly attached to the stoma wall. Further backward thin muscle strands extend between the stoma wall and the body wall. Behind the guiding ring the innermost parts of the protractors are thick and run parallel to the odontophore region, while the other parts are very thin (Fig. 2 G) and difficult to see in lateral view. Soon the muscles widen and become obvious with inner longitudinal and outer oblique parts (Fig. 2 I). Just below the insertion sites of the stylet retractors, the protractors are composed only of oblique bands running from the pharyngeal wall anteriorly to the body wall (Figs 1 A, 2 J). The two subdorsal protractors are very close to each other and soon merge to a single median band (Fig. 2 K); further backward this band loses its contact with the body wall and runs parallel to the pharynx (Fig. 2 L, M) until it disappears (Fig. 3 N).

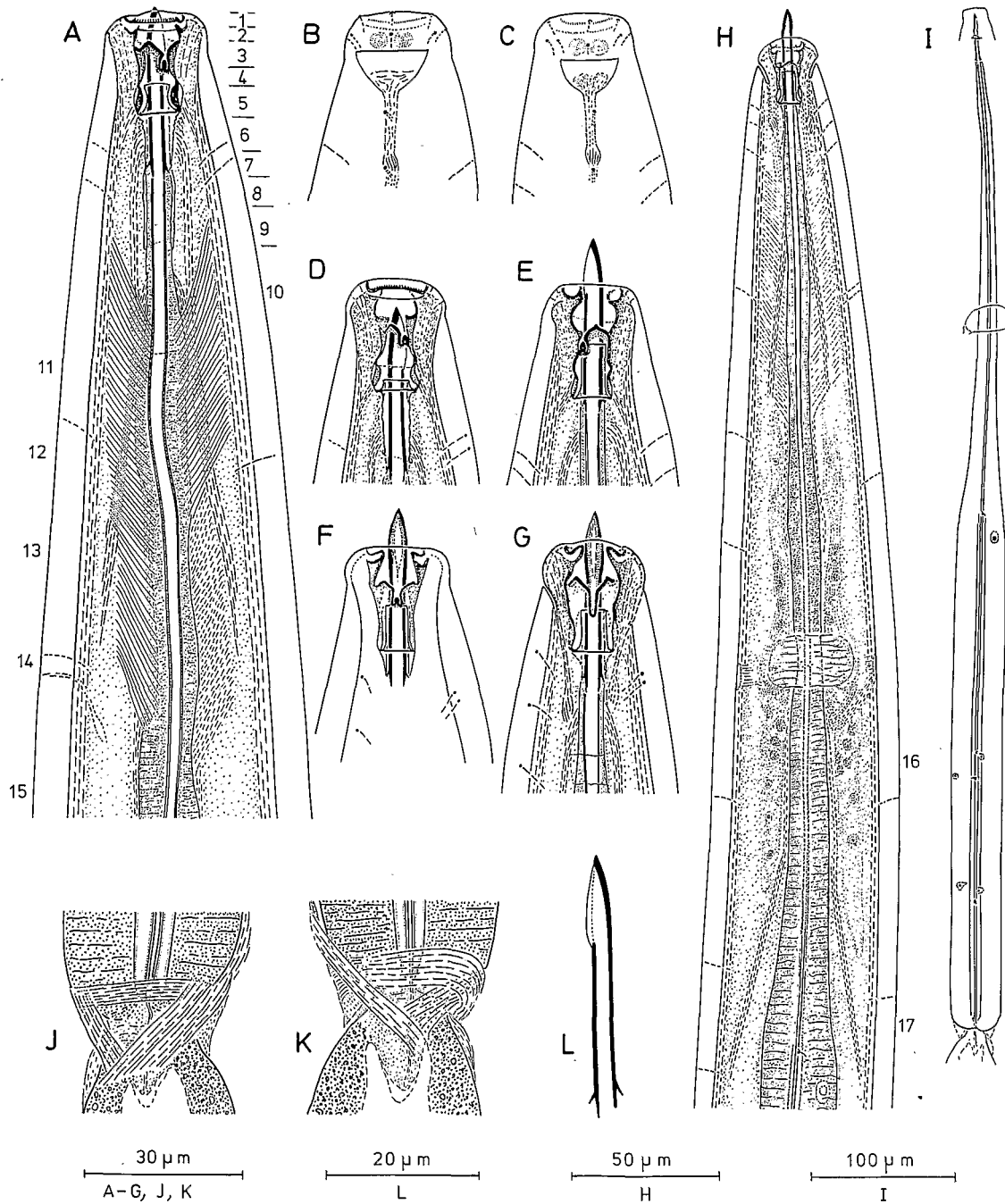


Fig. 1. *Actinca costata*. A : Anterior end of male, left lateral view; B : Lateral surface view of male head end; C : Same of female; D : Left lateral view of male head; E : Right lateral view of female head; F : Left latero-dorsal view of female head; G : Right lateroventral view of male head; H : Anterior pharyngeal region, medial view; I : Outline of pharynx showing position of pharyngeal gland nuclei and outlets; J and K : Pharyngo-intestinal junction, showing peripheral muscle bands from left (J) and right (K) side; L : Odontostyle. (The figures 1-17 in A and H indicate the approximate positions of cross-sections shown in Figs 2 and 3.)

