

Some new *Camallanoidea* (*Spirurida*) Nematodes from Fishes, Amphibians and Reptiles. *

[Quelques *Camallanoidea* nouveaux (*Spirurida*)
Nématodes de Poissons, Amphibiens et Reptiles]

by Vinod AGRAWAL **

Abstract

Cucullanus pseudeutropi n. sp. from *Pseudeutropius garua* (*Cucullanidae* Cobbold, 1864) is described. Three species of *Camallanidae* Railliet & Henry, 1915 are described, namely, *Camallanus mastacembeli* n. sp. from *Mastacembelus armatus*; *C. inglisi* n. sp. from *Rana tigrina*, and *C. bufonis* n. sp. from *Bufo* sp. In addition *Camallanides prashadi* Baylis and Daubney, 1922 from *Ptyas mucosus* is redescribed.

Résumé

Cucullanus pseudeutropi n. sp. (*Cucullanidae* Cobbold, 1864) de *Pseudeutropius garua* est décrit. Trois espèces de *Camallanidae* Railliet et Henry 1915 sont décrites: *Camallanus mastacembeli* n. sp. de *Mastacembelus armatus*; *C. inglisi* n. sp. de *Rana tigrina*, et *C. bufonis* n. sp. de *Bufo* sp. En outre une nouvelle description de *Camallanides prashadi* Baylis et Daubney, 1922 de *Ptyas mucosus* est donnée.

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The paratype and holotype specimens of the forms described in this paper will be deposited in Dr. G.S. Thapar's Helminthological Collection, Lucknow. U.P. India.

FAMILY - CUCULLANIDAE Cobbold, 1864
 SUB-FAMILY - CUCULLANINAE Yorke et Maplestone, 1926
CUCULLANUS PSEUDEUTROPI n. sp.

(Fig. 1-4)

Two male and one female specimens were collected from the intestine of a fresh water fish, *Pseudeutropius garua* (Ham.) from river Gomti at Lucknow.

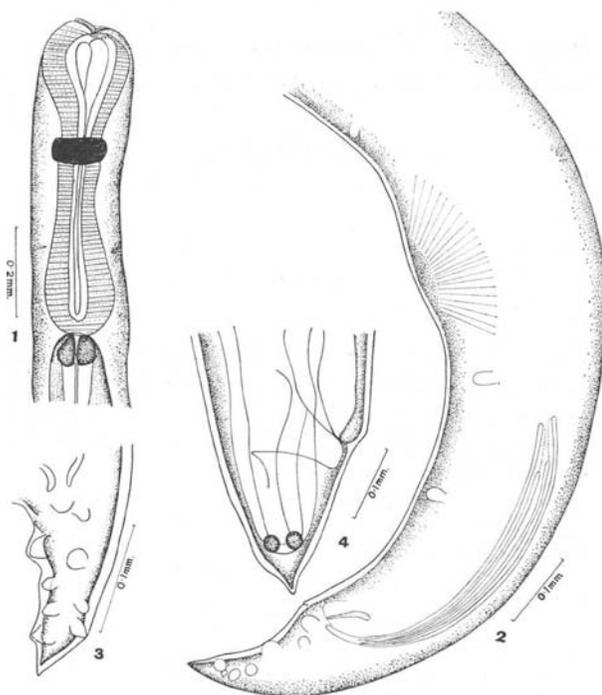


FIG. 1-4. — *Cucullanus pseudeutropi* n. sp.

FIG. 1. — Région antérieure du mâle. Vue latérale

FIG. 2. — Extrémité caudale du mâle. Vue latérale

FIG. 3. — Extrémité caudale du mâle. Vue ventrale.

FIG. 4. — Extrémité caudale de la femelle. Vue latérale

FIGS. 1-4. — *Cucullanus pseudeutropi* n. sp.

FIG. 1. — Anterior region of male. Lateral view

FIG. 2. — Male tail. Lateral view

FIG. 3. — Male tail. Ventral view

FIG. 4. — Female tail, Lateral view

Description :

Body elongated, cylindrical, medium sized, anterior extremity bent dorsally. In end on view mouth triangular, bounded with two large lateral lips at sides. Each bearing three well developed papillae. Behind mouth opening, a lining of dentigerous membrane. Oesophagus muscular, lacking a glandular portion, club shaped and dilated anteriorly to form a pseudobuccal capsule. Intestine simple without any diverticulum. Cephalic glands absent. Two lateral narrow alae extending throughout body length. Cuticle finely striated transversely, striations 0.005 to 0.009 mm. apart from each other.

Male : Body 7.15 to 10.16 mm. long, 0.38 to 0.41 mm. wide. Head 0.14 to 0.15 mm. in diameter. Two small cervical papillae bristle like 0.57 to 0.61 mm. from anterior extremity. Anterior dilated pseudobuccal capsule, 0.21 to 0.22 × 0.17 to 0.18 mm. and posterior muscular oesophagus 0.43 to 0.48 × 0.13 to 0.17 mm. Entire oesophagus 0.65 to 0.69 mm. long. Nerve ring 0.25 to 0.26 mm. and excretory pore 0.29 to 0.31 mm. from anterior end. Tail pointed, 0.18 mm long. Caudal end curled ventrally and forms a single turn of a spiral. Caudal alae narrow. Nine pairs of pedunculated caudal papillae with four pairs preanal and five pairs postanal. Of preanal papillae one pair anterior to anal sucker and rest of three pairs situated one behind other. A pair of phasmids observed at tip of tail. Spicules equal, similar, tubular, funnel shaped, broader at anterior end while sharply pointed at posterior end. They measure 0.49 to 0.52 mm. in length. Gubernaculum wedge shaped, 0.062 to 0.10 mm. in length. Preanal sucker muscular, spindle shaped, 0.16 to 0.20 mm. in length and situated at 0.40 to 0.45 mm. from cloacal aperture.

