

The Marine
Nematode Genus *Pseudonchus* COBB, 1920, with
Descriptions of *Cheilopseudonchus*, n. g.
and *Pseudonchus kosswigi*, n. sp.

by

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(With 2 figures in the text)

Species within the genus *Pseudonchus* are few and have been reported only rarely. Three species were reported by C. A. ALLGEN from Norwegian waters, (*P. norwegicus* ALLGEN, 1933, *P. longus* ALLGEN, 1949, and *P. donsi* ALLGEN, 1948), the descriptions and illustrations of which are very wanting in detail and are of questionable scientific value. *P. norwegicus* has been reported only as a juvenile. Males are known only for *P. rotundicephalus* COBB, 1920, the only adequate description of which was provided by GERLACH (1953), and for *P. kosswigi*, n. sp. *P. symmetricus* DE CONINCK, 1942 is only superficially similar to *Pseudonchus* COBB, 1920, and actually has differences so striking as to be incompatible with the genus. *Cheilopseudonchus*, n. g. is established to accommodate DE CONINCK's species. An ovoviviparous species new to science, *P. kosswigi*, is described herein from the Pacific Northwest of the United States and named in honor of PROF. DR. KOSWIG, Director, Zoologisches Staatsinstitut.

Pseudonchus COBB, 1920

Stomal structures appear to be the most reliable upon which to interpret taxonomic relationships in this genus as based upon published descriptions. The stoma exhibits bilateral symmetry and is clearly differentiated into two sections, the boundary of the two sections manifesting a well-developed lateral fold or ridge which protrudes into the stoma. From a lateral view such a ridge may appear as subventral and/or subdorsal teeth. This phenomenon was recognized by COBB in his original description of the genus, but may have been misinterpreted by ALLGEN and GERLACH in subsequent descriptions where teeth were reported in the same region. It may be that the entire ridge has tooth-like functions. Denticles have also been described in this boundary region. The posterior portion of the stoma appears to be simple with no armament. Anteriorly in the stoma are two opposing rows of teeth-like structures which COBB suggested were

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labial in origin, perhaps even being the folds into which the lips form when the stomal opening is closed. This is worthy of consideration in that indications of feeding habits, viz. nematode spicula found within the intestine by ALLGEN (1946) are indicative of injection of entire nematodes which would require considerable expansion of the stomal opening. On the other hand, the appearance and positioning of these structures in COBB's illustration do not conform readily to this view, but would suggest that they are a part of the stomal armature originating from the anterior stomal ridges. This view appears to be supported by the descriptions of C. A. ALLGEN (1933, 1946, 1948, 1949) and GERLACH (1953), is the case for *P. kosswigi*, and they are therefore considered herein as weakly sclerotized odontia and assumed to be constant in number for a given species.

It is this consistency of odontia which would appear to be the only reliable diagnostic character common to all described species. Lateral view illustrations of odontia are misleading as to actual number present (compare figures 1, A and B) but fortunately count has been provided in the descriptions of known species. *P. longus* is probably synonymous with *P. donsi*, but the latter species is impossible to evaluate properly in as much as only the anterior region was viewed. For this reason *P. donsi* is here designated as species inquirenda and *P. longus*, at least for the time being, will be maintained as valid. On the basis of odontia the four valid species can be separated as follows:

Species	Total number of odontia
<i>P. longus</i>	8
<i>P. rotundicephalus</i>	24
<i>P. kosswigi</i>	16
<i>P. norwegicus</i>	20

The value of enface views cannot be overemphasized in connection with critical studies of the mouth parts and accurate count of the odontia.

Pseudonchus kosswigi, n. sp.

(Figure 1, A—B; 2 A—E)

♀ 1 (Holotype) L = 0,864 mm, a = 11,4, b = 6,7, c = 13,1, V = 57,3 %, Ov1 = 38,9 %, Ov2 = 38,5 %.

♀ 2 (Paratype) L = 0,860 mm, a = 13,4, b = 4,5, c = 12,6, V = 60,3 %, Ov1 = 25,1 %, Ov2 = 26,8 %.