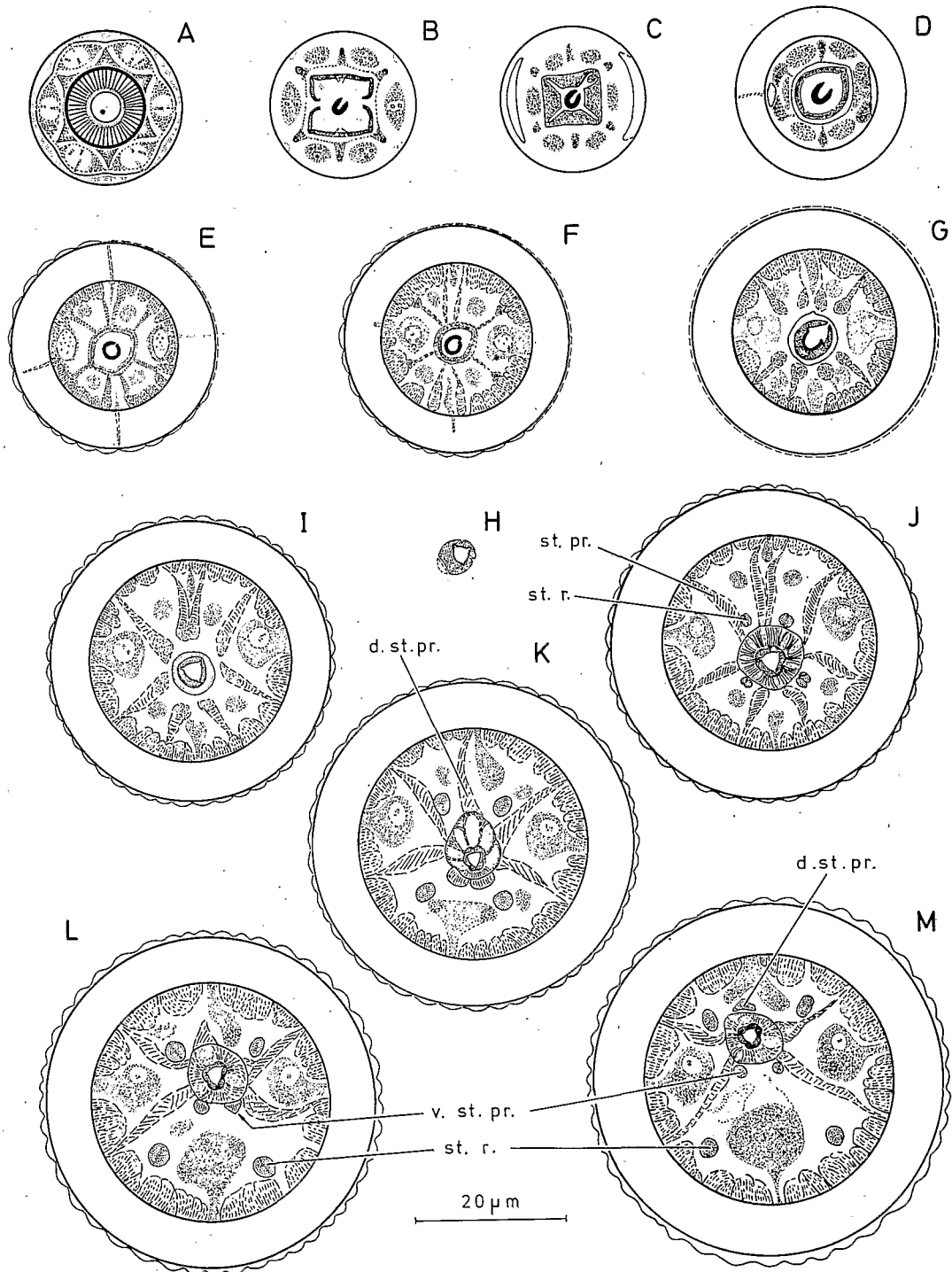


Fig. 2. *Actinca costata*. A : En face view; B-M : Cross sections at levels corresponding to figures 2-13 in Fig. 1 A (B = 2 → M = 13), but from a different specimen with slightly less protruded stylet. In E and F the cuticular ridges are only partly shown, in G they are omitted. (D. st. pr. = dorsal stylet protractor; st. r. = stylet retractor; v. st. pr. = ventral stylet protractor.)

In the area where the subdorsal protractors unite to a single mediodorsal one, the subventral protractors narrow, lose their contact with the body wall and become parallel to the pharynx (Fig. 2 J, K). After the dorsal protractor has disappeared, only six protractors remain: the two subventral longitudinal ones, and four oblique sublateral ones (Fig. 3 N). Further backward only four longitudinal protractors remain (Fig. 3 O); they run parallel to the pharynx over a short distance and then disappear simultaneously.

Eight very narrow muscle bands can be observed in cross section (Fig. 2, E, F), attached anteriorly to the labial framework and further backward to the stoma wall and the body wall. Although the arrangement is identical

to that of the protractors (Cf. Fig. 2 F, G) it is not clear whether these bands represent the anteriormost extensions of the protractors, or extensions of some of the anterior somatic muscle cells. They are oblique, but seem to run in the opposite direction as the oblique parts of the protractors.

