

## Caecal glands in Nereididae and a new tribe of the subfamily Nereidinae (Polychaeta, Phyllodocida)

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The presence/absence of caecal glands in Nereididae was examined in specimens from collections of the Zoological Institute, Russian Academy of Sciences. The caecal glands have not been found in species of the subfamilies Notophycinae, Namanereidinae and Gymnonereidinae. In the subfamily Nereidinae, their presence is correlated with the presence of predominantly chitinous paragnath, while their absence, with the equipment of pharynx with soft papillae. On this basis a new tribe of Nereidinae is described.

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Dealing with the fauna of Nereididae of the seas of Russia and adjacent water areas (Khlebovich, 1996), I paid attention to the fact that caecal glands are present not in all species on this group. The mere position of these glands on the boundary between pharynx and oesophagus and the fact that they open into the alimentary tube attests to their participation in the digestion process. Direct evidence has been presented of high activity of proteinases in the cells of these glands in *Alitta virens* (Kay, 1974; Michel & De Villez, 1979). The equipment of the everted pharynx is for many years considered the most important taxonomic character of Nereididae (Kinberg, 1865). This suggests that the divergence of species was associated with different methods of catching and retaining food. This also gives ground to pay attention to the fact of presence/absence of caecal glands, responsible for initial digesting of food mass, as to a character that could be evidently used for the classification within the family.

The study is based on comprehensive collections of the Zoological Institute, Russian Academy of Sciences; unique specimens were not examined for fear of spoiling them by dissection. The dissection was made from abdominal side with subsequent separation of the edges of incision.

Caecal glands have not been found in all the examined species of the subfamilies Notophycinae, Namanereidinae and Gymnonereidinae. Apparently, the absence of caecal glands is char-

acteristic of all representatives of these groups and is primary, as these subfamilies have the largest set of primitive features in the structure of parapodia and equipment of pharynx (Khlebovich, 1996).

Concerning the largest subfamily, Nereidinae, the presence or absence of caecal glands classifies this subfamily into two groups. It turned out that caecal glands are absent in the genera of the subfamily whose pharynx is equipped only by soft papillae (*Tylorrhynchus*, *Leonnates*), soft and partly chitinized papillae (*Paraleonnates*) or chitinized papillae on maxillary ring only (*Ceratonereis*, *Simplisetia*). On the basis of the characteristic features in the equipment of pharynx in the genus *Paraleonnates*, we (Khlebovich & Wu, 1963) have noted that chitinous paragnath evidently originated in this family from soft papillae in result of chitinization, the latter being mostly expressed on the maxillary ring of pharynx. Evidently, the absence of paragnaths on the maxillary ring in the genera *Simplisetia* and *Ceratonereis* is either a primary feature or is associated with the disappearance of the previously present soft papillae, but not of chitinous paragnaths.

Caecal glands are present in the genera whose pharynx is equipped only by chitinous paragnaths on both rings (*Cheilonereis*, *Neanthes*, *Alitta*, *Nectoneanthes*, *Hediste*, *Nereis*, *Platynereis*, *Perinereis*, *Pseudonereis*) or paragnaths are absent on maxillary (*Eunereis*) or oral (*Composetia*) ring; in the genus *Nicon*, the