Female : Body 11.68 mm. long, 0.45 mm. wide. Head 0.15 mm. in diameter. Two small cervical papillae bristle like 0.65 mm. from anterior end. Anterior dilated pseudobuccal capsule, 0.22 × 0.16 mm. and posterior muscular oesophagus, 0.52 × 0.17 mm. Entire oesophagus, 0.74 mm. long. Nerve ring 0.27 mm. and excretory pore 0.33 mm. from anterior end. Tail short, pointed without any lateral papillae. Vulva postequatorial 4.56 mm. from hind end of body. Two ovaries; Uterine branches opposed; Oviparous. Eggs thin shelled, 0.04 to 0.08 × 0.02 to 0.04 mm. in size.

Host : *Pseudeutropius garua* (Ham.).

Location : Intestine.

Locality : Lucknow.

Discussion :

The new form is referred to the genus *Cucullanus* Mueller, 1777. Yamaguti (1961) has listed 60 species of this genus from fishes from various parts of World. No form of the genus hitherto been described from fishes. Khera (1954) claimed that *C. antipodeus* Baylis, 1932 was found in *Mystus seenghala* from Lucknow. *Cucullanus pseudeutropi* n. sp. differs from all the known forms of the genus in the possession of a transverse cuticular ridge and in the number and arrangement of anal papillae. Accordingly it is regarded new with the specific name *Cucullanus pseudeutropi* n. sp.

FAMILY - CAMALLANIDAE Railliet and Henry, 1915

***CAMALLANUS MASTACEMBELI* n. sp.**

(Fig. 5-8)

Seven male and five female specimens were recorded from the intestine of a fresh water fish, *Mastacembelus armatus* (Lacep.) from river Gomti at Lucknow.

Description :

Worms small, elongated body, tapering towards both ends. Cuticle thin, finely striated. Mouth surrounded by six papillae, two lateral and four submedian in position. Buccal capsule sclerotized and formed by two buccal valves, each of which possesses 9 beaded longitudinal ridges of varying lengths in both sexes. Innermost ridges long with a gradual reduction in length towards outermost one. A strongly developed chitinous ring at junction of valves and œsophagus. A pair of tridents present. œsophagus consisting of a short anterior muscular portion and a long posterior glandular portion.

Male : Body 8.54 to 13.16 mm. long, 0.19 to 0.20 mm. wide. Dorsoventral diameter of head at its anterior angles 0.11 to 0.12 mm. Valves of buccal capsule broader than long, 0.085 to 0.09 mm. long, 0.10 to 0.11 mm. wide. Chitinous ring 0.08 to 0.085 mm. long, 0.010 to 0.020 mm. wide. Tridents well developed, except for small middle prong, measuring 0.03 to 0.04 mm in length ; lateral prongs 0.07 to 0.09 mm. long. Anterior club shaped muscular portion of œsophagus 0.48 to 0.59 mm. long, 0.10 to 0.12 mm. wide. Posterior glandular œsophagus 0.75 to 0.93 mm. long, 0.10 to 0.11 mm. wide. Entire œsophagus 0.85 to 1.49 mm. long. Nerve ring surrounds anterior portion of œsophagus 0.22 to 0.29 mm. from anterior extremity. Excretory pore posterior to nerve ring 0.48 to 0.59 mm. from anterior extremity. Caudal alae broad beginning at cuticular swelling on ventral side of body extending upto tip of tail. Nine pairs of preanal, one pair of adanal and three pairs of postanal papillae. Preanal papillae situated almost at regular intervals and adanal papillae situated laterally at level of cloaca. Postnatal papillae close together in a group. Right spicule broad at anterior end, narrow and sharply pointed at its posterior end, measuring 0.42 to 0.76 mm. in length. Left spicule absent.

Female : Body 16.25 to 24.88 mm. long, 0.24 to 0.30 mm. wide. Head 0.11 to 0.12 mm. in diameter. Valves of buccal capsule 0.10 to 0.11 mm. long, 0.12 to 0.13 mm. wide. Chitinous ring 0.07 to 0.09 mm. long, 0.02 to 0.03 mm. wide. Lateral prongs of tridents 0.08 to 0.10 mm. long. Middle prong 0.03 to 0.045 mm. long. Anterior muscular œsophagus 0.52 to 0.61 mm. long, 0.10 to 0.12 mm. wide. Posterior glandular œsophagus 0.78 to 0.93 mm. long, 0.10 to 0.13 mm. wide. Entire œsophagus 1.30 to 1.53 mm. long. Nerve ring 0.20 to 0.26 mm. and excretory pore