The stylet retractors consist of four long oblique longitudinal bundles (Fig. 1, A, H) that at first seem to be composed of two bands each (Fig. 2 J) but further backward this paired nature is no longer distinguishable (Fig. 2 M). The stylet retractors attach to the dorsolateral and ventrolateral body wall prior to the end of the protractors (Figs 1 A, 2 M).

The pharynx gradually enlarges posteriorly, but

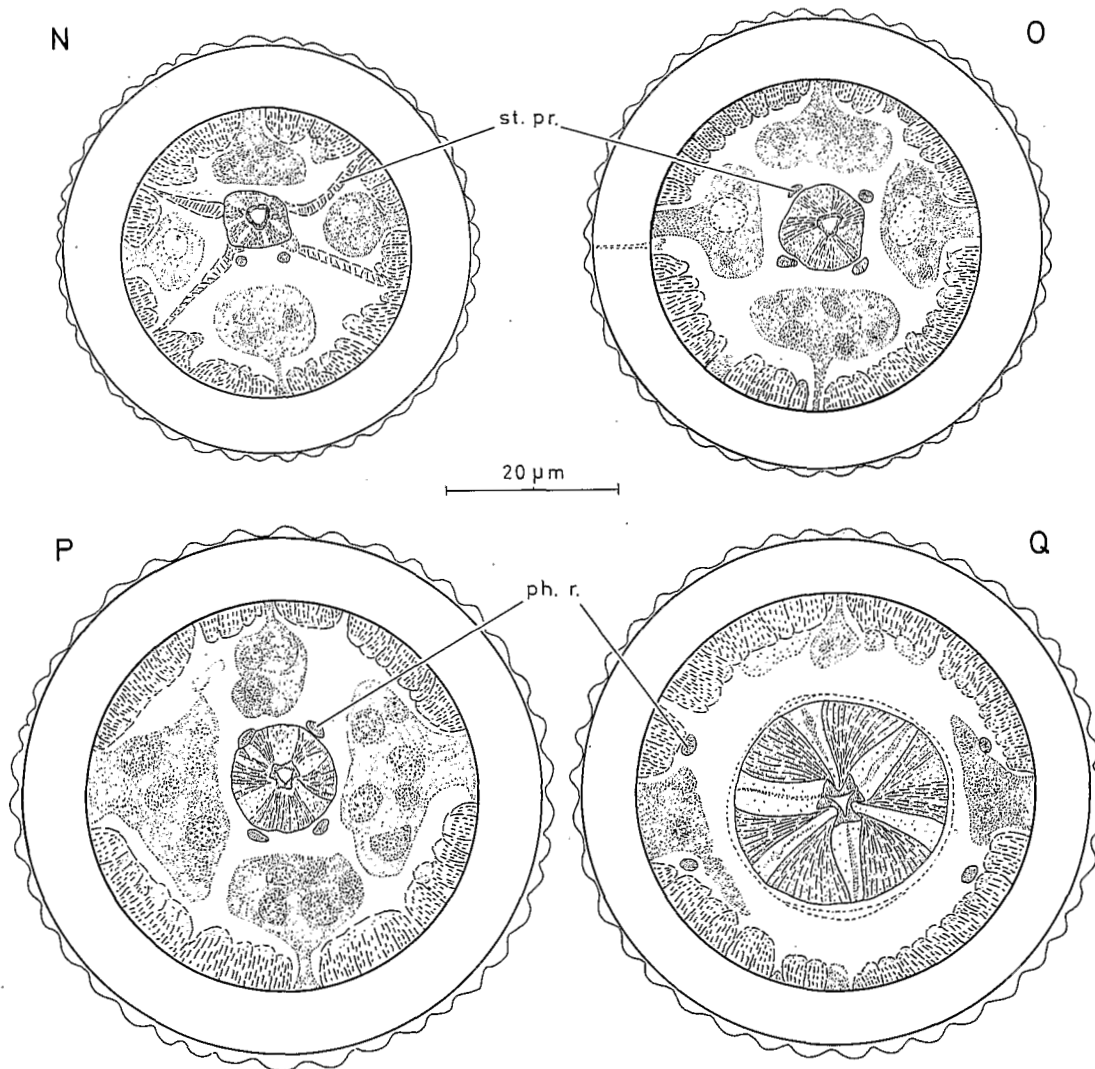


Fig. 3. *Actinca costata*. N-Q: Cross sections (continued at levels corresponding to figures 14-17 in Fig. 1 A and 1 H). (Ph. r. = pharyngeal retractor; st. pr. = stylet protractor.)

narrows again when it passes through the nerve ring, which is located at 207-216  $\mu\text{m}$  ( $n = 4$ ) from the anterior end or at 28-31 % of the pharynx.

Behind the nerve ring the pharynx gradually enlarges posteriad, in two steps, towards the long enlarged portion. In this area the pharynx is paralleled by four longitudinal muscle bands (Fig. 3 P) that about halfway their length diverge toward the body wall (Fig. 1 H), where they become attached sublaterally (Fig. 3 Q); these are the pharynx retractors.