**Table.** Presence (+) or absence (–) of caecal glands in Nereididae

Species	Locality	Glands
Subfam. Notophycinae		
<i>Micronereis ochotensis</i> Buzhinskaya	Kurile Islands	–
Subfam. Namanereidinae		
<i>Lycastopsis littoralis</i> Grube	Southern Primorye	–
<i>Namalycastis abiuma</i> Müller	Hainan Island	–
<i>N. indica</i> Southern	Hainan Island	–
Subfam. Gymnonereidinae		
<i>Ceratocephale loveni</i> Malmgren	Sea of Okhotsk	–
<i>Tambalagama fauveli</i> Pillai	Bay of Tonkin	–
Subfam. Nereidinae		
<i>Nicon ehlersi</i> Hartman	Falkland Islands	+
<i>Tylorhynchus osawai</i> (Izuka)	South Primorye	–
<i>Paraleonnates ushakovi</i> Khlebovich & Wu	Yellow Sea	–
<i>Leonnates joussemeaui</i> Gravier	Yellow Sea	–
<i>L. persica</i> Wesenberg-Lund	Hainan Island	–
<i>Cheilonereis cyclurus</i> Harrington	South Primorye	+
<i>Dendronereis aestuarina</i> Southern	Hainan Island	–
<i>Neanthes succinea</i> Frey & Leuckart	Sea of Azov	+
<i>N. gorbunovi</i> Ushakov	Sea of Okhotsk	+
<i>Alitta virens</i> (Sars)	White Sea	+
<i>A. brandti</i> Malmgren	Kunashir Island	+
<i>Nectoneanthes oxyroda</i> (Marenzeller)	Yellow Sea	+
<i>Hediste diversicolor</i> (O.F. Müller)	Sea of Azov	+
<i>H. japonica</i> (Izuka)	South Primorye	+
<i>Simplisetia erytraensis</i> (Fauvel)	Yellow Sea	–
<i>Composetia costae</i> (Grube)	Hainan Island	+
<i>C. burmensis</i> C.	Hainan Island	+
<i>Ceratonereis mirabilis</i> Kinberg	Hainan Island	–
<i>Nereis pelagica</i> L.	White Sea, Bering Sea, Kurile Islands	+
<i>N. ochotica</i> Grube	Kurile Islands	+
<i>N. procera</i> Ehlers	Kurile Islands	+
<i>N. zonata</i> Malmgren	Novaya Zemlya Is.	+
<i>N. vexillosa</i> Grube	Kurile Islands	+
<i>N. beringiana</i> Levenstein	Bering Sea	+
<i>N. longior</i> Khlebovich & Wu	East-China Sea	+
<i>Eunereis longissima</i> (Johnston)	Black Sea	+
<i>E. patagonica</i> McIntosh	Antarctic	+
<i>Platynereis dumerilii</i> (Audouin & M.-Edwards)	Black Sea	+
<i>P. bicanaliculata</i> (Baird)	Kurile Islands	+
<i>Perinereis cultrifera</i> (Grube)	Black Sea	+
<i>P. mictodonta</i> (Maraenzeller)	Yellow Sea	+
<i>P. aibuhitensis</i> Grube	Yellow Sea	+
<i>P. vancaurica</i> (Ehlers)	Hainan Island	+
<i>Pseudonereis gallapagensis</i> Kinberg	Hainan Island	+
<i>P. anomala</i> Gravier	Hainan Island	+

pharynx is smooth, neither papillae nor parag-naths are present.

Thus, in the genera of the subfamily Nereidinae, there is an evident correlation between the absence of caecal glands and the equipment of pharynx with soft papillae or smooth maxillary ring in one case and the correlation between the presence of caecal glands and chitinous parag-naths on both rings of pharynx or smooth oral ring and total absence of soft papillae in

the other case. Based on this reasoning, it is suggested to distinguish two tribes in the sub-family:

Tribus LEONNATINI trib. n.

Type genus *Leonnates* Kinberg, 1865.

*Diagnosis.* Caecal glands absent. Pharynx equipped only by soft papillae or they are present together with chitinous parag-naths.

Included genera: *Tylorrhynchus* Grube, 1868; *Leonnates* Kinberg, 1865; *Ceratonereis* Kinberg, 1865; *Paraleonnates* Khlebovich & Wu, 1962; *Wuinereis* Khlebovich, 1996.

Tribus NEREIDINI Lamarck, 1819

Type genus *Nereis* Linnaeus, 1758.

**Diagnosis.** Caecal glands present. Pharynx equipped only by chitinous paragnaths on both rings, or they are absent on maxillary (*Eunereis*) or oral (*Composetia*) rings of pharynx, or absent altogether (*Nicon*).

**Included genera:** *Nicon* Kinberg, 1865; *Cheilonereis* Benham, 1916; *Neanthes* Kinberg, 1865; *Alitta* Kinberg, 1865; *Nectoneanthes* Imajima, 1972; *Hediste* Malmgren, 1867; *Composetia* Hartmann-Schröder, 1985; *Nereis* Linnaeus, 1758; *Eunereis* Malmgren, 1865; *Platynereis* Kinberg, 1865; *Pseudonereis* Kinberg, 1865.

On the basis of the revision of Kinberg's types, Hartmann-Schröder (1985) has distinguished three subgenera in the genus *Ceratonereis* Kinberg, 1865: the nominotypical subgenus *Ceratonereis*, and new subgenera *Simplisetia* and *Composetia*. Latter (Khlebovich, 1996), I elevated all the three to the rank of genera. The validity of this act can be confirmed by the fact that *Ceratonereis* and *Simplisetia* on the one hand and *Composetia* on the other are attributed to different tribes in the above classification. There is also much evidence that *Simplisetia* may be subsequently placed in a separate tribe.

The presence/absence of caecal glands should be examined in all the Nereidinae spe-

cies with smooth pharynx: *Nicon* Kinberg, 1865 and *Rullierinereis* Pettibone, 1971. This would facilitate the judgement of whether the absence of paragnaths and papillae is a primary character and if it happens to be a secondary character, then what of the two, papillae or paragnaths, have disappeared.

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