

THE OFFICIAL MAGAZINE OF THE OCEANOGRAPHY SOCIETY

# Oceanography

## Supplemental Materials for

### Spatial Patterns of Bryozoan Fauna Biodiversity and Issues of Biogeographic Regionalization of the Chukchi Sea

Denisenko, N.V., and J.M. Grebmeier. 2015. *Oceanography* 28(3):134–145,  
<http://dx.doi.org/10.5670/oceanog.2015.62>.

This article has been published in *Oceanography*, Volume 28, Number 3,  
a quarterly journal of The Oceanography Society.  
Copyright 2015 by The Oceanography Society. All rights reserved.

# Supplemental Information on Bryozoan Species in the Chukchi Sea

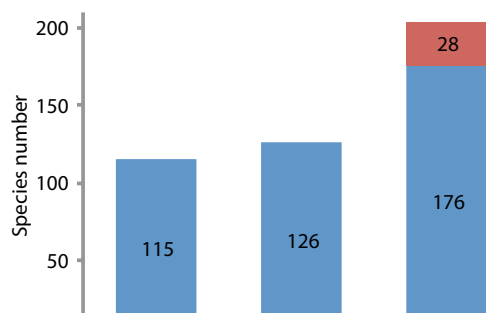
Bryozoans or moss animals are sessile colonial animals. This taxonomic group is one of the most diverse, not only in the Arctic, but also in the world ocean. Owing to collections of benthic samples made during the Russian-American Long-term Census of the Arctic (RUSALCA) program, the number of identified species of bryozoan fauna increased 14% (Figure S1, Table S1). As a result, the phylum can be regarded as one of the most diverse taxonomic groups in the Chukchi Sea (Figure S2).

The bryozoan fauna is dominated primarily by encrusting forms with short life spans, but these species also have massive branches and colonies (Figure S3). Low motility together with a short life span make this group suitable for studying biogeographic features

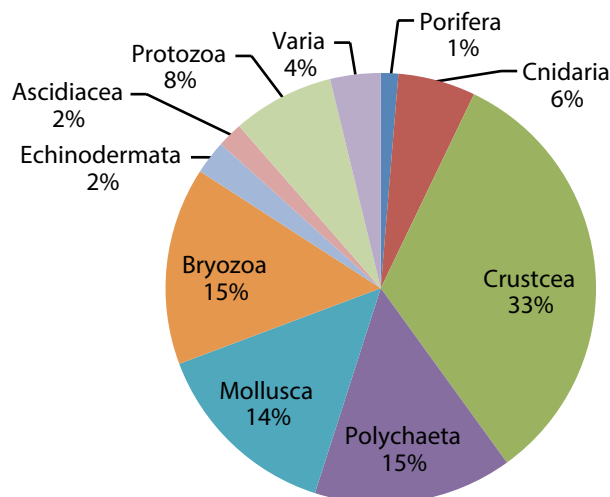
of the seas. Previous studies indicated the distribution of bryozoans with different biogeographic status and different origin correspond well with the distribution of bottom seawater temperatures. Temperate water species (boreal species) prefer temperatures above 3°–4°C, whereas Arctic species cannot be found in areas where the temperature exceeds these values, instead preferring old bottom water temperatures.

## REFERENCES

- Osburn, R.C. 1955. The circumpolar distribution of arctic-Alaskan Bryozoa. Pp. 29–38 in *Essays in the Natural Sciences in Honor of Captain Allan Hancock*. The University of Southern California press, Los Angeles.
- Kluge, G.A. 1962. *Bryozoans of the Northern Seas of the USSR*. Izdatel'stvo Akademii nauk SSSR, Moscow-Leningrad, 582 pp. [in Russian]