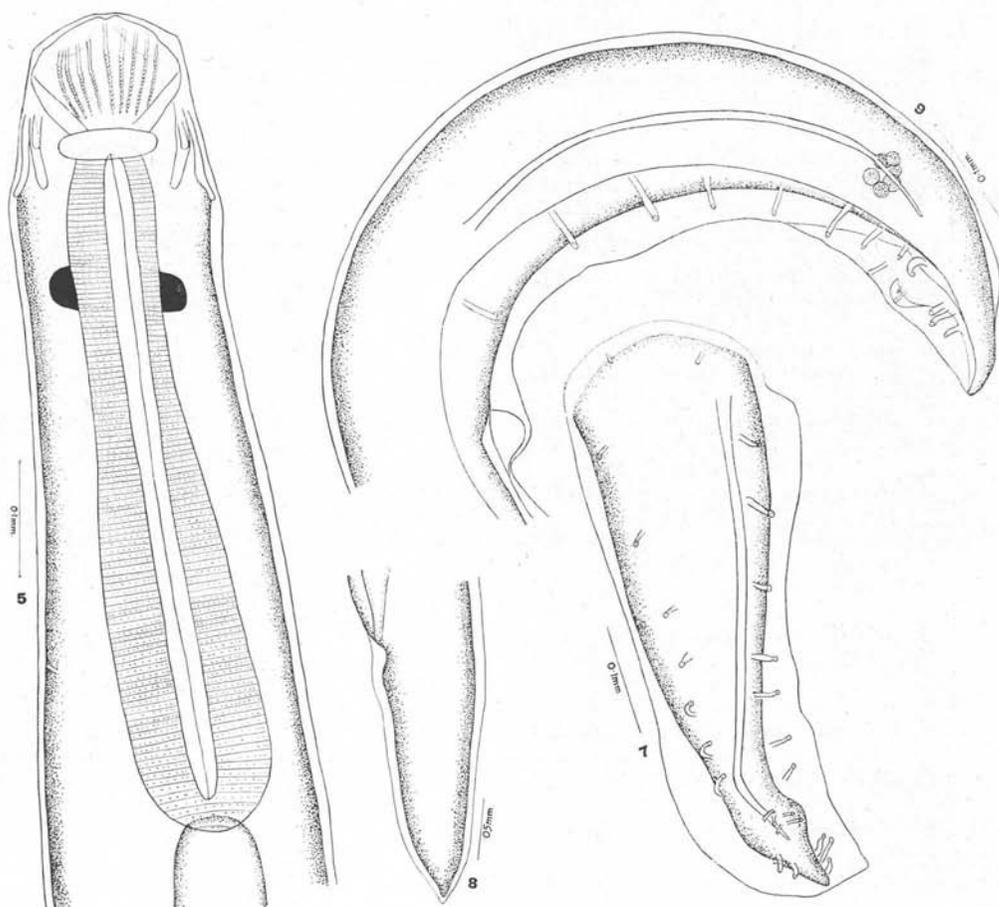


FIG. 5-8. — *Camallanus mastacembeli* n. sp.

FIG. 5. — Région antérieure du mâle. Vue latérale.

FIG. 6. — Extrémité caudale du mâle. Vue latérale

FIG. 7. — Extrémité caudale du mâle. Vue ventrale

FIG. 8. — Extrémité caudale de la femelle. Vue latérale.

FIGS 5-8. — *Camallanus mastacembeli* n. sp.

FIG. 5. — Anterior region of male. Lateral view

FIG. 6. — Male tail. Lateral view

FIG. 7. — Male tail. Ventral view

FIG. 8. — Female tail. Lateral view

TABLE I

Comparison of forms of the genus *Camallanus* Railliet and Henry, 1915

| Species | Internal longitudinal ridges | Caudal alae | Spicules | |
|--|------------------------------|--------------|-----------|-----------|
| | | | Right | Left |
| <i>C. anabantis</i> Pearse, 1933 (= <i>Z. anabantis</i>) Yeh, 1960 | Beaded | Present | 0.11 | 0.58-0.65 |
| <i>C. sweeti</i> Moorthy, 1937 (= <i>Z. sweetiof</i>) Yeh, 1960 . | Beaded | Present | 0.21-0.30 | 0.10-0.18 |
| <i>C. unispiculus</i> Khera, 1954 | Beaded | Absent | 0.63 | Absent |
| <i>C. fernandoi</i> (= <i>Z. fernandoi</i>) Yeh, 1960 | Beaded | Male unknown | | |
| <i>C. kulasirii</i> (= <i>Z. kulasirii</i>) Yeh, 1960 | Beaded | Present | 0.15-0.19 | 0.40-0.42 |
| <i>C. pearsei</i> (= <i>Z. pearsei</i>) Yeh, 1960 | Beaded | Male unknown | | |
| <i>C. nodulosus</i> Gupta, 1959 . | Beaded | Present | 0.44-0.45 | 0.27-0.36 |
| <i>C. thapari</i> Gupta, 1959 .. | Beaded | Present | 0.44-0.46 | 0.28-0.32 |
| <i>C. mastacembeli</i> n. sp. .. | Beaded | Present | 0.42-0.76 | Absent |
| <i>C. ingilisi</i> n. sp. | Beaded | Present | 0.27-0.36 | 0.37-0.46 |

at 0.50 to 0.51 mm. from anterior extremity. Tail long tapering, 0.16 to 0.21 mm. long. Vulva preequatorial, 6.7 to 9.03 mm. from anterior extremity. Viviparous.

