A new species of the genus *Callopora* (Bryozoa: Cheilostomatida: Calloporidae) from the Barents and Kara Seas

Новый вид рода *Callopora* (Bryozoa: Cheilostomatida: Calloporidae) из Баренцева и Карского морей

N.V. Denisenko

N.V. Денисенко

N.V. Denisenko, Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., St Petersburg 199034, Russia. E-mail: ndenisenko@zin.ru

A new species, *Callopora septentrionalis* sp. nov., of cheilostome Bryozoa is described from the collection of the Zoological Institute, Russian Academy of Sciences. The species differs from its congeners by presence on gymnocyst of three types of adventive avicularia: two columnar avicularia with triangular mandible of different sizes as well as large avicularia with spatulate mandible, and by bell-shape and cap-shape ovicells.

Новый вид *Callopora septentrionalis* sp. nov. хейлостомных мшанок описан из коллекций Зоологического института РАН. Данный вид отличается от других видов этого рода наличием на гимноцисте трех типов адвентивных авикуляриев: колоновидных авикуляриев с треугольными мандибулами разного размера, а также крупных авикуляриев со шпателевидной мандибулой, и колоколообразной и колпаковидной формой овицелл.

**Key words:** marine bryozoans, Barents Sea, Kara Sea, Arctic, taxonomy, Calloporidae, *Callopora*, new species

**Ключевые слова:** морские мшанки, Баренцево море, Карское море, Арктика, таксономия, Calloporidae, *Callopora*, новый вид

**INTRODUCTION**

Our knowledge of the taxonomy, diversity and distribution of many bryozoan species is still insufficient, although a huge work has been made during last decades (Bock, 2016). Using SEM technology has allowed to revise the taxonomy of some arctic bryozoans and their distribution as well as to recognize new species (Hayward, 1994; Soule & Soule 2002; Kuklinsky & Taylor 2006; Kuklinskiy et al., 2007; Winston & Hayward 2012; Denisenko 2015; Denisenko et al., 2014).

The present work aims not only to describe new taxa from unidentified collection but, also to define species composition of the genus in the systematic collection of the Zoological Institute of the Russian Academy of Sciences (ZIN RAS). Table of parametric measurements of zooidal characters are given herein.
MATERIAL AND METHOD

Colonies of described below new species were obtained from the Barents Sea during the PINRO (Knipovich Polar Institute of Marine Fisheries and Oceanography) expedition carried out in the Barents Sea in 1968. Sampled material was transferred to the ZIN RAS for storing. Additional material of this species was found after examination of the systematic collections of bryozoans keeping in the ZIN RAS. The new species was studied by scanning electron microscopy (SEM). Selected colonies were cleaned in sodium chloride, washed, dried and coated with platinum for examination under a QUANTA 250 (FEI) scanning electron microscope (SEM). Measurements were made using the SEM photos. The holotype and the paratype of the new species are stored in the collections of the Zoological Institute, Russian Academy of Sciences, Saint Petersburg.

DESCRIPTION OF NEW SPECIES

Class GYMNOLAEMATA

Order CHEILOSTOMATIDA

Family CALLOPORIDAE Norman, 1903

Callopora septentrionalis sp. nov. (Fig. 1)

Holotype. ZIN – 1/50659, Barents Sea, 74°11.6’ N, 19°33’ E, expedition vessel “N. Maslov”, 5-th expedition of PINRO, station 303/324, bottom trawl Sigsbi, 15.IX.1969, depth 100 m, sediments: clay with pebble; collector: T.V. Antipova.

Paratype. ZIN – 38/655; Kara Sea, 80°41’ N, 78°37’ E, Icebreaker “Lithke”, expedition “North-west”, station 192, trawl Sigsbi, 05.X.1948, depth 32 m, sediments: sand; collectors: M.V. Koltun, V.L. Vagin.

Diagnosis. Colonies incrusting; autozooids small, with narrow gymnocyyst and narrow criptocyst. Oval opesia surrounded by four or five pairs of long, tubular and overlapping spines. Ovicells varying from bell-shaped up to cap-shaped shape, smooth, two-layered. Inside layer roughly granulated, connected with outside layer by thick rim, changing from straight transverse belt shape up to incurved triangular shape. Adventive avicularia of three different sizes and shapes in colony, all associated with gymnocyyst. Smallest avicularia columnar slightly hooked apically, with triangular and directed downward rostrum. Medium sized avicularia with curved columnar cystid, adjoining to ovicell of previous zooid, hooked apically, with extended triangular rostrum directed distally and laterally. Largest avicularia also joined to ovicell of previous zooid; cystid curved and with large spatula-shaped mandible.

Description. Colony of irregular form, looking like not large sheets. Autozooids rectangular, small sized (Table 1), separated by deep grooves. Gymnocyyst not large, narrow, smooth; reduced cryptocyyst in form of narrow band, with coarse longitudinal stria- tion (Fig. 1 a, b, d). Elongated oval opesia surrounded by eight to ten long and hollow spines, thin in non-fertile zooids and thick in zooids with oviscells. Proximal spines directed distolaterally, overlapping aperture and curving in their distal part. Distal spines directed upward from frontal plane. Ovicells large relative to zooid size, to half of zooid length. Ovicells of changeable shape: from cap-shaped to bell-shaped, smooth and two-layered (Fig. 1 b–d). Visible part of entooecial layer roughly granulated, with thick rim at connecting line with ectoecial layer. Rim shape varying from transverse linear up to curved triangular shape (Fig. 1 a, c). Colony with three different in size and shape adventive avicularia associated with gymnocyyst of autozooids. Smallest avicularia with slightly hooked columnar cystid and with small, broadly triangular rostrum directed downward of opesia. This avicularia type presenting in zooids located above non fertile zooids (Fig. 1 a, c, d). Medium sized avicularia with curved columnar cystid, also hooked, and with more extended trian- gular mandible directed distally and laterally. Third type of scarcer avicularia
Fig. 1. *Callopora septentrionalis* sp. nov., holotype. Part of colony (a), group of zooids with broken spines, small columnar and medium size avicularia (b), zooids with spines and mandible shape in small and medium size aviculoaria (c), criptocyst structure and bell-shaped ovicell (d), and third type of avicularium with spatulate mandible (e).
with large curved cystid resembling head of bird from lateral view, and with large, spatula-shaped mandible (Fig. 1 e). Last two types of avicularia corresponding to zooids located above fertile zooids and conjugating with their ovicells.

