Description of *Acrobeloides emarginatus* (de Man, 1880) Thorne, 1937 and proposal of *Acrolobus* n. gen. (Nematoda : Cephalobidae)

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SUMMARY

*Acrobeloides emarginatus* (de Man, 1880) Thorne, 1937 differs in cephalic structure from other species of *Acrobeloides* Cobb, 1924. It is, therefore, transferred to *Acrolobus* n. gen. to become its type and only species. The general morphology of the new genus is typically cephaloboid. It is placed in the subfamily *Kirjanoviinae* Andrassy, 1976, whose diagnosis is emended. *Acrolobus* n. gen. differs from the other genera of the subfamily by a combination of the following characters: offset lip region, labial probolae large and leaf-like, prelabial probolae small and knob-like, radial extensions of the cuticular ridge surrounding the stomatal opening, and cuticle without longitudinal striation. The lip structure of the new genus is unique in having bilateral rather than tri- or hexaradiate symmetry.

**DESCRIPTION**

*Redescription d'Acrobeloides emarginatus* (de Man, 1880)

Thorne, 1937 et proposition d'Acrolobus n. gen. (Nematoda : Cephalobidae)


**Material and methods**

Specimens of *A. emarginatus* were collected from an agricultural field in central Sweden; for site description see Steen, Jansson and Persson (1984). Comparison of the specimens with the description and illustrations by de Man (1880, 1884) convinced me of the identity of the specimens. Examination by light microscope was made on specimens killed by heat, fixed in cold T.A.F. and processed to glycerine by the slow method (Hooper, 1970). Specimens were mounted on slides as described in Bostrom and Gyderno (1983). For scanning electron microscopy (S.E.M.), specimens were heat relaxed, fixed in cold T.A.F. (more than 24 hours), and postfixed in 1 % *OsO₄* in redistilled water (one hour). They were embedded in glycol methacrylate and sectioned on an ultramicrotome (Reese, 1971). Sections were shadowed with carbon and gold and viewed on a Cambridge Stereoscan 240 electron microscope.
dehydrated in an acetone/redistilled water series, terminating in pure acetone; critical point dried, mounted, coated with gold and examined in the S.E.M. at 15 kV as described in Bostrom and Gydemo (1983).

**Acrolobus** n. gen.

**Diagnosis**

Rhabditida. Cephalobidae. Lip region rounded and offset from body. Six large leaf-like lips (labial probolae). Lateral lips broader and shorter than the subdorsals and subventrals, marked by deep incisures. The two subdorsal and the two subventral lips separated by less deep markings. Lateral lips bear one anterior papilla and a posterior round amphid opening each. Subdorsal and subventral lips bear one anterior and one posterior papilla each. Six small knob-like prelabial probolae on the ridge surrounding the stomatal opening. The ridge extends radially from the labial probolae to connect at the base of the lips.

The new genus is separated from all other genera in the Cephalobidae Chitwood & Chitwood, 1934 by the organisation of the lip region.

**Type and Only Species**

*Acrolobus emarginatus* (de Man, 1880), n. comb.

= *Cephalobus emarginatus* de Man, 1880.

= *Acrobeloides emarginatus* (de Man, 1880)

Thorne, 1937.


**Measurements**

*Females* (n = 25) : L = 525 μm (449-617); a = 27 (23-30); b = 3.8 (3.5-4.3); c = 14 (13-15); V = 64 (63-66).

*Males* (n = 16) : L = 479 μm (429-513); a = 28 (25-31); b = 3.7 (3.4-3.9); c = 15 (13-17); T = 54 (49-60); spicules (measured along the axis) = 19.2 μm (17.5-21.2); gubernaculum = 9.0 μm (8.3-9.6).

**Description**

*Females* : Body, when relaxed by heat, slightly ventrally arcuate. Body width 17-26 μm at midbody. Cuticle annulated, annules about 1.5-2.0 μm. Lateral field with three incisures at midbody, 2.9-4.2 μm wide, about 1/5-1/6 of body diameter. Three incisures to phasmid, one extends almost to tail terminus. Lip region offset and rounded, 4-5 μm high. Six leaf-like lips (labial probolae). Lateral lips broader and shorter than subdorsals and subventrals. Lateral lips marked by deep incisures, the two subdorsal and subventral separated by less deep markings. Stomatal aperture surrounded by a cuticular ridge with six small knobs corresponding in position to prelabial probolae. The ridge extends laterally, subdorsally and subventrally to connect at the base of the labial probolae. An anterior ring of six papillae (one on each labial probola), a posterior ring of four papillae (one on each subdorsal and subventral labial probola), and two round amphid openings (one on each lateral labial probola) are situated on the lips. Stoma cephaloboid, 10.0-11.2 μm long. Cheilostom broad, cheilorhabdions 1.7-2.1 μm high; other buccal elements narrow. Dorsal metarhabdial tooth not prominent. Pharyngeal collar encloses anteriorly proto- and telostom. Pharynx cephaloboid, 129-149 μm long. Corpus cylindrical, somewhat fusiform posteriorly, 78-87 μm long (measured from base of telostom). Isthmus narrow, 25-35 μm long; basal bulb ovate, 16-19 μm long and 12-15 μm broad, with flaps. Cardia not prominent, enclosed by intestinal cells. Nerve ring usually surrounds metacorpus-isthmus junction. Excretory pore opposite nerve ring. Renette cell often visible ventral to bulb. Hemizonid distinct, 2.5-3.3 μm long, just posterior to excretory pore. Deirids at level of isthmus. Gonad monodelphic, prodelphic. Ovary directed posteriorly, reflexed at oviduct and usually not reflected secondarily. Oogonia in double, oocytes in single line. Spermatheca oval, 29-46 μm long, frequently with sperm. Egg 43-46 μm long, 15 μm broad. Post-uterine branch 17-25 μm long, septate in about 50 % of specimens. Rectum 16-18 μm long, about equal to anal body width (A.B.W.). Rectal glands three. Anal aperture a transverse slit with posterior lip protruding. Tail 32-41 μm long (more than 2 A.B.W.), conoid, tapering to an acute terminus. Phasmids at 35-50 % of tail length.