Host: *Mastacembelus armatus* (Lacep.).

Location: Intestine.

Locality: Lucknow.

Discussion :

Railliet and Henry (1915) established the genus *Camallanus* for *C. lacustris* (Zoega, 1776). Since the establishment of this genus a large number of species have been reported from various parts of World. Yamaguti (1961) has listed twenty

species from fishes, eight species from amphibia and thirteen species from reptiles under the genus *Camallanus*. Ali (1956) erected a new genus *Neocamallanus* for *Camallanides* Baylis and Daubney, 1922 without tridentis. Yeh (1960) considered the presence or absence of tridentis as a variable character and therefore regarded *Neocamallanus* to be synonym of *Camallanus*. In the same year Yeh erected a new genus *Zeylanema* with the type species *Z. anabantis* (Pearse, 1933) to accommodate those species in which buccal capsule is armed with teeth like longitudinal ridges, caudal alae short and with two simple very unequal spicules.

Furtado and Fernando (1963) on the basis of the classification proposed by Yeh redescribed *Z. anabantis* from Ceylon. The author does not agree with the views of Yeh as the characters used by him for creating the genus are variable except the longitudinal ridges, armed with teeth in the buccal capsule. In *C. sweeti* Moorthy, 1937 (= *Z. sweeti*), *C. nodulosus* Gupta, 1959 and *C. thapari* Gupta, 1959 and *C. inglisi* n. sp., the spicules are subequal; in *Z. anabantis* (= *C. anabantis*) and *Z. kulasirii* Yeh, 1960, the spicules are very unequal while in *C. unispiculus* Khera, 1954 and *C. mastacembeli* n. sp. there is only one spicule. The male of *Z. pearsei* and *Z. fernandoi* Yeh, 1960 are unknown, so it is difficult to determine their generic position. In *C. unispiculus* and *C. atridentis* Khera, 1954 the caudal alae are absent while in others short or well developed. Hence the characters of a spicule equal or very unequal and short caudal alae are very unreliable for generic distinctions. (See table 1).

Therefore it is a matter of convenience to consider *Zeylanema* distinct from *Camallanus* rather than because of its taxonomic importance. I also disagree with Yeh who considers *C. unispiculus* to be a synonym of *C. anabantis*. *C. unispiculus* differs from *C. anabantis* in the size of body, in the number and arrangement of anal papillae, in the absence of caudal alae and in the presence of only one spicule. Yeh (1960) without comment transferred *C. atridentis* to *Zeylanema*. I disagree with this in that *C. atridentis* has longitudinal ridges smooth and extremely fine.

Eight species of *Camallanus* with internal longitudinal ridges armed with teeth in buccal capsule have been reported from fishes and amphibia. Of these two species are from amphibians namely *C. thapari* Gupta, 1959 and *C. nodulosus* Gupta, 1959 and the rest from fresh water fishes namely *C. anabantis* Pearse, 1933 (= *Z. anabantis* of Yeh, 1960), *C. sweeti* Moorthy, 1937 (= *Z. sweeti* of Yeh, 1960), *C. unispiculus* Khera, 1954, *C. fernandoi* (= *Z. fernandoi*) Yeh, 1960, *C. kulasirii* (= *Z. kulasirii*) Yeh, 1960 and *C. pearsei* (= *Z. pearsei*) Yeh, 1960. *C. mastacembeli* n. sp. differs from the above mentioned species except *C. unispiculus* in the possession of a single spicule. It differs from *C. unispiculus* in having nine pairs preanal; one adanal and three pairs postanal instead fourteen pairs preanal and two pairs postanal papillae, in the size of spicule, in having specimens of larger size upto 24.8 mm. and in the possession of a well developed caudal alae. Further in new form the anterior oesophagus is smaller while in *C. unispiculus* anterior oesophagus is larger than posterior oesophagus. It is worthwhile to note that *C. unispiculus* Khera, 1954 and *C. mastacembeli* n. sp. are both recorded from *Mastacembelus armatus*. It is

possible that both belong to the same species, however, on the basis of description and of the present status of Camallanid taxonomy, each of these is quite distinct.

(See table I).

CAMALLANUS INGLISI n. sp.

(Fig. 9-12)

Four male and seven female specimens were collected from the intestine of a frog, *Rana tigrina* from Lucknow.

Description :

Body elongated, slender, medium sized, tapering towards extremities. Cuticle thin, finely striated. Mouth surrounded by six papillae, two lateral and four submedian in position. Bivalve buccal capsule possess beaded chitinous ridges (9-11 in female, 10-12 in male). Ridges vary in length in both sexes. A strongly developed chitinous ring present at junction of valves and oesophagus. A pair of well developed tridents present. Oesophagus consisting of a short anterior muscular and a long posterior glandular portion enlarged posteriorly.

