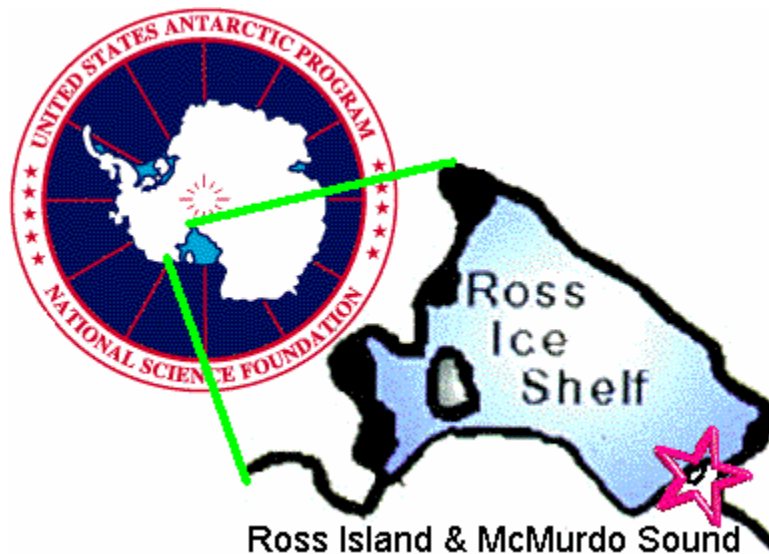


Ectoprocta: bryozoans

UNDERWATER FIELD GUIDE TO ROSS ISLAND & MCMURDO SOUND, ANTARCTICA

Peter Brueggeman

Photographs: Canadian Museum of Nature (Kathleen Conlan), Paul Cziko, Jim Mastro, & Norbert Wu



The National Science Foundation's Office of Polar Programs sponsored Norbert Wu on an Artist's and Writer's Grant project, in which Peter Brueggeman participated. One outcome from Wu's endeavor is this Field Guide. This Field Guide builds upon principal photography by Norbert Wu, with photos from other photographers, who are credited on their photographs and above. This Field Guide is intended to facilitate underwater/topside field identification from visual characters. Organisms were identified from photographs with no specimen collection. Therefore these identifications are to the taxonomic level possible from photographs, and there can be some uncertainty in identifications solely from photographs.

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cheilostomatous bryozoan *Camptoplites* sp.

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Cheilostomatous bryozoan *Camptoplites* sp.



Camptoplites bryozoans have their greatest diversity on the Antarctic Shelf and are also known from the abyss of the Indian, Atlantic, and Pacific Oceans [1]. *Camptoplites* colonies are erect, have dichotomous branching at regular intervals, may exceed five centimeters in height, and develop slender, open branched forms, dense feathery tuft forms, or highly-branched fan-shaped forms [1]. 81% (215 of 264) of Antarctic Cheilostomatous bryozoan species

are endemic to Antarctica; nine of the ten Antarctic species of *Camptoplites* are endemic to Antarctica [1].



This *Camptoplites* sp. could be among six or so species [1,2].

Bryozoans are sedentary animals that form colonies of individuals (zooids) by budding. The external skeletal walls of bryozoans are made with calcium carbonate (calcareous). Bryozoan zooids sit in the equivalent of a calcified box with a gated opening from which a feeding structure is protruded to capture small plankton; food is carried to the mouth with ciliary hairs and then sucked into the stomach for digestion. Sea slugs and sea spiders are their usual predators.

References: 1: Antarctic Cheilostomatous Bryozoa. PJ Hayward. Oxford : Oxford University Press, 1995; 2: PJ Hayward, personal communication, 1999

cheilostomatous bryozoan *Cellarinella* sp.



