

# UNDERWATER FIELD GUIDE TO ROSS ISLAND & MCMURDO SOUND, ANTARCTICA, VOLUME 1: PORIFERA demosponges, glass sponges, calcareous sponges

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Photographs: Bill Baker, Kathleen Conlan/Canadian Museum of Nature, Paul Cziko, Paul Dayton, Shawn Harper, Stacy Kim/SCINI, Adam G Marsh, Jim Mastro, Bruce A Miller, Rob Robbins, Steve Rupp/National Science Foundation & 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 which builds upon principal photography by Norbert Wu, with photos from other photographers, who are credited on their photographs and above. This Field Guide aims to facilitate underwater/topside field identification from visual characters. Most organisms were identified from photographs with no specimen collection, so there can be uncertainty with these identifications.

Keywords: Antarctic, Ross Island, marine, field guide, Antarctica, sponges, porifera, McMurdo Sound, demosponge, glass sponge, calcareous sponge

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**basketball sponge *Antarctotetilla leptoderma***



**pseudo fan sponge *Calyx shackletoni***



**spiky sponge *Cinachyra antarctica***



**grungy multihole sponge *Cinachyra barbata***



sponge *Clathria (Axosuberites) nidificata*



cactus sponge *Dendrilla antarctica*



brain sponge *Guitarra antarctica*



smooth finger sponge *Haliclona (Rhizoniera) dancoi*





finger sponge *Haliclona (Rhizoniera) scotti*



sponge *Haliclona* sp.



smooth finger sponge *Haliclona* sp.



staghorn sponge *Hemigellius fimbriatus*





grapefruit ball sponge *Hemimycale topsenti*



bush sponge *Homaxinella balfourensis*



knobby sponge *Inflatella belli*



shoelace sponge *Iophon abnormalis*



sponge *Iophon radiatum*



polychaete sponge *Isodictya erinacea*



stringy sponge, probably *Isodictya setifera*



cotton candy sponge *Kirkpatrickia coulmani*



red sponge *Kirkpatrickia variolosa*



green sponge *Latrunculia (Aciculatrunculia) biformis*

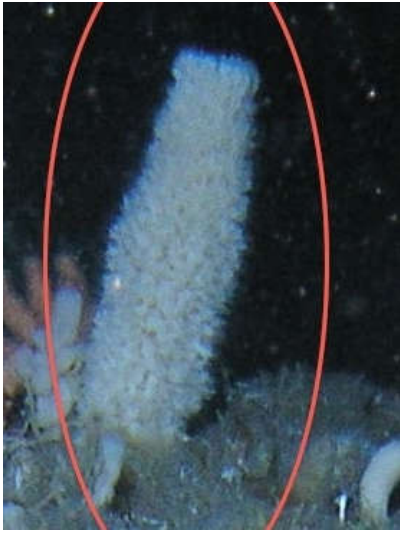


pipe cleaner sponge *Lycopodina vacoleti*



pink staghorn or pink robe sponge *Microxina benedeni*





chimney sponge, possibly *Microxina myxa*



slimy sponge *Mycale (Oxymycale) acerata*



brown saguaro sponge *Phorbas areolatus*



cone sponge *Polymastia invaginata*



tubular sponge *Sphaerotylus antarcticus*



lollipop sponge *Stylocordyla chupachups*



sea peach sponge *Suberites caminatus*



volcano sponge *Anoxycalyx (Scolymastra) joubini*



barrel sponge *Rossella antarctica*



brown vase sponge *Rossella fibulata*





spiky volcano sponge *Rossella levis*



root sponge *Rossella podagrosa*



knobby volcano sponge *Rossella racovitzae*



smooth volcano sponge *Rossella* sp.



rubber sponge *Leucascus leptoraphis*

November 2021: Taxonomic names checked in Zoological Record and World Register of Marine Species

**basketball sponge *Antarctotetilla leptoderma***



*Antarctotetilla leptoderma* is found throughout Antarctica and South Shetland Island, South Orkney Islands, South Georgia Island, Falkland Islands, Chile, Argentina, Kerguelen Island, Heard Island, New Zealand, and Christmas Island, from 4 to 2,267 meters depth [1,3,7,8,10,11,13].

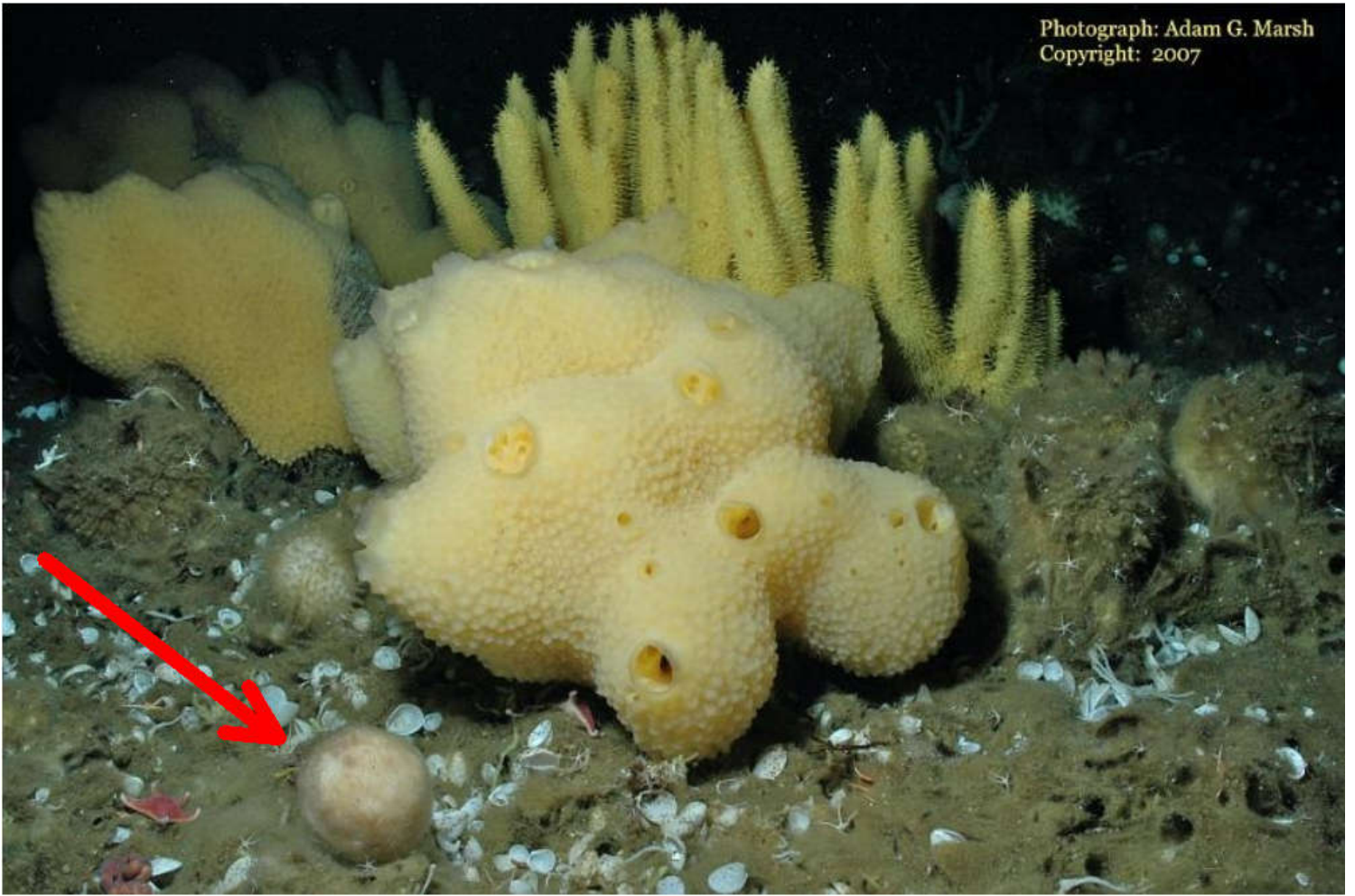


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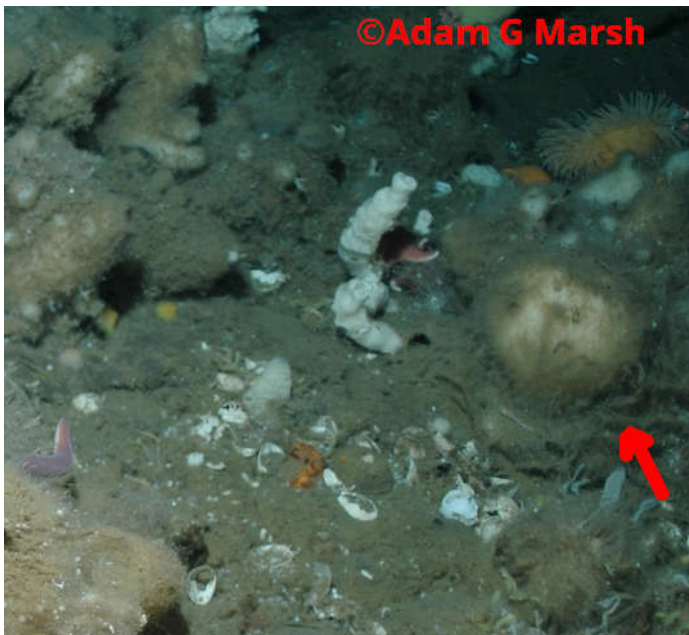


The clumped dispersion of *Antarctotetilla leptoderma* suggests that it has limited larval dispersal [5].





*Antarctotetilla leptoderma* is slightly elongate or egg-shaped with one oscular opening at the top [13].



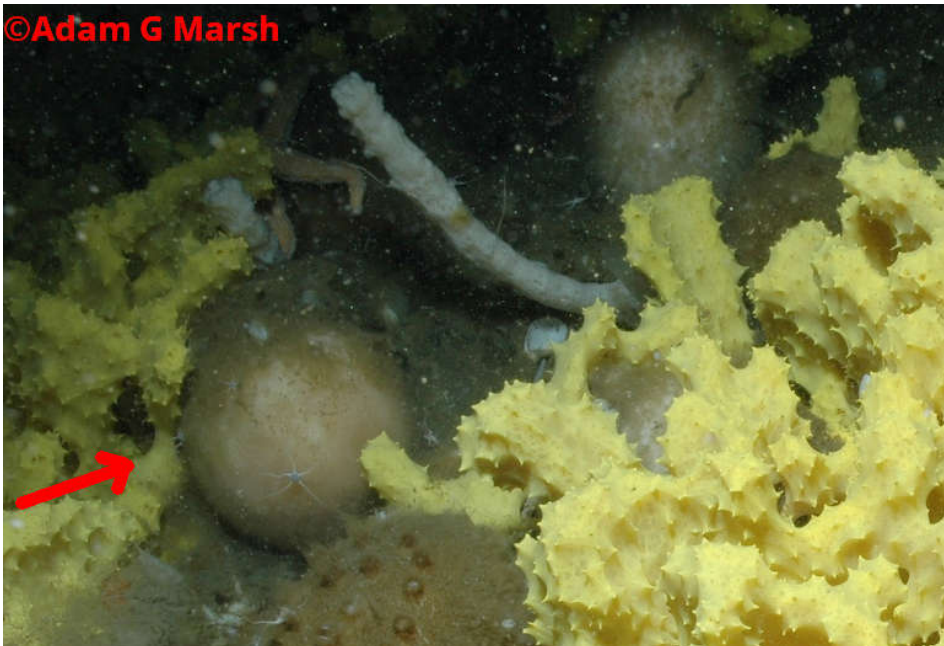
The surface of *Antarctotetilla leptoderma* is smooth or bristly with a spicule felt; it has small crests and conules [4,7,12,13].



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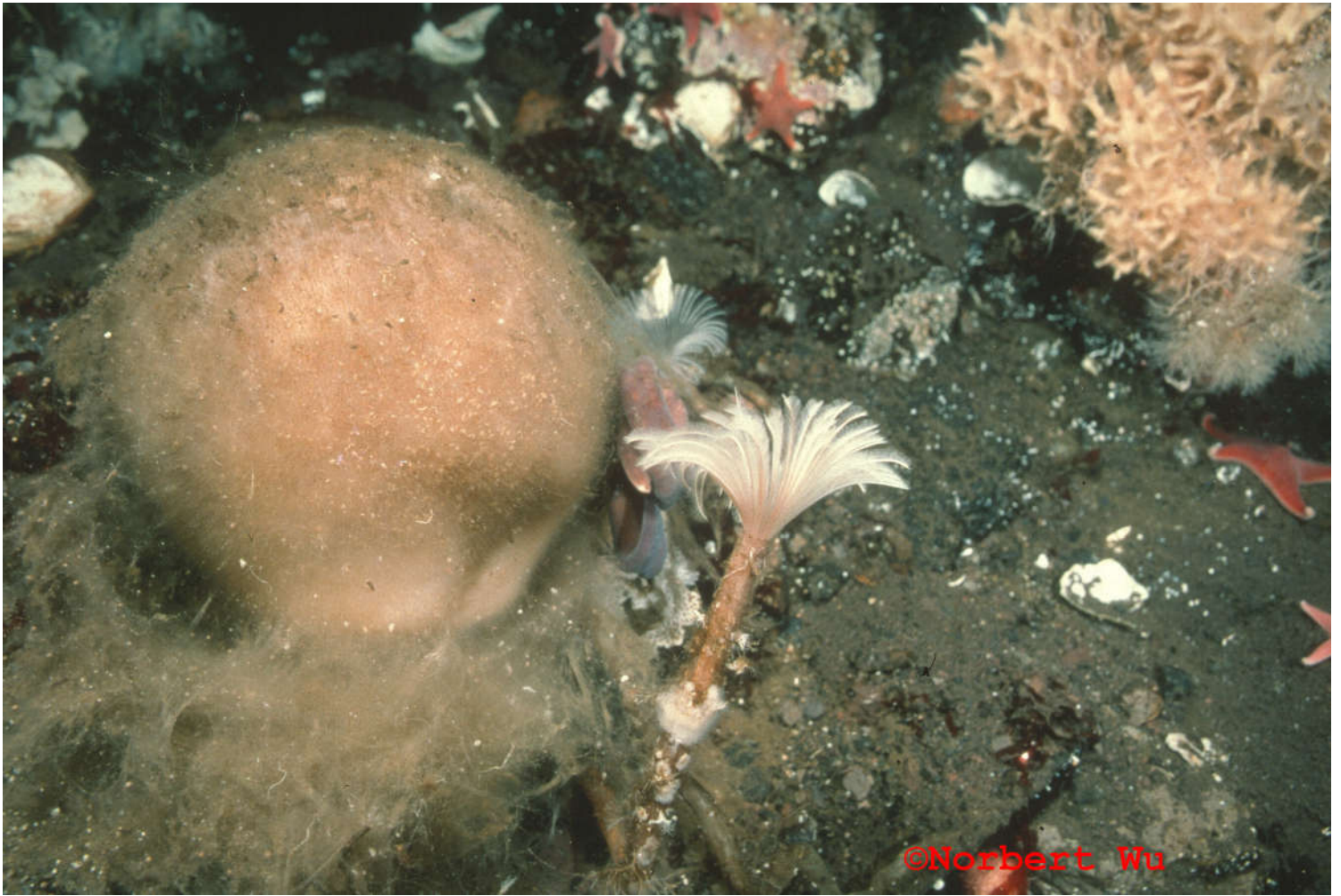


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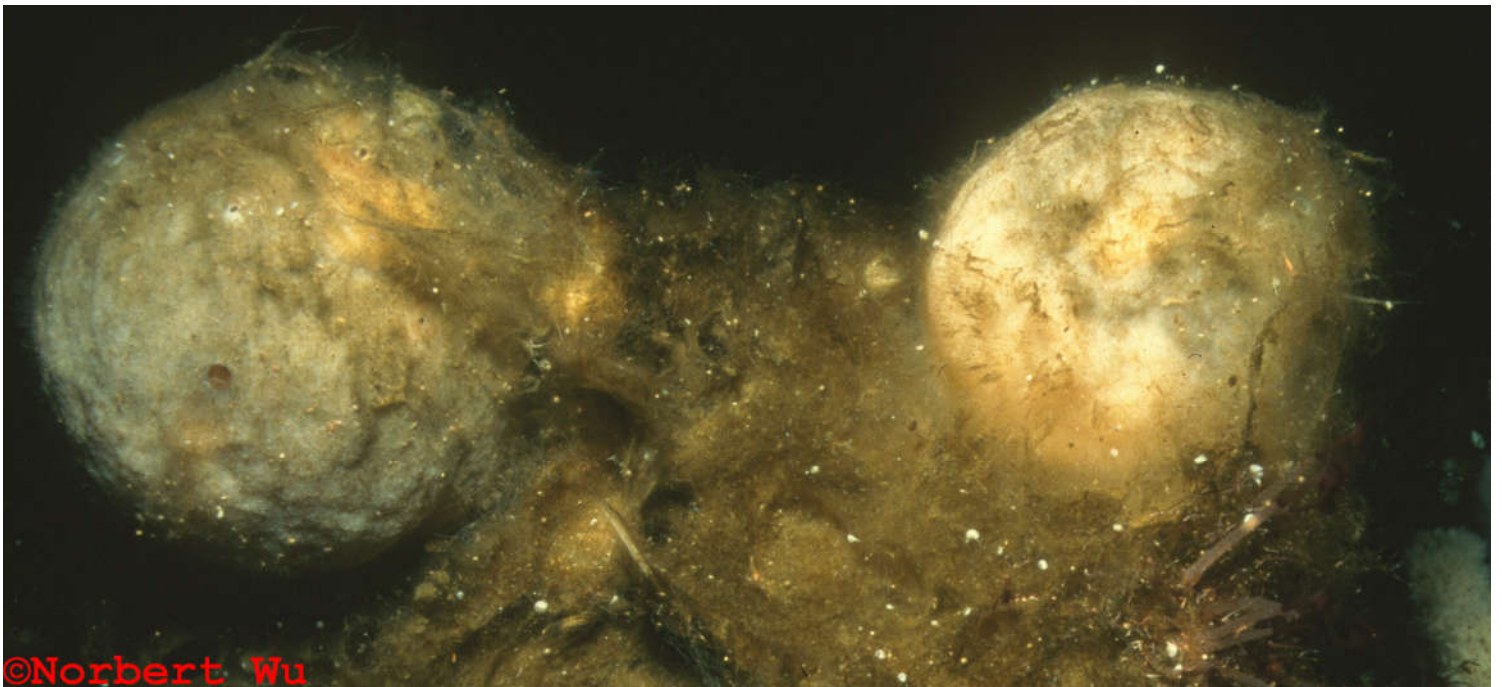


*Antarctotetilla leptoderma* can be large, up to 35 centimeters [5].

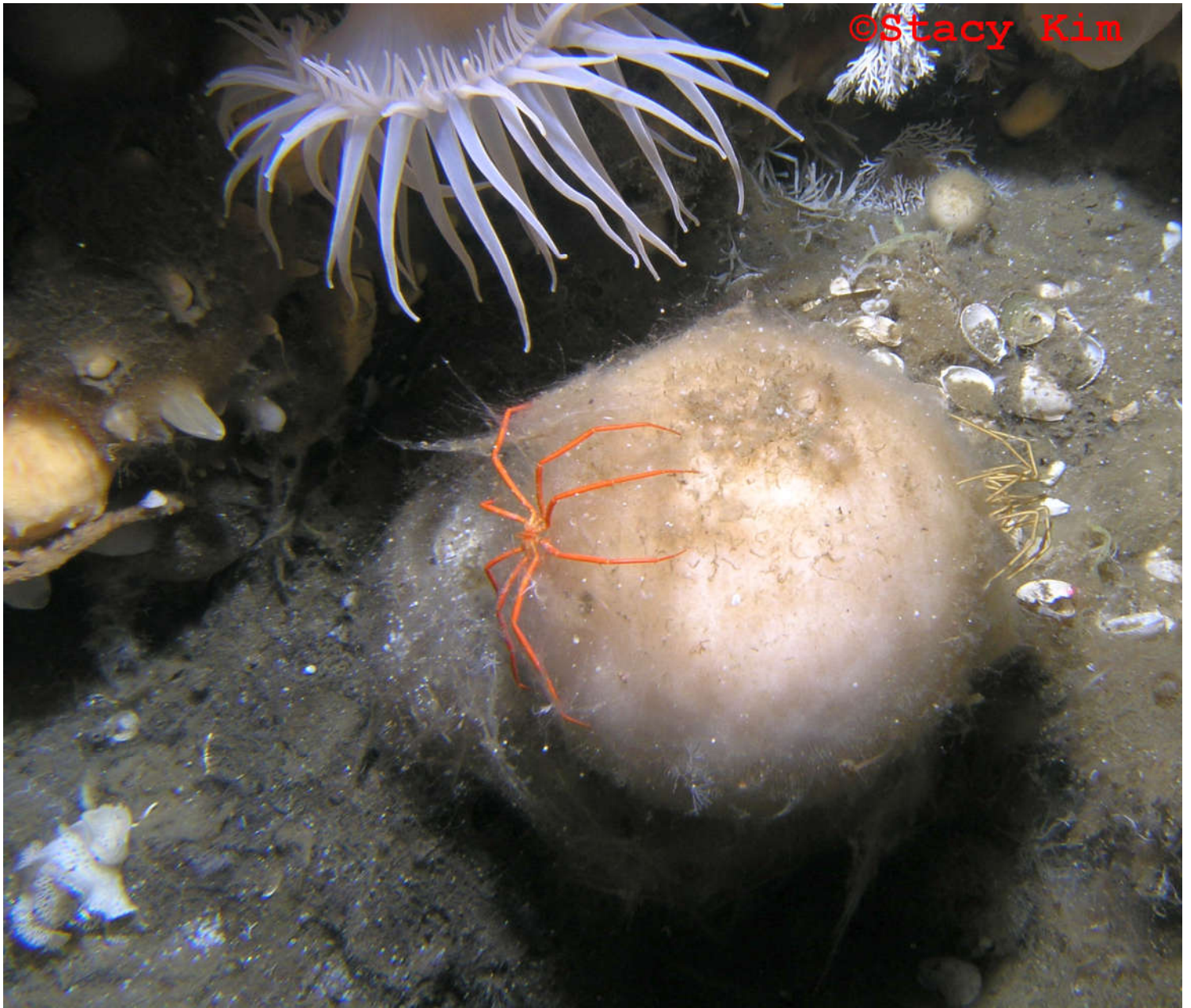




*Antarctotetilla leptoderma* may have root-like spicules entangled at its base [7,13].







The color of *Antarctotetilla leptoderma* is greyish beige, reddish gray, dirty gray, light yellow, or light brown [4,7,8,12,13].



Predators of *Antarctotetilla leptoderma* include the seastars *Perknaster fuscus*, *Odontaster validus*, and *Acodontaster conspicuus* and the nudibranch *Doris kerguelensis* [6].



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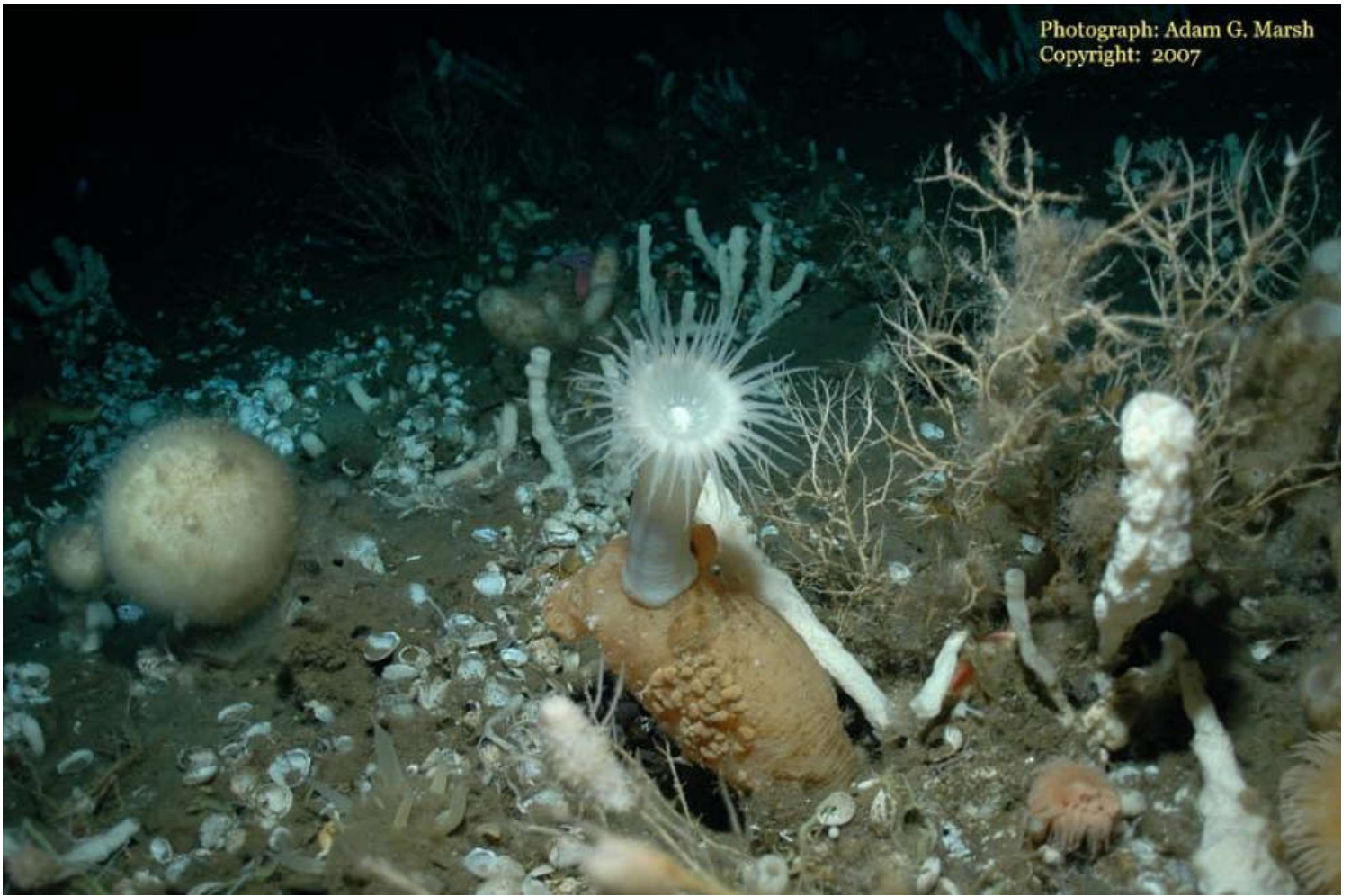


*Antarctotetilla leptoderma* is found in the third benthic zone of Cape Armitage below 33 meters and rarely in the second benthic zone between 15 and 33 meters [6]. *Antarctotetilla leptoderma* is commonly seen, being 3.2% of the benthic surface cover and 6.7% of the sponge biomass at a Cape Armitage site [6].



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**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. The genus for *leptoderma* was changed to *Antarctotetilla* in 2016, from *Tetilla* [9,11].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **4:** Antarctic Science 4(2):137-150, 1992; **5:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; **6:** Ecological Monographs 44(1):105-128, 1974; **7:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **8:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **9:** PLoS ONE 11(8):e0160718. doi:10.1371/journal.pone.0160718, 2016; **10:** Polar Biology 12:559-585, 1992; **11:** Revista Brasileira de Zoologia 24(3):687-708, 2007; **12:** Antarctic Macrobenthos, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 27; **13:** Zootaxa 4455(2):295-321, 2018



pseudo fan sponge *Calyx shackletoni*



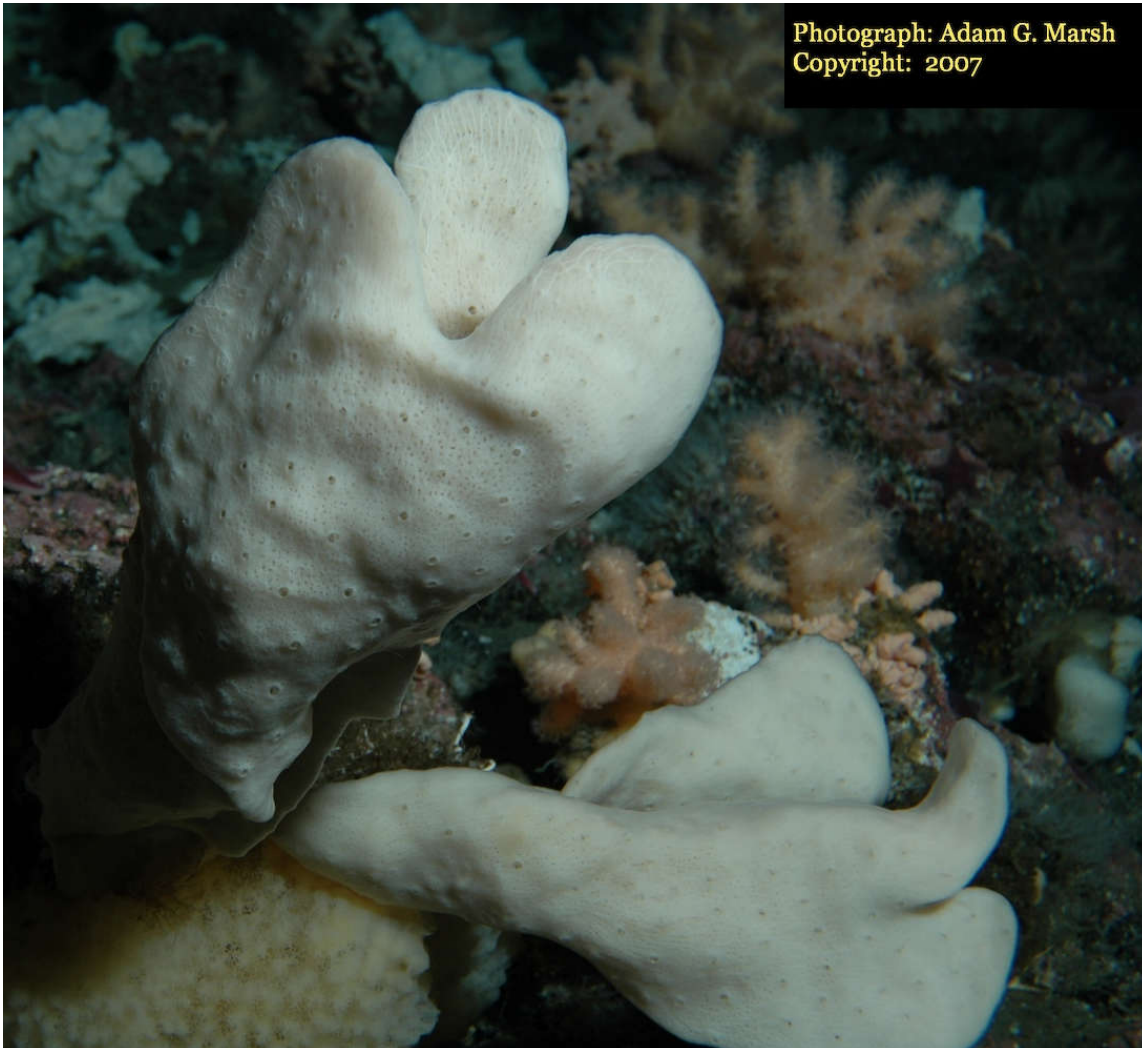
*Calyx shackletoni* is found throughout Antarctica, South Shetland Islands, South Orkney Islands, and South Georgia Island, from 16 to 900 meters depth <sup>[1,3,8]</sup>.



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The body of *Calyx shackletoni* is usually flattened and fanlike but it can be cylindrical, gradually thickening near the distal end and shaped like a club (clavate), or split into branches with rounded edges [6,7,8]. The flattened arms of *Calyx shackletoni* are wider than *Calyx arcuarius* and not as large [2].

The color of *Calyx shackletoni* is white, light gray, beige, light brown, or brown [6,7].



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The oscula of *Calyx shackletoni* are numerous and round and scattered on both sides of the smooth surface of the body [6,7,8].