♂ 1 (Allotype) L $\frac{1}{3}$ 0,730 mm, a = 14,8, b = 6,9, c = 9,4.

The body is plump, bluntly rounded at either end. The cuticle appears smooth at lower magnifications but actually bears fine lateral striations resolvable under high magnifications. There is a slight cuticular differentiation in the cephalic region that bears resemblance to the helmet found in desmodorids. Anteriad is a „circle“ of six small papillae (manifesting the bilateral symmetry of the stoma) followed closely by a circle of four setae about 2.3 μ long. A second circle of four subcephalic setae is located at a level just below the amphids. Setae which probably correspond to the third circle of other species are located at the level of the excretory pore.

The stoma is typical for the genus, approximately 14 μ wide and 24 μ deep, and bears anteriorly 16 odontia. A conspicuous ridge is located at the boundary

of the anterior and posterior stomal regions. At this boundary there is also evidence of what may be a latero-ventral tooth. Esophageal tissue surrounds the entire stoma. Located dorsally in the anterior region of the stoma is a sclerotized structure which is difficult to interpret as to exact location and form (see figure 1 B).

The amphids are spiral, small; approximately 25 % of the corresponding head diameter. The excretory pore is located about $44\ \mu$ from the anterior end. There are a few short setae distributed along the body. The esophagus is cylindrical anteriorly and terminates in a distinct, valvulated bulb. The nerve ring encircles the esophagus just anterior to the bulb. The cardia is prominent. Cells of the intestine are distinct.

Female is didelphic, ovaries reflexed. Sperm were distinctly visible in the posterior uterus, not observed in the anterior uterus. The species is ovoviviparous.

Male with simple, arcuate spicula $52\ \mu$ long. Gubernaculum well-developed. No evidence of supplementary organs or genital setae.

Female tail and male tail approximately 1.8 and 2.4 anal diameters long respectively.

Holotype: ♀ on slide OSU OM 147a, Oregon State University Nematode Collection. — Allotype: ♂ on slide OSU OM 147b. — Paratype: ♀ on slide OSU OM 147b. Type-locality: beach adjacent to Yaquina Light-house, Newport, Oregon.

Remarks: *P. kosswigi* was collected by the author from the sand about the roots of eel grass (*Zostera* sp.) in the mid-tide zone on 1 February 1962: distinguished by number of odontia, and by being ovoviviparous.

Pseudonchus sp.

(Figure 1 C)

♀ 1 L = 3.120, a = 41.0, b = 15.6, c = 31.0, V = 66 %.

Cuticle finely striated. Head bluntly rounded. There is a circle of six setose papillae followed closely by a circle of 4 cephalic setae of about $7\ \mu$ in length. A third circle of setae is present at the level of the amphids. The amphids are spiral, desmodoroid, $15\ \mu$ in width. Head diameter at the level of the amphids is $48\ \mu$. The amphids are located $22\ \mu$ from the anterior end of the nematode. The esophagus is characterized by pronounced buccal musculature of $23\ \mu$ in diameter, a cylindrical portion $29\ \mu$ in diameter, and a pronounced basal bulb of $49\ \mu$ in diameter. The stoma appears typical for the genus. There is apparently a large ventral tooth present at the juncture of the anterior and posterior portions of the stoma. A definite count of odontia was not obtained.

The specimen briefly described and illustrated here was collected by S. A. GERLACH from the Breitgrund of Kiel Bay (see GERLACH, 1958, *P. norwegicus*). The specimen was not observed by the author, the description and illustration coming from unpublished records of DR. GERLACH. It is possible that this species is *P. norwegicus*, but sufficient information is not available at this time to justify a redescription of ALLGEN's species.

Cheilopseudonchus, n. gen.

