

The proposed transfer of the echiuran *Ochetostoma capense* to the genus *Listriolobus*

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The taxonomic position of the echiuran *Ochetostoma capense* is reviewed based on examination of type material and on specimens from the type locality. On the basis of the disposition of the inner oblique muscle layer, the species is transferred to the genus *Listriolobus* and is re-described as *L. capensis*.

Gebaseer op die ondersoek van die soortmateriaal en van monsters van die soortlokaliteit word die taksonomiese posisie van een van die Echiura, *Ochetostoma capense*, hersien. Op grond van die rangskikking van die binne-skuinsspierlaag, word die spesie oorgeplaas na die genus *Listriolobus* en word hier herbeskryf as *L. capensis*.

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Introduction

Ochetostoma capense was erected by Jones & Stephen (1955) from numerous specimens obtained from the Zwartkops River estuary near Port Elizabeth. The species was also recorded from Durban Bay and Langebaan Lagoon. In a brief report, Wesenberg-Lund (1963) noted its occurrence as far as 3,6 km upstream from the estuary mouth of the Zwartkops River. Mathew (1976) undertook histological studies of the integuments in echiurans and overlooked the nature of the inner oblique muscle layer of this species. In a comprehensive report on the species of *Ochetostoma* from southern Africa, *O. capense* was briefly diagnosed by Biseswar (1988).

Histological studies of the body wall of type material and of specimens obtained from the type locality, however, have revealed that the placement of this species in the genus *Ochetostoma* is erroneous. On the basis of the disposition of the inner oblique muscle layer it is proposed that the species be transferred to the genus *Listriolobus*. A revised description of the species, together with the proposed taxonomic change is given below.

Systematic section

Family Thalassematidae Bock, 1942

Subfamily Ochetostomatinae Dattagupta, 1976

Genus *Listriolobus* Spengel, 1912

Diagnosis

Longitudinal muscles of body wall grouped into bands which in young specimens are faint or visible only in the posterior region. Inner oblique layer of muscles not separated into transverse fascicles between the longitudinal bands. Two to three pairs of gonoducts; gonostomal lips elongate and spirally coiled. Interbasal muscle between the setae is present.

Type species: Listriolobus bahamensis Fischer

Remarks

The generic name *Listriolobus* was proposed by Spengel (1912) for specimens collected from Indonesia and the Bahamas. Fischer (1926) subsequently provided the specific names *billitonensis* and *bahamensis* for the specimens and later Fisher (1946) designated *L. bahamensis* as the type species of *Listriolobus*. The genus now contains nine species.

There are four genera in the subfamily Ochetostomatinae, namely, *Ochetostoma*, *Listriolobus*, *Lissomyema* and *Ikedosoma*, where the longitudinal muscle layer of the body wall is aggregated into discrete bands. In the rest of the echiurans this muscle forms a continuous sheet. In echiurans, the presence or absence of longitudinal muscle bands is an important taxonomic character in the classification above the generic level.

Internal to the longitudinal muscle is a layer of oblique muscles. It was only after the publication of Spengel's paper in 1912 and Wharton's in 1913 that the taxonomic importance of this muscle layer was realized.

The arrangement of the inner oblique muscle is a valid character in distinguishing *Ochetostoma* from *Listriolobus*. In the former, this muscle is aggregated into fascicles between the longitudinal muscle bands whereas in the latter it forms a continuous sheet. The taxonomic position of several species assigned to the genus *Ochetostoma* is doubtful because some of the earlier descriptions contain no information about the oblique muscles.

Distribution. This genus has a fairly wide distribution mainly in tropical and subtropical waters of the Indo-Pacific and Atlantic Oceans.

Listriolobus capensis (Jones and Stephen, 1955)

Ochetostoma capensis Jones and Stephen, 1955: 273–278, Figs 1–3, Table 1; Wesenberg-Lund, 1963: 142. *Ochetostoma capense* Stephen and Edmonds, 1972: 430–431; Day, 1974: 50; Mathew, 1976: 151–158.

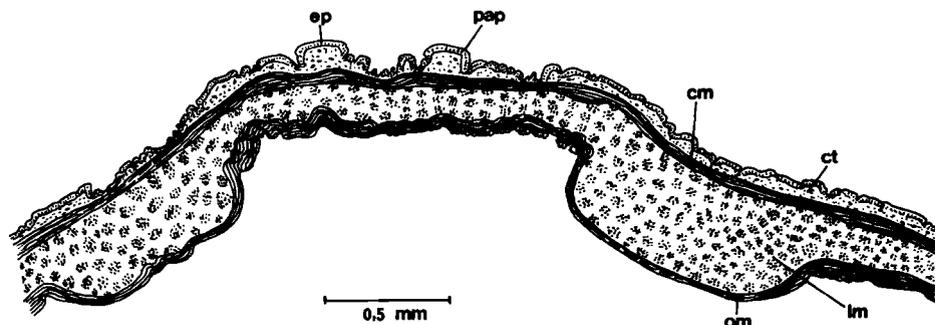


Figure 1 Histological section of the body wall of *Listriolobus capensis* showing the arrangement of the muscle layers. cm = circular muscle, ct = connective tissue, ep = epithelium, lm = longitudinal muscle, pap = papillae, om = oblique muscle.