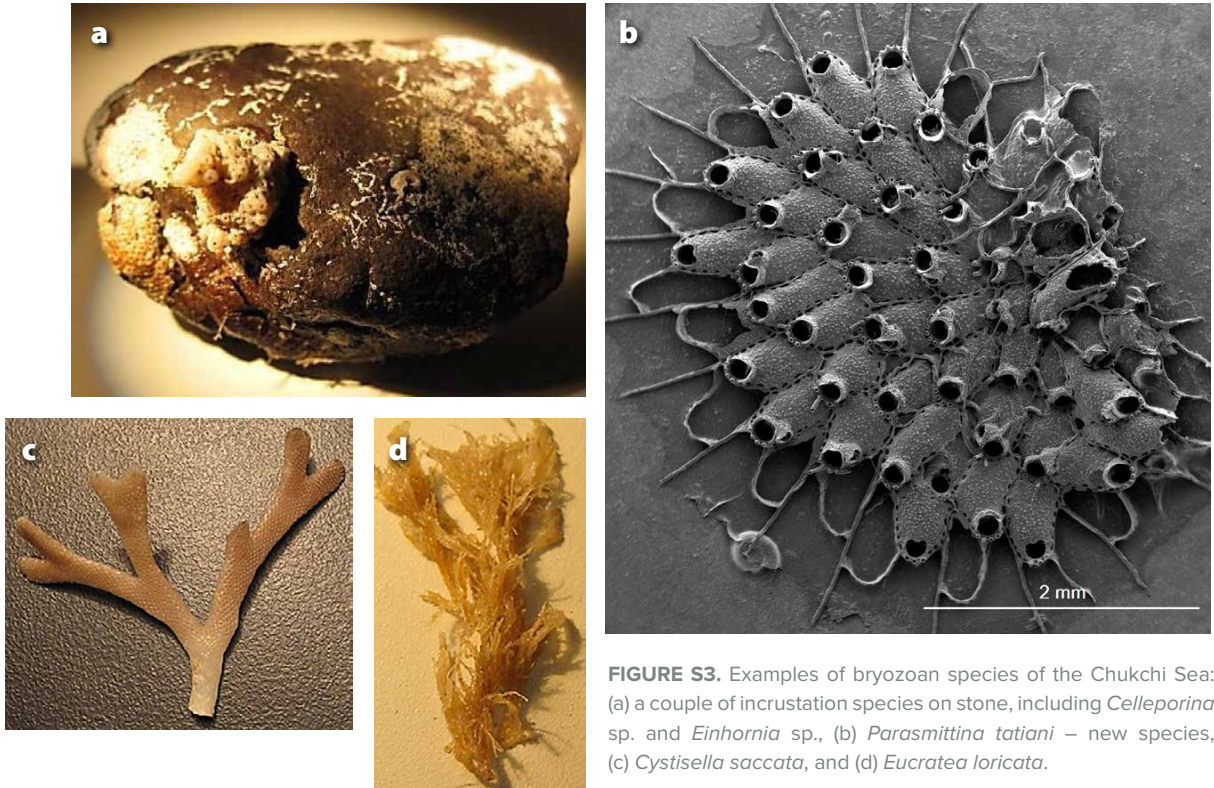
**FIGURE S1.** Number of bryozoan species found in the Chukchi Sea in different areas and during different periods of observations: 1 = Bryozoan records in American waters of the Chukchi Sea in the 1930s (Osburn, 1955). 2 = Records from 1878–1946 (Kluge, 1962). 3 = Total bryozoan species number, including RUSALCA sampling in 2004–2012 (red box).



