

# On the taxonomic status of *Cerianthus septentrionalis* van Beneden, 1923 (Cnidaria: Anthozoa: Ceriantharia)

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Molodtsova, T.N. 2001. On the taxonomic status of *Cerianthus septentrionalis* van Beneden, 1923 (Cnidaria: Anthozoa: Ceriantharia)\*. *Zoosystematica Rossica*, 10(1): 9-10.

The holotype of *Cerianthus septentrionalis* van Beneden, 1923 is examined. This species was pretended to have two separate sexes. However as result of close investigation, both types of gonads are found in the holotype. *C. septentrionalis* is thus a junior synonym of the common North Atlantic species *C. lloydii* Gosse, 1859 (new synonymy).

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Most of cerianthids are hermaphrodites. Male and female gonads occur in the same animal, often in the same fertile mesentery (Carlgren, 1912; Molodtsova & Malakhov, 1995). However, several species of cerianthids have been described as having separate sexes. One of such odd species, *Cerianthus septentrionalis* van Beneden, 1923, was described from a single specimen from the Norway coast.

This specimen was determined by Danielssen as *C. borealis* Danielssen, 1889 and sent to Liège to E. van Beneden for further studying of microanatomy. After close examination of the specimen, Beneden (1923) decided that he was dealing with a new species: "La diagnose de *C. Borealis* ne s'applique pas à l'animal que je dois l'obligeance de l'éminent et regretté naturaliste de Bergen. Je le considère comme nouveau et je le décrirai sous le nom de *Cerianthus septentrionalis*".

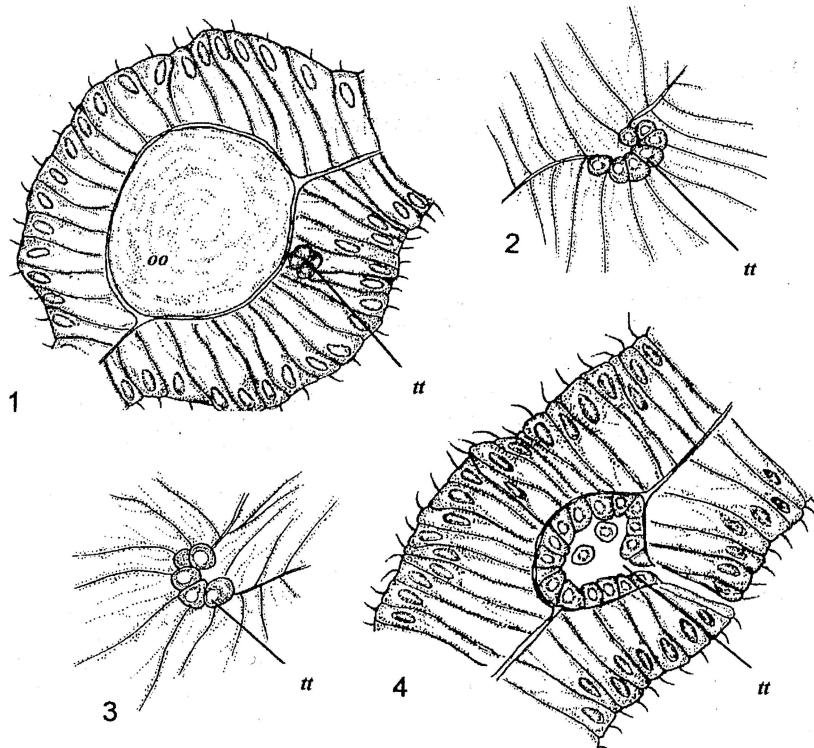
*C. borealis* was described by Danielssen (1889) as having two separate sexes with different body shape. However, Carlgren (1912) considered these two separate sexes as two different common species of ceriantharia viz. *Cerianthus lloydii* Gosse, 1859 and *Pachycerianthus multiplicatus* Carlgren, 1912. These two species can be easily distinguished by their external appearance. *C. lloydii* ranges from rather small to medium-sized, up to 10 cm long, with up to 70 fairly short marginal tentacles, whereas *P. multiplicatus* is a large species, up

to 15-20 cm long, and with up to 170-200 very long marginal tentacles. Large tubes of *P. multiplicatus* rise up to 10 cm above the bottom and can serve as a substrate for various marine animals: polychaetes, sipunculas, crustaceans etc. (O'Connor et al., 1977).