Desmodoridae. Cephalic region manifesting strong bilateral configuration, and possessing anteriorly an inner circle of six small labial papillae, a second

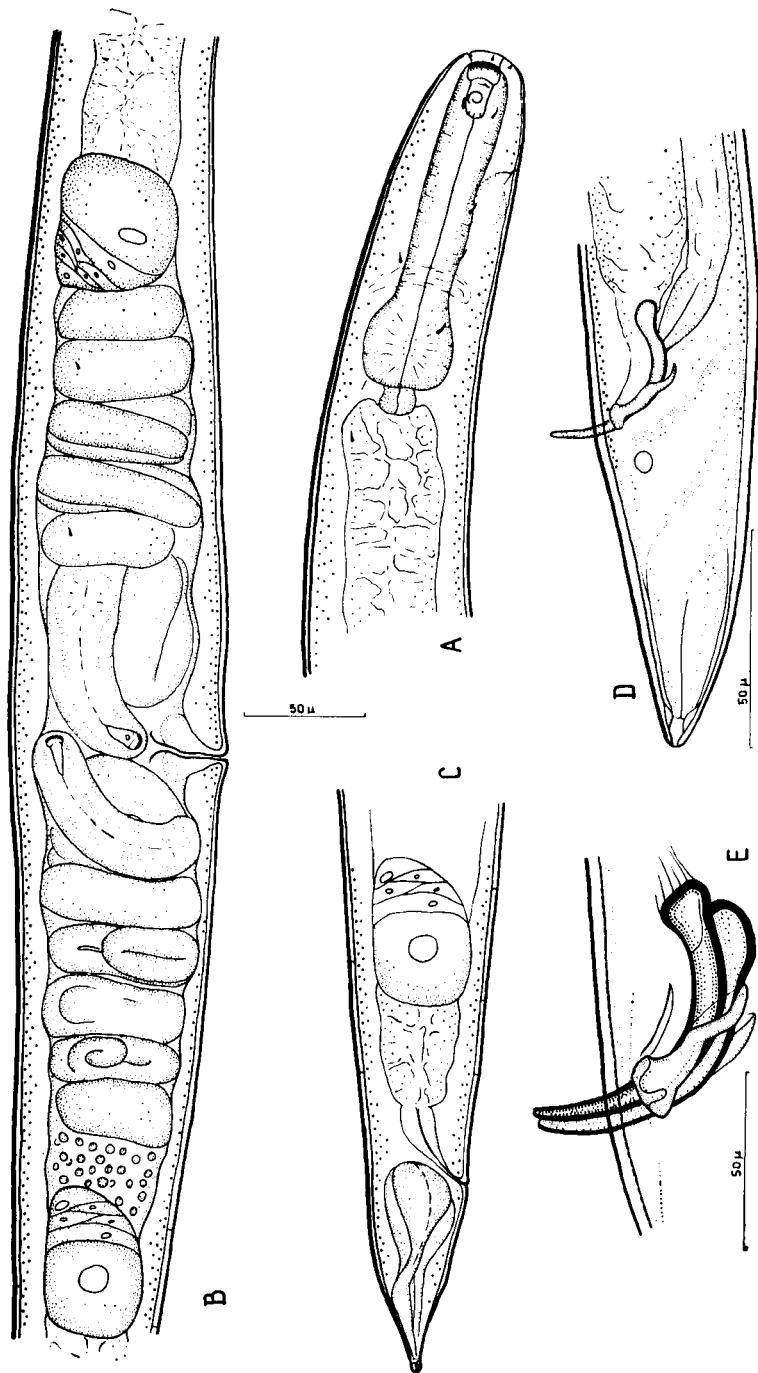


Figure 1. A, *P. kosswigi*, anterior region of female. B, *P. kosswigi*, face view of female. C, *Pseudonchus* sp., anterior region of female.