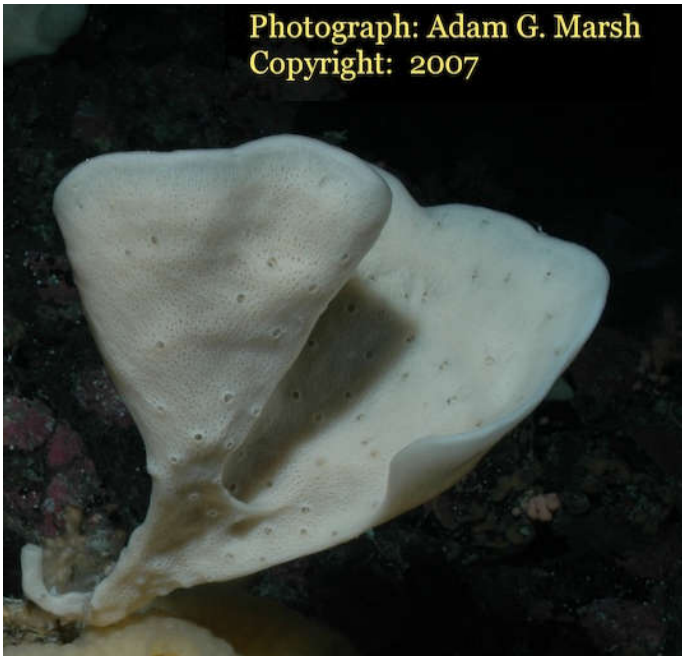
*Calyx shackletoni* is uncommonly seen, being 0.03% of the benthic surface cover at a Cape Armitage site [5].



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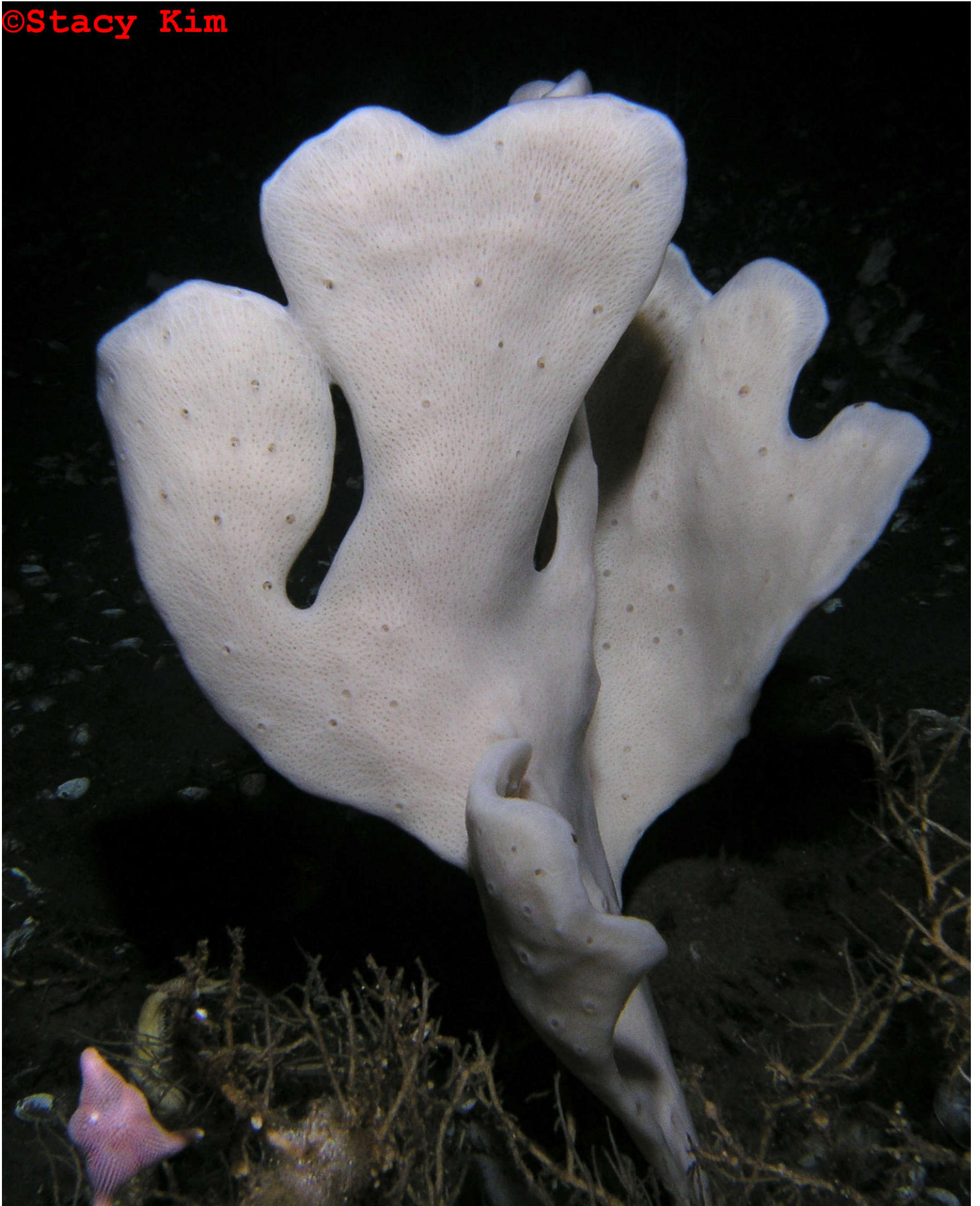


*Calyx shackletoni* always has a hard stalk [6]. *C. shackletoni* has been collected at sizes up to fifty centimeters high and fifty centimeters across [6,8].

Predators of *Calyx shackletoni* include the seastars *Odontaster meridionalis* and *Acodontaster hodgsoni*, and the nudibranch *Doris kerguelensis* [5].



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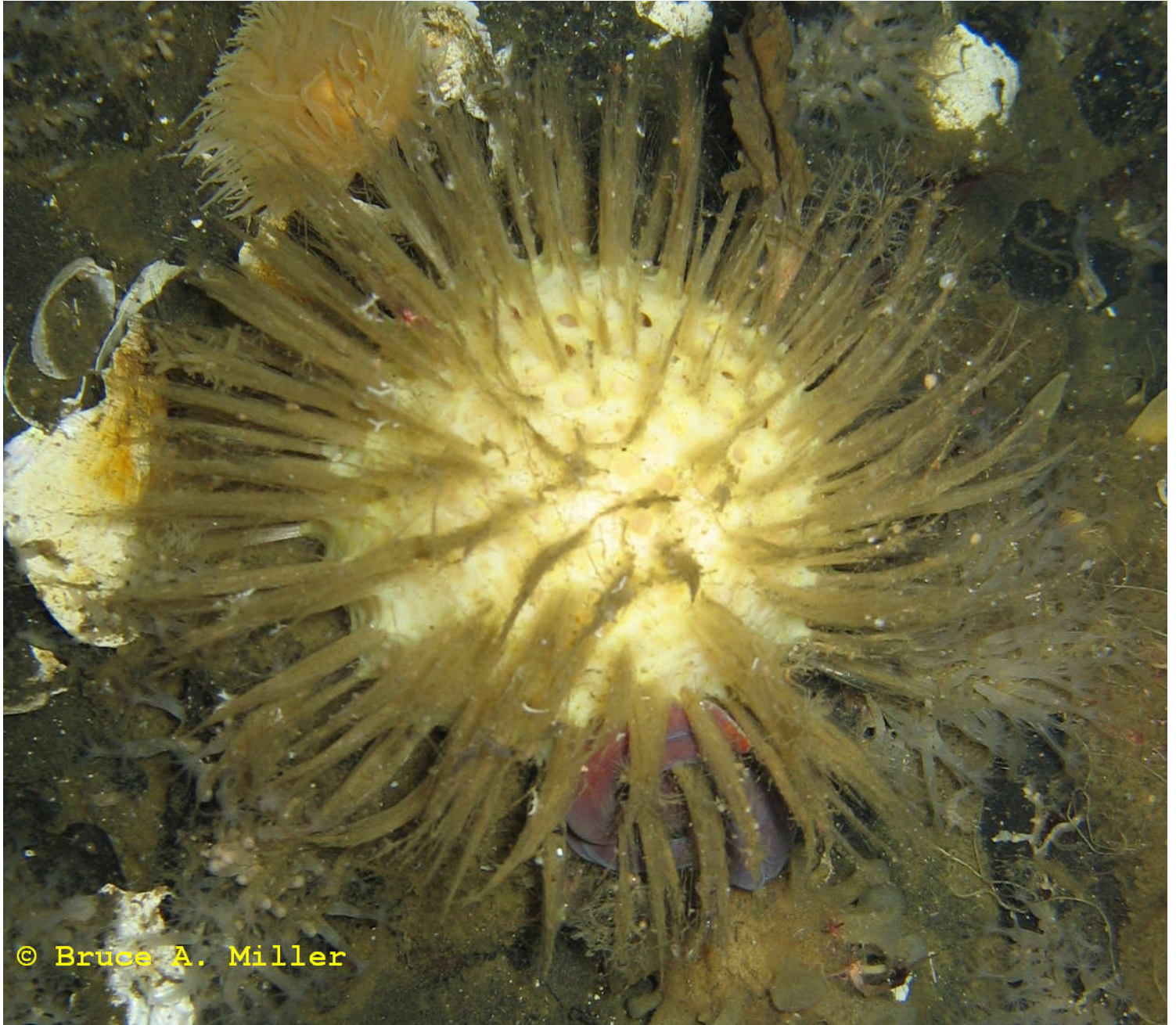


**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. Burton's original description of what became known as *Calyx arcuarius* is problematic, and there could be several species with later reports and synonyms [1,4,9]. *Calyx shackletoni* specimens from South Georgia Island are likely con-specific with some of Burton's *Calyx arcuarius* specimens from the Antarctic, South Georgia, and Shag Rocks [1,9].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **4:** Zootaxa 3692(1):28-101, 2013; **5:** Ecological Monographs 44(1):105-128, 1974; **6:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **7:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **8:** Further Zoological Results of the Swedish Antarctic Expedition 1901-1903. Volume 3, Number 2. Sponges. M Burton. Stockholm: PA Norstedt and Soner, 1934; **9:** Zootaxa 3542:1-48, 2012



spiky sponge *Cinachyra antarctica*

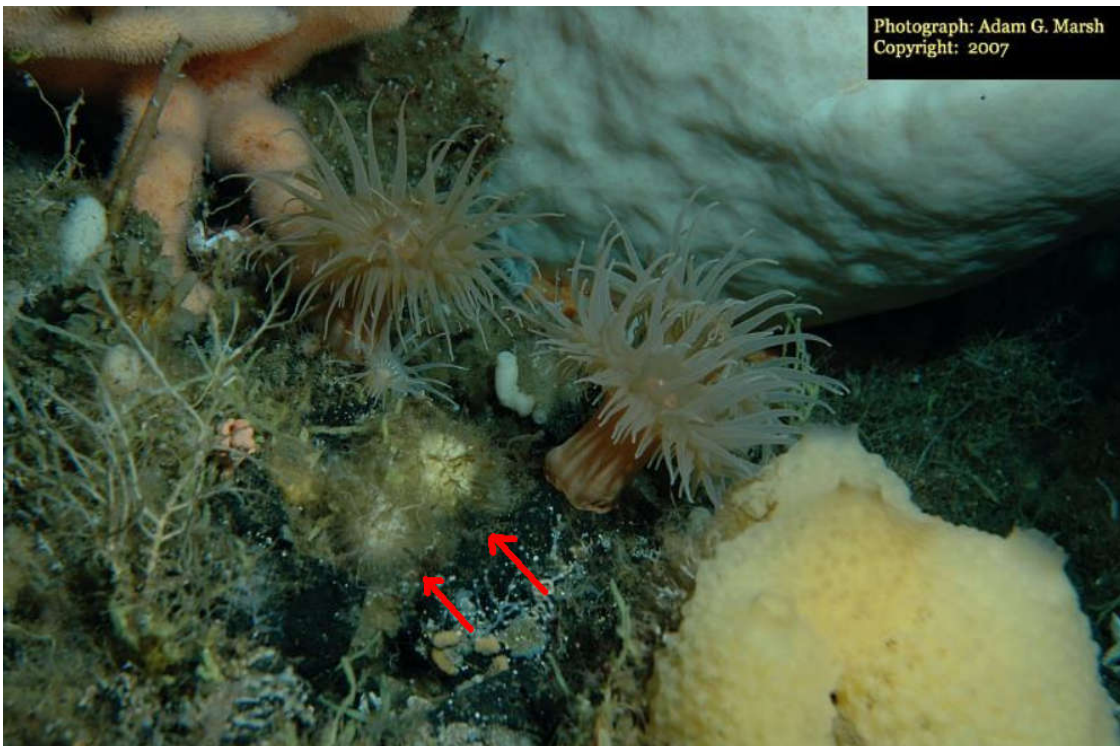
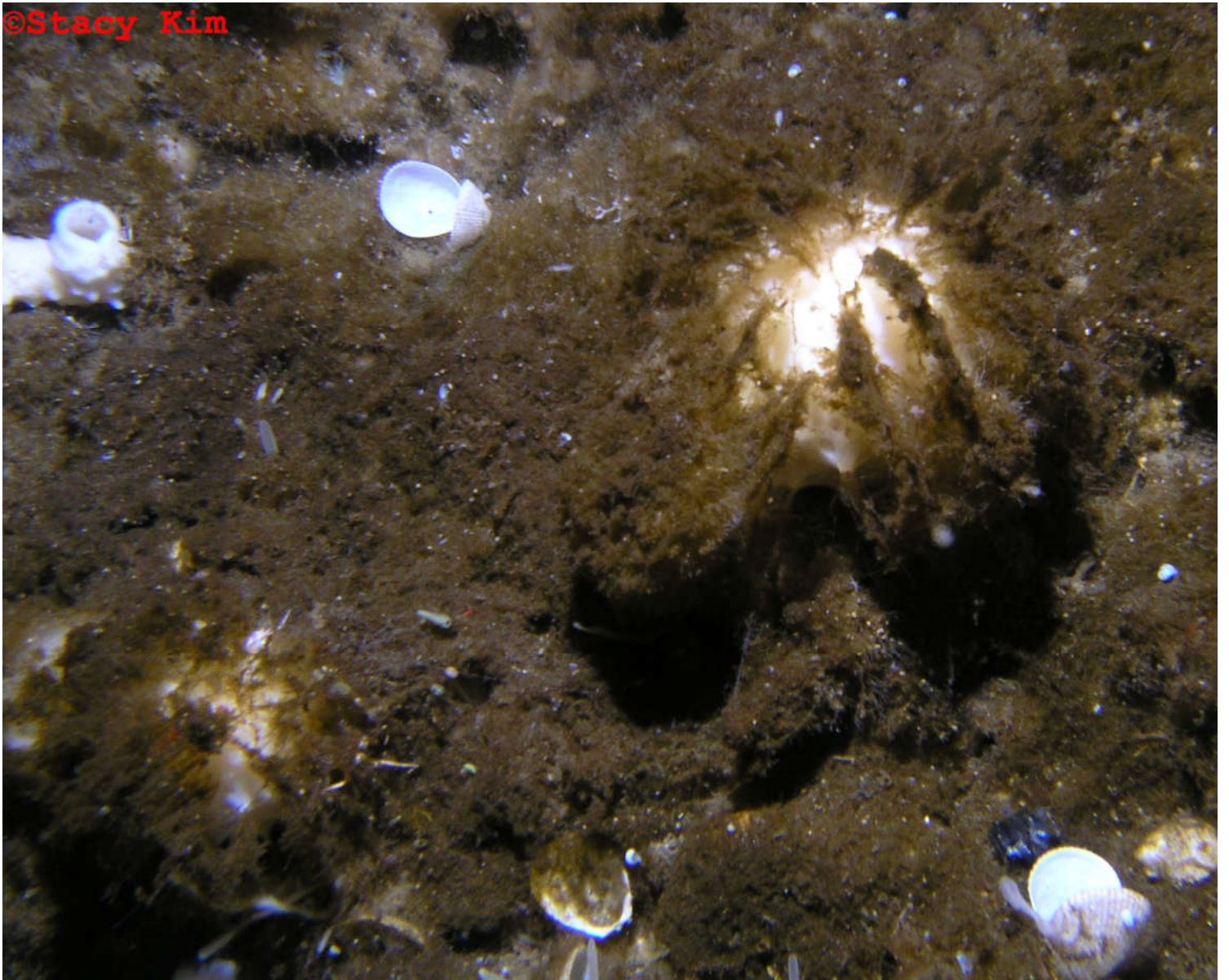


*Cinachyra antarctica* is found throughout Antarctica and the Antarctic Peninsula and South Shetland Islands, South George Island, Kerguelen Islands, at depths from 18 to 830 meters

[1,3,7,9,10,12,13]



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*Cinachyra antarctica* is round or egg-shaped with distinctive long spiculate tufts sticking out from the conules spiraling on its surface [4,5,7,13]. Its size is up to fifteen centimeters in height [4].

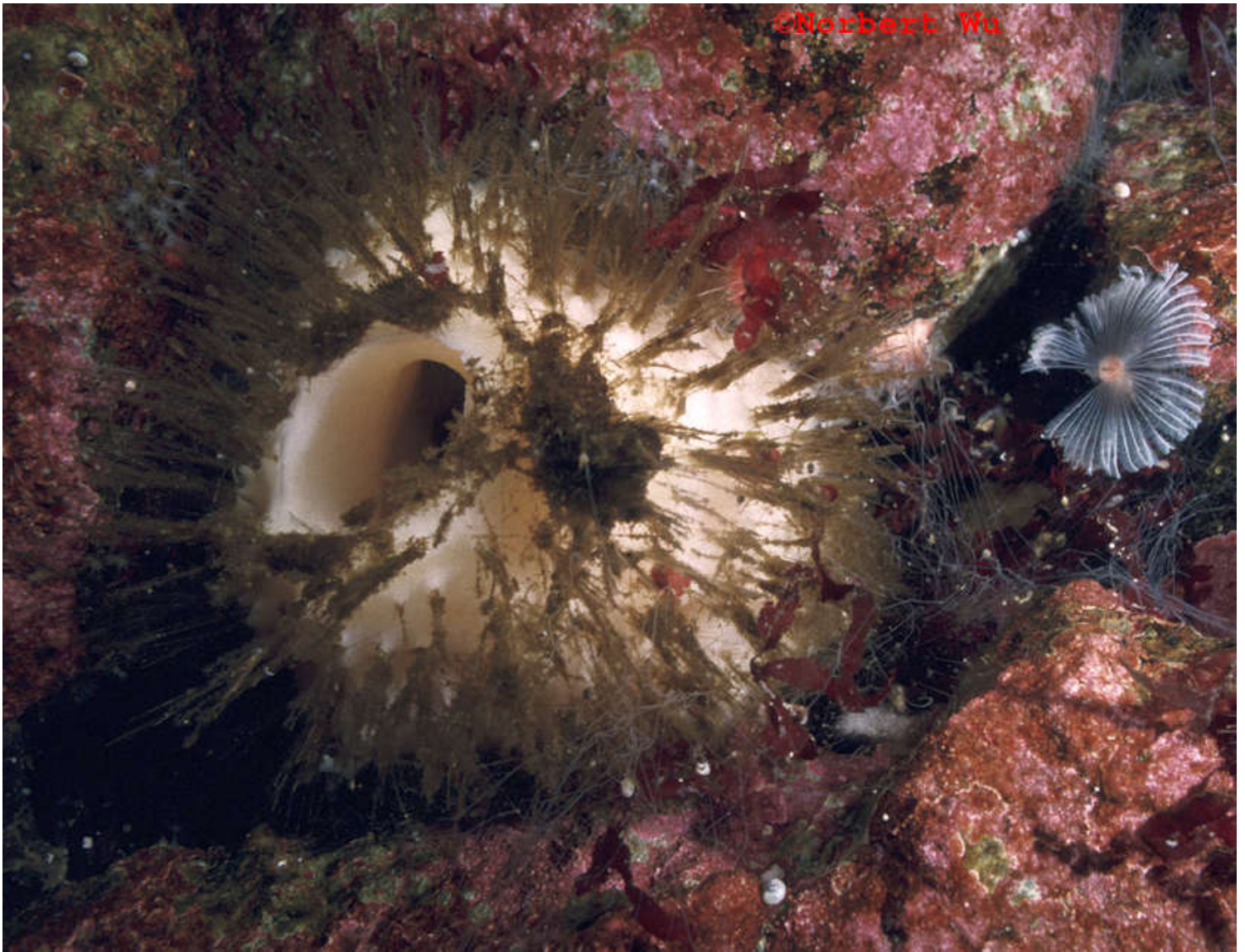


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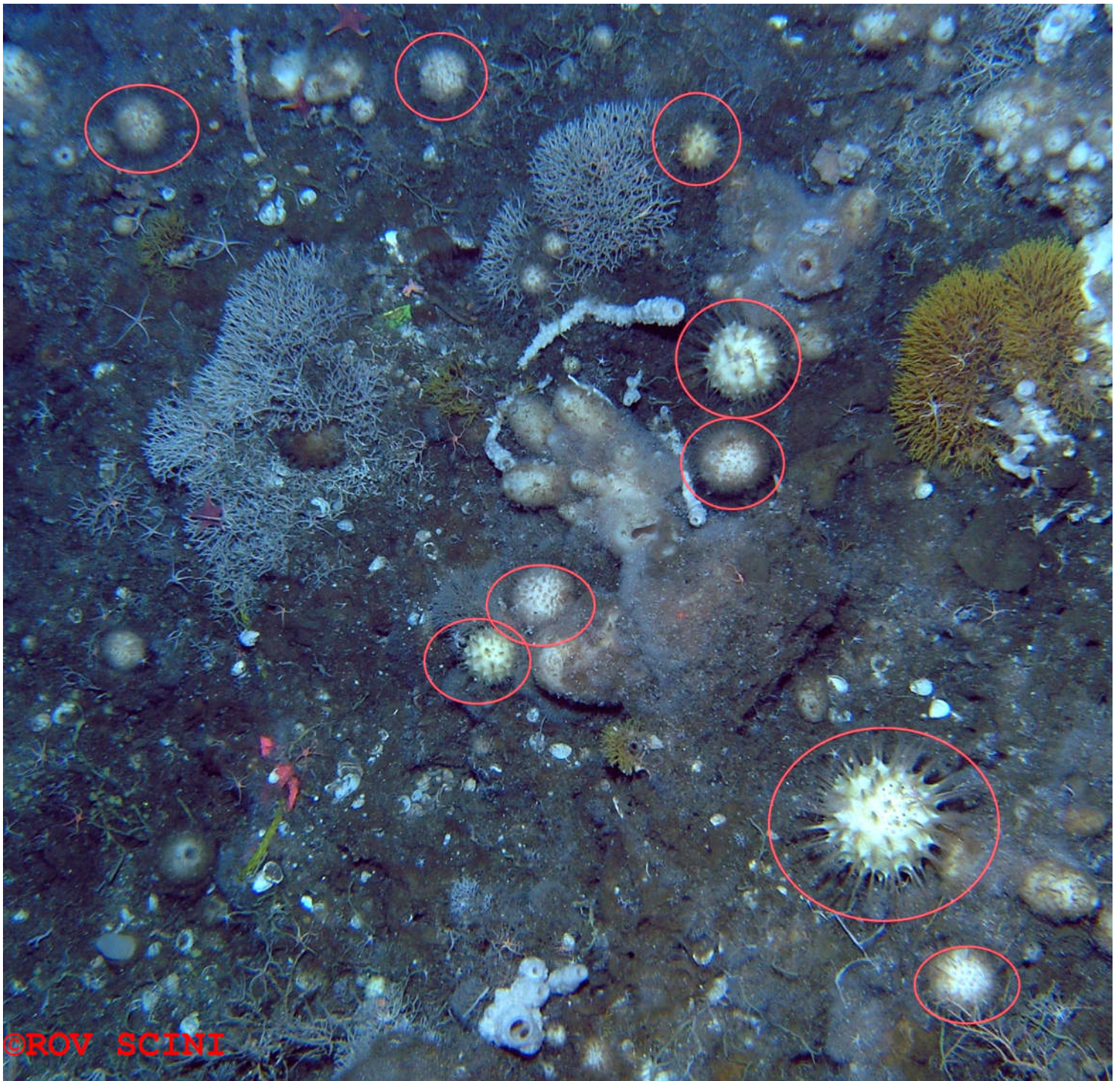
Experiments suggest that the extending spicules of *Cinachyra antarctica* keep predators at bay; seastars quickly move in to feed when the spicules are removed [11].





The color of *Cinachyra antarctica* is white, gray, grayish brown, light brown, dark yellow, or greenish [4,5,7,8].

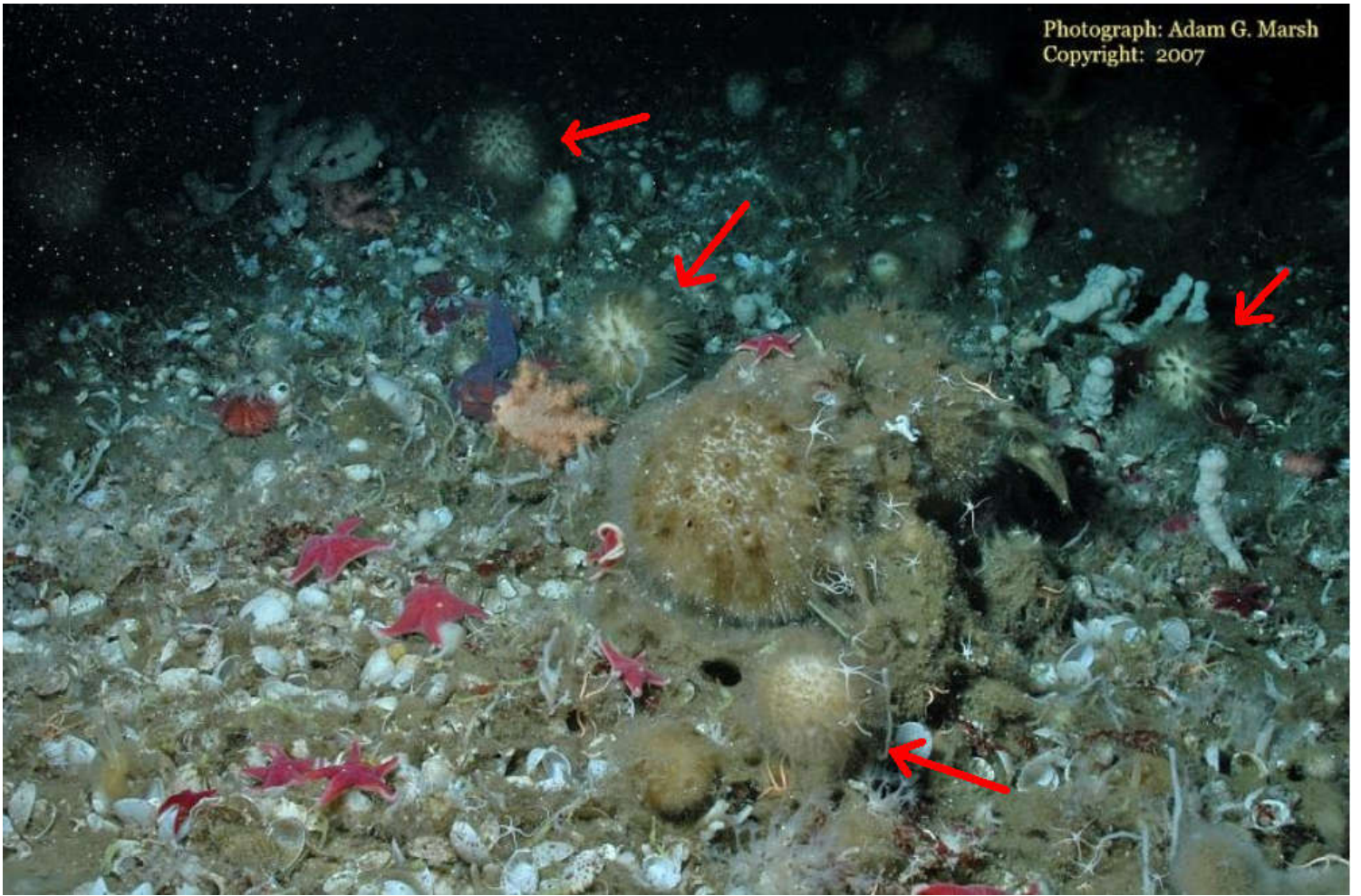




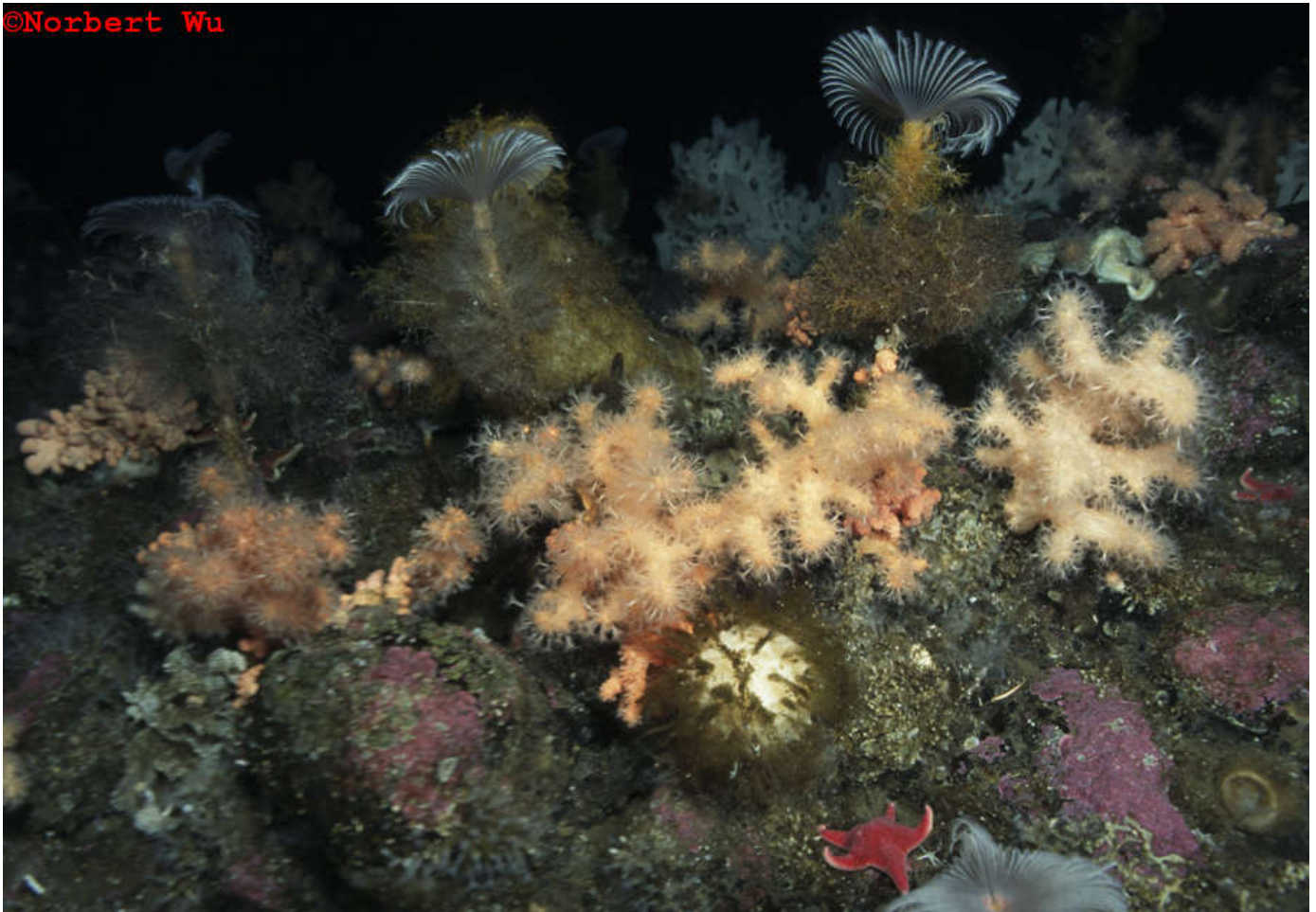
*Cinachyra antarctica* is commonly seen, being 1.2% of the benthic surface cover and 0.6% of the sponge biomass at a Cape Armitage site [2,6].