The pharynx begins to widen toward the enlarged part at 39-42 % and attains its full width at 48-51 % of its length from head end. The enlarged portion contains the five pharyngeal glands. Of these, the anterior pair of ventro-sublateral glands are degenerate, judging from their very small nuclei and posteriorly placed outlets (Fig. 1 I). The distance DO-DN is 15-18  $\mu\text{m}$ . The  $S_1N$  lie only a small distance apart (11-25  $\mu\text{m}$ ). Locations (four males, see Fig. 4) :

DO 47-49 %;  $S_1N_1$  73-75 %;  $S_2N$  86 %; K = 87-95;  
DN 48-52 %;  $S_1N_2$  75-76 %;  $S_2O$  87-88 %; K' = 88-95.  
DO-DN 2.1-2.5 %; dist. 1.5-3.5 %;

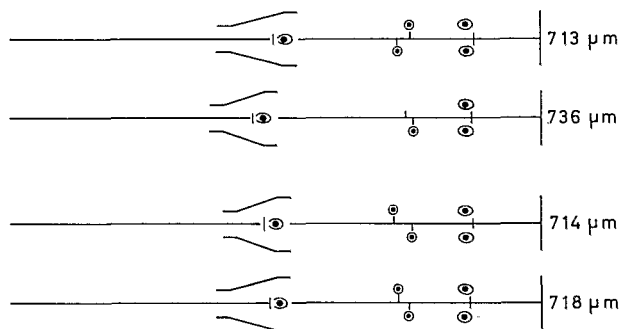


Fig. 4. *Actinca costata*. Position of pharyngeal gland nuclei and outlets.

The peripheral pharyngeal muscles, which surround the enlarged portion as a thin sheath, become more obvious at the cardia, where they extend obliquely over the junction with the intestine (Fig. 1 J, K).

Intestine usually with wide lumen and six cells in circumference. Length of prerectum 494-755  $\mu\text{m}$  ( $n = 11$ ) or 5-11 body widths (always extending far anterior of "Kopulationshöcker") in males, 275-400  $\mu\text{m}$  ( $n = 10$ ) or 6-9 anal body widths in females. Rectum about 1.5 anal body widths long in females, very short in males.

Females didelphic, amphidelphic; uteri rather long without differentiations except for a more developed muscular portion close to its proximal end (Fig. 5 B, D). The innermost muscle bands are longitudinal, the median ones are oblique and cross each other, while the outermost ones are transverse (Fig. 5 D). Vulva longitudinal. Vagina extending about halfway across the

body, surrounded by at least nine circular muscle bands forming a sphincter; its junction with the uteri guarded by the radiating vaginal dilator muscles (Fig. 5 A). Vulva-vagina junction sclerotized, but in the specimens at hand partly faded.

Male reproductive system with well developed testes, long *vas deferens* and prominent glands. Mature spermatozoa inside female genital tract 4.0-4.5  $\mu\text{m}$  long, oval in shape (Fig. 5 D). Spermatids (?) in testes about 6  $\mu\text{m}$  long, with clear cytoplasmatic boundary (Fig. 5 F). There are usually eight ejaculatory glands, sometimes only seven and occasionally six or five; and three pairs of rectal glands. Copulatory muscles extending from the region of the "Kopulationshöcker" to the anterior cloacal lip, numbering 60-72 ( $\bar{x} = 64.8$ ,  $n = 13$ ). Several bands of caudal copulatory muscles are present in the tail. In the region of the spicules four to five sets of cloacal muscles run from the dorsolateral body wall to the dorsolateral wall of the cloaca. The long spicule retractors extend to the dorsolateral body wall and the spicule protractors attach to the tail cuticle near the apex and the dorsal wall (for more details about glands and muscles see Coomans & Loof, 1986). Apart from the adanal pair there are 14-18 medioventral supplements arranged into two fascicles, the anterior one with 7-9, the posterior one with 6-9 supplements (Fig. 5 E, H).

Posterior to the junction of intestine and prerectum there are 16-25 ( $\bar{x} = 18.4$ ,  $n = 12$ ) subventral papillae, of which two or three are caudal.

Spicules rather slender, ventrally arcuate (Fig. 4 G), 69-80  $\mu\text{m}$  long medially ( $\bar{x} = 75.4$ ,  $n = 12$ ). Lateral guiding pieces 11.5-17.5  $\mu\text{m}$  long ( $\bar{x} = 14.9$ ,  $n = 10$ ).

Female tail elongate conoid with pointed tip and two pairs of caudal pores (Fig. 5 C). Male tail short, dorsally convex-conoid, slightly less than one anal body width long; with 7-12 ( $\bar{x} = 8.15$ ,  $n = 13$ ) caudal pores and papillae (of which two or three are subventral) on either side. Anal dilator prominent in both sexes.

#### TAXONOMIC POSITION OF *ACTINOLAIMUS COSTATUS* WITHIN THE SUBFAMILY

Andrássy (1964) transferred *Actinolaimus costatus* to the genus *Actinca* Andrásy, 1964; in 1968 he transferred it to *Stomachoglossa* Andrásy, 1968. These two genera were united into a subfamily Actincinae by Andrásy (1968) because of the tripartite pharynx, consisting of a very long (nonmuscular) so-called stomatal tube, a short middle section and an enlarged part. However, in 1967 Thorne erected the subfamily Brittonematinae for two genera, *Brittonema* Thorne, 1967 and *Actinocephalus* Thorne, 1967 (renamed *Practinocephalus* Andrásy, 1974 because of homonymy) which also possess a tripartite pharynx (see Thorne's figs 1 C, 2 C and 3 D, and the descriptions of *B. spicatum* and *P. bizarrus*).