**Distribution.** Western part of the Barents Sea, depth 100 m; north-west of the Kara Sea; depth 32 m.

**Etymology.** The species name is the Latin adjective septentrionalis, meaning “northern”.

**Discussion.** Main characters of the genus *Callopora* Gray, 1848 are well known, and the shape of the avicularia and ovicells also are considered as important characters for the diagnosis of the species in this genus. According to the latest description of *Callopora lineata* (Linneus, 1758), all the adventive avicularia of the species have triangular mandibles and similar size within a colony. The ovicells of the species are prominent and globular; their ectooecium with extensive uncalcified area of roundish shape (Hayward & Ryland, 1998). However, a variability of the characters of *C. lineata* is still present as it has been marked in earlier publications. Hincks (1880) noted the existence of two forms of *C. lineata*. The first one has the short spines and the equal-sized avicularia in zooids with the ovicells and without them (Plate XIX, fig. 3, 5 in Hincks, 1880). Hayward and Ryland (1998) do not mention the difference in length of the spines as did Hincks, but they wrote about the squat cystid and similar sizes of the avicularia within a colony (Fig. 39 and 42 in Hayward & Ryland, 1998). The description of *C. lineata* given by Kluge (1962) does not include any information about sizes and shapes of the spines and avicularia, but on Fig. 170 the length of the spines is different within the zooids. And the avicularia on Kluge’s figure also have different sizes in the zooids with ovicells and without them, as it was mentioned for *C. lineata* by Hincks (1880), but avicularian cystid at Kluge’s figure is more prominent (Fig. 170 in Kluge, 1962) in comparison to Hincks’s (1880) and Hayward and Ryland’s (1998) figures. The shape of the ovicells in the Kluge’s illustration of *C. lineata* (Fig. 170 in Kluge, 1962) is also distinguished from a ovicell shape in this species presented at the illustration of Hayward & Ryland (1998, Fig. 39 and 42 D) as well as from the shape of the ovicells of the new species. According to the opinion of Winston and Hayward (2012), the specimen, shown in the Figure 170 of Kluge (1962) looks like *Callopora thaxteri* Winston et Hayward, 2012. However, the spatulated avicularia and bell-shaped ovicells were not mentioned in any publications concerning the genus *Callopora*. After

---

**Table 1.** Measurements (in mm) of *Callopora septentrionalis* sp. nov. N, number of measurements; Mean, average size of character; SD, standard deviation; Min–max, minimal and maximal sizes of each character.

<table>
<thead>
<tr>
<th>Character</th>
<th>N</th>
<th>Mean ± SD</th>
<th>Min–max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autozooid length</td>
<td>15</td>
<td>0.37 ± 0.01</td>
<td>0.36–0.38</td>
</tr>
<tr>
<td>Autozooid width</td>
<td>15</td>
<td>0.22 ± 0.02</td>
<td>0.20–0.24</td>
</tr>
<tr>
<td>Large avicularium length</td>
<td>3</td>
<td>0.21 ± 0.01</td>
<td>0.21–0.22</td>
</tr>
<tr>
<td>Medium avicularium length</td>
<td>5</td>
<td>0.14 ± 0.01</td>
<td>0.12–0.14</td>
</tr>
<tr>
<td>Small avicularium length</td>
<td>3</td>
<td>0.07 ± 0.00</td>
<td>0.05–0.07</td>
</tr>
<tr>
<td>Ovicells width</td>
<td>15</td>
<td>0.21 ± 0.03</td>
<td>0.20–0.22</td>
</tr>
<tr>
<td>Ovicells length</td>
<td>15</td>
<td>0.19 ± 0.02</td>
<td>0.18–0.21</td>
</tr>
</tbody>
</table>
having found a specimen of the new species in unidentified material we checked the systematic collection of Calloporidae storing in the ZIN RAS and concluded that one specimen in the collection also belongs to the new species due to presence on the gyrnocyst of the large adventive avicularia with spatula-shaped mandible, and the difference in a ovicell shape in comparison to C. lineata and C. thaxteri. One more specimen in the ZIN collection can be regarded as C. thaxteri. Remaining specimens can be regarded as C. lineata forma β according to Hincks’s classification (Hincks, 1880).

ACKNOWLEDGMENTS

The author is thankful to Alexey Mirolubov (ZIN RAS) for his technical support in preparing of scanning photographs, and to Dr. Judith E. Winston (Virginia Museum of Natural History, Martinsville) for her comments and suggestions for improving the manuscript. The study is supported by the Russian Academy of Sciences (Project N 01201351181 “Fauna and ecology of invertebrates of the Russian eastern arctic seas supported by the Russian Academy of Sciences”).

REFERENCES


Received 29 June 2016 / Accepted 24 Oct. 2016

Editorial responsibility: D.A. Gapon