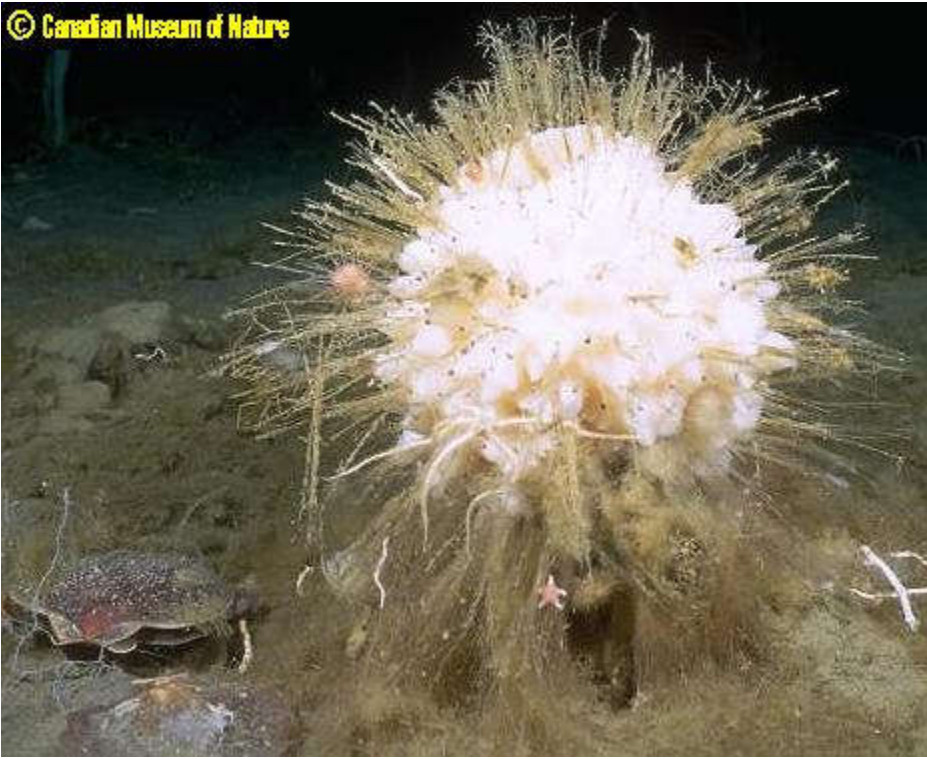
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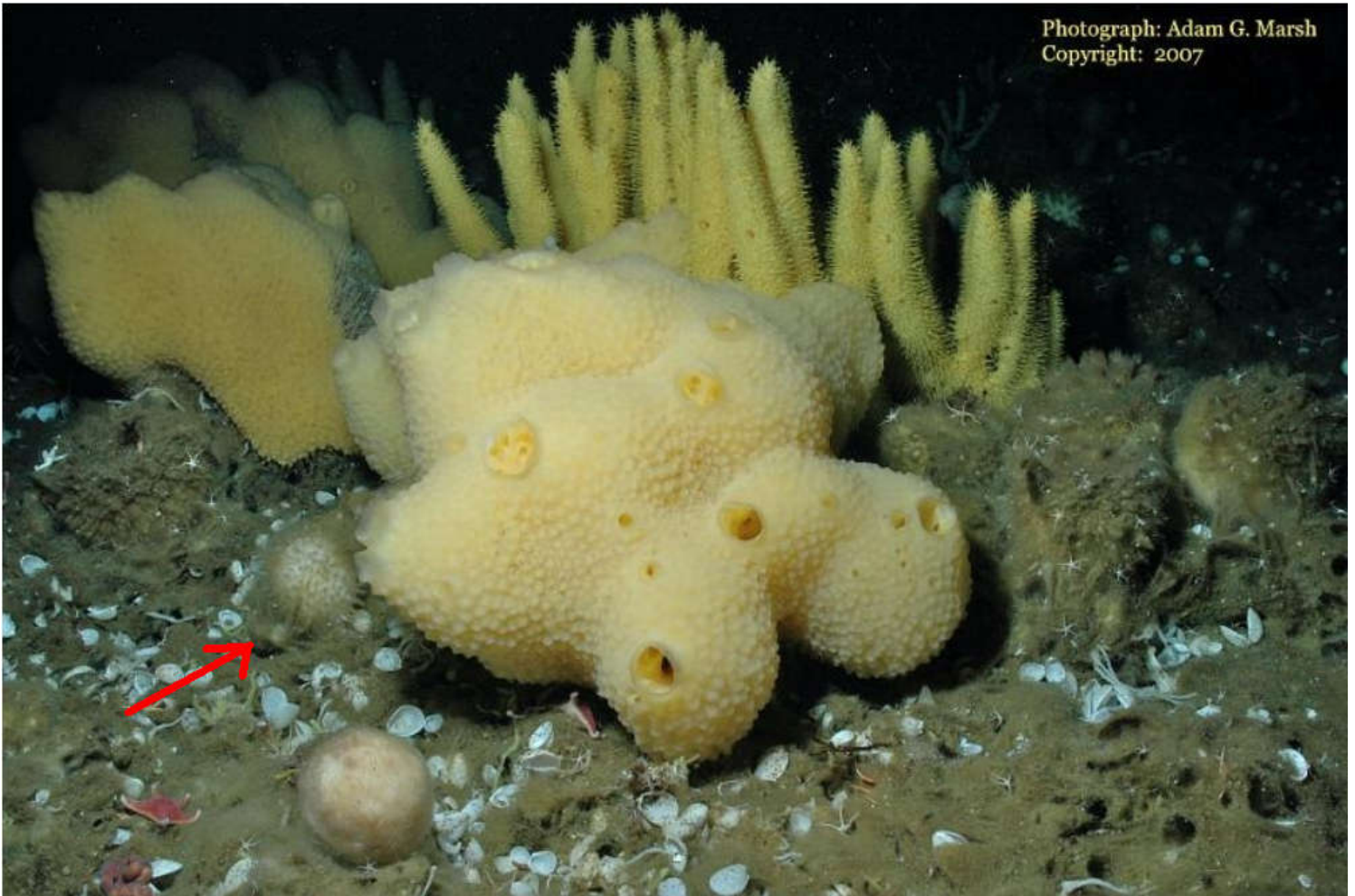
*Cinachyra antarctica* appears to grow extremely slow, and has several distinct morphs [2].



The seastar *Odontaster validus* (shown here) and the sea urchin *Sterechinus neumayeri* have been observed feeding on the detrital film on the surface of *Cinachyra antarctica* [11].



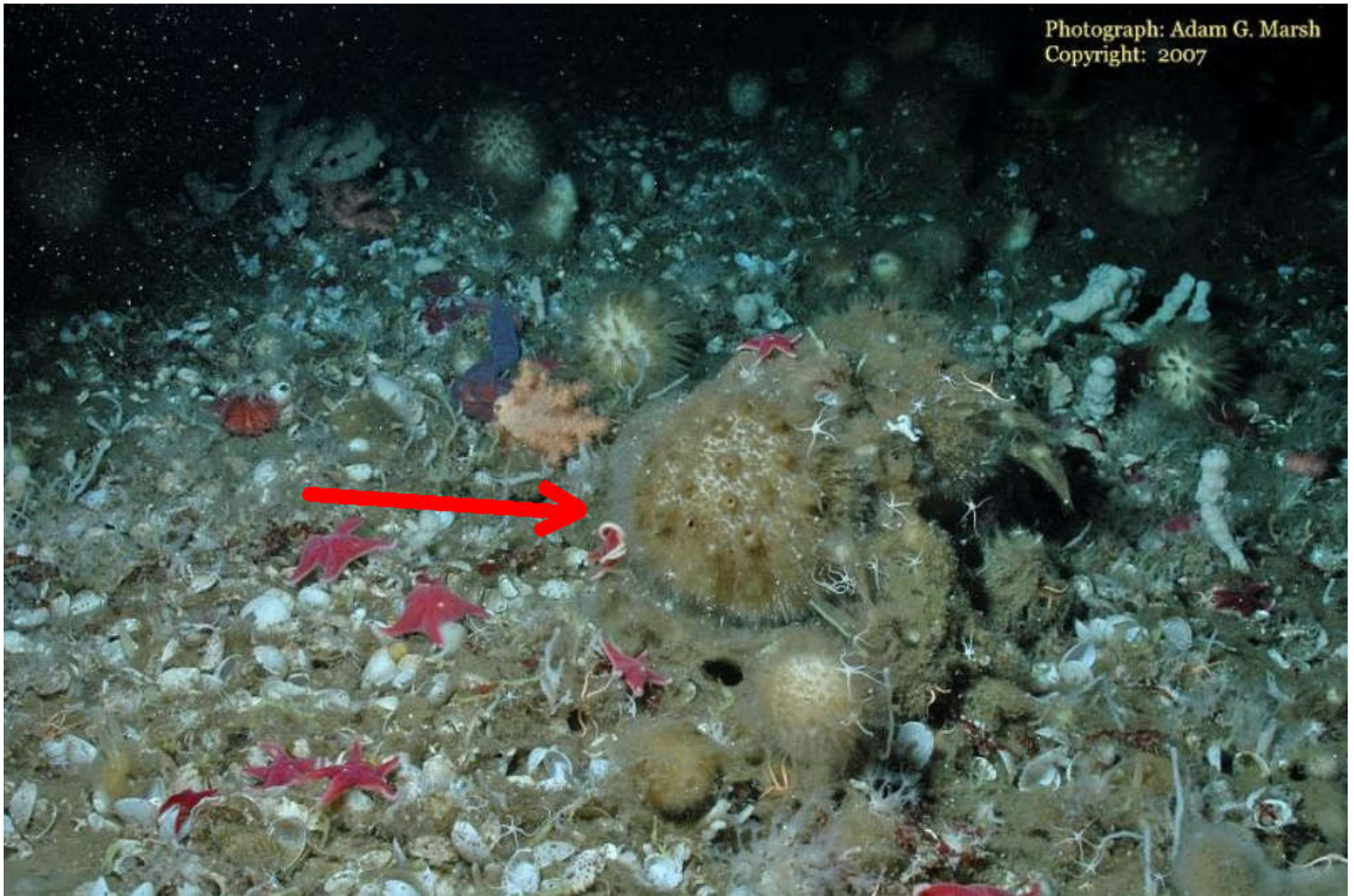




**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2].

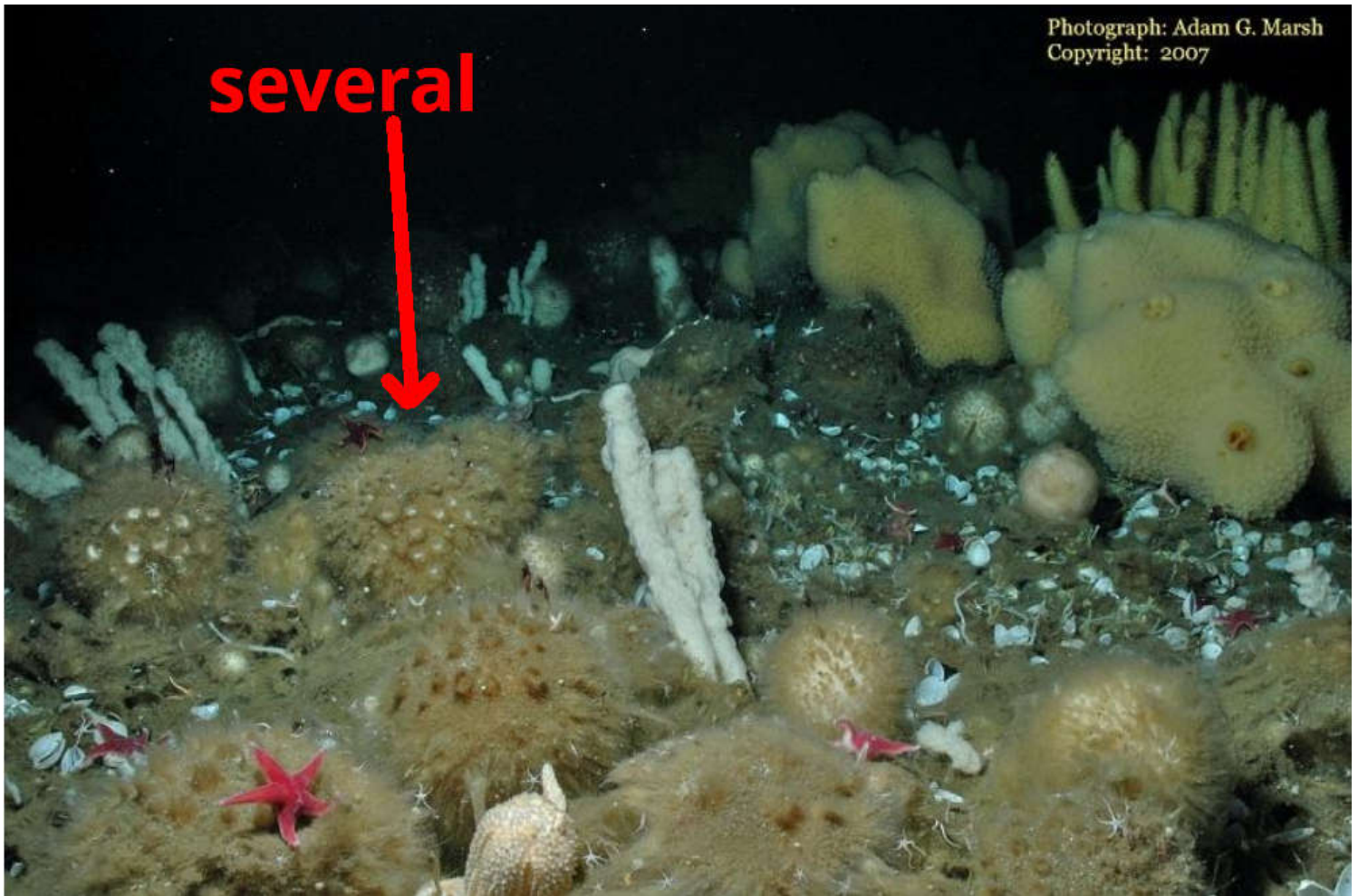
**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Antarctic Science 4(2):137-150, 1992; **5:** Antarctic Macrobenthos, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 25; **6:** Ecological Monographs 44(1):105-128, 1974; **7:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **8:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **9:** Polar Biology 12:559-585, 1992; **10:** Issledovaniia Fauny Morei 19:49-55, 1972; **11:** New Zealand Antarctic Record 9(2):34-52, 1989; **12:** Polar Biology 20(4):229-247, 1998; **13:** Revista Brasileira de Zoologia 24(3):687-708, 2007

grungy multihole sponge *Cinachyra barbata*



*Cinachyra barbata* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Sandwich Islands, South Georgia Island, off Tierra del Fuego, and Kerguelen Island, from 13 to 830 meters depth [1,2,3,5].

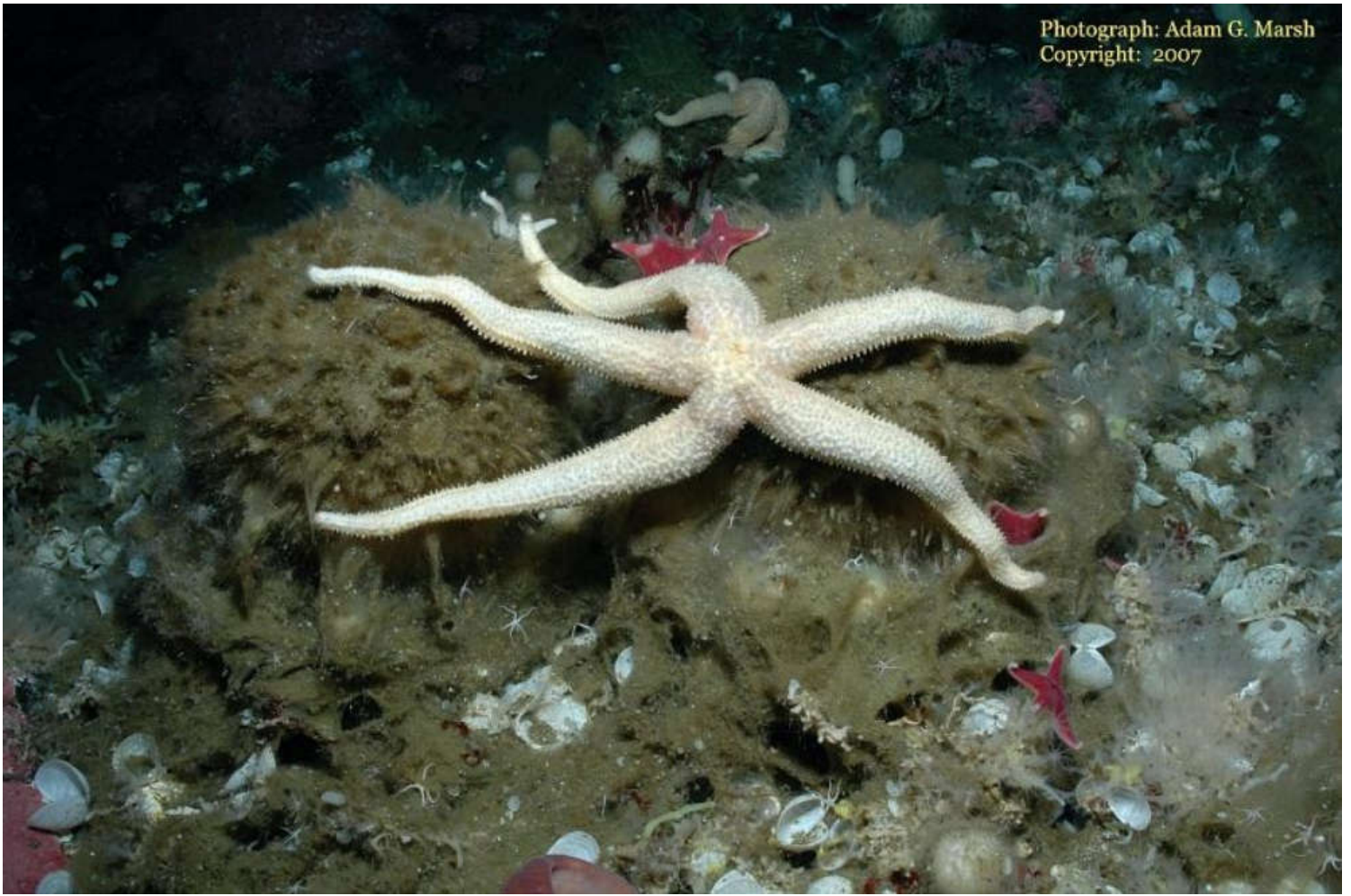




*Cinachyra barbata* is irregularly rounded or spherical up to 20 centimeters diameter [1,2,4].

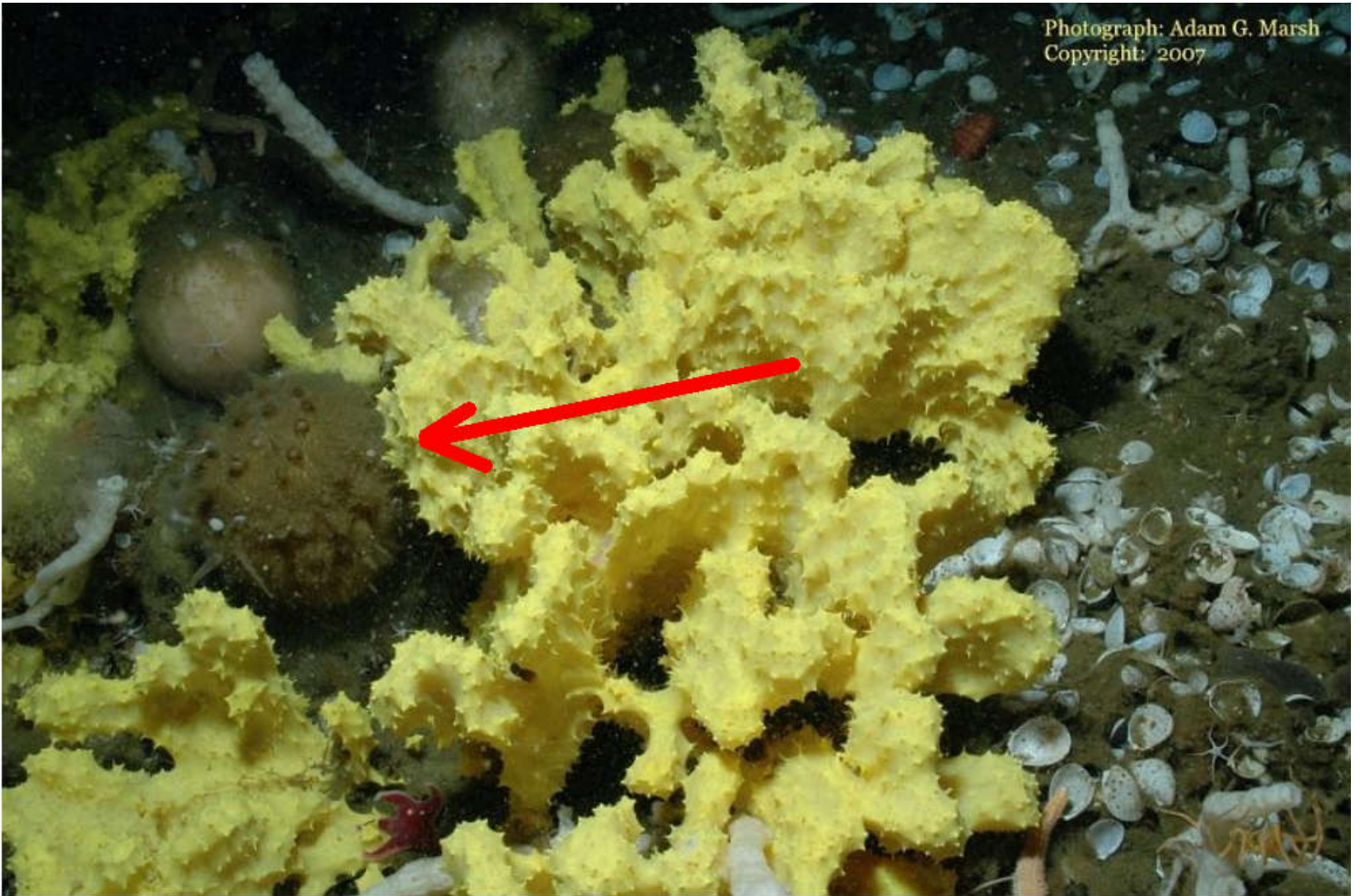
*Cinachyra barbata* has a heavily silted and bristled exterior with numerous apical oscules that are fringed or crowned by longer protruding spicules [1,2,4]. The lower part of *Cinachyra barbata* has a tangle or tuft of spicules [2,4].

*Cinachyra barbata* occurs frequently in groups, with sponges of different sizes, indicating that embryos fall from a mother sponge and settle in the immediate area [4].

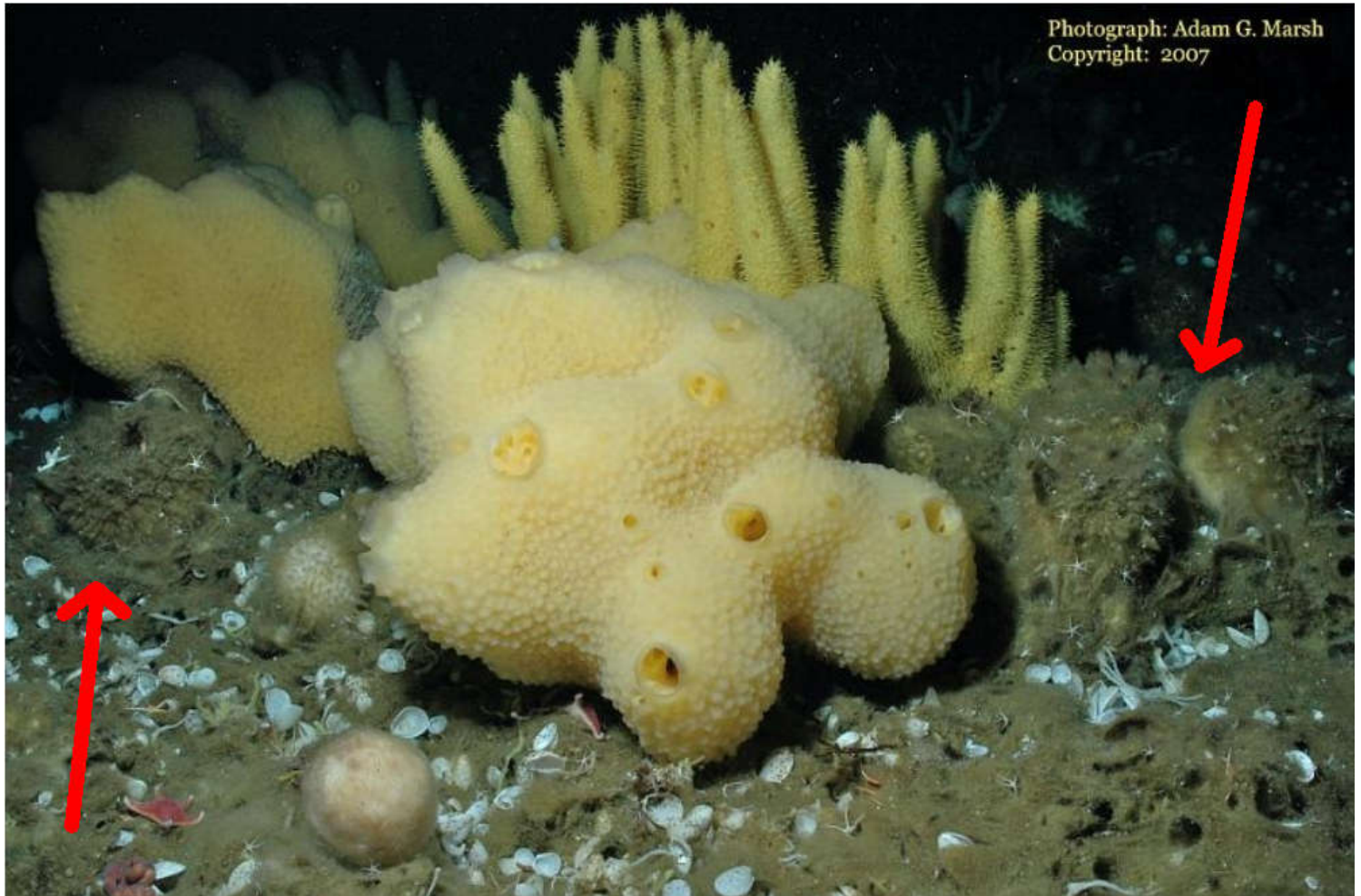


*Cinachyra barbata* is off-white, gray, yellow or dark purple brown [2,4]. *Cinachyra barbata* is relatively common below 40 meters, and appears to be slow growing and long lived, with no observed mortality from predation [6].





*Cinachyra barbata* has a similar appearance to *Antarctotetilla leptoderma*, but with multiple oscula ringed by spicules [6].

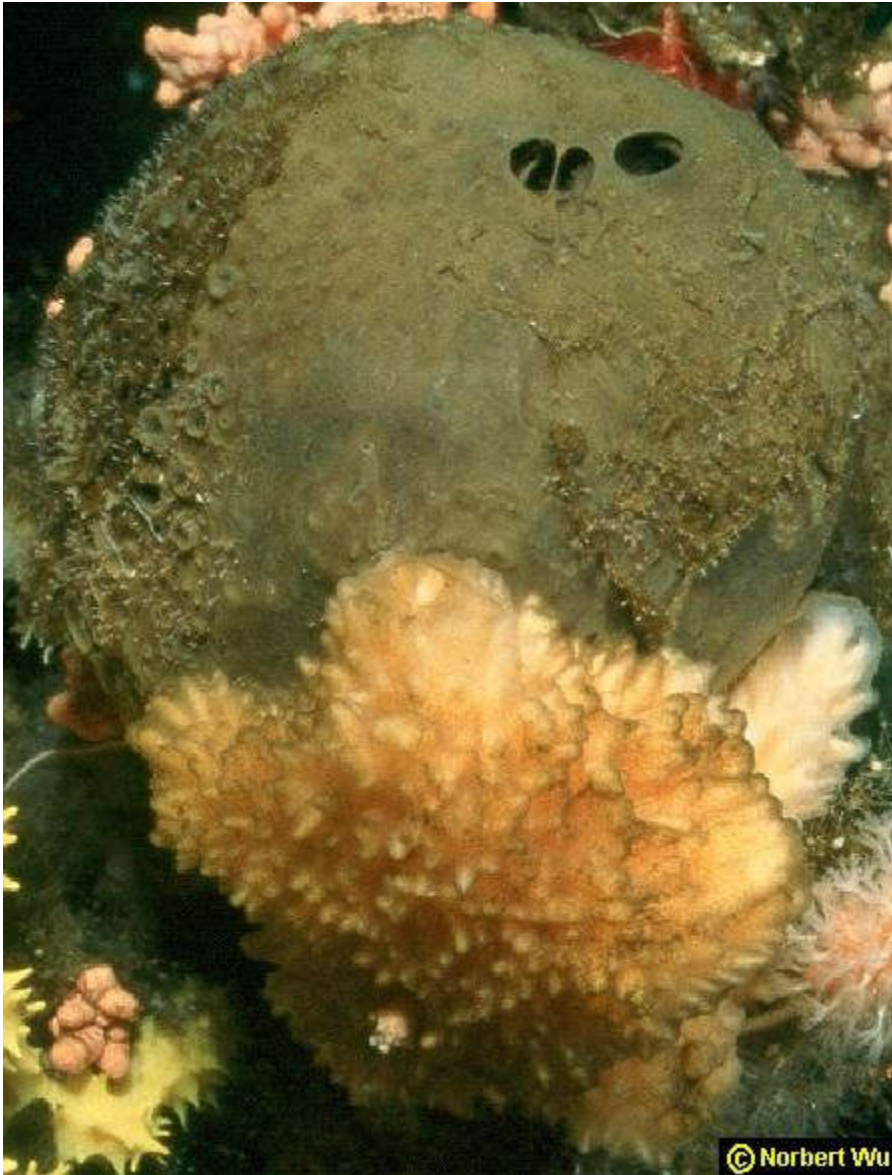


**Taxonomic Note:** Common name taken from Dayton et al, 2016 [6].

**References:** **1:** Zootaxa 3542:1-48, 2013; **2:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **3:** Antarctic Science 7(3):227-234, 1995; **4:** Antarctic Science 4(2):137-150, 1992; **5:** Antarctic Invertebrates, Smithsonian National Museum of Natural History, [invertebrates.si.edu/antiz/](http://invertebrates.si.edu/antiz/) ; **6:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016



## sponge *Clathria (Axosuberites) nidificata*



*Clathria (Axosuberites) nidificata* (perched in the middle foreground of the green sponge *Latrunculia biformis* in this photo) is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Sandwich Islands, South Georgia Island, Chile, Burdwood Bank, and Argentina, in depths from 20 to 700 meters [2,3,6,7,9,13,14,15,16].

The color of *Clathria (Axosuberites) nidificata* is gray, beige, dark yellow, light brown, and brown [3,5,14]. *C. nidificata* is morphologically variable [5,6]. The body of *C. nidificata* can be globular and erect, branched with finger-like branches, flattened, or layered and fan-shaped [3,5,6,14]. The surface of *C. nidificata* is bristly and the sponge is hard [3,5]. *C. nidificata* can be up to fifteen centimeters high and densely covered with cylindrical outgrowths which are the result of fused branches [3]. *C. nidificata* is often constricted at its base forming a stalk [3]. *C. nidificata* may host

diatoms within its food-capturing cells that line the passages through which the sponge circulates water; these endobiont diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [10]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [10].

**Taxonomic Note:** *Clathria nidificata* was placed in *Axociella* subgenus in 1994, and then corrected in 2002 to the *Axosuberites* subgenus [4,12]. The genus name *Axociella* is used by some authors [2,5,6,7,8,9,10,11].