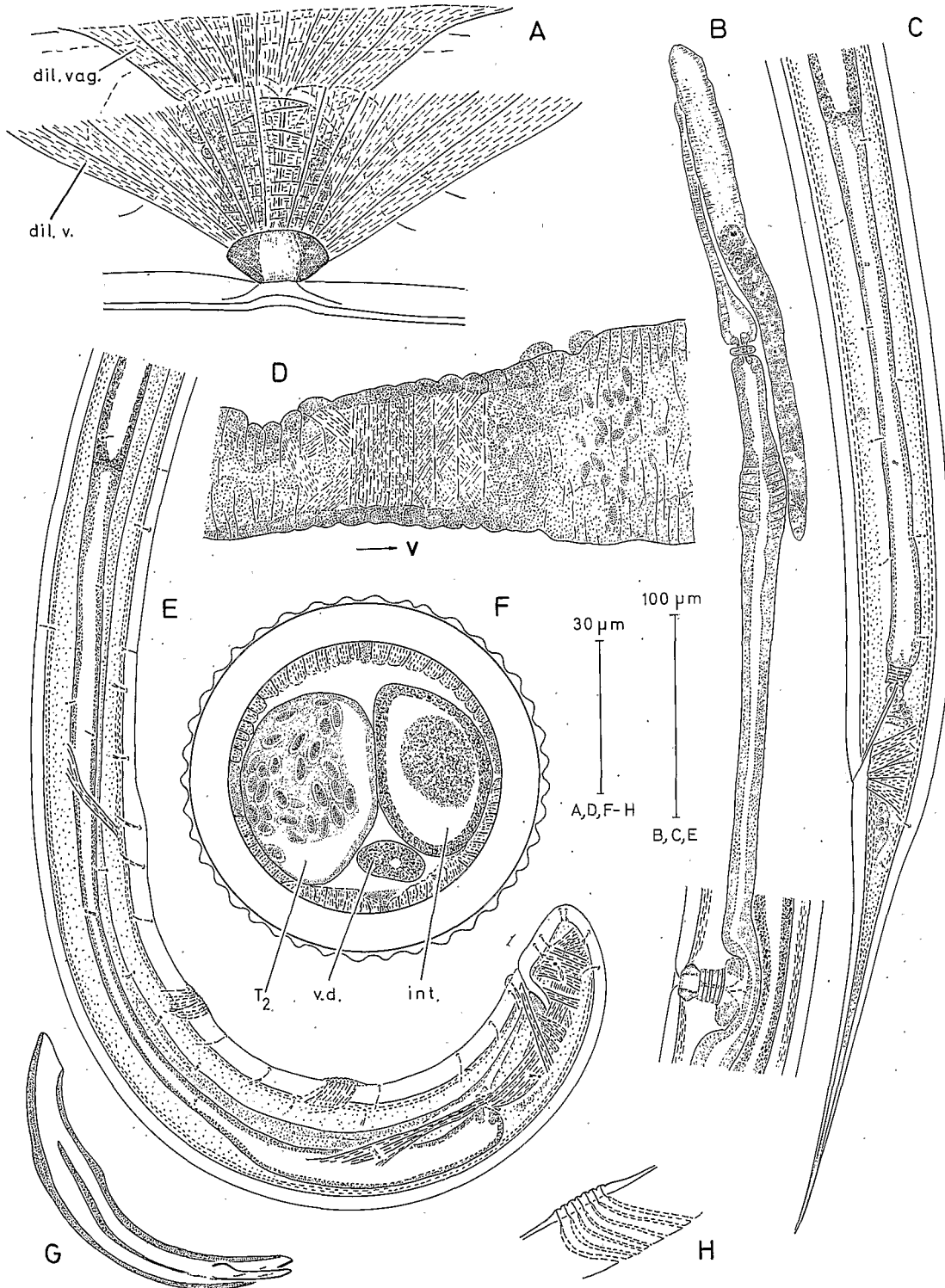


Fig. 5. *Actinca costata*. A : Vulva-vagina muscles; B : Anterior branch of female reproductive system; C : Posterior body region of female; D : Muscular portion of uterus; E : Posterior body region of male; F : Cross section at mid-body of male; G : Right spicule and lateral guiding piece; H : Anterior fascicle of male. (*Dil. v.* = vulval dilator; *dil. vag.* = vaginal dilator; *int.* = intestine; *T2* = posterior testis; *v.d.* = *vas deferens*.)

Schneider's species has a tripartite pharynx and thus belongs to this group. However, the "stomatal tube" is much shorter and gradually merges with the remainder of the slender pharynx, so that there often is no clear demarcation between the two. From cross sections it appears that there are already clearly distinguishable radial muscles in the posterior area of the oblique stylet protractors (Figs 2 J-M, 3 N). The second part of the pharynx is long and muscular; it expands gradually to the enlarged portion.