Male : Body 6.25 to 8.11 mm. long, 0.20 to 0.28 mm. wide. Dorsoventral diameter of head at its anterior angles, 0.085 to 0.120 mm. Valves of buccal capsule broader than long, 0.09 to 0.092 mm. long, 0.01 to 0.015 mm. wide. Tridents well developed except for smaller middle prong, measuring 0.025 to 0.028 mm. in length; lateral prongs 0.06 mm. long, 0.09 to 0.11 mm. wide. Anterior club shaped muscular oesophagus 0.42 to 0.46 mm. long. Posterior glandular oesophagus 0.33 to 0.46 mm. long, 0.08 to 0.11 mm. wide. Entire oesophagus 0.75 to 0.92 mm. long. Nerve ring surrounds anterior portion of oesophagus 0.21 to 0.24 mm. from anterior extremity. Excretory pore posterior to nerve ring 0.25 to 0.30 mm. from anterior extremity. Caudal end curled ventrally to form a single turn of a spiral. Tail very short, 0.09 to 0.12 mm. long with long bifid tip. Caudal alae broad beginning at cuticular swelling on ventral side of body, 0.41 to 0.67 mm. from posterior end, extending upto tip of tail. Seven pairs of preanal, two pairs of paracloacal and five pairs of postanal papillae. Preanal and small paracloacal papillae situated almost at regular intervals. Postcloacal papillae small and sessile. Of postanal papillae two posterior pairs isolated, fourth pedunculated and fifth sessile. First three pairs of postcloacal papillae close together forming a group on each side. Spicules dissimilar and subequal. Right spicule relatively stout, 0.27 to 0.36 mm. long with a barb or prong 0.05 mm. long near its tip. Left spicule 0.37 to 0.46 mm. long.

Female : Body 10.96 to 18.72 mm. long, 0.32 to 0.48 mm. wide. Dorsoventral diameter of head 0.14 to 0.18 mm. Valves of buccal capsule 0.11 to 0.12 mm. long, 0.16 to 0.19 mm. wide. Chitinous ring 0.09 to 0.11 mm. long, 0.01 to 0.02 mm. wide.

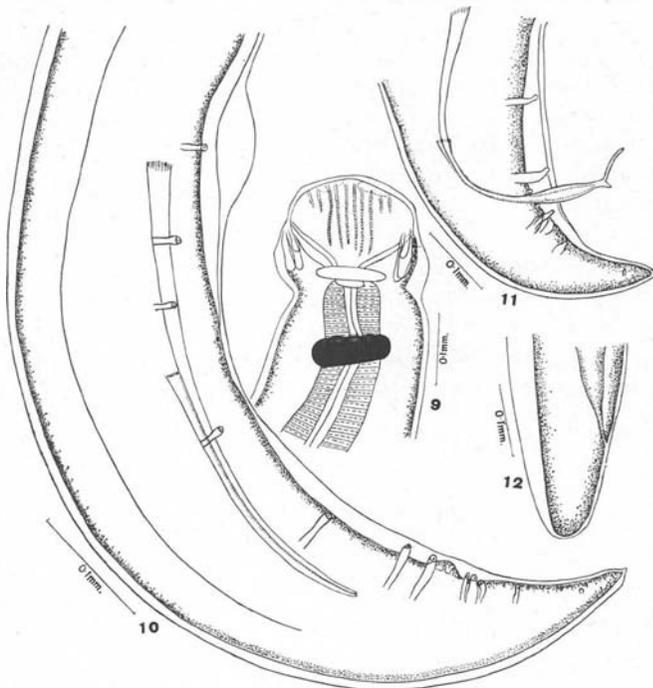


FIG. 9-12. — *Camallanus inglisi* n. sp.

FIG. 9. — Région antérieure du mâle. Vue latérale.

FIG. 10. — Extrémité caudale du mâle. Vue latérale.

FIG. 11. — Extrémité caudale du mâle. Vue latérale

FIG. 12. — Extrémité caudale de la femelle. Vue latérale

FIGS 9-12. *Camallanus inglisi* n. sp.

FIG. 9. — Anterior region of male. Lateral view

FIG. 10. — Male tail. Lateral view

FIG. 11. — Male tail. Lateral view

FIG. 12. — Female tail. Lateral view

Lateral prongs of tridents 0.065 to 0.08 mm. long; middle prong 0.03 to 0.038 mm. long. Anterior muscular oesophagus 0.56 to 0.66 mm. long, 0.09 to 0.15 mm. wide. Posterior glandular oesophagus 0.45 to 0.59 mm. long. Nerve ring 0.22 to 0.32 and excretory pore at 0.28 to 0.43 mm. from anterior extremity. Tail long tapering 0.16 to 0.28 mm. in length. Vulva preequatorial 4.96 to 9.52 mm. from anterior extremity. Viviparous.

Host: *Rana tigrina*.

Location: Intestine.

Locality: Lucknow.

Discussion :

Two species of the genus *Camallanus* with internal longitudinal ridges armed with teeth in the buccal capsule have been described so far from amphibian hosts viz. *C. nodulosus* Gupta, 1959 and *C. thapari* Gupta, 1959. The new form differs from both these forms in having specimens of both sexes of smaller size, in the possession of broad caudal alae and in the number and arrangement of pre and postcloacal papillae. The new form differs from *C. nodulosus* in having five pairs postanal papillae instead six pairs. In the new form there are five pairs of postcloacal papillae of which three anterior pedunculated postcloacal papillae are close together in a group while in *C. nodulosus* there are six pairs of postcloacal papillae of which four pedunculated postcloacal papillae are close together, in a group and the sixth is sessile. Further the new form differs from *C. thapari* in the possession of seven pairs of precloacal papillae instead six pairs and in having the most posterior post cloacal papillae sessile instead being pedunculated.

CAMALLANUS BUFONIS n. sp.