**References:** 1: Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; 2: B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; 3: Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; 4: Invertebrate Taxonomy 7(5):1221-1302, 1993; 5: Ross Sea Expeditions 1987-1988 and 1989- 1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; 6: Cahiers de Biologie Marine 16:47-82, 1975; 7: Polar Biology 12:559- 585, 1992; 8: Berichte zur Polarforschung 249:44-52, 1997; 9: Scientia Marina 63(Supplement 1):203-208, 1999; 10: Biological Bulletin 198:29-33, 2000; 11: Ross Sea Ecology: Italiantartide Expeditions (1987-1995). FM Faranda, L Guglielmo, A Ianora, eds. Berlin: Springer, 2000. pp. 551-561; 12: Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; 13: Revista del Museo Argentino de Ciencias Naturales, n.s. 7(2):191-219, 2005; 14: Zootaxa 4312(3):580-594, 2017; 15: Zootaxa 4728(1):77-109, 2020; 16: Zootaxa 5403(4):401-430, 2024



cactus sponge *Dendrilla antarctica*



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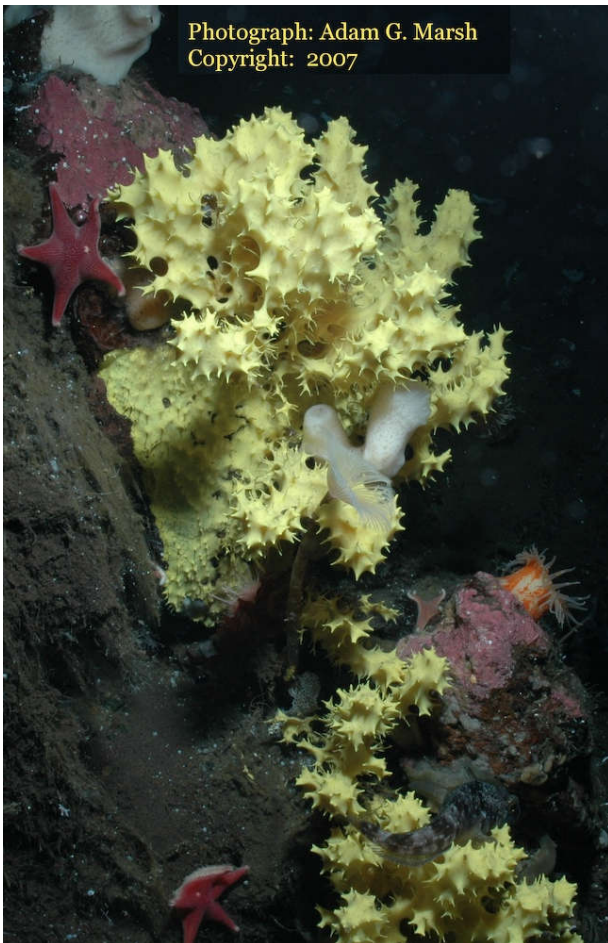
*Dendrilla antarctica* is found throughout Antarctica and the Antarctic Peninsula, South Georgia Island, Falkland Islands, Tierra del Fuego, Burdwood Bank, and Kerguelen Islands, from 5 to 549 meters depth

[1,3,5,6,9,12,15,16]





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The body of *Dendrilla antarctica* can be a simple encrusting sponge or can be irregularly branched or fan-shaped [9,11,15]. *D. antarctica* can be up to sixty centimeters high, and one meter in diameter [9,11,15].





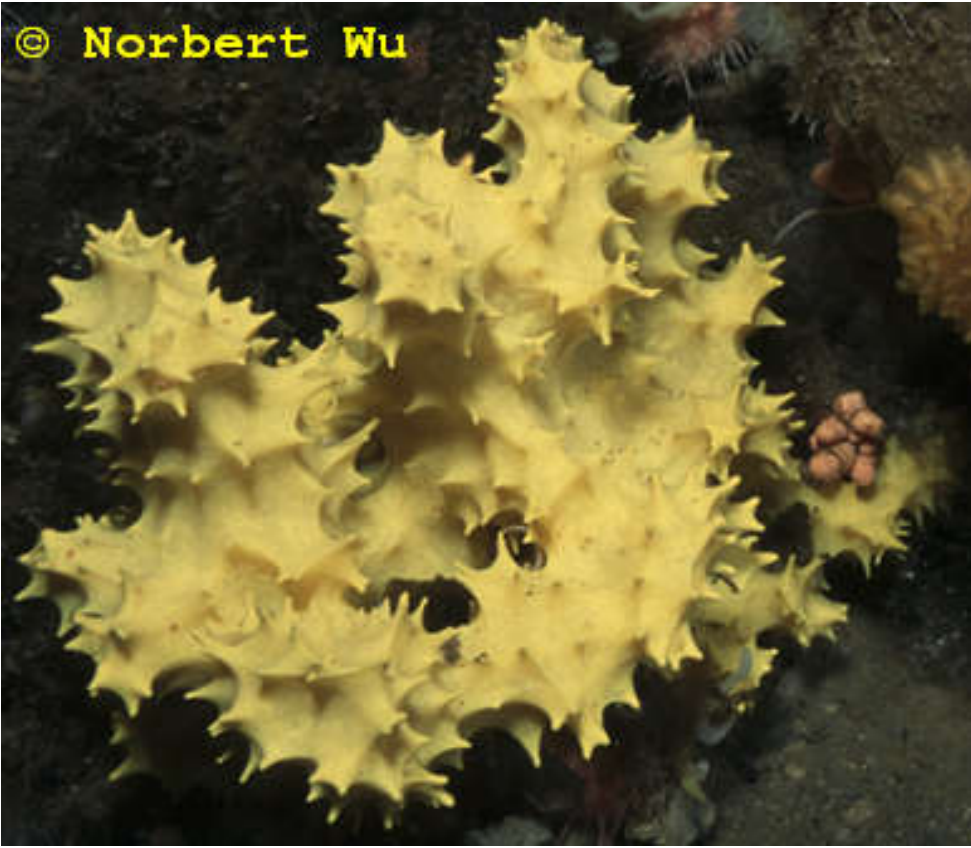
Photograph: Adam G. Marsh  
Copyright: 2007



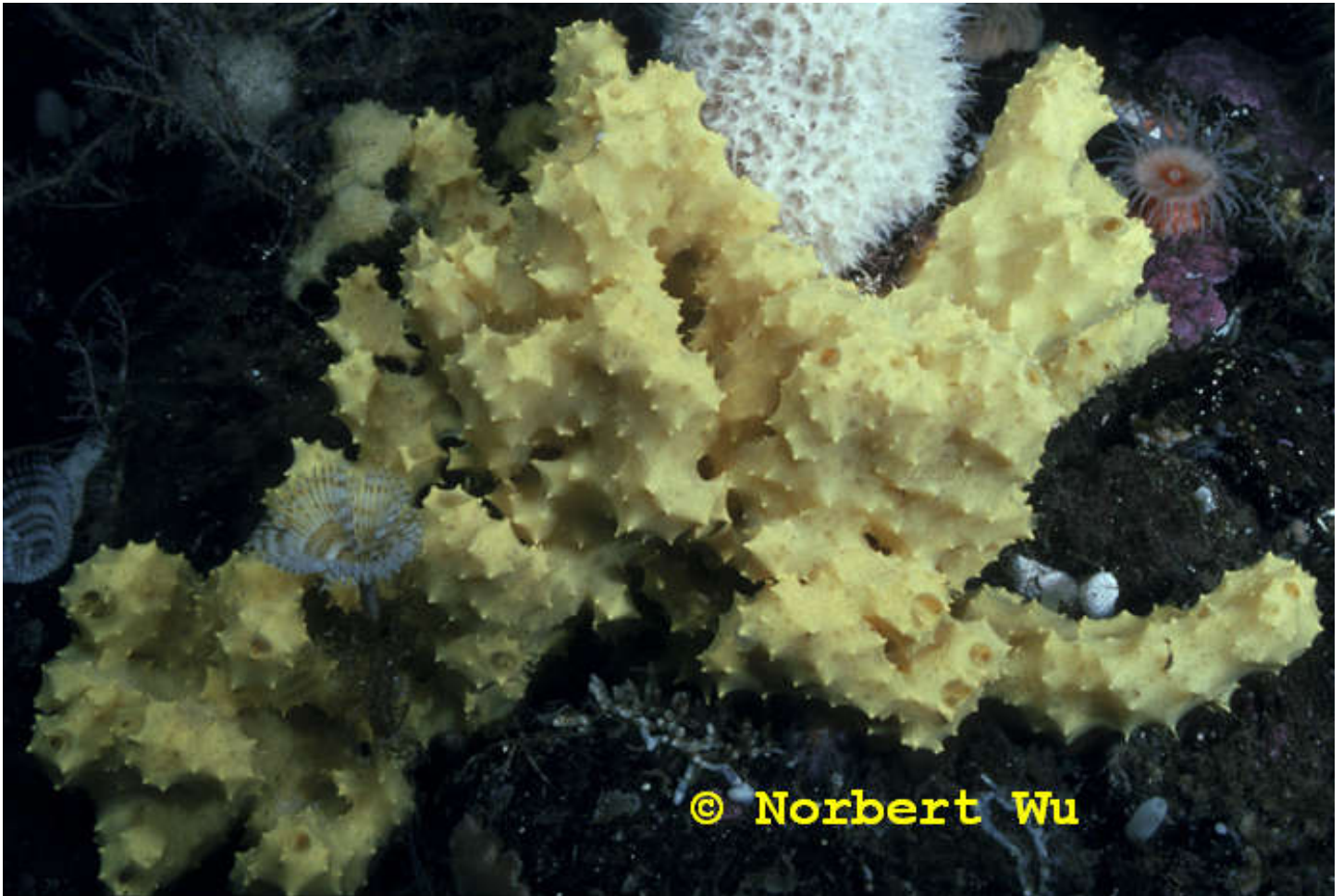
*Dendrilla antarctica* has a smooth surface with spiky conical papillae over one centimeter long [9,15,16].



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*Dendrilla antarctica* is soft and elastic [11]. The color of *D. antarctica* is lemon yellow, neon yellow, beige, gray, yellowish, violet, pink, dark yellow, or brown [9,10,15,16].



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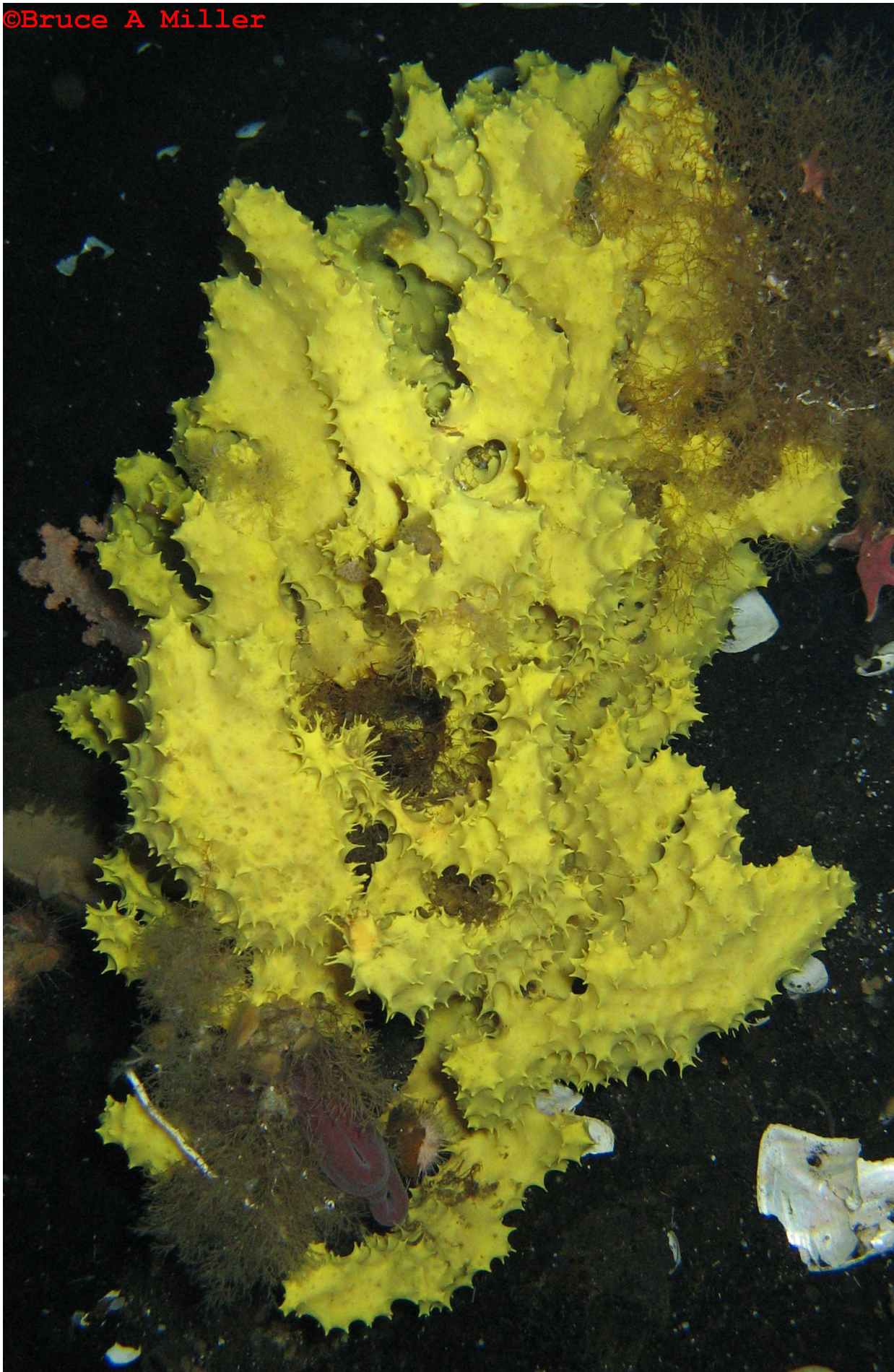




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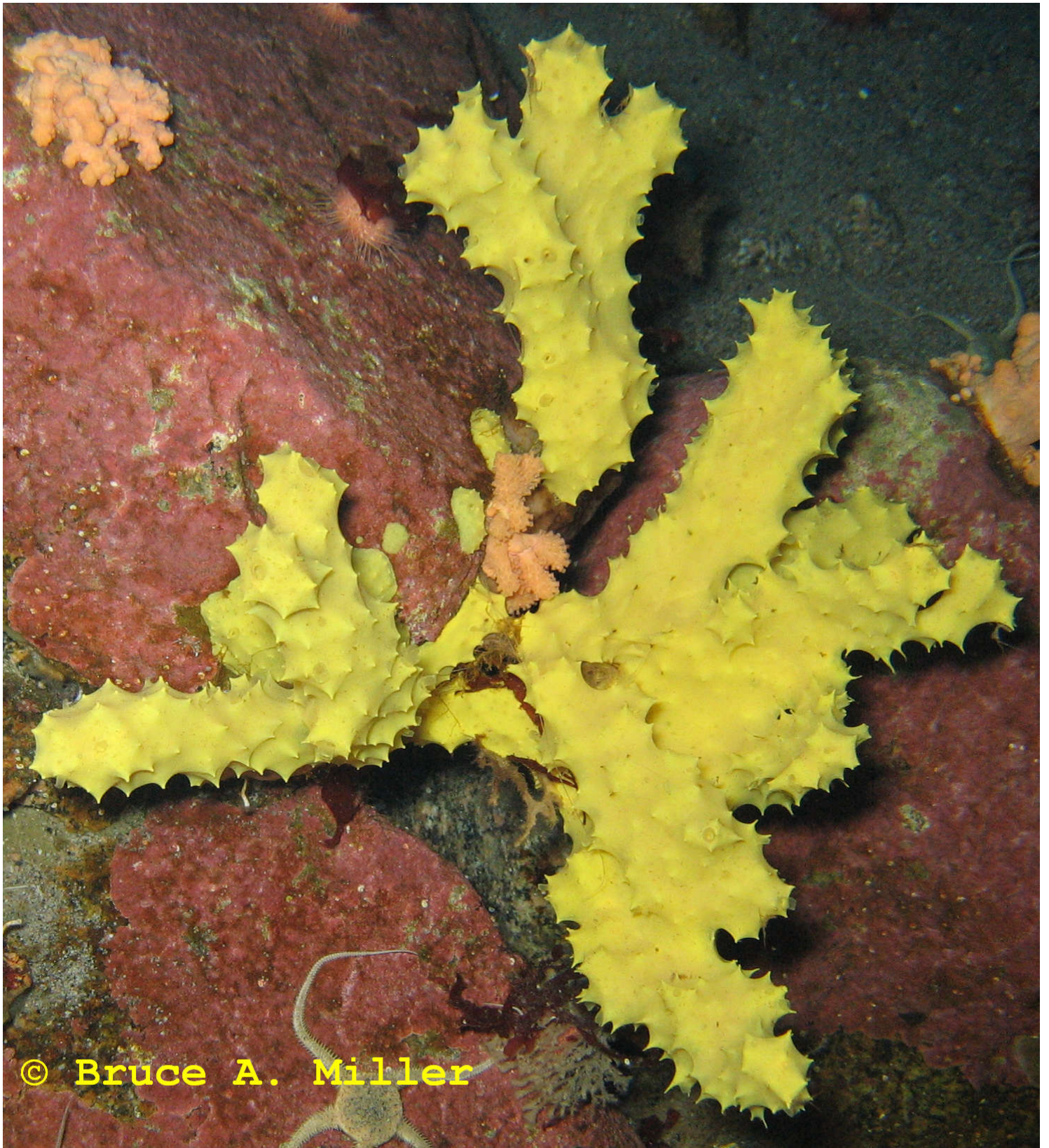
*Dendrilla antarctica* is less commonly seen, being 0.8% of the benthic surface cover and 0.08% of the sponge biomass at a Cape Armitage site [7]. The dorid nudibranch *Doris kerguelensis* eats *Dendrilla antarctica* [5].





*Dendrilla antarctica* may host diatoms within its food-capturing cells that line the passages through which the sponge circulates water; these endobiont diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [13]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [13].





**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. Koltun (1976) has it recorded as *Dendrilla membranosa* [1]. It was revised to *Dictyodendrilla membranosa* [4] and then revised to *Dendrilla antarctica* [3,10]. Van Soest corroborated as *Dendrilla antarctica* [8]. Some later authors refer to it as *Dendrilla membranosa* [13,14]. *Dendrilla membranosa* described from Australia, Red Sea, and Malaysia is probably another species [16].

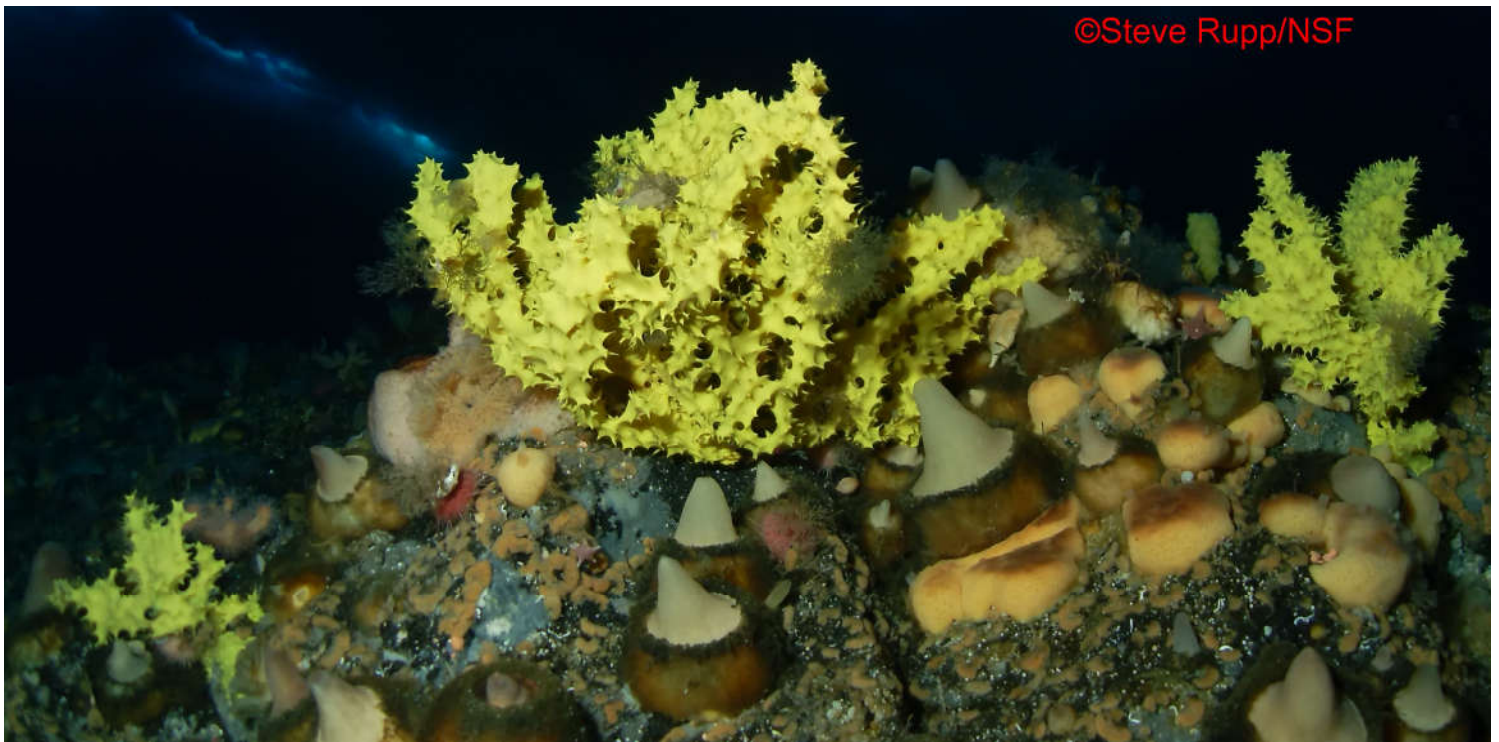




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**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** *Journal of Experimental Marine Biology and Ecology* 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: *Zoological Catalogue of Australia*. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: *Australian Faunal Directory (AFD)*. Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** *New Zealand Journal of Zoology* 7(4):443-503, 1980; **5:** *Journal of Molluscan Studies* 62(3):281-287, 1996; **6:** *Revista del Museo Argentino de Ciencias Naturales*, n.s. 7(2):191-219, 2005; **7:** *Ecological Monographs* 44(1):105-128, 1974; **8:** R. van Soest, 1998, personal communication with B. Baker; **9:** *Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida*. VM Koltun. IN: *Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958)*. Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **10:** *Instituto Antartico Chileno. Serie Cientifica* 39:97-158, 1989; **11:** *Ross Sea Expeditions 1987- 1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography*. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **12:** *Polar Biology* 12:559-585, 1992; **13:** *Biological Bulletin* 198:29-33, 2000; **14:** *Ross Sea Ecology: Italian Antarctic Expeditions (1987-1995)*. FM Faranda, L Guglielmo, A Ianora, eds. Berlin: Springer, 2000. pp. 551-561; **15:** *Zootaxa* 4658(3):461-508, 2019; **16:** *Latin American Journal of Aquatic Research* 50(5):790-794, 2022



brain sponge *Guitarra antarctica*



*Guitarra antarctica* is found in Antarctica and in Argentina, Falkland Islands, and New Zealand, at 33 to 385 meters depth [4].



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**Taxonomic Note:** Common name taken from Dayton et al, 2016 [3]. *Guitarra antarctica* is listed in the World Porifera Database [2]. There has been considerable discussion on the status of *Guitarra fimbriata* under which *Guitarra antarctica* had been synonymized [1].

**References:** **1:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **2:** van Soest, R. (2007). *Guitarra antarctica* Hentschel, 1914. In: Van Soest, R.W.M et al. (2016). World Porifera database. Accessed at <http://marinespecies.org/porifera/porifera.php?p=taxdetails&id=168400> on 2017-02-26; **3:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **4:** Zoological Journal of the Linnean Society 132(4): 411-428, 2001; **5:** Revista del Museo Argentino de Ciencias Naturales, n.s. 7(2):191-219, 2005

smooth finger sponge *Haliclona (Rhizoniera) dancoi*



*Haliclona (Rhizoniera) dancoi* has a smooth surface with slightly bristled areas [2].

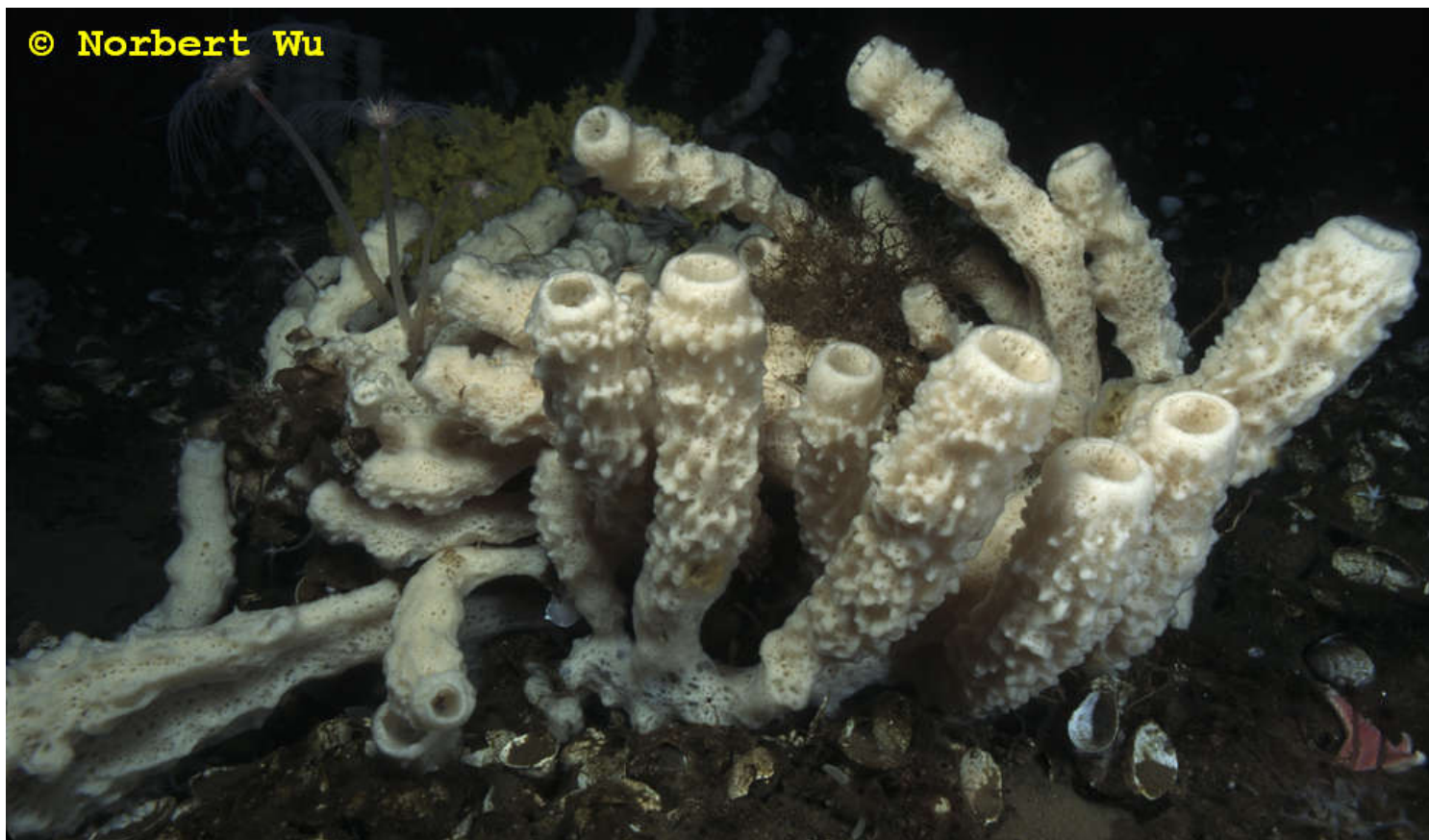
**Taxonomic Note:** Common name taken from Dayton et al, 2016 [1].

**References:** 1: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; 2: Polar Biology, 2023  
<https://doi.org/10.1007/s00300-023-03205-w>



finger sponge *Haliclona (Rhizoniera) scotti*

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*Haliclona (Rhizoniera) scotti* is white or orange/beige, with a wide tubular, cylindrical/conical shape and visibly hollow inside [1,5]. The surface of *H. (Rhizoniera) scotti* is rough with bristles and is fistulated and conulose with abundant pores [5].

*H. (Rhizoniera) scotti* exudes mucus and crumbles when collected [1].





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Predators of *Haliclona (Rhizoniera) scotti* include the seastars *Odontaster meridionalis*, *Acodontaster hodgsoni*, *Perknaster fuscus* (when juvenile), and *Acodontaster conspicuus* and the nudibranch *Doris kerguelenensis* [1].

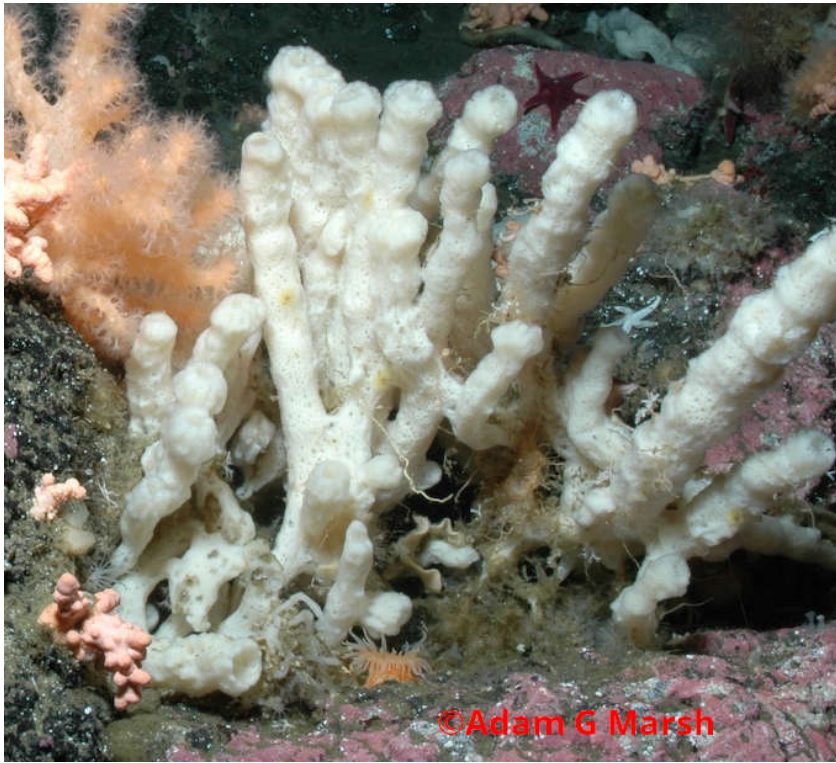
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*Haliclona (Rhizoniera) scotti* is commonly seen, being 1.1% of the benthic surface cover and 0.2% of the sponge biomass at a Cape Armitage site [1].

*Haliclona (Rhizoniera) scotti* is fast growing [4]. *H. (Rhizoniera) scotti* maximum size is approximately 35 centimeters [2].



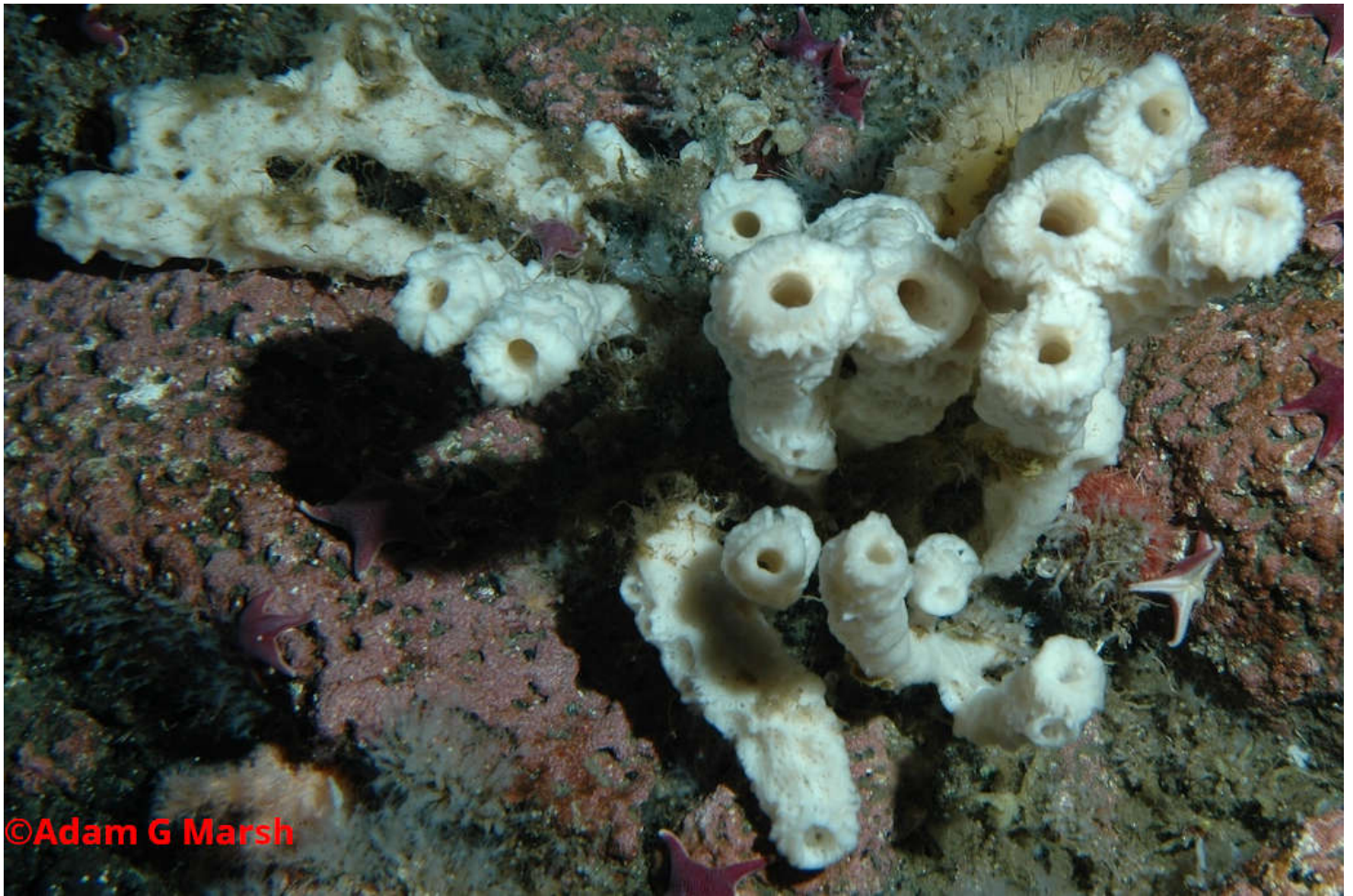


*Haliclona (Rhizoniera) scotti* is seen in the third benthic zone of Cape Armitage below 33 meters depth [1].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [4]. Skeletal analysis confirmed *Rhizoniera* sub-genus [5]. Paul Dayton's McMurdo Sound observations of *Haliclona dancoi*, reported in his 1974 and 1979 articles, were on *Haliclona scotti* [1,2,3].