Schneider's species further has a thick cuticle with conspicuous pores, a distinct vestibular ring and an envelope around the pharyngo-intestinal junction. This agrees with the definition of *Stomachoglossa*. On the other hand, the tongue-shaped process (which gave the genus its name) could not be found in *A. costatus*. We could observe it in the type specimens of *S. bryophila* Hunt, 1978 (*bryophilum* emend.) and in a specimen of *Stomachoglossa* sp. from Ecuador, but not in a paratype female of *S. macroderma* Zullini, 1973. The envelope around the pharyngo-intestinal junction of *A. costatus* is muscular and in fact not different from what the authors observed in other actinolaims (*Actinolaimus tripapillatus*, *Actinca* spp., *Neoactinolaimus* spp.).

In 1967 Thorne described a new genus *Brittonema* with three new species, and transferred *Actinolaimus taylori* Meyl, 1957 and *A. tenuiaculeatus* Kreis, 1924 to that genus. The males of *Brittonema* were described as long-tailed, but Thorne's figure 1 B shows that the male tail is short, rounded, with a long appendage (remnant of J4 cuticle?). Males perhaps belonging to *B. spicatum* were short-tailed, and in all other species males are unknown. It is a mystery why Thorne did not discuss *Actinca*.

In 1970 Andr ssy transferred *B. fusiforme* (*fusiformum* emend.) to *Actinca* and *B. spicatum* to *Stomachoglossa*; *A. tenuiaculeatus*, which had been transferred to *Actinca* by him in 1964, was reinstated under that genus. *A. taylori* was not mentioned; the type material of this species is lost (W. Decraemer, pers. comm.). This leaves only *B. sulcatum* in *Brittonema*. This species very much resembles *Actinca* species except for the long male tail; since, however, the male tail is really short, rounded, we see no justification in keeping both genera apart. *Actinca* has priority over *Brittonema*, hence *A. sulcata* (Thorne, 1967) n. comb. is proposed. As a consequence the subfamily name Actincinae Andr ssy, 1968 must be replaced by Brittonematinae Thorne, 1967. In our opinion the number of longitudinal ridges and length of supplement "innervations" as used to differentiate the two subfamilies cannot be retained as diagnostic. The type specimens of Thorne's three *Brittonema* species are in poor condition and no more fit for taxonomic study (Rom n, *in litt.* July 10, 1985).

The genus *Stomachoglossa* was originally characterized by its well developed vestibular ring, thick

cuticle with prominent pores, a tongue-like projection of the pharyngeal cuticle into the cardia and a glandular envelope around the pharyngo-intestinal junction. A study of several species of *Actinca* revealed that the vestibular ring is always present but may vary from weakly to well developed. The thickness of the cuticle is also variable within this genus, though it is never so thick as in *S. pachyderma* or *S. macroderma*.

Examination of various species of Actinolaimidae elucidated the nature of the "sclerotized tongue-shaped process" which Andr ssy considered characteristic for *Stomachoglossa*. In *S. macroderma* the platelets on the cuticular lining of the pharyngeal lumen end a fair distance from the end of the pharynx, and the posterior contour of this platelet region extends obliquely from antero-axial to postero-abaxial. The lining of the lumen is distinctly cuticularized but not thickened (Fig. 6 C).

In *S. bryophila* the platelet region ends in the same way, but closer to the posterior end of the pharynx. The cuticular lining of the pharyngeal lumen behind this region is strongly thickened anteriorly (Fig. 6 F).

The same condition was found in a (probably undescribed) *Stomachoglossa* species from Venezuela (Fig. 6 E).

In *Stomachoglossa* sp. from Ecuador (specimen kindly provided by I. Andr ssy) the posterior end of the platelets is transverse instead of oblique, while the cuticular lining of the next part of the lumen is slightly thickened anteriorly (Fig. 6 B).

In *Egtitus elaboratus* (not a Brittonematinae) the posterior end of the platelet region is somewhat rounded, and there is a small but distinct thickening in the lining of the next part of the lumen (Fig. 6 D). This species does not belong in Brittonematinae.

In *Actinolaimus costatus* the platelets end in a similar way as in *S. spec.* (Ecuador) and *E. elaboratus*, but here the cuticular lining of the next part of the lumen, though distinct, is not thickened (Fig. 6 A). The same holds for *A. tripapillatus*, which does not belong in Brittonematinae.

Thus the lumen wall of the posterior part of the pharynx is even, not thickened, in *A. costatus*, *A. tripapillatus* and *S. macroderma*; slightly thickened in *S. spec.* (Ecuador) and *E. elaboratus*, strongly thickened in *S. bryophila* and *S. spec.* (Venezuela). The peculiar oblique posterior end of the platelets is present in *S. macroderma*, *S. bryophila* and *S. spec.* (Venezuela), but not in *S. spec.* (Ecuador), *A. costatus*, *A. tripapillata* and *E. elaboratus*. It must be concluded that the structure of the posterior pharyngeal part is diagnostic at the species level only; generic characters cannot be derived from it.