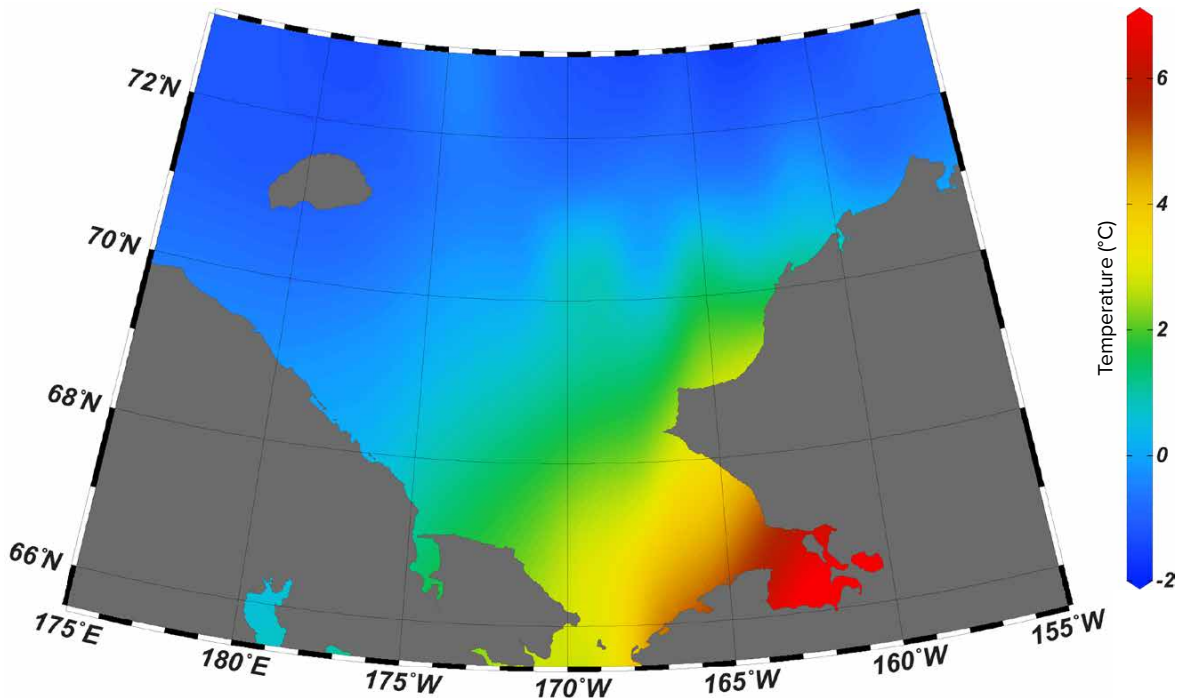
**FIGURE S2.** Proportions of different marine taxonomic groups in the Chukchi Sea.

**TABLE S1.** Summary of bryozoan species records and new bryozoan taxa identified from the Chukchi Sea during the Russian-American Long-term Census of the Arctic (RUSALCA) program.

FAMILY	SPECIES NAME
Crisiidae	<i>Crisia klugei</i> (Ryland, 1967)
	<i>Crisiella producta</i> (Smitt, 1865)
	<i>Diplosolen obelia</i> (Johnston, 1838)
Alcyonidiidae	<i>Alcyonidium diaphanum?</i> (L., 1767)
	<i>Alcyonidium pachydermatum</i>
	<i>Alcyonidium erectum</i> Silén, 1942
Electridae	<i>Alcyonioides mytilii</i> Dalyell, 1847
	<i>Einhornia crustulenta</i> (Borg, 1931)
Calloporidae	<i>Amphiblestrum auritum</i> (Hincks, 1877)
	<i>Amphiblestrum trifolium quadrata</i> (Hincks, 1880)
	<i>Callopora lata</i> (Kluge, 1907)
Hippotoiidae	<i>Celleporella reflexa</i>
Umbonulidae	<i>Ragonula rosacea</i> (Busk, 1856)
Escharellidae	<i>Escharella ventricosa</i> (Hassal, 1842)
	<i>Porella aperta</i> Boeck, 1862
Porellidae	<i>Porella laevis</i> (Fleming, 1828)
	<i>Porella obesa</i> Waters, 1900
	<i>Porella patula</i> M.Sars, 1851
	<i>Porella smitti</i> Kluge, 1907
Cryptosulidae	<i>Harmeria scutulata</i> (Busk, 1855)
Stomachetosellidae	<i>Stomachetosella limbata</i> (Lorenz, 1886)
	<i>Stomachetosella pachystega</i> (Kluge, 1929)
Smittinidae	<i>Smittoidea propinqua</i> (Smitt, 1868)
	<i>Parasmittina tatiani</i> Denisenko, in press
Bitectiporidae	<i>Schizomavella lineata</i> (Nordgaard, 1896)
	<i>Hippomonavella borealis</i> (Waters, 1900)
Microporellidae	<i>Microporella germata</i> Dick et Ross, 1988
Celleporidae	<i>Celleporina ventricosa</i> (Lorenz, 1886)



**FIGURE S3.** Examples of bryozoan species of the Chukchi Sea: (a) a couple of incrustation species on stone, including *Celleporina* sp. and *Einhornia* sp., (b) *Parasmittina tatiani* – new species, (c) *Cystisella saccata*, and (d) *Euratea loricata*.



**FIGURE S4.** Map of variation of bottom water temperature (°C) constructed on integrating multiple years of observations from 1930–2006.