This *Cellarinella* sp. bryozoan could be among six or so species [2,3]. *Cellarinella* bryozoans are almost exclusively found in Antarctica (fourteen of the fifteen known species) [2]. The flat branches of this cellarinellid bryozoan have strong transverse growth checks or discontinuities; these growth checks may occur at times of the year when food supply is lowest [1]. A short distance between two cellarinellid bryozoan growth checks may be due to a year in which food supply was minimal thus retarding normal growth [1]. There appears to be a delay between maximum abundance of phytoplankton in surface water (late December - January) and bryozoan growth initiation; cellarinellid bryozoans initiate growth in early winter (July) and continue growth into late winter

months [1]. Antarctic *Cellarinella* species grow about ten times more slowly than temperate *Cellarinella* species, and are among the slowest growing bryozoans known [4].

81% (215 of 264) of Antarctic Cheilostomatida bryozoan species are endemic to Antarctica [1]. Bryozoans are sedentary animals that form colonies of individuals (zooids) by budding. The external skeletal walls of bryozoans are made with calcium carbonate (calcareous). Cellarinellid bryozoan zooids sit in the equivalent of a calcified box with an opening from which a feeding structure is protruded to capture small plankton; food is carried to the mouth with ciliary hairs and then sucked into the stomach for digestion [1]. Sea slugs and sea spiders are their usual predators.

References: 1: Bulletin of Marine Science 33(3):688-702, 1983; 2: Antarctic Cheilostomatous Bryozoa. PJ Hayward. Oxford : Oxford University Press, 1995; 3: PJ Hayward, personal communication, 1999; 4: Polar Biology 30(8): 1069-1081, 2007

cheilostomatous bryozoan *Cellaria* sp.



Cellaria forms erect, tufted, dichotomous-branching colonies attached to the substrate by chitinous rhizoids [1].

Cellaria moniliorata is abundant in the Ross Sea below fifty meters depth [2].



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Sea slugs and sea spiders are the usual predators of bryozoans.

References: 1: Antarctic Cheilostomatous Bryozoa. PJ Hayward. Oxford : Oxford University Press, 1995; 2: Biology and Palaeobiology of Bryozoans: Proceedings of the 9th International Bryozoology Conference, School of Biological Sciences, University of Wales, Swansea, 1992. PJ Hayward, JS Ryland and PD Taylor, eds. Fredensborg, Sweden : Olsen & Olsen, 1994. pp. 205-210

cheilostomatous bryozoan *Celleporella* sp.



Celleporella sp. is shown in close-up on the leg of a sea spider.

This could be *Celleporella hyalina* (a cosmopolitan species) or *C. divaricata* [1].



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Sea slugs and sea spiders are the usual predators of bryozoans. Here's a twist... bryozoans living on sea spider legs.

References: 1: John C Ljubenkov, personal communication, 2004

cheilostomatous bryozoan *Reteporella* sp.



Reteporella bryozoans have erect netted colonies with their branches fusing at regular intervals leaving elongated spaces between [1]. *Reteporella* colonies can be like a tree, a netted cup, or folded sheets [1]. *Reteporella* spp. are abundant in the Ross Sea in shallow and deeper water [3]. 81% (215 of 264) of Antarctic Cheilostomatida bryozoan species are endemic to Antarctica [1].



Species is not discernible at this magnification [1,2].

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bryozoans.

Taxonomic Note: Genus changed to *Reteporella* from *Sertella*; it was *Retepora* before that [1]. *Retepora* may be misspelled *Terepora* in some older ecological articles.

References: **1:** Antarctic Cheilostomatous Bryozoa. PJ Hayward. Oxford : Oxford University Press, 1995; **2:** PJ Hayward, personal communication, 1999; **3:** Biology and Palaeobiology of Bryozoans: Proceedings of the 9th International Bryozoology Conference, School of Biological Sciences, University of Wales, Swansea, 1992. PJ Hayward, JS Ryland and PD Taylor, eds. Fredensborg, Sweden : Olsen & Olsen, 1994. pp. 205-210