All actinolaims studied so far by the authors possess an envelope around the pharyngo-intestinal junction ("esophageal shield" of Thorne, 1967). Although the structure may be obscure or poorly developed and then difficult to interpret, in all cases where it was clearly developed, it was found to be muscular, not glandular.



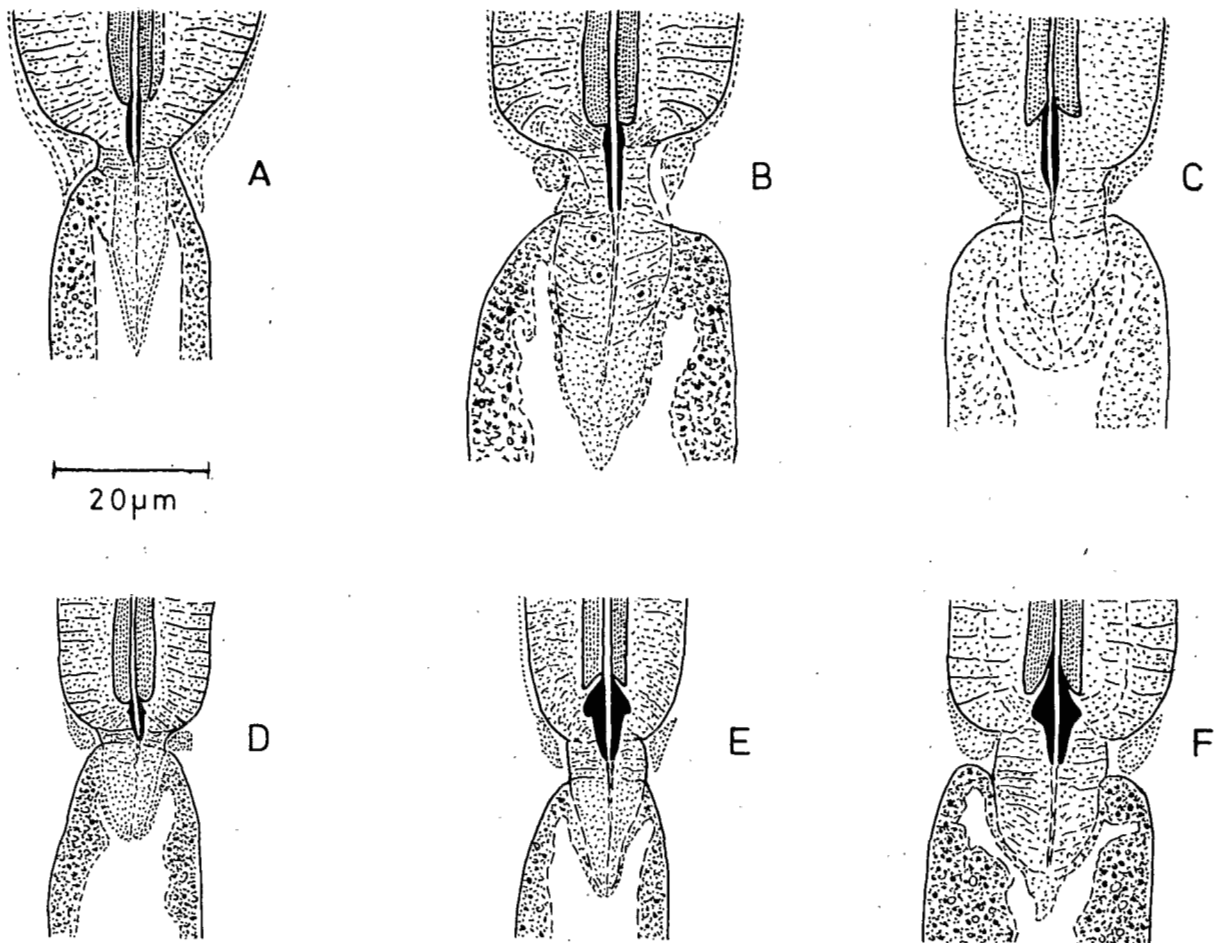


Fig. 6. Pharyngo-intestinal junction of : A : *Actinca costata*; B : *Stomachoglossa* spec. (Ecuador); C : *S. macroderma*; D : *Egtitus elaboratus*; E : *Stomachoglossa* spec. (Venezuela); F : *S. bryophila*.

A detailed comparison of the pharyngeal structure in *Actinca* and *Stomachoglossa* revealed the existence of the same patterns in the two genera, the variation being mainly in the length of the "stomatal tube" and the shape and muscularization of the middle section.

In view of the above we feel that there is no clear difference between the genera *Actinca* and *Stomachoglossa*, the only real differentiating characters for the moment being cuticle thickness, and probably the shape of the lip region : in *Actinca* it is higher and narrower, the width/height ratio being 1.3-1.6, in *Stomachoglossa* it is lower and wider, width/height ratio = 1.7-2.1; also *Actinca* species tend to be more slender ( $a = 35$  or more, *A. tenuiaculeata* to be checked) than *Stomachoglossa* species ( $a = 30$  or less). For the time being the two groups could be retained as (weakly differentiated) genera or as subgenera.