(Fig. 13-16)

Twelve male and seven female specimens were collected from the intestine of a toad *Bufo* sp. from Lucknow.

Description :

Body elongated, slender, medium sized tapering towards extremities. Cuticle thin, finely striated. Mouth surrounded by two lateral and four submedian papillae. Buccal capsule bivalved and possess 10 simple longitudinal ridges of varying lengths in both sexes. Head slightly tilted ventrad. A strongly chitinized ring at junction of valves and oesophagus. A pair of tridents conspicuous and sclerotized.

Male : Body 4.99 to 8.34 mm. long, 0.16 to 0.26 mm. wide. Dorsoventral diameter of head 0.09 to 0.14 mm. Valves of buccal capsule broader than long 0.08 to 0.10 mm. long, 0.10 to 0.14 mm. wide. Tridents well developed except for small middle prong measuring 0.030 to 0.035 mm. in length; lateral prongs 0.055 to 0.070 mm. long. Anterior club shaped muscular portion of oesophagus 0.43 to 0.50 mm. long, 0.08 to 0.11 mm. wide. Posterior glandular oesophagus 0.30 to 0.45 mm. long, 0.08 to 0.12 mm. wide. Entire oesophagus 0.75 to 0.92 mm. long. Nerve ring surrounds anterior portion of oesophagus 0.17 to 0.22 mm. and excretory pore 0.19 to 0.29 mm. from anterior extremity. Tail 0.090 to 0.155 mm. long. Caudal alae broad beginning at cuticular swelling on ventral side of body extending upto tip of tail. Seven pairs of large pedunculated preanal papillae, two pairs of adanal and six pairs of postanal. A median papillae also found at level of cloaca. Preanal papillae situated almost at regular intervals and adanal papillae situated laterally at level of cloaca. Of postanal papillae,

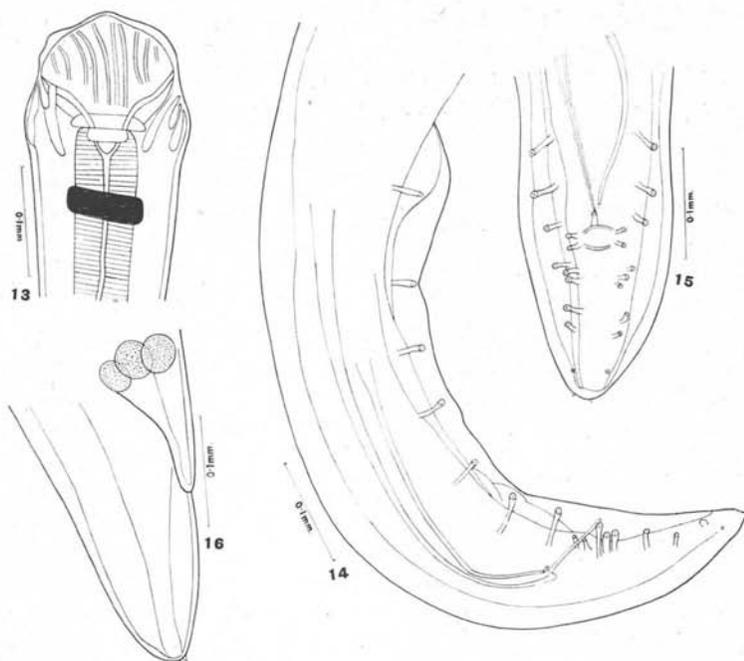


FIG. 13-16. — *Camallanus bufonis* n. sp.

FIG. 13. — Région antérieure du mâle. Vue latérale

FIG. 14. — Extrémité caudale du mâle. Vue latérale

FIG. 15. — Extrémité caudale du mâle. Vue ventrale

FIG. 16. — Extrémité caudale de la femelle. Vue latérale.

FIGS. 13-16. — *Camallanus bufonis* n. sp.

FIG. 13. — Anterior region of male. Lateral view

FIG. 14. — Male tail. Lateral view

FIG. 15. — Male tail. Ventral view

FIG. 16. — Female tail. Lateral view

three pairs close together in a group and three pairs situated one behind the other. A pair of phasmids observed at tip of tail. Spicules subequal and dissimilar. Right spicule broad, highly sclerotized, relatively large, 0.36 to 0.48 mm. in length with a barb or prong, 0.054 to 0.06 mm. long at its tip. Left spicule slender and thin, 0.28 to 0.40 mm. in length.

Female : Body 8.128 to 12.624 mm. long, 0.208 to 0.240 mm. wide. Dorsoventral diameter of head 0.13 to 0.14 mm. Buccal valves 0.10 to 0.13 mm. long, 0.11 to 0.16 mm. wide. Tridents well developed, middle prong 0.030 to 0.033 mm. long ; lateral prongs 0.055 to 0.075 mm. long. Anterior club shaped œsophagus 0.48 to 0.67 mm. long, 0.06 to 0.10 mm. wide. Posterior glandular œsophagus 0.30 to

0.62 mm. long, 0.05 to 0.12 mm. wide. Entire œsophagus 0.78 to 1.29 mm. long. Nerve ring 0.23 to 0.26 mm. and excretory pore at 0.26 to 0.30 mm. from anterior extremity. Tail conical 0.128 to 0.176 mm. long. Vulva nearly equatorial 3.848 to 6.042 mm. from anterior extremity. Viviparous.