Description of Acrobeloides emarginatus and Acrolobus n. gen.

Fig. 1. Acrolobus emarginatus (de Man, 1880) n. comb. Female. A: Entire body; C: Anterior part; D: Posterior part; E: Reproductive organs. Male. B: Entire body; F: Posterior part.
Fig. 2. *Acrolobus emarginatus* (de Man, 1880) n. comb. S.E.M.-micrographs. A: *En face* view of female head. B: Female head with distended oral aperture. C: Lateral view of female head. D: Female tail. E-F: Male tail. Abbreviations: a = amphid; an = anal aperture; ca = cloacal aperture; cd = caudal subdorsal papilla; cl = caudal lateral papilla; cs = caudal subventral papilla; cv = caudal ventral papilla; If = lateral field; lp = labial probolae; p = papilla; pn = phasmid; pl = prelabial probolae; pp = preanal subventral papilla; pv = preanal ventral papilla; sg = subventral groove.
arcuate, somewhat dorso-ventrally flattened, conoid in shape, tapering to a rounded terminus with conspicuous ventral micro, 2.5-2.9 μm long. Of the three incisures, the central one ends at the phasmid at 46-51 % of tail length, and the other two extend, almost to the tail tip.

**Relationships**

Andrassy has recently (1984) transferred *A. emarginatus* to the genus *Panagrobelus* in the family Panagrobelidae Thorne, 1937. I am not, however, willing to accept this transfer, as *A. emarginatus* does not fit the diagnoses of either the family (Thorne, 1937) or the genus (Thorne, 1939). *A. emarginatus* has stoma, basic cephalic features and cephalic papillar arrangement typical of cephalobids (Sauer, Chapman & Brzeski, 1979; Boström & Gydemo, 1983; Boström, 1985a, 1985b). Furthermore, spicules, gubernaculum and arrangement of male secondary sexual characters are cephaloboid (Sauer, Chapman & Brzeski, 1979; Boström, 1985a, 1985b). These morphological characters justify retention of *A. marginatus* in the family Cephalobidae. All species of *Panagrobelus* appear to be associated with bark beetles (Goodey, 1963), while *A. emarginatus* is found in terrestrial and semi-aquatic habitats, hence they also seem to be ecologically separable.

*Acrolobus* n. gen. is in general morphology a typical member of the family Cephalobidae. The new genus has similarities with *Kirjanovia*, described by Ivanova (1969) and with *Acromoldavicus*, described by Nesterov (1970), in the large labial probolae, and with *Scottnema*, described by Timm (1971), in the offset head and large labial probolae. The detail morphology of the head of these genera is, however, difficult to interpret since no S.E.M. studies have been made on them.

*Kirjanovia* Ivanova, 1969, *Acromoldavicus* Nesterov, 1970 and *Scottnema* Timm, 1971, were each placed by their respective author in the Acrobelinae Thorne, 1937. Thus, by implication they emended the diagnosis of the subfamily to cover also forms with labial probolae longer than prelabial probolae. Andrassy (1976) proposed a new subfamily, *Kirjanoviinae*, for the genera *Kirjanovia* and *Acromoldavicus*, but retained *Scottnema* in the Acrobelinae. This was a variance with Andrassy’s (1976) key stating that members of the Acrobelinae always have labial probolae shorter than prelabial probolae.

The presence of large labial probolae, longer than the small knob-like prelabial probolae, places *Acrolobus* n. gen. in the subfamily Kirjanoviinae Andrassy, 1976, whose diagnosis is emended to embrace also genera without longitudinally striated cuticle. The genus *Scottnema* is proposed to be included in the Kirjanoviinae too.

*Acrolobus* n. gen. differs from the other genera of the subfamily by the combination of the following characters: 1) offset lip region, 2) large leaf-like labial probolae, 3) small knob-like prelabial probolae on the cuticular ridge surrounding the stomatal aperture, 4) radial extensions of the cuticular ridge connecting at the base of the labial probolae, and 5) cuticle without longitudinal striation.

The lip-region organisation of *Acrolobus* n. gen. is unique among the Cephalobidae and differs from the general pattern with three symmetric primary axes. The symmetry of the head of the new genus is rather bilateral with the axis drawn between the two subdorsal and the two subventral labial probolae. This pattern may be interpreted as derived from the basic tri- or hexaradiate condition found in other cephalobids and generally among nematodes.

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**References**


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