**References:** 1: Ecological Monographs 44(1):105-128, 1974; 2: Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271- 282; 3: Paul Dayton, personal communication, 2015; 4: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; 5: Polar Biology, 2023 <https://doi.org/10.1007/s00300-023-03205-w>

sponge *Haliclona* sp.



Perhaps *Haliclona*  
(*Rhizoniera*) *dancoi*

**Taxonomic Note:** ID  
by Walentina de  
Weerdt and Rob van  
Soest, provided without  
specimens for checking  
microscopic details.



smooth finger sponge *Haliclona* sp.



**Taxonomic Note:** ID by Walentina de Weerd and Rob van Soest, provided without specimens for checking microscopic details.

## staghorn sponge *Hemigellius fimbriatus*

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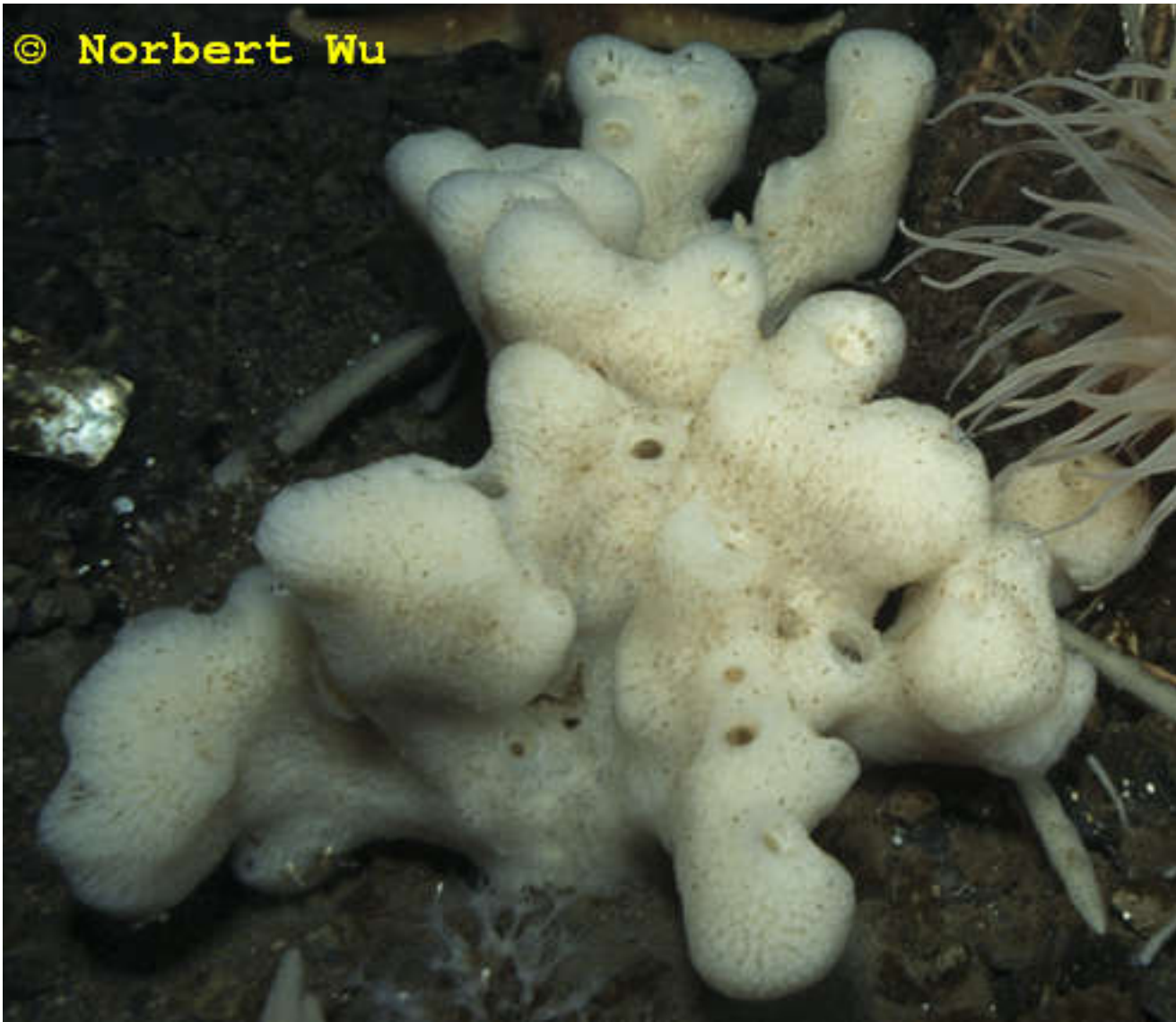
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*Hemigellius fimbriatus* is found throughout Antarctica and the South Shetland Islands, South Georgia Island, and Kerguelen Island, from 20 to 603 meters depth [1,2,5,9]. The color of *H. fimbriatus* is light gray, beige, or brown [2,4,5]. The body of *H. fimbriatus* is massive or shaped with curved or rounded projections (lobes), sometimes with thick-walled tubular outgrowths [2,4]. The base of the *H. fimbriatus* mass may be narrowed and stalk-like [5,9]. *H. fimbriatus* can be up to twenty-two centimeters high and twenty-seven centimeters in diameter [5]. The surface of *H. fimbriatus* is slightly bristly with large pores and round apical

oscles [2,4]. *H. fimbriatus* is firm, hard and crumbles easily [2,4,9].



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*Hemigellius fimbriatus* is less commonly seen, being 0.6% of the benthic surface cover at a Cape Armitage site [14]. *H. fimbriatus* is typically seen in the third benthic zone of Cape Armitage below 33 meters depth and is rarely seen in the second zone between 15 and 33 meters depth [14].



*Hemigellius fimbriatus* is eaten by the seastars *Odontaster meridionalis* and *Acodontaster hodgsoni* and by the dorid nudibranch *Doris kerguelenensis* [16].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [12]. The trail in the literature on this sponge is confusing in taxonomy and is elucidated by Hooper and Van Soest [11]. Earlier authors use *Gellius*, *Haliclona*, and *Hemigellius* [2,3,4,5,6,7,8,9,10]. Photos identified as *Hemigellius rudis* (Topsent, 1901) (Haplosclerida, Niphatidae) by Walentina de Weerd and Rob van Soest (provided without specimens for checking microscopic details). The sponge that Paul Dayton identified as the staghorn sponge *Gellius tenella* in his 1974 and 1979 work, was later identified as *Hemigellius fimbriatus* [12,13,14,15].





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**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **5:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **6:** W de Weerd and R van Soest, personal communication, 1999; **7:** Polar Biology 12:559-585, 1992; **8:** The Expedition ANTARKTIS VII/4 (EPOS leg 3) and VII/5 of RV "Polarstern" in 1989. Arntz, W, W Ernst, and I Hempel, eds. Berichte Polarforschung 68:120-130, 1990; **9:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **10:** Ross Sea Ecology: Italiantartide Expeditions (1987- 1995). FM Faranda, L Guglielmo, A Ianora, eds. Berlin: Springer, 2000. pp. 551- 561; **11:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **12:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **13:** Paul Dayton, personal communication, 2015: *Haliclona dancoi* observations are corrected to *H. scotti*; *Gellius tenella* corrected to *Hemigellius fimbriatus*; **14:** Ecological Monographs 44(1):105-128, 1974 (P. Dayton, personal communication, 2015: *Haliclona dancoi* observations are corrected to *H. scotti*; *Gellius tenella* corrected to *Hemigellius fimbriatus*); **15:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris : Centre National de la Recherche Scientifique, 1979. pp.271- 282; **16:** Ecological Monographs 44(1):105-128, 1974

grapefruit sponge *Hemimycale topsenti*

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*Hemimycale topsenti* is found throughout Antarctica, and the Antarctic Peninsula, Falkland Islands and the Burdwood Bank, from 6 to 4700 meters depth [1,2,3,6,7,9].

The body of *H. topsenti* is firm, compact and dense, irregularly spherical or ball-shaped, with oscula of various sizes, and up to ten centimeters high and 30 centimeters in diameter [2,6,7,8,9].





The color of *Hemimycale topsenti* is grey, yellowish orange, pale yellow, beige, or brown on the outside, and yellowish on the inside [2,7,9]. The surface of *H. topsenti* is minutely bristled (hispid) or velvety, and has large pore sieve structures up to one centimeter in diameter, some with raised rims algae [2,7,9]. *H. topsenti* occasionally has large oscules up to two centimeters in diameter [9]. *H. topsenti* can have purplish-brown patches due to algae [9].

Diatoms, particularly of the genera *Achnanthes* and *Porosira*, have been found living in the tissue of *Hemimycale topsenti* [4]. Found within the food-capturing cells lining the passages through which the sponge circulates water, these endobiont diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [5]. Diatoms produce large amounts of polysaccharides, thus giving the sponge an alternative food source during food-scarce periods [4]. This symbiotic

adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [5].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [8]. Species was formerly *montiniger* and is now *topsenti* [7]. Genus tentatively changed from *Suberites* to *Hemimycale* [9].

**References:** **1:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **2:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **3:** Polar Biology 12:559- 585, 1992; **4:** Ross Sea Ecology: Italian Antarctic Expeditions (1987-1995). FM Faranda, L Guglielmo, A Ianora, eds. Berlin: Springer, 2000. pp. 551- 561; **5:** Biological Bulletin 198:29-33, 2000; **6:** Revista Brasileira de Zoologia 24(3):687-708, 2007; **7:** Zootaxa 1866:95-135, 2008; **8:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **9:** Zootaxa 4658(3):461-508, 2019



## bush sponge *Homaxinella balfourensis*



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*Homaxinella balfourensis* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Georgia Island, and Kerguelen Island from 0 to 550 meters depth [1,3,6,7,9,10,13,17]. The body of *H. balfourensis* can be clavate (gradually thickening near the distal end - shaped like a club), or ramified and arborescent (split into branches) [6]. The body of *H. balfourensis* is up to fifty centimeters long, and attached to the bottom by a root system or creeping stolons [10,12,16]. Lower branches are densely structured and cylindrical; upper branches are broadened with a loose consistency [6,8]. A branch comes to a sharp point and can be ten centimeters long and 0.8 centimeter in diameter [7,16,17]. *H. balfourensis* has a smooth surface and its color is white, yellowish gray, yellow, orange, brown, or light gray [6,7,8,10,12,16].

Anchor ice (shown here) impacts the population of *H. balfourensis*



significantly, being capable of almost entirely eliminating it in an area [4,5]. Anchor ice damage discolors *H. balfourensis* whereas predation leaves a spongin skeleton; 87% of tagged *H. balfourensis* was lost or damaged by anchor ice in a two-year period [4].



*Homaxinella balfourensis* is seen in the second benthic zone of Cape Armitage from 15 - 33 meters [5].

A dramatic population explosion of *H. balfourensis* was studied at 15 - 30 meters depth at Hut Point and Cape Armitage [4,5]. It was rare at this depth previously and within 6 - 7 years, *H. balfourensis* was almost 80% of the surface cover at Hut Point, and less dense but impressive at Cape Armitage [4,5].

*H. balfourensis* may host diatoms within its food-capturing cells that line the passages through which the sponge circulates water; these endobiont diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [15]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [15].



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The important predators of *Homaxinella balfourensis* are the seastars *Odontaster meridionalis*, *Odontaster validus*, and young *Perknaster fuscus*; other predators include copepods and the nemertean worm *Parborlasia corrugatus* [2,4].



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*H. balfourensis* almost always has arcturid isopods perched on it [11].



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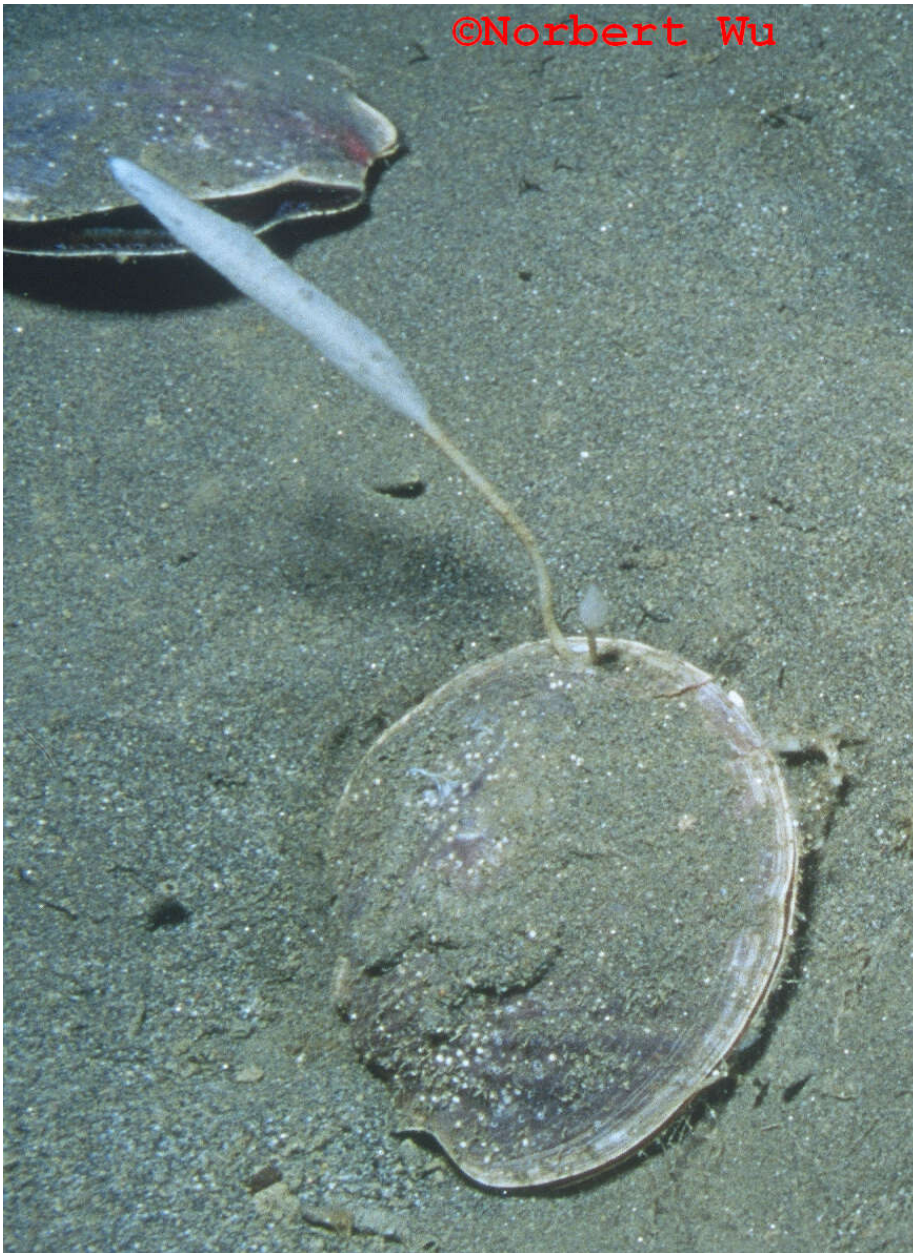


The Antarctic scallop *Adamussium colbecki* may have *Homaxinella balfourensis* attached <sup>[12,14]</sup>. The larvae of *H. balfourensis* seem to be distributed throughout the water column in McMurdo Sound

[2]



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*Homaxinella balfourensis* is found on scallops larger than seven centimeters, with the sponge up to fourteen centimeters in height [14]. The usual position of *H. balfourensis* on the scallops is near the shell's peripheral margin, suggesting that the sponge is seeking the water flow over the scallop shell in order to facilitate its own filter feeding [14].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. *Homaxinella balfourensis* is very close to *H. flagelliformis*; *balfourensis* branches are flattened and *flagelliformis* branches are tapered [8].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD).

Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Science 245:1484-1486, 1989; **5:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; **6:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **7:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **8:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **9:** Polar Biology 12:559-585, 1992; **10:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **11:** Rob Robbins, personal communication, 1999; **12:** Tethys Supplement 4:9-24, 1972; **13:** US National Museum Polar Invertebrate Catalog at <http://www.nmnh.si.edu/iz/usap/usapdb.html>; **14:** Ecology of the Circumpolar Antarctic Scallop, *Adamussium colbecki* (Smith, 1902). Paul Arthur Berkman. Ph. D. Dissertation, University of Rhode Island, 1988; **15:** Biological Bulletin 198:29-33, 2000; **16:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **17:** Zootaxa 4658(3):461-508, 2019



knobby sponge *Inflatella belli*



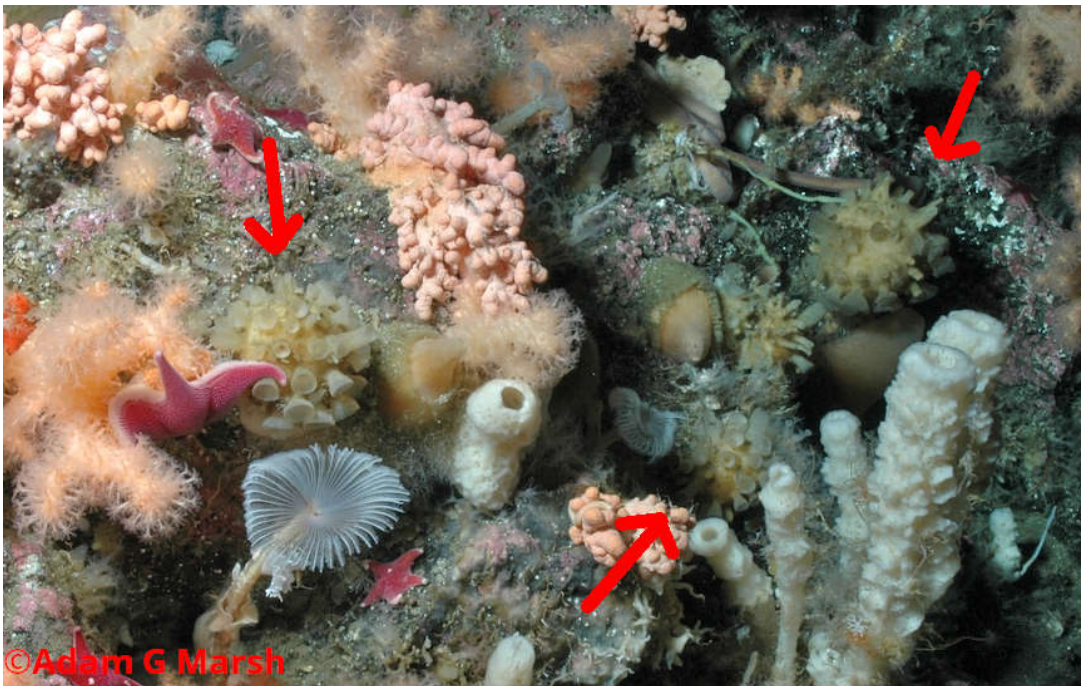
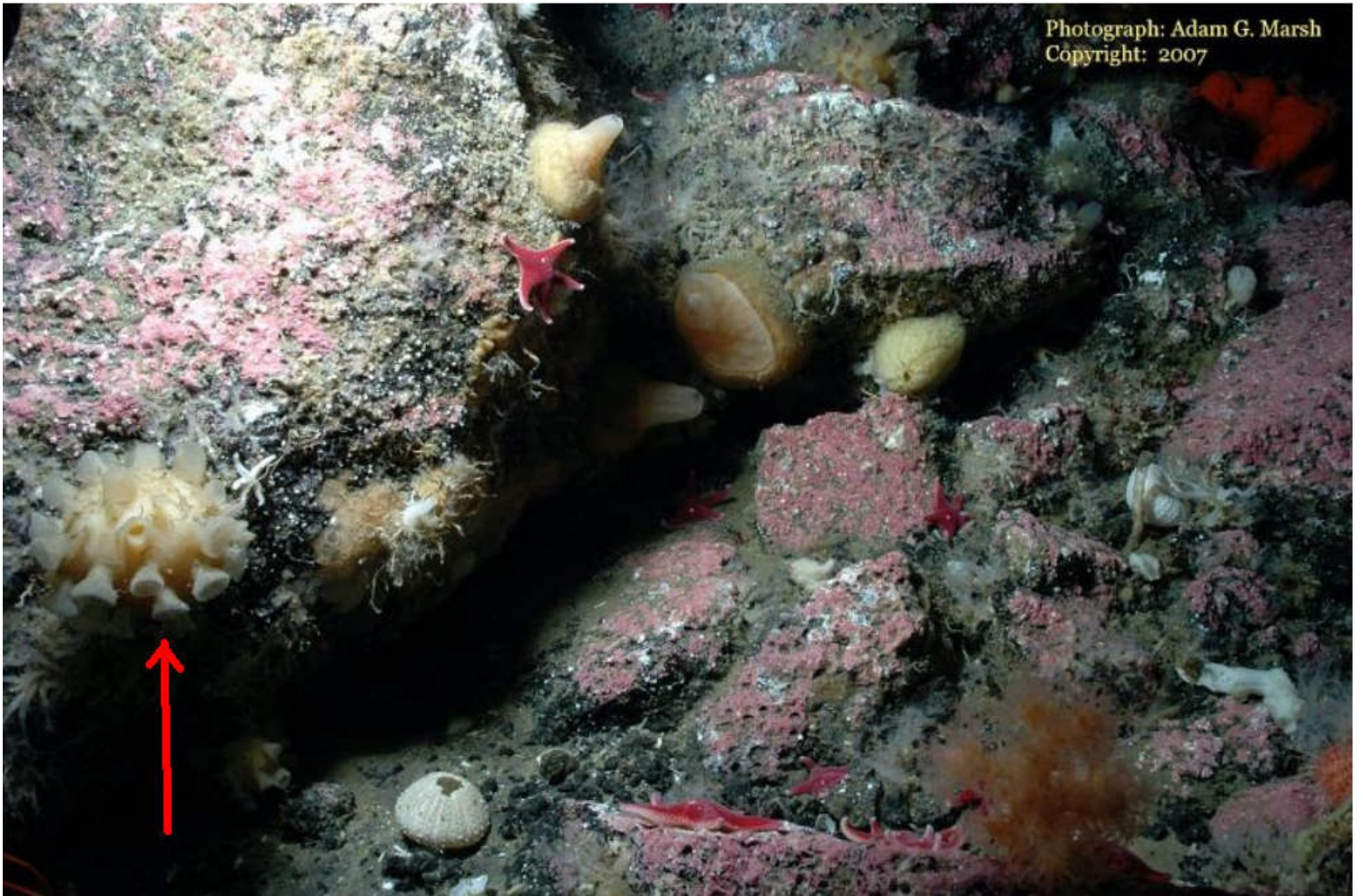
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*Inflatella belli* is found throughout Antarctica, South Orkney Islands, Falkland Islands, Kerguelen Island, New Zealand, and South Africa at depths from 18 to 506 meters [1,3,8,10,12]. The body of *I. belli* is rounded or pear-shaped, may be irregularly constricted, and has long, tubular papillae up to 2.5 centimeters long with oscules and pores at the widened tip [6,7,9].





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*Inflatella belli* is fixed by a peduncle to rock or hard surface [7]. The surface of *Inflatella belli* is smooth, wrinkled, or bristly and has pores [6,7].

*Inflatella belli* may host diatoms within its food-capturing cells that line the passages through which the sponge circulates water; these endobiotic diatoms live by consuming

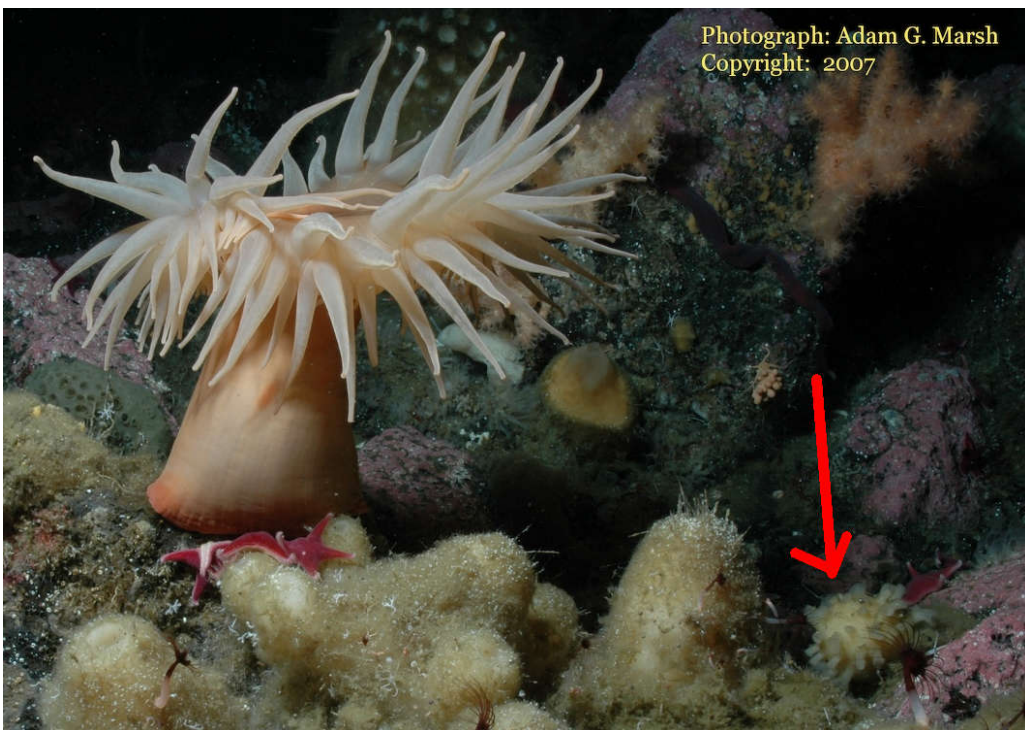
carbohydrates produced by the sponge and also by photosynthesis [4,11]. Diatoms produce large amounts of polysaccharides, thus giving the sponge an alternative food source during food-scarce periods [12]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [4,11].



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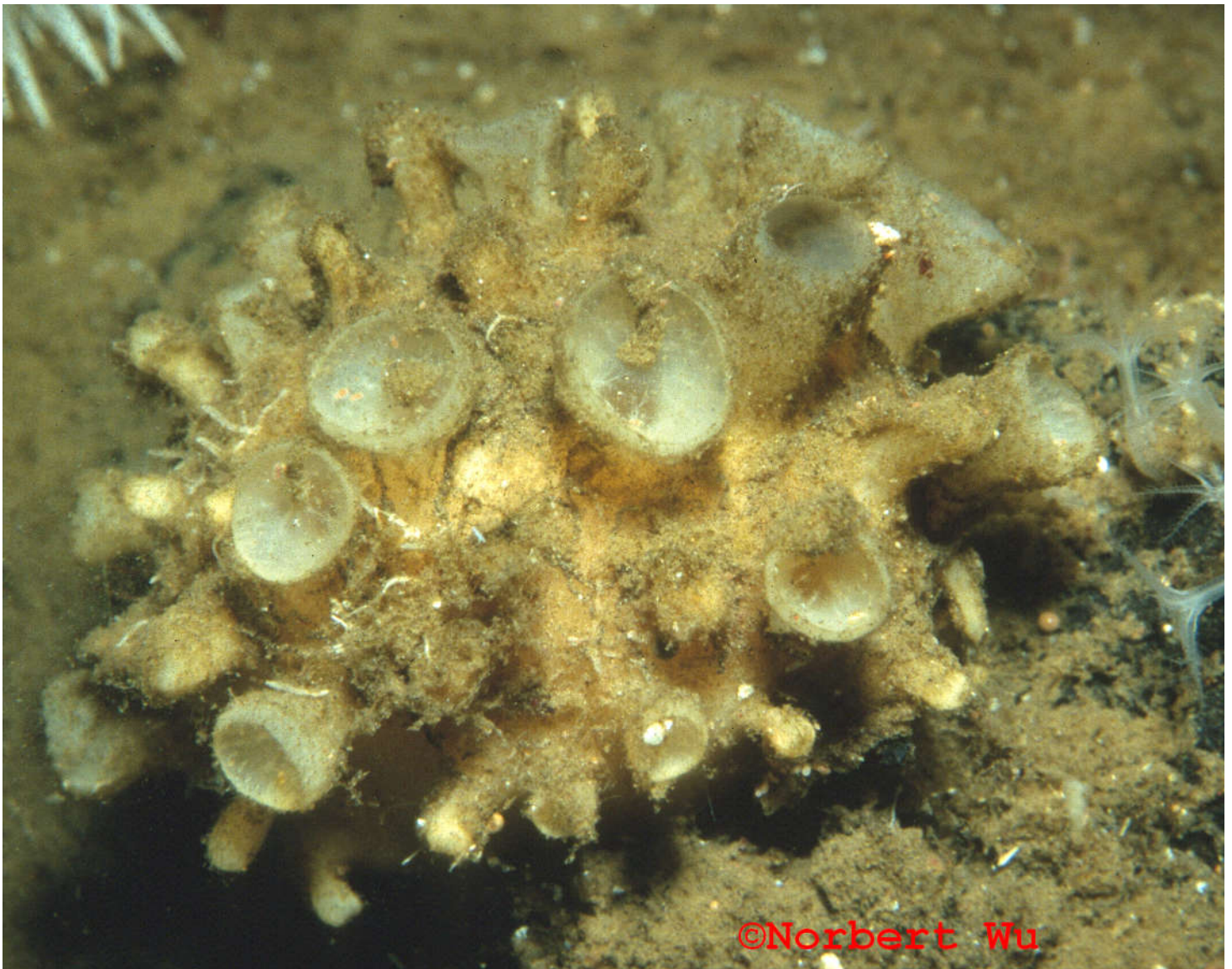


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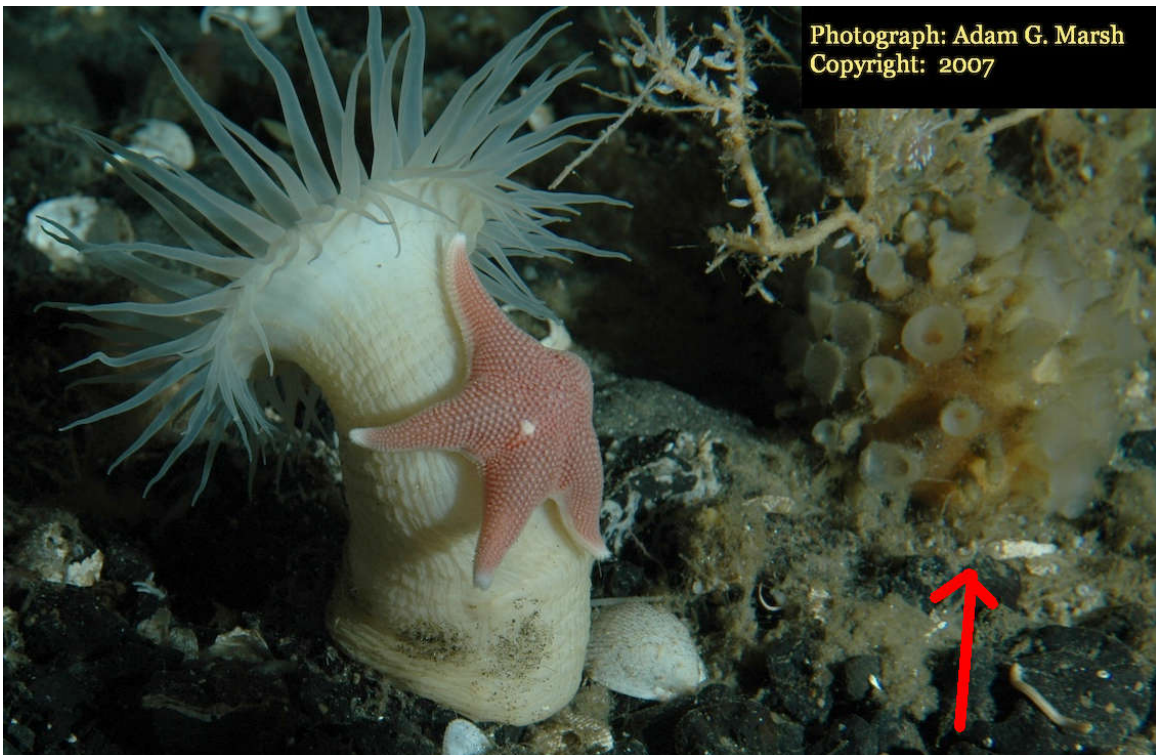


Color of *Inflatella belli* is light gray, greenish brown, yellowish brown, or yellow; interior color can be yellowish [6,7,9,10].