Host : *Bufo* sp.

Location : Intestine.

Locality : Lucknow.

Discussion :

Nine species of the genus *Camallanus* Railliet and Henry, 1915 without beaded longitudinal ridges in the buccal capsule have been reported from amphibians namely *Camallanus nigrescens* (von Linstow, 1906), Railliet and Henry, 1915, *C. baylisi* Karve, 1930, *C. multiruga* Walton, 1932, *C. pipientis* Walton, 1935, *C. kaapstaadi* Southwell and Krishner, 1937, *C. mazabukae* Kung, 1948, *C. multilineatus* Kung, 1948, *C. ranae* Khera, 1954 and *C. johni* Yeh, 1960. The new form differs from *C. pipientis*, *C. mazabukae*, *C. kaapstaadi* and *C. johni* in the possession of vulva preequatorial instead postequatorial. The new form can also be distinguished from *C. multilineatus* and *C. multiruga* in having anterior œsophagus larger than posterior œsophagus. The new form closely resembles to *C. nigrescens*, *C. baylisi* and *C. ranae* in the possession of anterior œsophagus larger than posterior œsophagus. However it differs from *C. nigrescens* in having two spicules instead one. The new form most closely resembles *C. baylisi* and *C. ranae* but can be distinguished in the number and arrangement of anal papillae. The new form differs from *C. ranae* in having six pairs of postcloacal papillae instead of five pairs and in the possession of a barb or prong 0.054 to 0.06 mm. long at the tip of right spicule.

The new form has a close resemblance to *C. baylisi* in the number and arrangement of pre and post cloacal papillae but however differs from it in having a single median papillae at the level of cloaca, in having left spicule 0.28 to 0.40 mm. long instead 0.18 to 0.23 mm. long, in the absence of small spines at the tip of female tail and in having vulva slightly anterior to mid region of body.

Accordingly it is regarded as new with the specific name *Camallanus bufonis* n. sp.

CAMALLANIDES PRASHADI (Baylis and Daubney, 1922)

(Fig. 17-21)

Two male and a large number of female specimens were recovered from the intestine of a snake *Ptyas mucosus* (Linn.) at Lucknow.

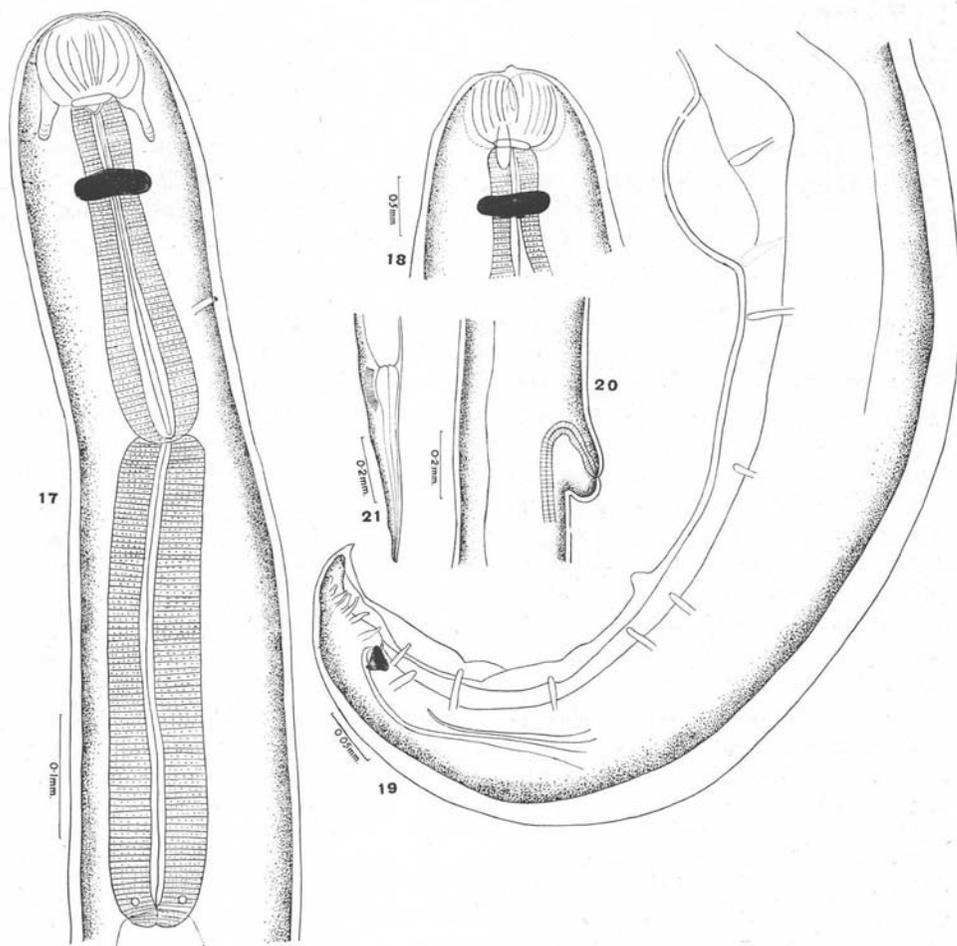


FIG. 17-21. — *Camallanides prashadi* Baylis et Daubney, 1922

FIG. 17. — Région antérieure du mâle. Vue latérale

FIG. 18. — Région antérieure du mâle. Vue latérale

FIG. 19. — Extrémité caudale du mâle. Vue latérale.