Let us now reconsider the position of *A. costatus*. When compared with the other Brittonematinae so far

discussed, it shares the tripartite pharynx and the special arrangement of the elongated stylet protractor muscles (found to be present in all *Actinca* species studied), but it differs by its greater body length, shorter "stomatal tube", more muscular and much longer middle portion of the pharynx, and wider and lower lip region (width/height ratio 2.5), comparatively smaller and shallower amphidial fovea and more robust odontostyle. It therefore differs at least as much from other *Stomachoglossa* species as the latter differ from *Actinca* species. Thus a third generic or subgeneric name must be erected to accommodate it. Since the differences between *Actinca*, *Stomachoglossa* and *A. costatus* do not seem to be really fundamental (*Actinca intermedia* e.g. has also a more robust odontostyle) subgeneric status is preferred. This would restrict the number of genera in the Brittonematinae to two : *Actinca* and *Practinocephalus*; the former with three subgenera : *Actinca* s. str., *Stomachoglossa*, and *Parastomachoglossa*

n. subgen. *Actinolaimus costatus* Schneider, 1935, consequently, is herewith redesignated *Actinca* (*Parastomachoglossa*) *costata* (Schneider, 1935) n. comb.; type species of the subgenus *Parastomachoglossa*. It should be remarked that males of *Practinocephalus* are, according to Thorne (1967), long-tailed, so that this genus may not belong to Brittonematinae.

**Genus *Actinca*** Andrassy, 1964  
= *Brittonema* Thorne, 1967 (n. syn.)

#### DIAGNOSIS

Actinolaimidae, Brittonematinae. Cuticle with prominent longitudinal ridges. Odontostyle mostly very slender, but in some species more robust. Anterior part of pharynx thin, non-muscular; pharynx tripartite. Tail elongate in females, short and rounded in males. Supplements concentrated into two fascicles.

Type species : *A. gracillima* Andrassy, 1964.

**Subgenus *Actinca*** Andrassy, 1964

#### DIAGNOSIS

Vestibular ring weakly developed. Lip region narrow and high, ratio 1.3-1.6. Cuticle thin. Body length under 3 mm; body mostly slender ( $a = 35$  or more). Odontostyle slender except in *A. intermedia*. Amphid aperture large (more than half corresponding body width). Stomatal tube long, middle section of pharynx short.

#### TYPE SPECIES

*A. (A.) gracillima* Andrassy, 1964

#### OTHER SPECIES

- A. (A.) dicastrii* Andrassy, 1968
- A. (A.) fusiformis* (Thorne, 1967) Andrassy, 1970
- A. (A.) intermedia* Andrassy, 1968
- A. (A.) memorabilis* Andrassy, 1968
- A. (A.) papillata* (Schneider, 1935) Andrassy, 1964
- A. (A.) striata* (Thorne, 1939) Andrassy, 1964
- A. (A.) sulcata* (Thorne, 1967) n. comb.
- A. (A.) tenuiaculeata* (Kreis, 1924) Andrassy, 1964

**Subgenus *Stomachoglossa*** Andrassy, 1968

#### DIAGNOSIS

Vestibular ring well developed. Lip region low and wide, ratio 1.6-2.1. Cuticle thick, cuticular pores numerous and conspicuous. Odontostyle slender. Body length under 3 mm. Body stout with  $a = 30$  or less

(except in *A. (S.) bryophila*). Amphid aperture large as in subgenus *Actinca*. Stomatal tube long, middle section of pharynx short.

#### TYPE SPECIES

*A. (S.) pachyderma* (Andrassy, 1968) n. comb.

#### OTHER SPECIES

- A. (S.) bryophila* (Hunt, 1978) n. comb.
- A. (S.) macroderma* (Zullini, 1973) n. comb.
- A. (S.) spicata* (Thorne, 1967) n. comb.

**Subgenus *Parastomachoglossa*** n. subg.

#### DIAGNOSIS

Body large, length well over 3 mm. Cuticle thick with conspicuous pores. Lip region low and wide, ratio 2.5-3.5. Vestibular ring well developed, denticulate. Stomatal tube much shorter than in the two preceding subgenera; middle portion of pharynx very long. Amphid aperture relatively small. Odontostyle robust.

#### TYPE SPECIES

*A. (P.) costata* (Schneider, 1935) n. comb.

#### OTHER SPECIES

*A. (P.) taylori* (Meyl, 1957) n. comb.

***Actinca (P.) costata*** (Schneider, 1935) n. comb.

#### TYPE SPECIMEN

*Lectotype* : Male on slide *Actinca costata* -1, deposited in the collection of W. Schneider, located at the Limnologische Lehrkanzel, University of Vienna, Austria. *Paralectotypes* : Ten males and nine females on slides *Actinca costata* -2 to 10 located in the same collection; eleven males and nine females on slides WT 2380-2387 in the nematode collection of the Landbouwhogeschool, Wageningen, Netherlands; eleven males and nine females on slides 752-759 of the nematode collection of the Instituut voor Dierkunde, University of Gent, Belgium.

#### TYPE HABITAT AND LOCALITY

Man km 21-b, mountain brook near road to Touba, 600 m above sea-level, lower fall, liverworts (Hepaticae) wet from spray. Collected March 3, 1931.

#### OTHER RECORD

Khera (1970) reported *A. costata* from India. The dimensions fit well, but no description nor illustrations were given, and the material was not available for study.

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