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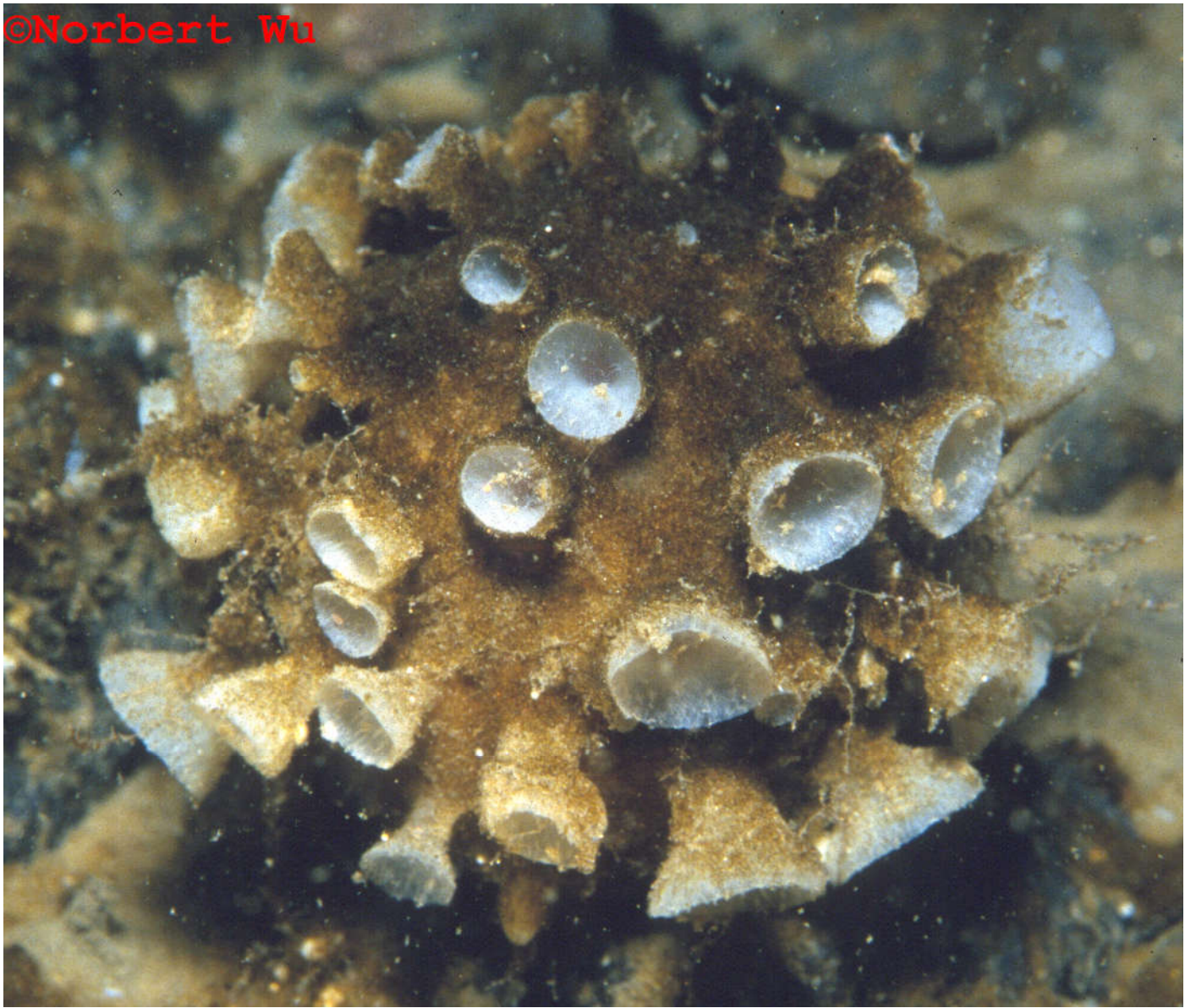
Photograph: Adam G. Marsh  
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Maximum height of *Inflatella belli* is fourteen centimeters; a large specimen was measured at fourteen centimeters by twelve centimeters by six centimeters [5,6].

**Taxonomic Note:**  
Common name taken from Dayton et al, 2016 [2].



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**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson ..., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994 ; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Ross Sea Ecology: Italian Antarctic Expeditions (1987-1995). FM Faranda, L Guglielmo, A Ianora, eds. Berlin: Springer, 2000. pp. 551- 561; **5:** Non-calcareous Sponges. M Burton. Australasian Antarctic Expedition 1911-1914, Scientific Reports. Series C, Zoology and Botany. Volume 9, Part 5. Sydney: David Harold Paisley, Government Printer, 1938; **6:** Sponges of the Antarctic. I. Tetraxonida and Comacuspungida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-133; Appendix, Index of Latin Names on pp. 443-448; **7:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **8:** Polar Biology 12:559-585, 1992; **9:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **10:** Tethys Supplement 4:9-24, 1972; **11:** Biological Bulletin 198:29-33, 2000; **12:** Zootaxa 5403(4):401-430, 2024



## shoelace sponge *Iophon abnormalis*



*Iophon abnormalis* has been collected at Kerguelen Islands and at Marion Island (depths from 91 to 137 meters) [2,3].

*Iophon abnormalis* is a small, cylindrical, brittle, vine-like sponge (15 cm in length, and 0.4 cm thick), observed to range in color from pale yellow-green to white [1,2,4]. The dermal membrane is translucent with round or oval pores [2].





**Taxonomic Note:** Common name taken from Dayton et al, 2016 [1].

**References:** **1:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **2:** Sponges of the Antarctic. I. Tetraxonida and Comacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-133; Appendix, Index of Latin Names on pp. 443-448; **3:** On the deep and shallow water marine fauna of the Kerguelen Region of the Great Southern Ocean. John Murray. Transactions of the Royal Society of Edinburgh 38(2) for the session 1894-95, [art.] 10. Edinburgh: Robert Grant & Son, 1896; **4:** Annals and Magazine of Natural History 18 (5<sup>th</sup> Series): on page 350, 1886



## sponge *Iophon radiatum*



*Iophon radiatum* is found in Antarctica and the Antarctic Peninsula, South Orkney Islands, South Georgia Island, Falkland Islands and Kerguelen Island, at depths of 10 to 450 meters [5,6,7,8,9].

*Iophon radiatum* is light or dark brown, and may be up to 11 cm high, with a lamellar or globular or ramified body and a smooth surface [5,8].

*Iophon radiatum* may be an epizoic sponge on some *Ophioplinthus* species [1]. *I. radiatum* obscures the brittle star's true color, growing on *Ophioplinthus* disc and arm bases [1,5]. Presence of *I. radiatum* is not definitive for identifying *Ophioplinthus gelida*; some *O. gelida* lack it, and other species of *Ophioplinthus* have it [1,2,3].

*Iophon radiatum* may be found living epibiotically on the shells of the scallop *Adamussium colbecki* [4].

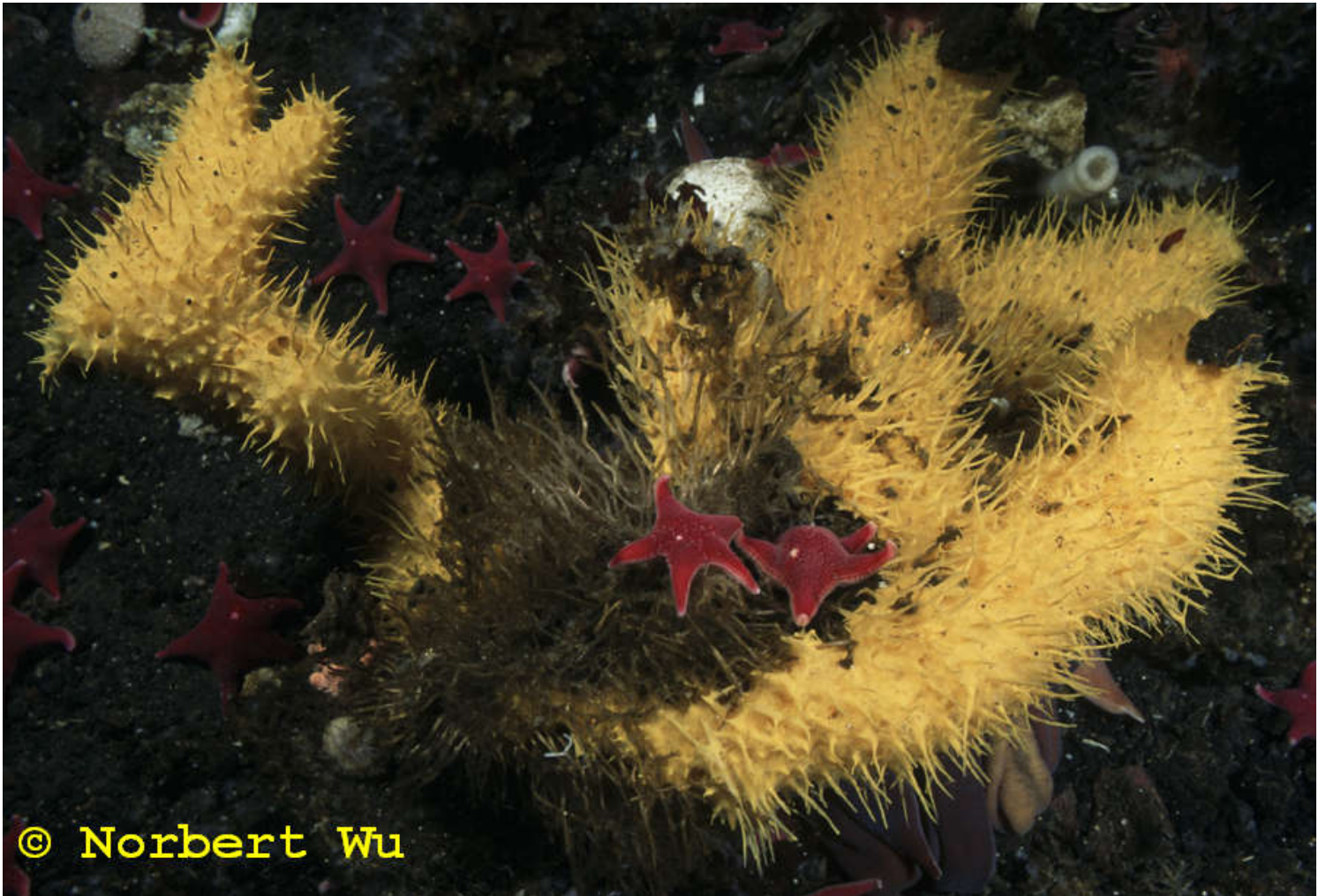
**Taxonomic Note:** Some authors may have the species as *radiatus* which is an incorrect species gender [1,3,5,9].



**References:** **1:** The Fauna of the Ross Sea, Part 1, Ophiuroidea. HB Fell. New Zealand Department of Scientific and Industrial Research Bulletin 142, New Zealand Oceanographic Institute Memoir 18, 1961; **2:** John Dearborn, personal communication, 1999; **3:** AFJ Madsen. B.A.N.Z. Antarctic Research Expedition 1929-1931. Reports, Series B (Zoology and Botany) Volume 9, Part 3, Ophiuroidea. Adelaide: BANZAR Expedition Committee, 1967; **4:** Polar Biology 32(7):1067-1076, 2009; **5:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-133; Appendix, Index of Latin Names on pp. 443-448; **6:** Polar Biology 12:559-585, 1992; **7:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna> ; **8:** Les Démosponges du plateau continental de Kerguelen- Heard. N. Boury-Esnault & M. Van Beveren. Comité national français des recherches antarctiques 52:1-175, 1982; **9:** Zootaxa 4728(1):77-109, 2020



polychaete sponge *Isodictya erinacea*



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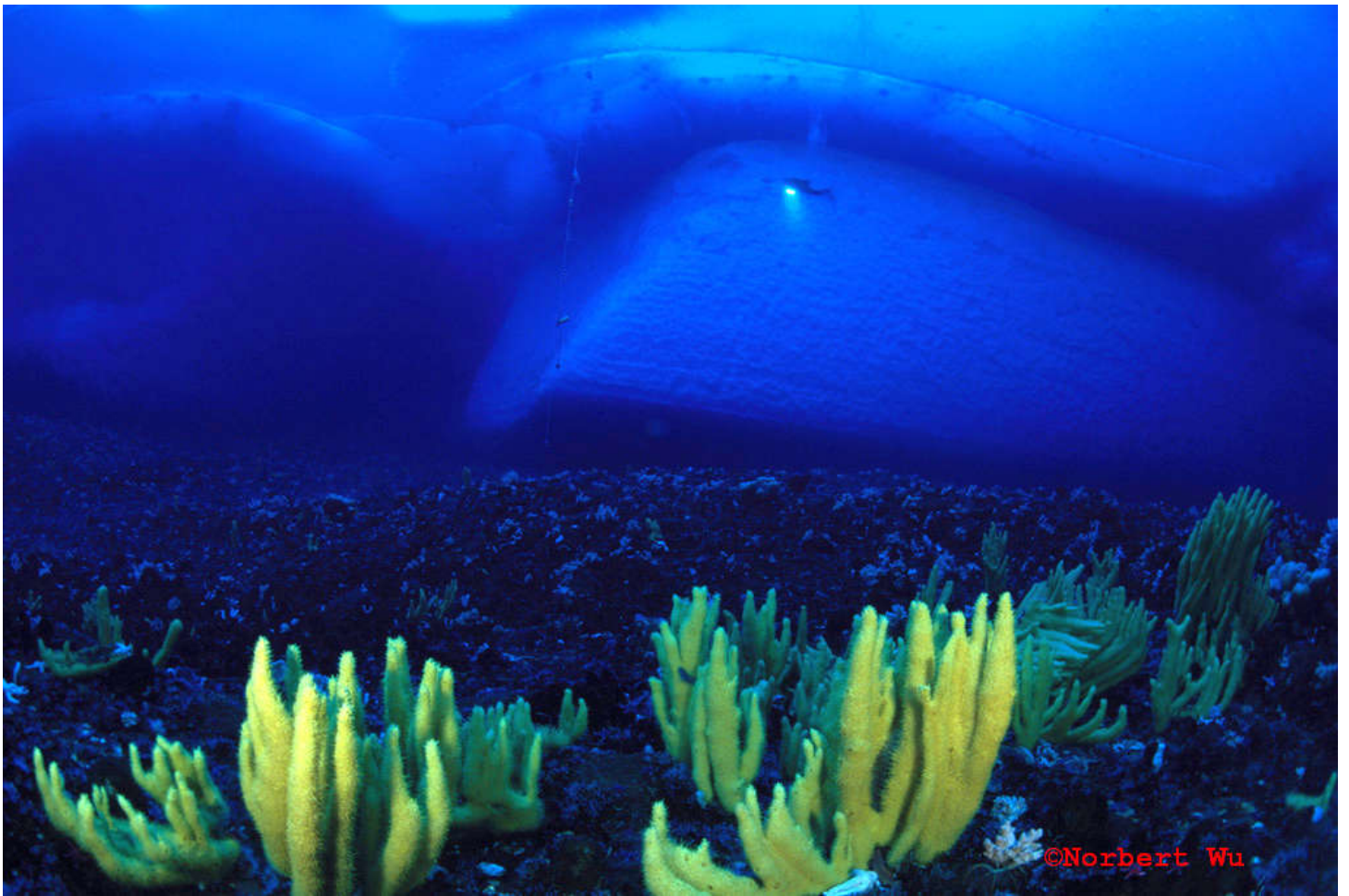
*Isodictya erinacea* is found throughout Antarctica, the Antarctic Peninsula, South Shetland Islands, and the Falkland Islands from 14 to 920 meters depth [1,5,6,7,11,12,17].



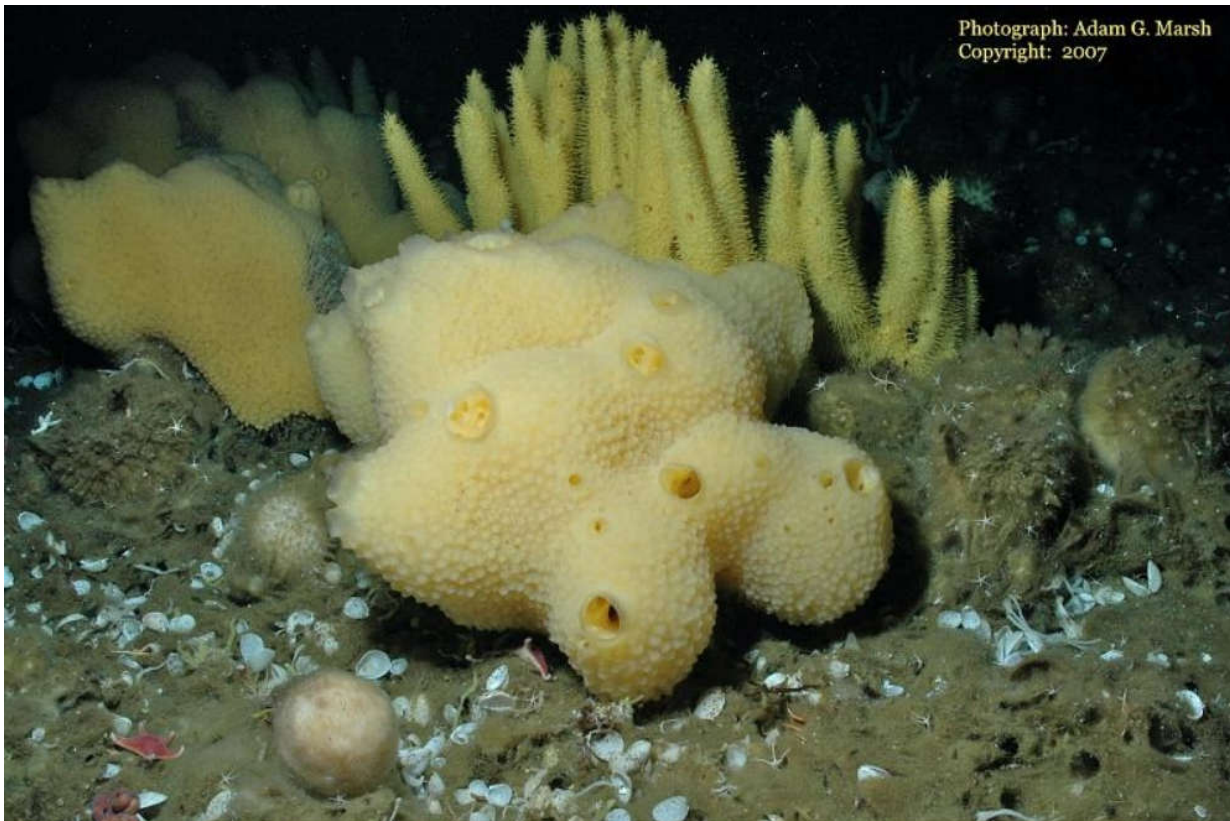
Photograph: Adam G. Marsh  
Copyright: 2007

The body of *Isodictya erinacea* is globular, cylindrical, stem- or tree-like, light brown or yellow in color, up to twenty centimeters high, and attached to the substrate by a long strand of spongin [1,4,5,8,9,10,17].





*Isodictya erinacea* can be characterized by its yellow color and spiny appearance with long fibrous spines which are simple or divided [1,4,9,10].



*Isodictya erinacea* is uncommonly seen, being 0.01% of the benthic surface cover at a Cape Armitage site [1].





Photograph: Adam G. Marsh  
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The surface of *Isodietya erinacea* has numerous conules in two morphs: short conules, or long conules up to nine centimeters long [5,8,10].

*Isodietya erinacea* may host diatoms within its food-capturing cells that line the passages through which the sponge circulates water; these endobiont diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [14,15]. Diatoms produce large amounts of polysaccharides, thus giving the sponge an alternative food source during food- scarce periods [15]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [14,15].

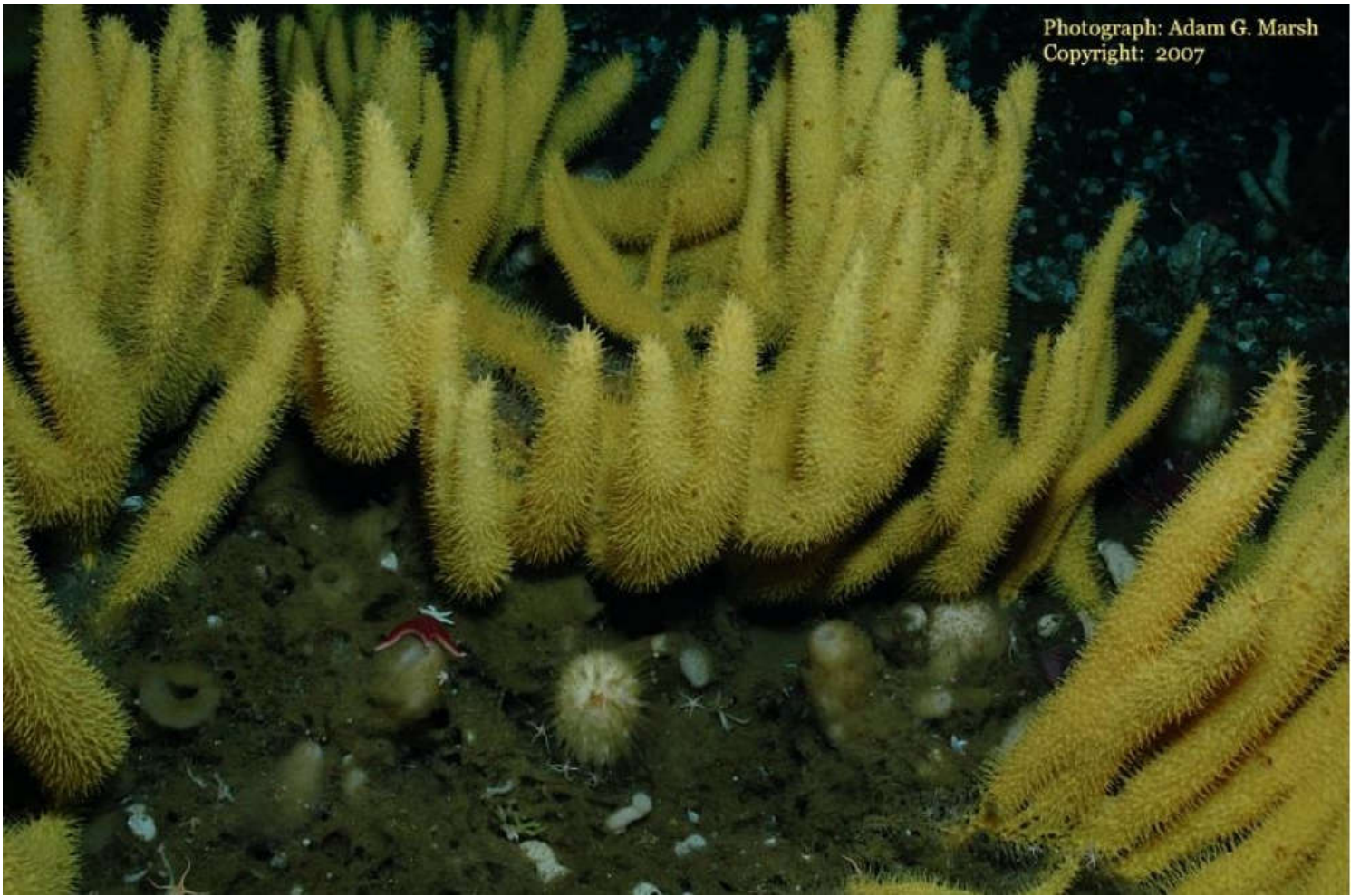
*Isodietya erinacea* may be found living epibiotically on the spines of the cidaroid urchin *Ctenocidaris perrieri* [18].



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*Isodictya erinacea* has no observed predators [1]. Extracts from *I. erinacea* suggest that chemical defense is used by the sponge to avoid predation; extracts cause tubefoot retraction in the seastar *Perknaster fuscus*, a common sponge predator [2,13].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [3]. *Homoeodictya* is a synonym of *Isodictya* [16]. *Isodictya* used by Koltun (1976), and Desqueyroux-Faundez (1989) [5,9]; *Homoeodictya* used by Bergquist (1988), and Hooper and Wiedenmayer (1994) [6,7].

**References:** **1:** Ecological Monographs 44(1):105-128, 1974; **2:** Antarctic Journal of the United States 29:151-153, 1994; **3:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **4:** Antarctic Macrobenthos, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 25; **5:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **6:** Marine Fauna of New Zealand: Porifera, Desmospongiae, Part 4 (Poecilosclerida). Bergquist PR and Fromont PJ. New Zealand Oceanographic Institute Memoir 96, 1988; **7:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **8:** Sponges of the Antarctic. I. Tetraxonida and Comacususpongia. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **9:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **10:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **11:** Polar Biology 12:559-585, 1992; **12:** Antarctic Science 9(4):3921-398, 1997; **13:** Journal of Natural Products 61(1):116-118, 1998; **14:** Biological Bulletin 198:29-33, 2000; **15:** Ross Sea Ecology: Italianartide Expeditions (1987-1995). FM Faranda, L Guglielmo, A Ianora, eds. Berlin: Springer, 2000. pp. 551- 561; **16:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **17:** M Campos et al. Sponges (Porifera, Demospongiae) from Bransfield strait, off Joinville Island, collected by Brazilian Antarctic Program - PROANTAR. IN: Custódio MR et al. (eds). Porifera research: biodiversity, innovation and sustainability. Série Livros 28. Museu Nacional, Rio de Janeiro. pp. 219-232; **18:** Polar Biology 32(7):1067-1076, 2009; **19:** Zootaxa 4658(3):461-508, 2019



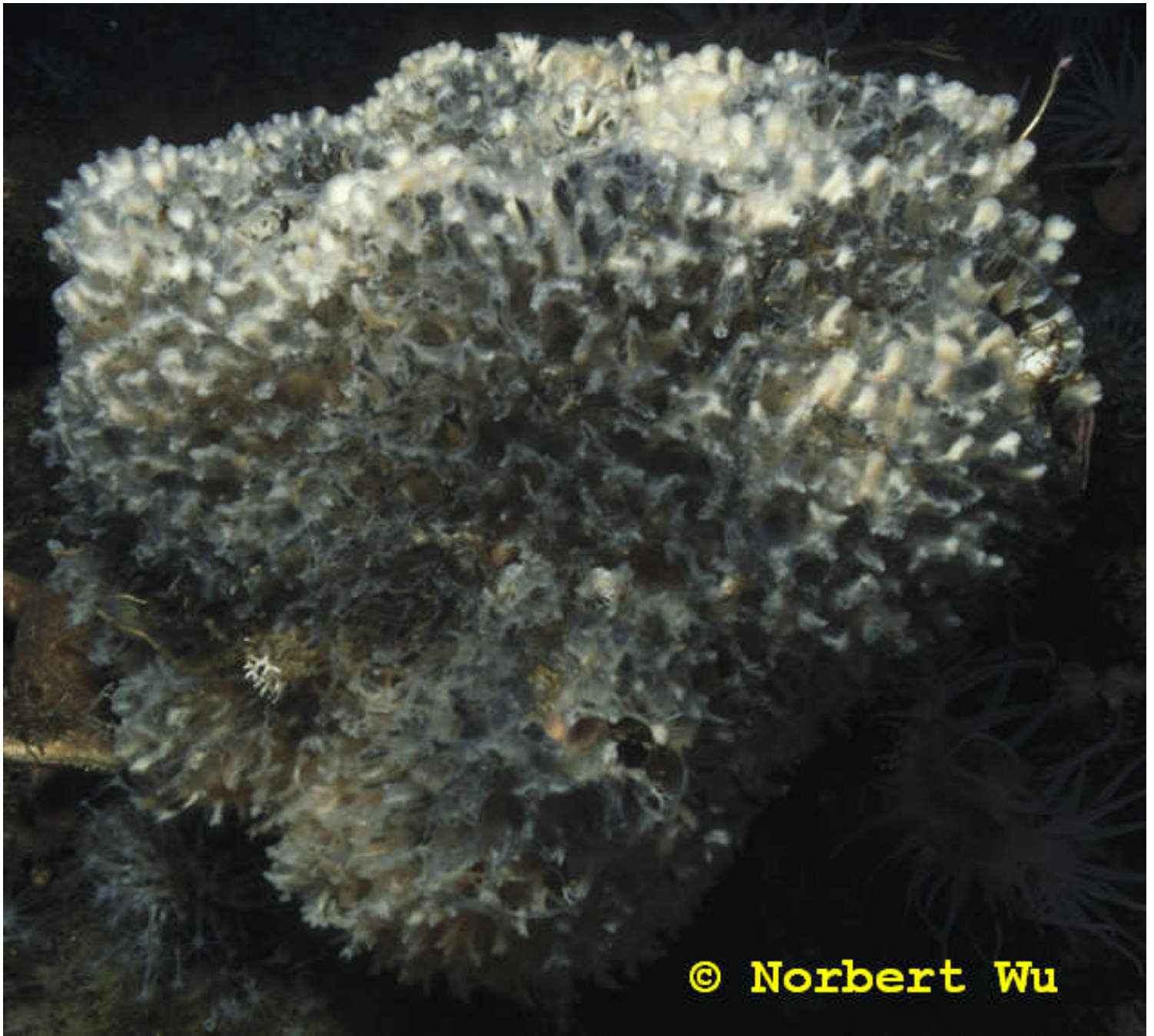
stringy sponge, probably *Isodictya setifera*



*Isodictya setifera* is found throughout Antarctica and the Antarctic Peninsula, South Orkney Islands, South Georgia Island, Falkland Islands, southern Argentina, Tierra del Fuego, and New Zealand from 0 to 710 meters depth <sup>[5,8,10,13]</sup>.

*Isodictya setifera* can be twelve centimeters or more in height <sup>[1]</sup>.





The body of *Isodictya setifera* can be globular, spherical, cylindrical, finger-shaped, or gradually thickening near the distal end and shaped like a club (clavate); it may have a stalk <sup>[1,5]</sup>.

The color of *Isodictya setifera* has been described as cream, pink, pale yellow-red, or different shades of yellow <sup>[1,2,4]</sup>. *I. setifera* attaches to rocks or *Limatula hodgsoni* valves <sup>[2]</sup>.

*Isodictya setifera* is uncommonly seen, being 0.02% of the benthic surface cover at a Cape Armitage site <sup>[2]</sup>. *Isodictya setifera* has been observed to settle and grow to sizes of five and eight centimeters in diameter in a three year period <sup>[3,9]</sup>.





Predators of *Isodictya setifera* include the seastar *Odontaster meridionalis* and the nudibranch *Doris kerguelensis* [2].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [4]. Koltun changed the genus to *Isodictya* and synonymized the species *spinigera* under *I. setifer*, but uses the incorrect gender [1,5]. When the genus changed to *Isodictya*, the species should have changed gender to *setifera* [6]. Later references usually have it as *I. setifera*. *Homoeodictya* is a synonym of *Isodictya* [11]. These photos could be *Isodictya kerguelensis* based on Paul Dayton's later research bridging his older work, thus the use of "probably" in the name [12].