cheilostomatous bryozoan



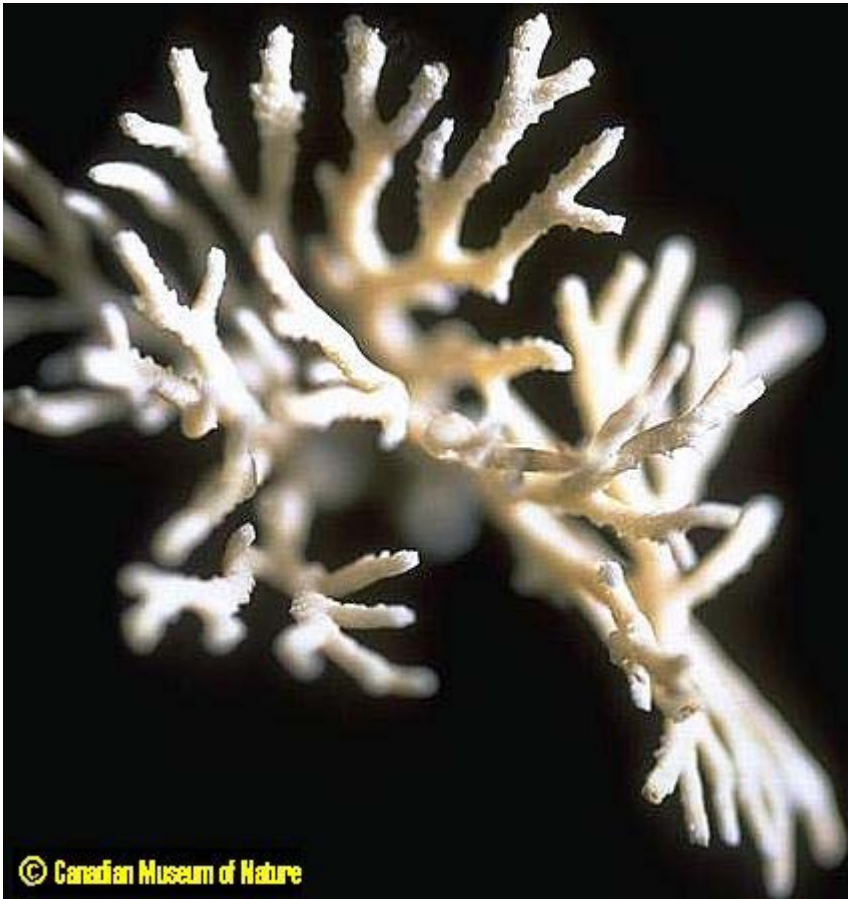
About ten genera of Antarctic bryozoans have this growth form [1,2].

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Sea slugs and sea spiders are the usual predators of bryozoans.

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cyclostomate bryozoan *Hornera* sp.



Antarctic species of *Hornera* are found throughout Antarctica, Antarctic Peninsula, subantarctic islands, Tierra del Fuego, and Auckland Islands [1].

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Sea slugs and sea spiders are the usual predators of bryozoans.



Hornera is a cyclostomate bryozoan. Cyclostomates are roughly 30% of the Ross Sea bryozoans shallower than fifty meters and 12% deeper than fifty meters [2]. Compared to cyclostomates, cheilostomate bryozoans are much more numerous in Antarctica where they comprise 85% of bryozoan taxa [2].

References: **1:** Biological Reports of the Soviet Antarctic Expedition, 1955-1958. Volume 4. (Rezultaty Biologicheskikh Issledovaniy Sovetskoi Antarkticheskoi Ekspeditsii, 1955-1958) Chief editor: EP Pavlovskii. Edited by AP Andriyashv and PV Ushakov. Jerusalem, Israel : Program for Scientific Translations, 1970. pp. 33-83; **2:** Biology and Palaeobiology of Bryozoans: Proceedings of the 9th International Bryozoology Conference, School of Biological Sciences, University of Wales, Swansea, 1992. PJ Hayward, JS Ryland and PD Taylor, eds. Fredensborg, Sweden : Olsen & Olsen, 1994. pp. 205-210

bryozoan