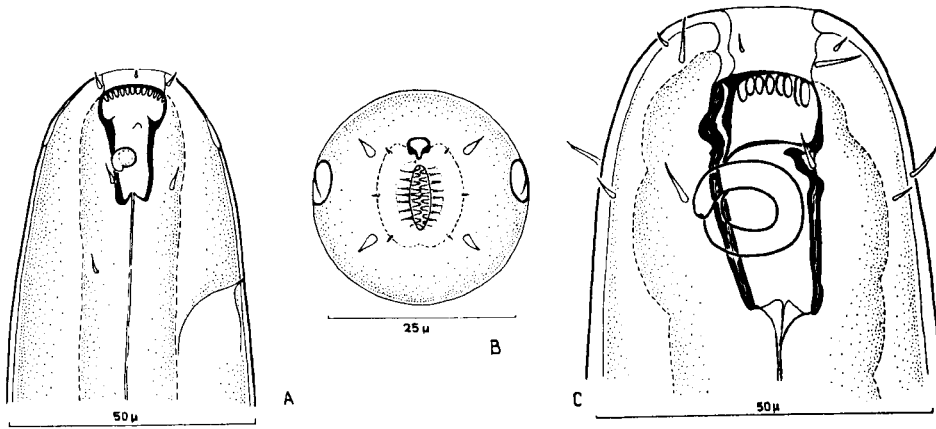


Figure 2. *P. kosswigi*. A—C, lateral view of female. D, male tail. E, male spicular region.

circle of six setose papillae and an outer circle of four cephalic setae. Cheilorhabdions are strongly developed and represent two opposing rows of paired tooth-like structures, (four pair in the one known species). The stoma is heavily sclerotized, and divisible into two major regions. The anterior region resembles two large, opposing mandibles. Two rows of opposing teeth are present where the anterior and posterior regions of the stoma join. Anteriorly the stoma is armed with two opposing rows of denticles. The esophagus encompasses the stoma anteriorly and is bulbular terminaly. Amphids are spiral.

Females are didelphic, ovaries reflexed. Male possesses a gubernaculum and simple spicula. The preanal supplements are numerous, glandular protuberances.

Type species: *Cheilopseudonchus symmetricus* (DE CONINCK, 1942).

Synonym: *Pseudonchus symmetricus* DE CONINCK, 1942.

Remarks: DE CONINCK's species is at least superficially similar to the species of *Pseudonchus*; however, this similarity may well be attributed to convergence rather than taxonomic juxtaposition. The most pronounced indication of relationship lies in the bilateral symmetry of the stoma and the similar amphid structure. Beyond this the similarity seems to disappear: *Cheilopseudonchus symmetricus* is armed with two powerful, opposing mandibles whereas in *Pseudonchus* spp. the stoma does not give one the impression of being mandibular. The labial plates (Cheilorhabdions) of *C. symmetricus* are not to be found in the species of *Pseudonchus*.

Differences in male genital structure alone would justify generic rank. The males of *Pseudonchus* species are known through *P. rotundicephalus*, and *P. kosswigi*. The spicula and gubernaculum would not appear notably different than those of *C. symmetricus*; however, the latter species bears an elaborate row of preanal supplements and setae whereas the *Pseudonchus* species are devoid of preanal supplements or genital setae.

Literature

- ALLGEN, C. A., 1933: Freilebende Nematoden aus dem Trondhjemsfjord, Cap. Zool. **4** (2), 1—162. Taf. I — XVIII.
- , 1946: Letzter Bericht über freilebende marine Nematoden aus dem Tronheimsfjord. Cap. Zool. **21** (28), 113—116.
- , 1948: Zur Kenntnis norwegischer Nematoden, XIV. Über eine neue Art der Gattung *Pseudonchus* COBB, *P. donsi* n. sp. von der Strandzone Norwegens. Kong. Norske Vid. Selsk. For. **20** (30), 120—121.
- , 1949: Zur Kenntnis norwegischer Nematoden XVIII. Über einige neue freilebende Nematoden aus dem Tronheimsfjord. Kong Norske Vid. Selsk. For. **21** (28), 113—116.
- COBB, N. A., 1920: One hundred new nemas. (Type species of 100 new genera). Contr. Sci. Nemat. **9**, 217—343.
- DE CONINCK, L. A. P., 1945: *Pseudonchus symmetricus* DE CONINCK, 1942 (Nematoda — Choanolaimidae), un Nematode a symetrie bilaterale secondaire de l'extremite anterieure. Bull. Mus. Hist. nat. Belg. **21** (22), 1—12.
- GERLACH, S. A., 1953: Die Nematodenbesiedlung des Sandstrandes und des Küstengrundwassers an der italienischen Küste. I. Systematischer Teil. Arch. Zool. Ital. **37**: 512—640.
- , 1958: Die Nematodenfauna der sublitoralen Region in der Kieler Bucht. Kieler Meeresf. **14** (1): 64—90.