**References:** **1:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **2:** Ecological Monographs 44(1):105-128, 1974; **3:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; **4:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **5:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **6:** Article 34(b) of the 1985 International Code of Zoological Nomenclature; **7:** Marine Fauna of New Zealand: Porifera, Desmospongiae, Part 4 (Poecilosclerida). Bergquist PR and Fromont PJ. New Zealand Oceanographic Institute Memoir 96, 1988; **8:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **9:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; **10:** Polar Biology 12:559-585, 1992; **11:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **12:** Paul Dayton, personal communication, 2015; **13:** Revista del Museo Argentino de Ciencias Naturales, n.s. 7(2):191-219, 2005



cotton candy sponge *Kirkpatrickia coulmani*



**Taxonomic Note:** Common name taken from Dayton et al, 2016 [1].

**References:** 1: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016



red sponge *Kirkpatrickia variolosa*

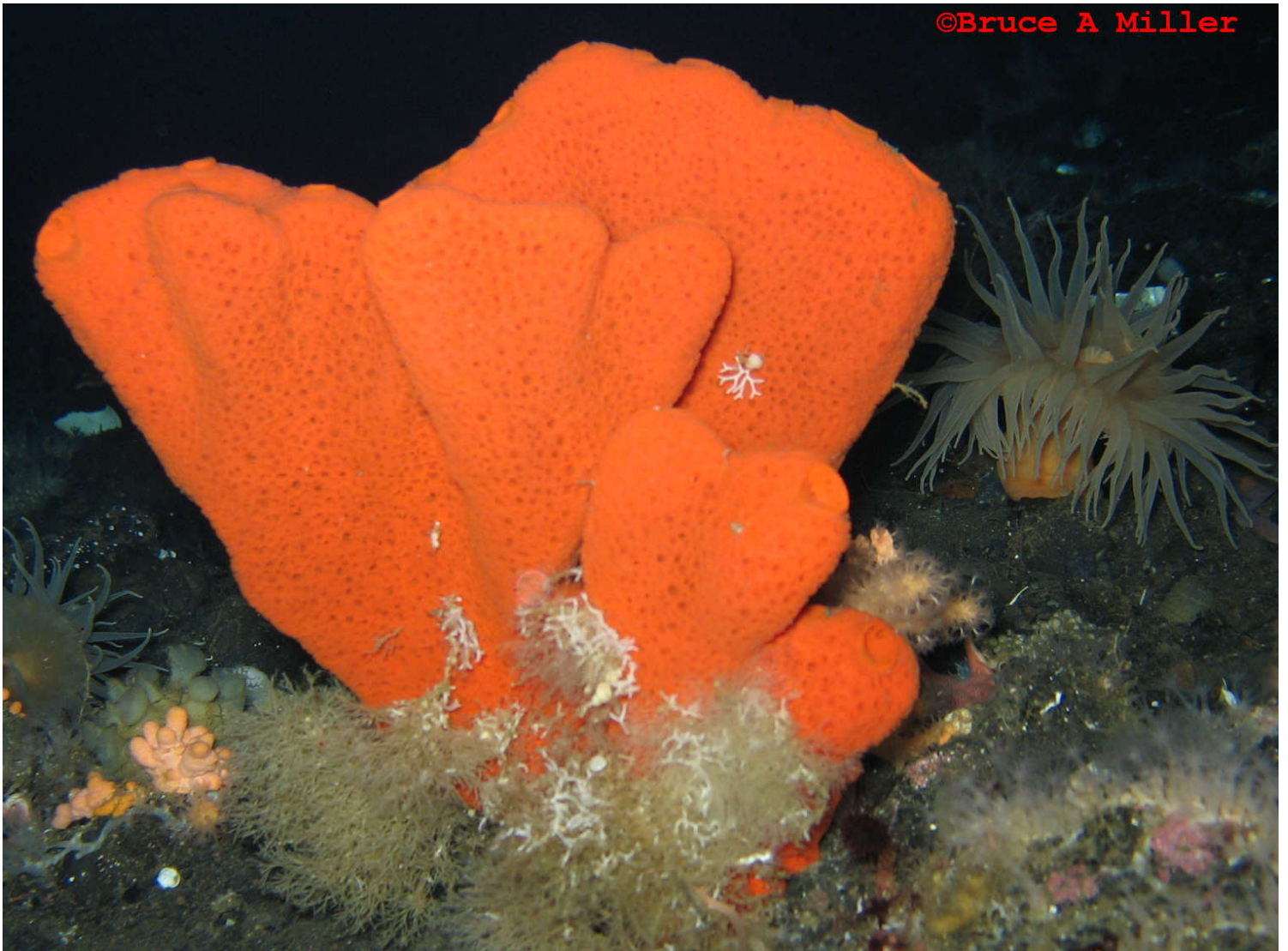
©Norbert Wu



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*Kirkpatrickia variolosa* is found throughout Antarctica and South Georgia Island, from 18 to 640 meters depth [1,3,7].

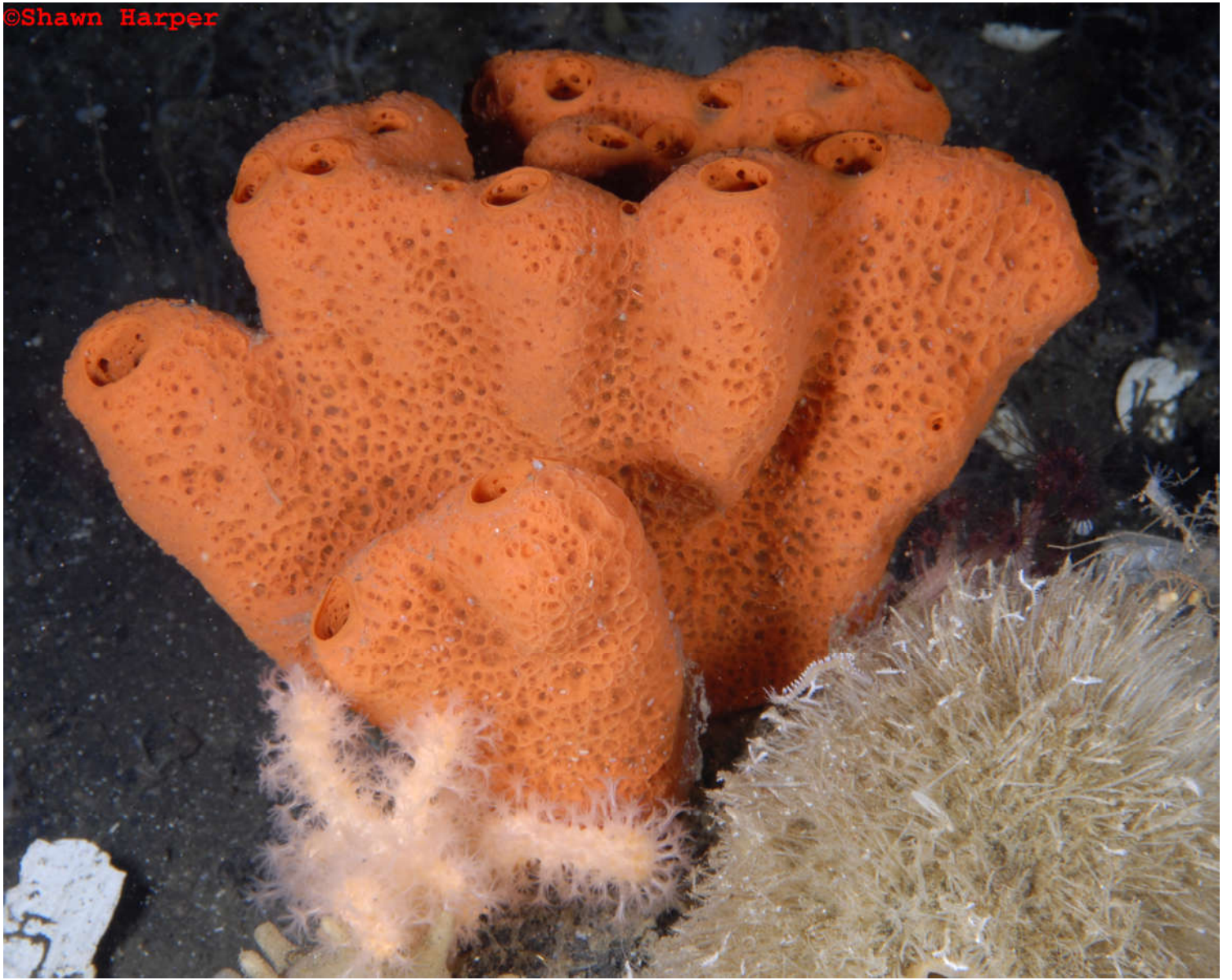




The body of *Kirkpatrickia variolosa* is fan-shaped, with thick finger-like outgrowths starting from a common base, whose tips have an oscular opening one centimeter in diameter [6].



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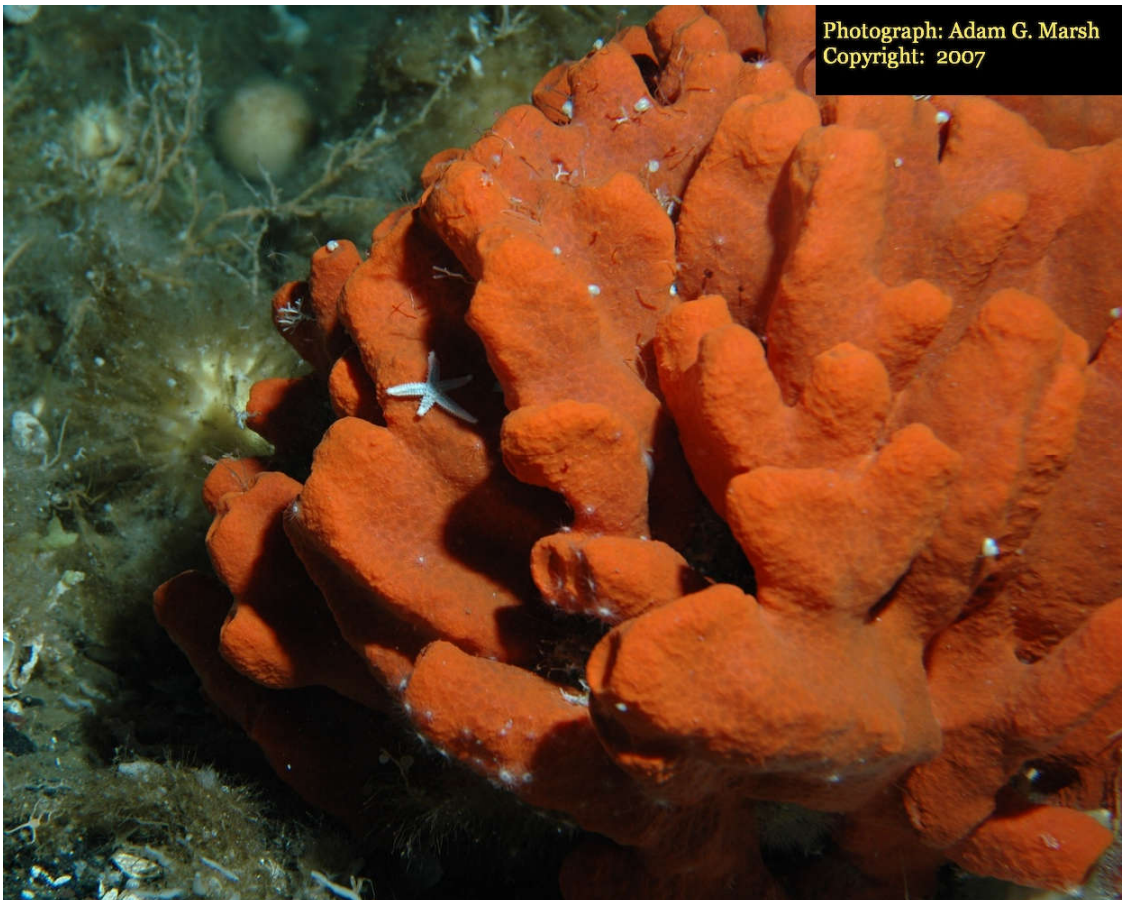
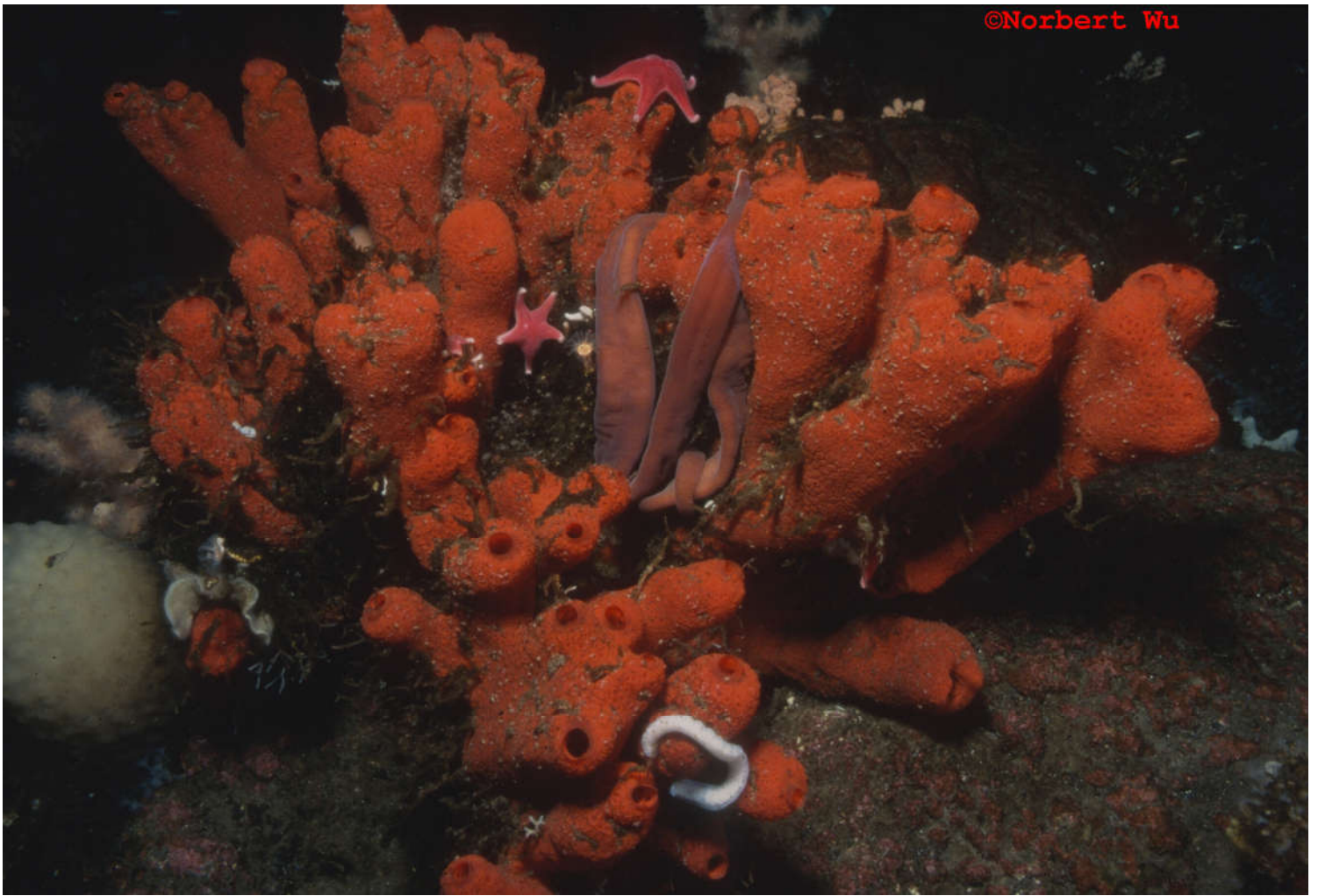
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Fronds of *Kirkpatrickia variolosa* are up to eighteen centimeters high and thirteen centimeters wide, and its surface has fields of slightly raised pores with areoles [4,6].

The color of *Kirkpatrickia variolosa* is pale brown, beige, orange red, or deep red [4,5,6].





Photograph: Adam G. Marsh  
Copyright: 2007

Predators of *Kirkpatrickia variolosa* include the seastars *Perknaster fuscus* (when juvenile) and *Acodontaster conspicuus* [5].

Amoeboid cells in *Kirkpatrickia variolosa* phagocytose diatom cells to digest them, and then the diatom silica is used to generate sponge spicules [8].





*Kirkpatrickia variolosa* is uncommonly seen, being 0.02% of the benthic surface cover at a Cape Armitage site [5]. *K. variolosa* is typically seen in the second benthic zone of Cape Armitage between 15 and 33 meters depth [5].

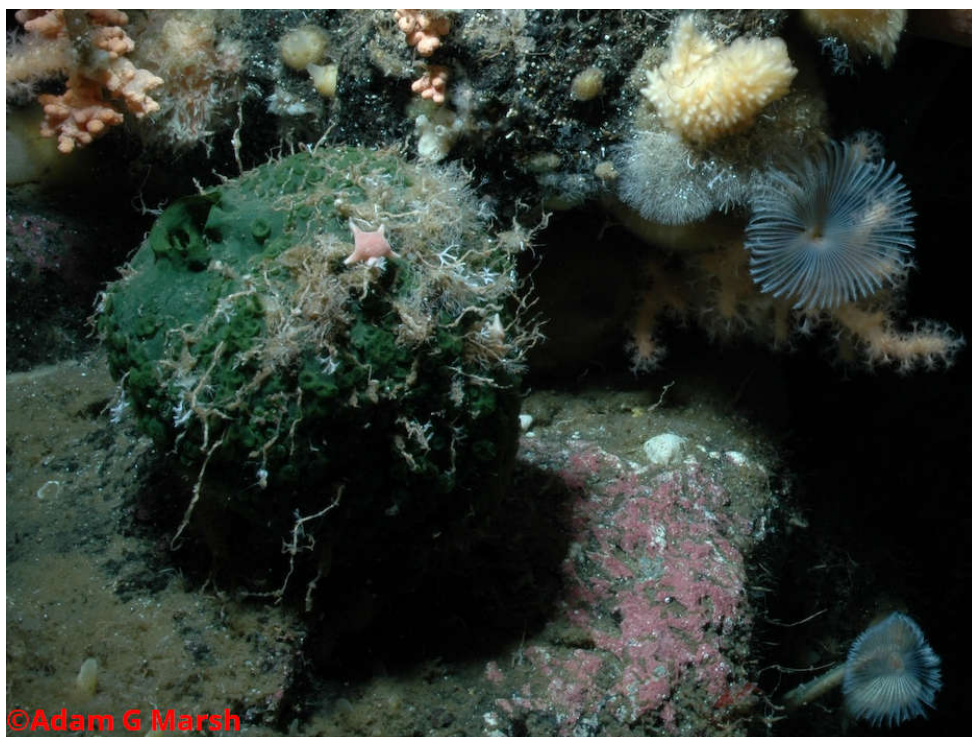
**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department

of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **5:** Ecological Monographs 44(1):105-128, 1974; **6:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **7:** Polar Biology 12:559-585, 1992; **8:** Zoological Journal of the Linnean Society 192:259-276, 2021



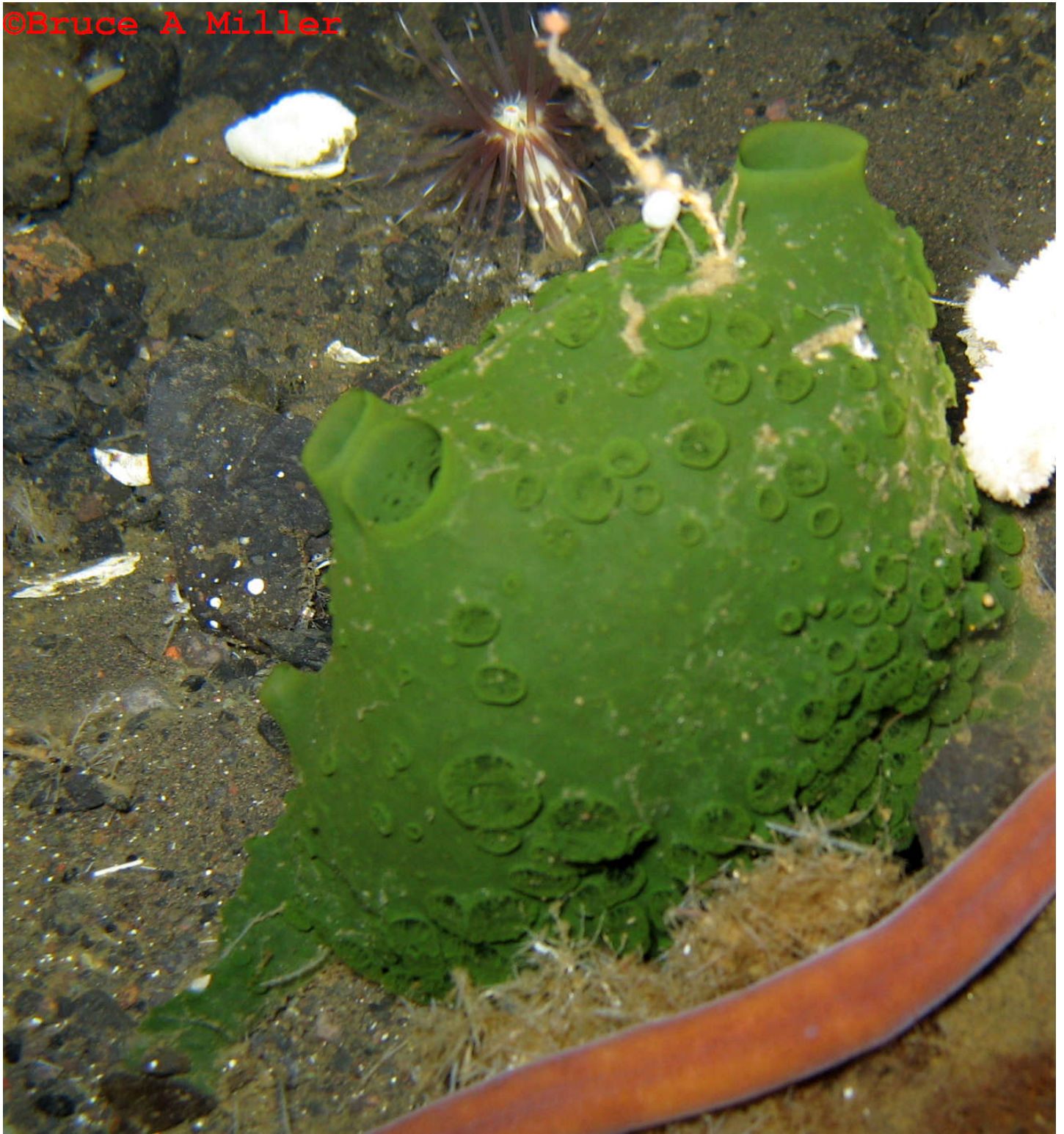
green sponge *Latrunculia (Aciculatrunculia) biformis*



*Latrunculia (Aciculatrunculia) biformis* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, Kerguelen Islands, Falkland Islands, Argentina and South Africa, from 18 to 1,379 meters depth [1,3,5,6,7,8,9,11,12].

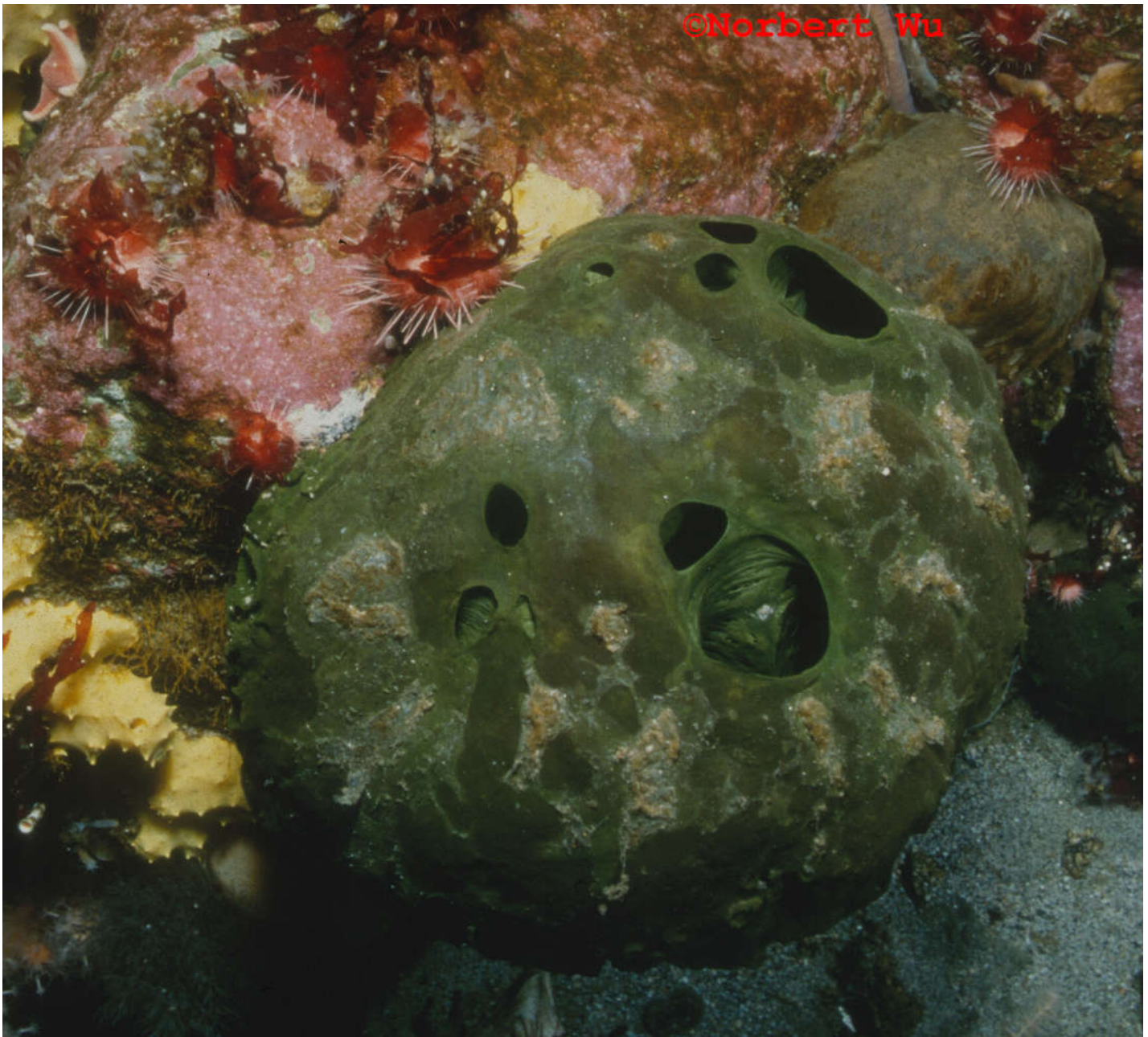


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The color of *Latrunculia (Aciculatrunculia) biformis* is dark olive green, yellowish gray, gray, brown, or wine red; it can be dark red or garnet in its interior [4,5,6,7,8,10,12].

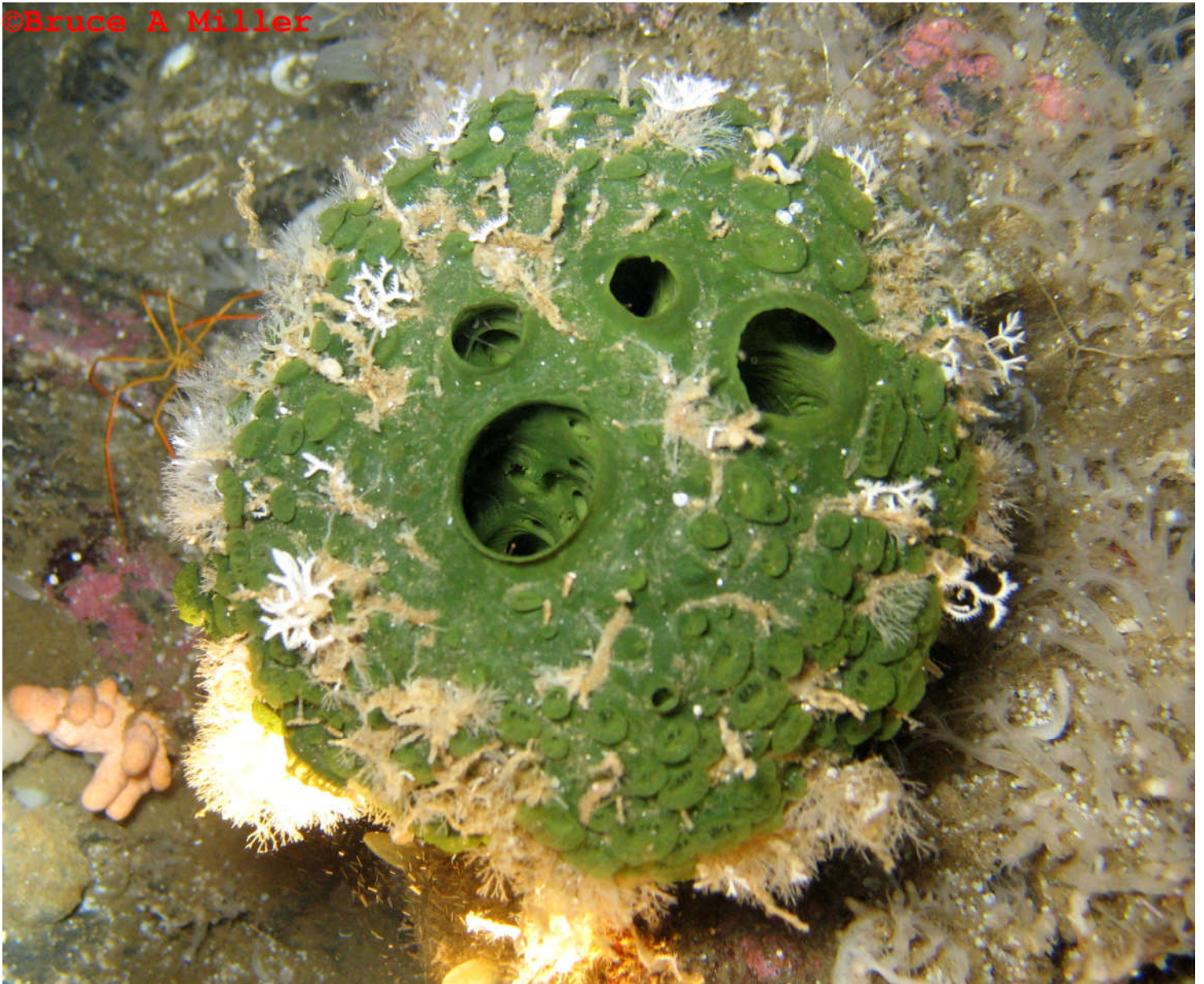




The body of *Latrunculia (Aciculatrunculia) biformis* is massive, globular/spherical or hemispherical, with a maximum height of 11.4 centimeters and a width of 7.5 centimeters [4,6]. The apical oscule can be on top of a conical papilla a few millimeters high [10].



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*Latrunculia (Aciculatrunculia) biformis* has a smooth surface covered with crater-like or conical papillae and warty incurrent openings and one or more excurrent openings [4,5,6].