Description

Proboscis small in preserved specimens, about one-eighth of trunk length and in living specimens one-twelfth to one-third; ventral edges crenate when extended, but thrown into a series of tight ridges when contracted. Colour of proboscis varies from cream, through different shades of cream-yellow, to light orange. Trunk cylindrical or sausage shaped, up to 140 mm in length and typically widest at posterior end. Trunk thickly covered with papillae on anterior ventral surface but fewer at posterior end. Papillae aligned in rows in middle region of trunk. Colour of trunk variable, ranging from dark grey-brown to purple-brown. Longitudinal muscles gathered into seven main bands, most conspicuous at ends of trunk. A few weakly developed bands occur between the main bands. Inner oblique muscle layer, between the longitudinal bands, not arranged in fascicles (Figure 1.) Gonoducts two pairs, postsetal, usually half to three quarters as long as trunk, but sometimes quite short. Gonostomal lips extended into long spiral filaments. Interbasal muscle vessel present, passing through a loop of the neuro-intestinal vessel (Figure 2).

Intestinal ring sinus located at end of foregut; neuro-intestinal vessel paired (Figure 2).

Anal vesicles long, thin, brown tubes of variable length, from one- to three-quarters trunk length and bearing minute ciliated funnels which are most numerous towards their free ends.

Ventral setae one pair, consisting of a long, straight shaft with a flattened, curved terminal blade. Terminal end is set slightly askew from cylinder part of shaft.

Material

This analysis is based on a study of 13 specimens collected from the type locality and on the examinations of the holotype of *O. capense* (Reg No: 1958. 23. 41), the two figured specimens of Jones & Stephen 1955 (Reg No: 1958. 23. 43) and four paratypes (Reg. No. 1958. 23. 43) obtained from the Royal Scottish Museum.

For histological details, strips of the body wall of six specimens, including two paratypes, were sectioned at 8–10 μm and stained with haematoxylin and eosin. Drawings were made with the aid of a camera lucida.

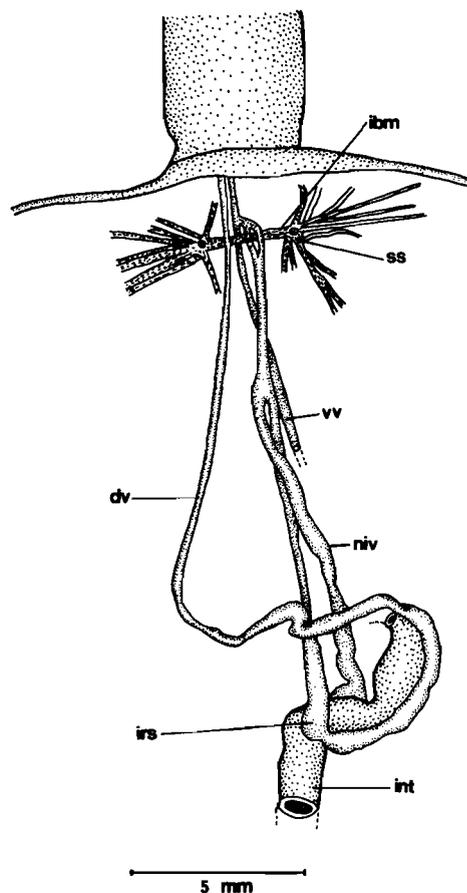


Figure 2 Anterior part of the trunk cavity of *Listriolobus capensis* showing the blood system. dv = dorsal vessel, ibm = interbasal muscle, int = intestine, irs = intestinal ring sinus, niv = neuro-intestinal vessel, ss = setal sac, vv = ventral vessel.

Remarks

Jones & Stephen (1955) obviously overlooked the disposition of the oblique muscle when assigning their species to the genus *Ochetostoma*. Their original description of the species makes no mention of this important feature. In their monograph, Stephen & Edmonds (1972), however, state that the oblique muscles between the longitudinal bands form fascicles.

The nature of the oblique muscle layer may not be readily discernible from gross morphological observations. Mathew (1976), also holds the view that the real nature of this muscle can be determined only after examination of histological sections of the body wall. Histological studies by the present authors clearly show that the oblique muscle layer, although of variable thickness, forms a continuous sheet and is not separated into transverse fascicles as in *Ochetostoma*. On the basis of this character it is proposed that *O. capense* be moved to the genus *Listriolobus*. It is rather surprising that this feature was also overlooked by Mathew (1976) who examined histological sections of the body wall of specimens obtained from the Royal Scottish Museum.

Another feature that tends to support this taxonomic change is the presence of an interbasal muscle in *L. capensis* as in all the known species of *Listriolobus*.

Four echiuran genera were previously known from the southern African region, namely, *Ochetostoma*, *Thalassema*, *Anelassorhynchus* and *Echiurus*. The genus *Listriolobus* was not recorded previously from this region. *Listriolobus capensis* appears to be an endemic species. Since its discovery at the three localities mentioned above, it has not been reported from beyond the southern African region.

Of the species of *Listriolobus* so far described, two, namely *L. bulbocaudatus* and *L. brevirostris*, possess seven longitudinal muscle bands and two pairs of gonoducts and hence appear to be closely related to *L. capensis*. *Listriolobus bulbocaudatus*, described by Edmonds (1963) is based on four specimens from Mud Island, Moreton Bay, Queensland. The latter species, however, differs from *L. capensis* in possessing a trunk that is expanded at the posterior end into a fleshy, bulbous structure which bears a number of rings of very large, prominent wart-like papillae.

Listriolobus brevirostris, described by Chen & Yeh (1958), is known from specimens obtained from Kiao-Chow Bay, Shantung. In this species, the proboscis is short, truncated and nearly open at the base. The trunk is somewhat fusiform, tapering at either end and up to 120 mm in length. According to the authors, the papillae are arranged in transverse rows which are more evident on the ventral and ventro-lateral surfaces of the anterior third of the body. The papillae are small, round, ampulla-like, of variable size and occur either singly or in groups of 2–3. Hence *L. brevirostris* differs from *L.*

capensis in the shape of the trunk and in the nature and distribution of the dermal papillae.

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