Thus, *C. septentrionalis* could be considered as a junior synonym of one of these species as well. However, Beneden (1923) mentioned in his description that his new species differed from Danielssen's description of *C. borealis* in several aspects. Therefore, the type material had to be investigated.

Danielssen's description contained several questionable points. For example, Danielssen mentioned that marginal tentacles in his species were several times more numerous than mesenteries. All mesenteries in Danielssen's *C. borealis* were fertile, including directive ones. On the other hand, the cerianthid examined by Beneden (1923) was very close to *C. lloydii* Gosse and had two types of mesenteries, but had only one female type of gonads.

By the courtesy of Dr. Michèle Loneux, we had an opportunity to examine the holotype of *C. septentrionalis* preserved in Musée de Zoologie de l'Université de Liège (Belgium) (box 236, slides 21-100) and listed in the inventory of the collection as "*Cerianthus borealis* Danielssen". It is represented by a series of microscope sections, 5 µm thick. Close investigation of these microscope slides has revealed a



Figs 1-4. Developing male gonads in the fertile mesenteries of the *Cerianthus septentrionalis* holotype. *tt*, male gonads; *oo*, oocyte.

number of groups of negligible cells disposed tightly close to ovum cells (Fig. 1). Some of such groups (Figs 3-4) were better developed and separated from gastroderm by their own mesogleal capsules. They have had a strong resemblance with a developing male gonad of *C. lloydii*.

Thus, the specimen, described by van Beneden, has had two types of gonads, male and female, respectively. It follows that the only character separating *C. septentrionalis* from *C. lloydii* is invalid. *C. septentrionalis* van Beneden, 1923 is thus a junior synonym of *C. lloydii* Gosse, 1859 (**new synonymy**).

On the other hand, the order of gonad formation in van Beneden's specimen seems interesting. All cerianthids are considered to be protandrous hermaphrodites (Carlgren, 1912; Tiffon, 1987). However, our results show that this feature is not so clear even in the well investigated *C. lloydii*. There is a strong reason to believe that in the Norwegian population of *C. lloydii* protogyny can be displayed.

#### Acknowledgements

I am indebted to Dr. Michèle Loneux for her help during my stay at Musée de Zoologie de l'Université de

Liège. The work was financially supported by Volkswagen Foundation grant project 11/73638.

#### References

- Beneden, E. van. 1923. Travaux postumes d'Edouard van Beneden sur les Cérianthaires. *Arch. Biol.*, vol. hors serie. 242 p.
- Carlgren, O. 1912. Ceriantharia. *The Danish Ingolf-Expedition*, 5(3): i-xviii, 1-78.
- Danielssen, D.C. 1889. *Cerianthus borealis*. *Bergens Mus. Arb.*, 1888(1): 1-12.
- Molodtsova, T.N. & Malakhov, V.V. 1995. *Cerianthus lloydii* (Anthozoa, Ceriantharia) from the volcanic ecosystem of Kraternaya Bay. 1. Morphology and anatomy of adult polyps, geographic distribution. *Zool. Zh.*, 74(10): 5-17. (In Russian).
- O'Connor, B., Könecker, G., McGrath, D. & Keegan, B.F. 1977. *Pachycerianthus multiplicatus* Carlgren – biotope or biocoenosis? *Europ. mar. Biol. Symp.*, 11: 475-482.
- Tiffon, J. 1987. Ordre des Cérianthaires (Ceriantharia Perrier 1883). In: Grasse, P.-P. & Doumenc, D. (Eds). *Traité de zoologie. Anatomie, systématique, biologie*, t. 3. Cnidaires, Anthozoaires, fasc. 3: 1-859. Paris, etc.: Masson.

Received 16 June 2000