FIG. 20. — Région vulvaire. Vue latérale

FIG. 21. — Extrémité caudale de la femelle. Vue latérale

FIGS. 17-21. — *Camallanides prashadi* Baylis and Daubney, 1922

FIG. 17. — Anterior region of male. Lateral view

FIG. 18. — Anterior region of male. Lateral view

FIG. 19. — Male tail. Lateral view

FIG. 20. — Vulvar region. Lateral view

FIG. 21. — Female tail. Lateral view

Description :

Body elongated medium sized, slender and tapering towards extremities. Cuticle thin, finely striated. Mouth elongated dorsoventrally and surrounded by six papillae. Buccal capsule consists of two buccal valves each of which comprises four separated masses. Each valve consists of two chitinous masses separated by a broad longitudinal groove. Buccal valves bear ten to twelve complete and incomplete longitudinal ridges in both sexes. A large stout chitinous ring present at junction of valves and oesophagus. Tridents simple pointed chitinous bodies of yellow colour lying opposite to edges of buccal valves. Dorsal and ventral chitinous bodies, 0.10 to 0.15 mm. in length.

Male : Body 6.74 to 7.29 mm. long, 0.24 to 0.28 mm. wide. Dorsoventral diameter of head 0.08 to 0.09 mm. Buccal capsule 0.06 to 0.065 mm. long, 0.080 to 0.085 mm. wide. Posterior chitinous ring 0.040 to 0.042 mm. in diameter. Length of rod 0.065 to 0.075 mm. Anterior club shaped muscular oesophagus 0.29 to 0.30 mm. long and 0.075 to 0.08 mm. wide. Posterior cylindrical glandular oesophagus 0.42 mm. long and 0.09 to 0.095 mm. wide. Entire oesophagus 0.71 to 0.72 mm. long. Nerve ring surrounds anterior portion of oesophagus 0.14 mm. and excretory pore at 0.19 to 0.22 mm. from anterior end. Tail conical, pointed and curved ventrally to form a single turn of a spiral, 0.06 to 0.09 mm. long. Caudal alae broad beginning at cuticular swelling on ventral side of body extending upto tip of tail. Fourteen pairs of caudal papillae with seven pairs preanal, two pairs paracloacal and five pairs postanal. Papillae pedunculated, rib like almost diminishing in size towards tip of tail. Preanal papillae situated almost at regular intervals. Paracloacal papillae curving inwards towards ventral side of cloaca. Postanal papillae arranged three in a group relatively large in size. Spicules dissimilar, subequal in size. Right spicule chitinized, 0.29 to 0.36 mm. long, its tip curved into a hook. Left spicule chitinized, slender, tapering, 0.175 to 0.190 mm. long. Gubernaculum yellow in colour, triangular, 0.028 to 0.029 mm. long.

Female : Body 13.56 to 19.88 mm. long, 0.40 to 0.48 mm. wide. Dorsoventral diameter of head, 0.11 to 0.14 mm. Buccal capsule 0.08 to 0.115 mm. long, 0.11 to 0.14 mm. wide. Posterior chitinous ring 0.055 to 0.070 mm. in diameter. Anterior muscular oesophagus 0.31 to 0.40 mm. long, 0.10 to 0.15 mm. wide. Posterior glandular oesophagus 0.51 to 0.63 mm. long, 0.10 to 0.15 mm. wide. Entire oesophagus 0.88 to 0.99 mm. long. Nerve ring 0.18 to 0.26 mm. and excretory pore 0.32 to 0.56 mm. from anterior extremity. Cervical papillae 0.52 to 0.86 mm. from anterior extremity. Tail short 0.29 to 0.36 mm. long, tapers gradually with exception of a very slight broadening out just before the pointed end. Vulva modified into tentacular appendage flattened dorsoventrally, projecting freely from body, 6.1 to 8.6 mm. from anterior end. Viviparous.

Host : *Ptyas mucosus* (Linn.).

Location : Intestine.

Locality : Lucknow.

Discussion :

Baylis and Daubney (1922) erected the genus *Camallanides* with the type species *C. prashadi* Baylis and Daubney, 1922. Khera (1954) divided the genus into two subgenera *Camallanides* and *Procamallanides*. *Camallanides* is characterised by the presence of dorsal and ventral chitinized bodies, while *Procamallanides* is based upon their absence.

My material is referred to *C. prashadi* in having dorsal and ventral chitinoid bodies but differs in being larger in size and in having spicules of larger size. These differences are considered variations within the species.

TABLE II

Measurements of *Camallanides prashadi* Baylis and Daubney, 1922 in mm.

| | Author's specimens | | Baylis and Daubney, 1922 | |
|-------------------------|--------------------|-------------|--------------------------|-----------|
| | Male | Female | Male | Female |
| Length | 6.94-7.29 | 13.56-19.88 | 5.8-6.6 | 14.2-17.7 |
| Maximum width | 0.24-0.28 | 0.4-0.48 | 0.21-0.25 | 0.40-0.47 |
| Length of spicules : | | | | |
| Right | 0.29-0.36 | | 0.24 | |
| Left | 0.175-0.19 | | 0.14 | |

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