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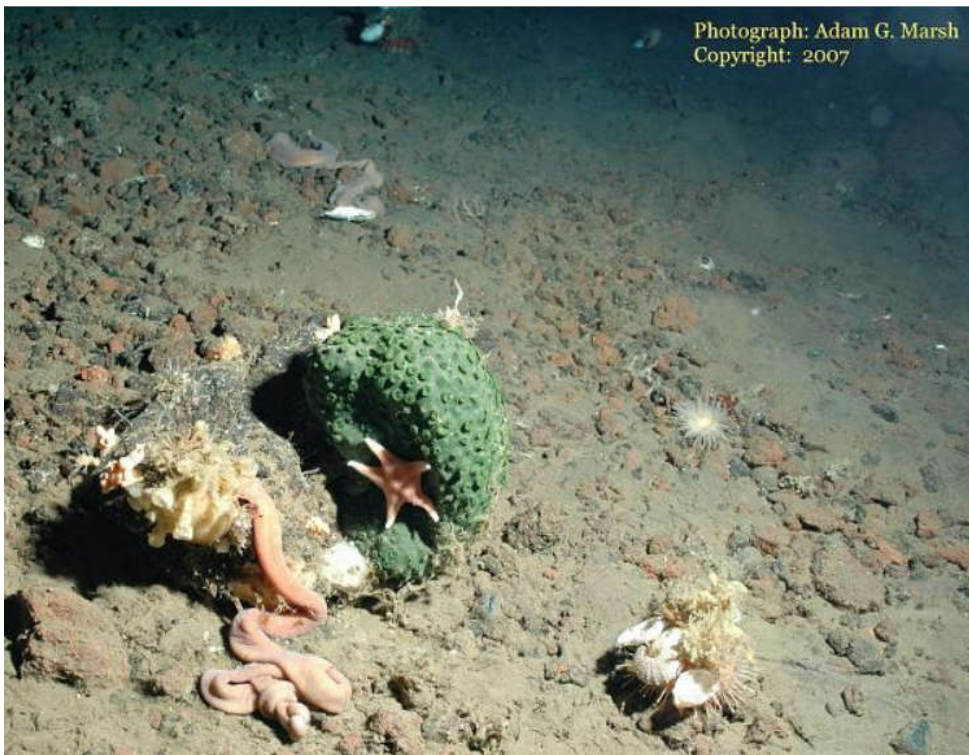
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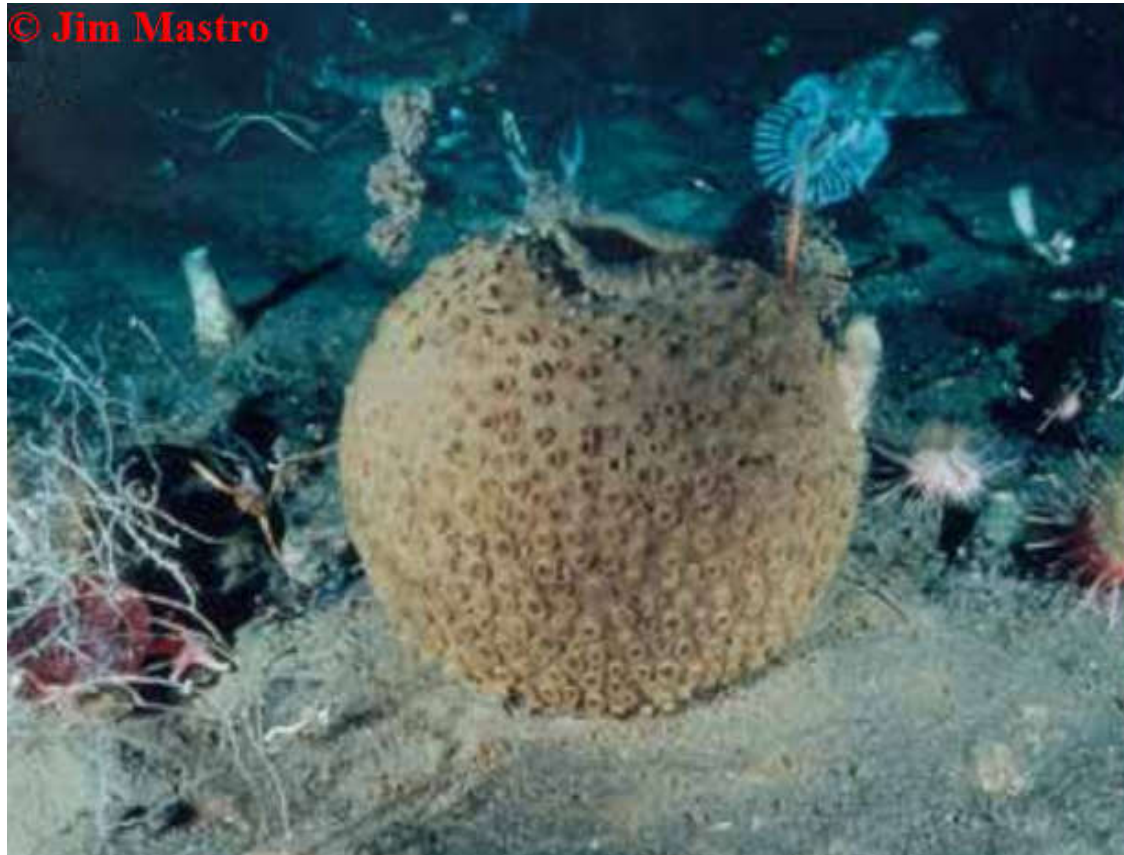
Photograph: Adam G. Marsh  
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**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. Species revised to *biformis* from *apicalis* [5]. Placed in *Aciculatrunculia* subgenus [8].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **4:** Antarctic Science 4(2):137-150, 1992; **5:** Zootaxa 1127:1-71, 2006; **6:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **7:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **8:** A review of New Zealand and Antarctic latrunculid sponges with new taxa and new systematic arranges within family Latrunculiidae (Demospongiae, Poecilosclerida). Carina Sim-Smith et al. NIWA Biodiversity Memoir 134, 2022; **9:** Polar Biology 12:559-585, 1992; **10:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **11:** Polar Biology 20(4):229-247, 1998; **12:** Revista Brasileira de Zoologia 24(3):742-770, 2007



## pipe cleaner sponge *Lycopodina vaceleti*

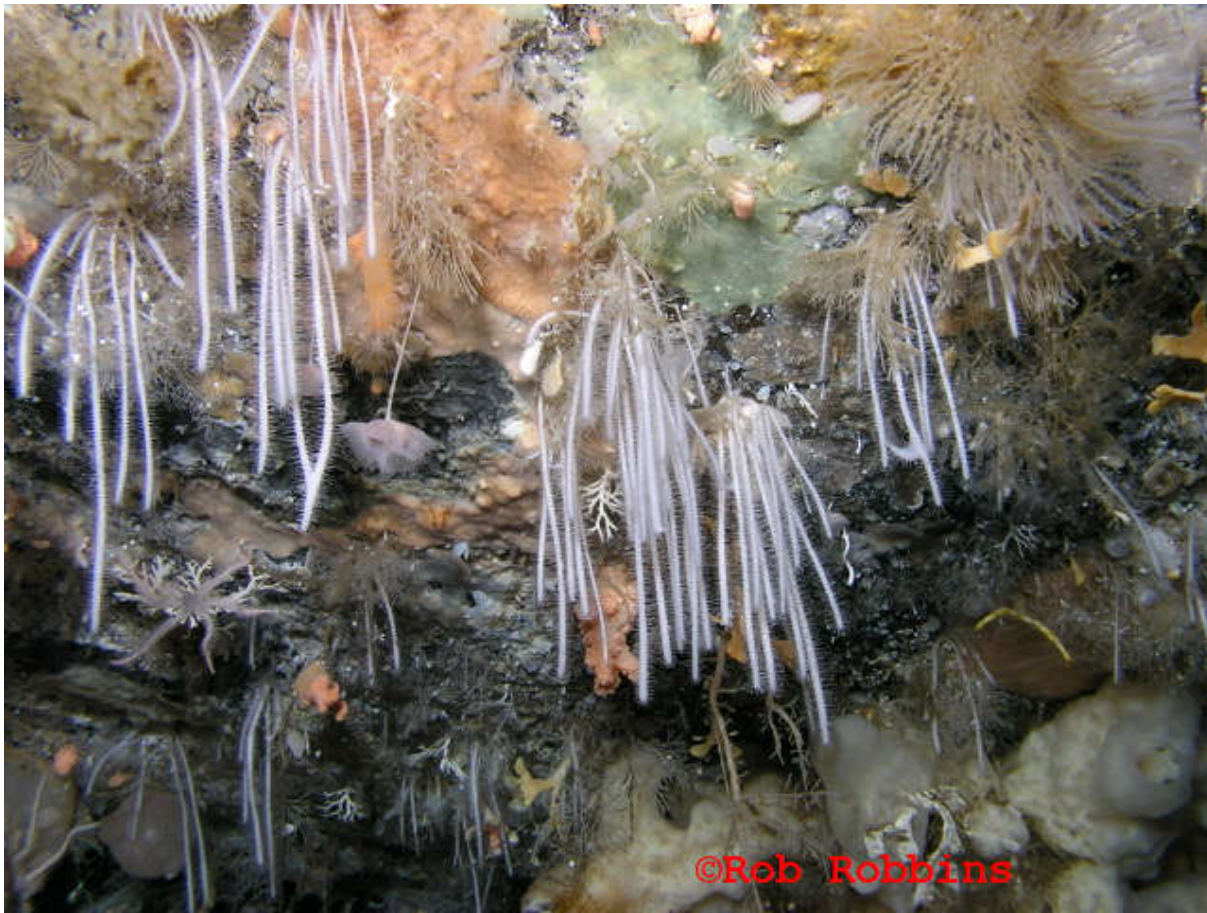


*Lycopodina vaceleti* is a white stalked carnivorous sponge hanging down from rocky overhangs, with filamented branches up to 15 cm long, slightly swollen at their tips [5,7]. As a carnivorous sponge, it is different from other sponges in anatomy and feeding habits; it does not have a water circulating system, with cells to circulate water [1,3,6].

Carnivorous sponges trap small prey, like crustaceans, less than one millimeter in size, with raised hook-like spicules on their filaments; these filaments are sticky like Velcro for trapping swimming crustaceans that have appendages that can become entangled [1,3,5,6]. The trapped crustaceans struggle while the carnivorous sponge extends epithelial cells and new filaments over its prey, enveloping it within a day, and digesting it within a few days [3,6]. The droplets at the end of the spicules may be toxic immobilizing enzymes [7].

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In McMurdo Sound, *Lycopodina vaceleti* sponges can be found hanging down from rocks (upper left and lower right in this photo) [4,5,7].

This unusual modification from typical sponge filter feeding has elements of cnidarian and foraminiferan functionality, involving passive capture of living prey and nutrient transfer into the body through cell migrations [3]. Carnivorous sponges are typically found in deep-water, frequently around hydrothermal vents and seeps, but species are found in shallower waters including caves [3,6]. Their feeding strategy may be an adaptation to a food-scarce (oligotrophic) environment, with low particle concentrations and/or relatively still water [3,6].



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**Taxonomic Note:** Common name taken from Dayton et al, 2016 [7]. Genus/subgenus changed from *Asbestopluma* (*Asbestopluma*) to *Lycopodina* [6]. This field guide originally noted this sponge as *Asbestopluma* aff. *lycopodina* with a tentative ID provided by Walentina de Weerd and Rob van Soest without specimens for checking microscopic details.

**References:** **1:** Bulletin de l'Institut Royal des Sciences Naturels de Belgique. Biologie 66 (suppl):109-115, 1996; **2:** Porifera, Part II. Desmacidonidae (pars.). W Lundbeck. Danish Ingolf- Expedition. Volume 6(2). Copenhagen: Bianco Luno, 1905; **3:** Nature 373(6512):333-335, 1995; **4:** Bill Baker, personal communication, 2003; **5:** Marine Biodiversity 41:495-501, 2011; **6:** Molecular Phylogenetics and Evolution 94:327-345, 2016; **7:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016



pink staghorn or pink robe sponge *Microxina benedeni*



*Microxina benedeni* is found throughout Antarctica, South Shetland Islands, South Orkney Islands, South Georgia Island, and the Falkland Islands, from 30 to 1,266 meters depth [1,7,9,11,12,13].

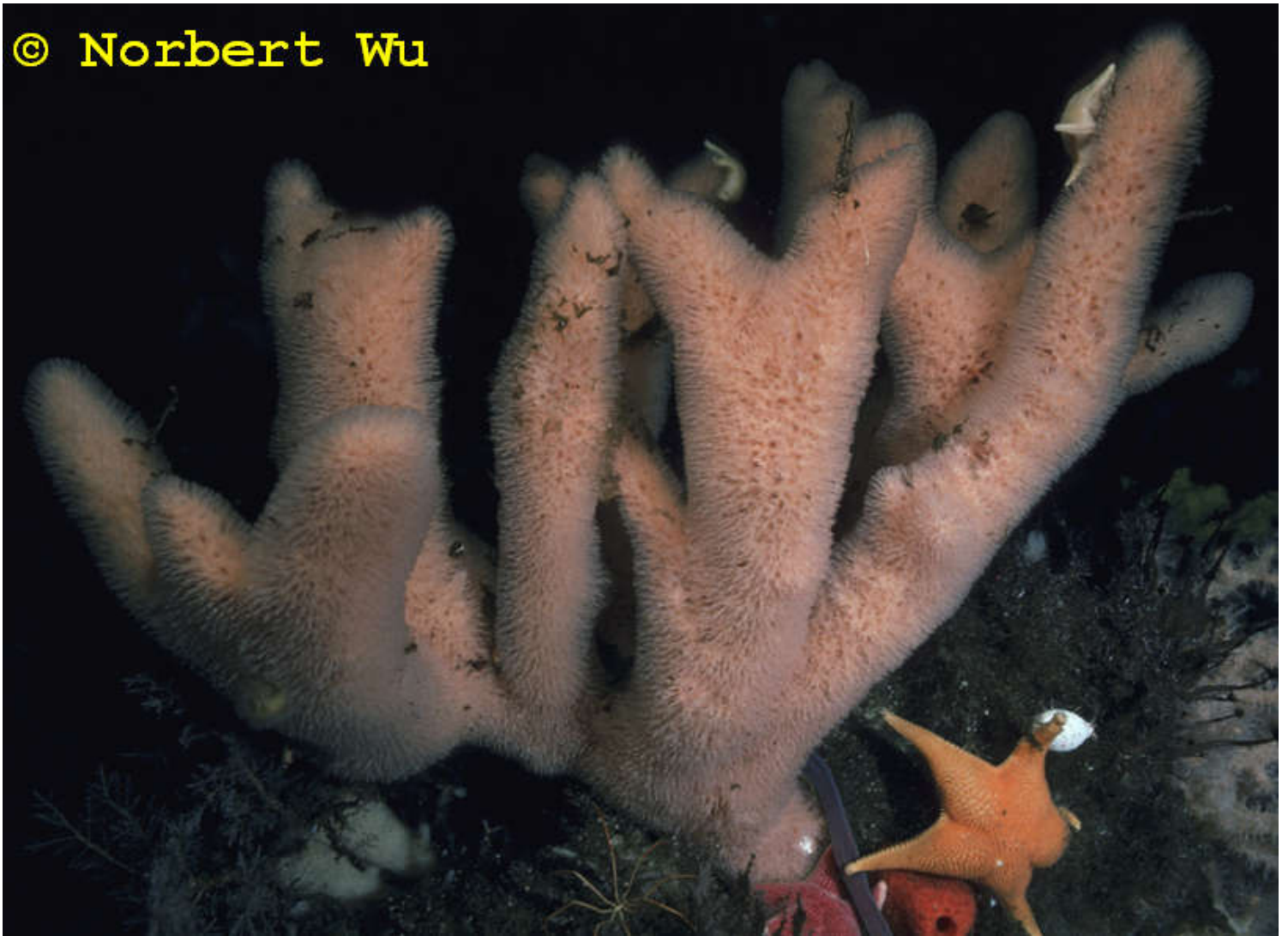


Photograph: Adam G. Marsh  
Copyright: 2007

The body of *Microxina benedeni* can be tubular, gradually thickening near the distal end and shaped like a club (clavate), or split into branches [3,4,6,11]. *M. benedeni* has a narrowed base that can be a stalk [3]. The surface of *M. benedeni* is bristly with numerous conules [3,4,6]. The color of *M. benedeni* is straw, grayish yellow and brown [3,4,6,11].



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*Microxina benedeni* has been collected at sizes up to 18 centimeters high [3]. *M. benedeni* is typically found in the third benthic zone of Cape Armitage below 33 meters depth [5]. *M. benedeni* is uncommonly seen, being 0.08% of the benthic surface cover at a Cape Armitage site [2]. The body of *M. benedeni* can harbor an isopod that sometimes kills the sponge [5]. *Mi. benedeni* may host diatoms within its food- capturing cells that line the passages through which the sponge circulates water; these endobiont

diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [10]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [10].





**Taxonomic Note:** Systema Porifera has Microxina as the genus [8].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Antarctic Science 4(2):179-183, 1992; **3:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448 (synonymy noted in Appendix); **4:** Antarctic Macrobenthos, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 25; **5:** Ecological Monographs 44(1):105-128, 1974; **6:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **7:** Polar Biology 12:559-585, 1992; **8:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer,

2002; **9:** Antarctic Science 9(4):3921- 398, 1997; **10:** Biological Bulletin 198:29-33, 2000; **11:** M Campos et al. Sponges (Porifera, Demospongiae) from Bransfield strait, off Joinville Island, collected by Brazilian Antarctic Program - PROANTAR. IN: Custódio MR et al. (eds). Porifera research: biodiversity, innovation and sustainability. Série Livros 28. Museu Nacional, Rio de Janeiro. pp. 219-232; **12:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna> ; **13:** Zootaxa 5403(4):401-430, 2024



chimney sponge, possibly *Microxina myxa*



From Dayton et al, 2016:  
“Superficially this sponge resembles *Haliclona* species, but is firmer and has conspicuous spicule tufts sticking out from its conules. It is relatively rare, but seems to settle high on structures and grow about as fast as the other *Haliclona* species.” [1].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [1].

**References:** 1: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016



## slimy sponge *Mycale (Oxymycale) acerata*



*Mycale (Oxymycale) acerata* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Georgia Island, Falkland Islands, Bouvet Island, Chile, Argentina, Kerguelen Island, and Macquarie Island from 5 to 761+ meters depth

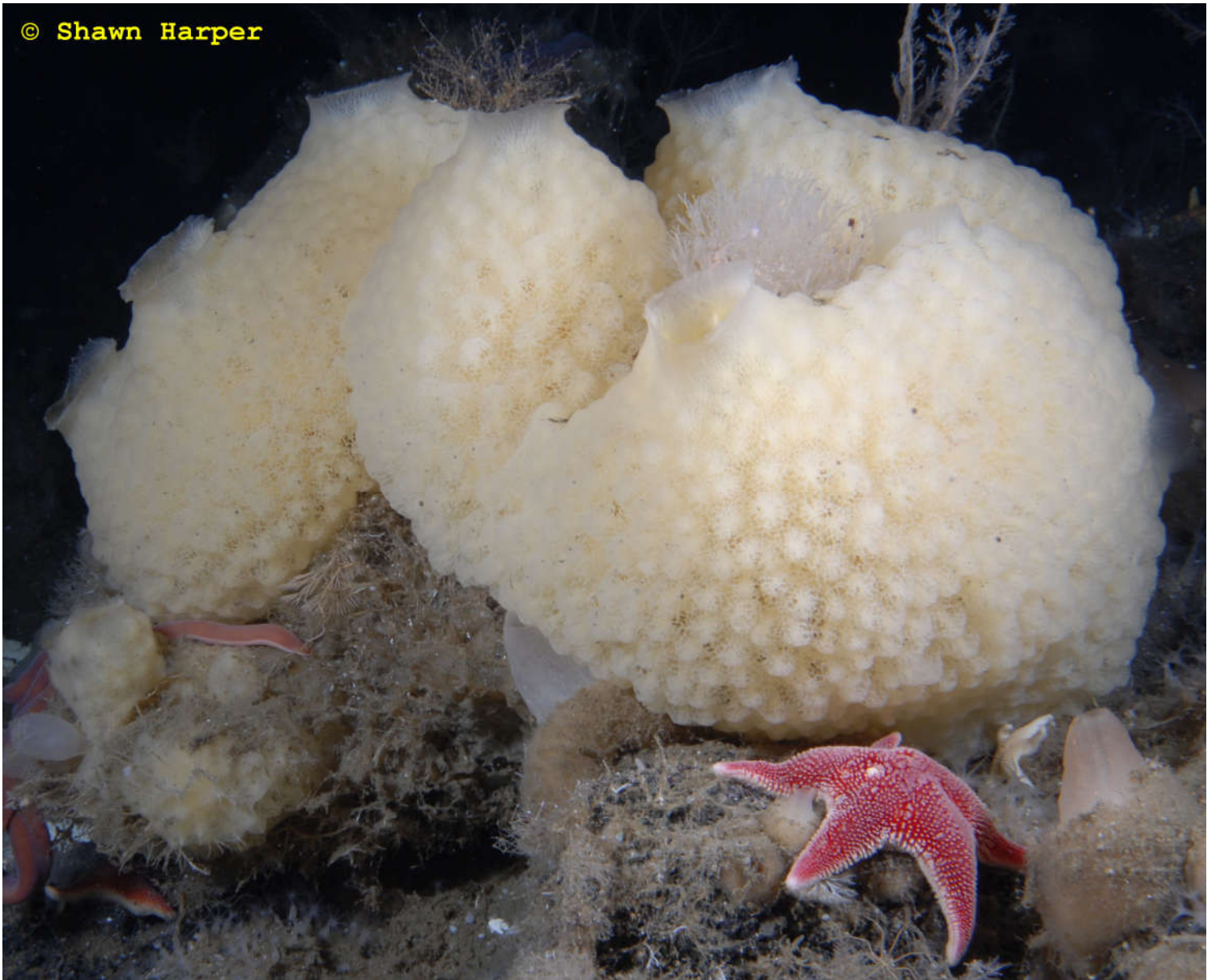
[1,3,4,12,14,18,19,21,22]. The body of *M. acerata* is globular, sometimes cup-shaped, and crumbles easily [4,11,13].



The color of *Mycale (Oxymycale) acerata* can be white, beige, brown, pale yellow, yellow, yellowish brown, greenish, or gray [4,8,10,13,17,20,21]. The surface of *M. acerata* can have low conical papillae or small nodules, or be almost smooth [4,20,21]. *M. acerata* can be massive, composed of a series of fused mounds with terminal oscula, and up to 1.5 meters high and 1.75 meters in diameter [7,9,21].



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*Mycale (Oxymycale) acerata* has a relatively high growth rate. One individual increased its volume 40% in seven years and then grew little afterwards; another grew 63% in one year and did not grow further for nine years [2,9]. When disturbed, *M. acerata* produces a copious amount of slime [6,8]. Predators of *M. acerata* include the seastars *Odontaster meridionalis*, *Acodontaster conspicuus*, and *Perknaster fuscus*, and the nudibranch *Doris kerguelenensis* [2,6].





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A fast-growing *Mycale* (*Oxymycale*) *acerata* has a white, delicate texture after which it may develop a greenish or tan colored leathery surface which becomes fouled by diatoms, hydroids, ascidians, anemones, and the bush sponge *Homaxinella balfourensis* [2,9,17].

*M. acerata* has been collected completely covering a polychaete worm tube [17].





*Mycale (Oxymycale) acerata* is commonly seen in the third benthic zone of Cape Armitage below 33 meters depth, being 1.1% of the benthic surface cover and 2.4% of the sponge biomass at a site there [6]. The eggs of *M. acerata* can be seen beneath the epidermis with the naked eye in younger individuals [2,9]. *M. acerata* is often found with yellow or orange larvae at its base [8].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. In 2002, *Mycale (Oxymycale) acerata* was placed in an *Oxymycale* subgenus [5]. Earlier authors might have it in an *Oxymycale* genus [3,12,15,16].





**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, ..., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological Reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty Biologicheskikh Issledovaniy Sovetskoi Antarkticheskoi Ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **5:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **6:** Ecological Monographs 44(1):105-128, 1974; **7:** Berichte zur Polarforschung, Reports on Polar Research 286, 1998; **8:** Antarctic Science 4(2):137-150, 1992; **9:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; **10:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **11:** Ross Sea Expeditions 1987-1988 and 1989- 1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **12:** Polar Biology 12:559-585, 1992; **13:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **14:** Boletin de la Sociedad de Biologia de Concepcion 58:39-66, 1987; **15:** Tethys 6(3):631-653, 1974; **16:** Antarctic Science 7(3):227-234, 1995; **17:** Tethys Supplement 4:9-24, 1972; **18:** Polar Biology 20(4):229-247, 1998; **19:** Polar Biology 29(2):83-96, 2006; **20:** Antarctic Macrobenenthos, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 26; **21:** Zootaxa 4658(3):461-508, 2019; **22:** Zootaxa 5403(4):401-430, 2024



## brown saguaro sponge *Phorbas areolatus*



*Phorbas areolatus* is found throughout Antarctica and South Georgia Island, Falkland Islands, Chile, and Argentina, from 22 to 970 meters depth [1,2,7,9].

The body of *Phorbas areolatus* is globular, lobate (curved or rounded), and up to twelve centimeters high; it can be in a thick encrusting form when young [2,5].

The color of *Phorbas areolatus* is yellow, yellowish-red, yellowish brown, or garnet [2,5].

The surface of *Phorbas areolatus* is uneven and frequently divided into rounded or elongated fields having pores with slightly elevated rims [2].

Amoeboid cells of *Phorbas areolatus* phagocytose diatom cells to digest them, and then the diatom silica is used to generate sponge spicules [10].





**Taxonomic Note:** Koltun (1966) has it recorded as *Anchinoides areolata* [2]. Later authors synonymize *Achinoides* under *Phorbastria* [3,4,8]. The species changed gender to *areolatus* when the genus changed gender [6].

**References:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **2:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **3:** Marine Fauna of New Zealand: Porifera, Desmospongiae, Part 4 (Poecilosclerida). Bergquist PR and Fromont PJ. New Zealand Oceanographic Institute Memoir 96, 1988; **4:** RWM Van Soest. Marine Sponges from Curacao and other Caribbean Localities. Part 3. Poecilosclerida. Studies on the Fauna of Curacao and other Caribbean Islands 199, The Hague: M. Nijhoff, 1984; **5:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **6:** Article 34(b) of the 1985 International Code of Zoological Nomenclature; **7:** Polar Biology 12:559-585, 1992; **8:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **9:** Revista del Museo Argentino de Ciencias Naturales, n.s. 7(2):191-219, 2005; **10:** Zoological Journal of the Linnean Society 192:259-276, 2021



cone sponge *Polymastia invaginata*



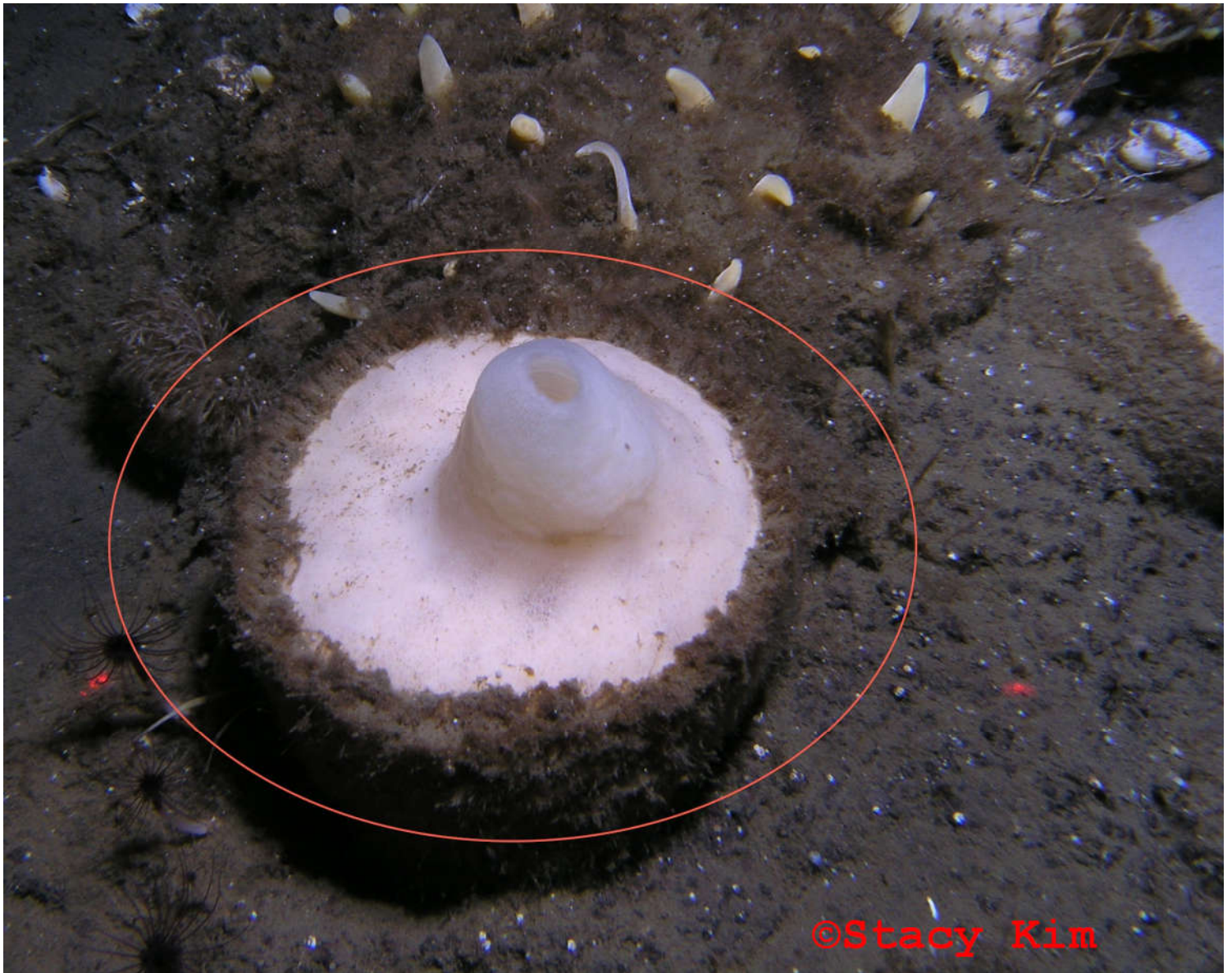
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*Polymastia invaginata* is found throughout Antarctica, and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Sandwich Islands, South Georgia Island, Bouvet Island, Heard Island, Kerguelen Island, Lord Howe Plateau or Rise, and Chile, at depths from 5 to 4,800 meters [1,3,7,8,9,11,13,15,16,17].





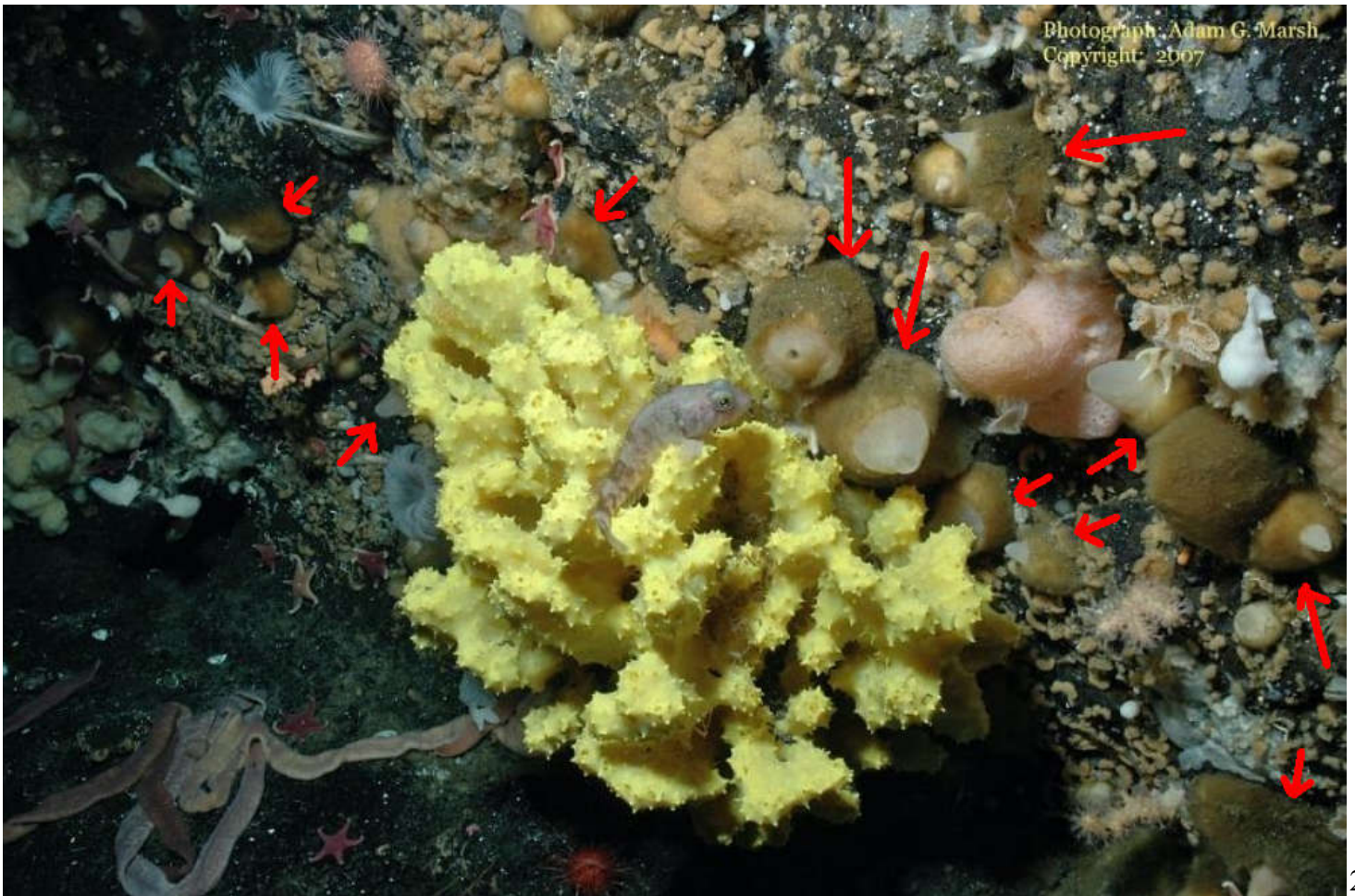
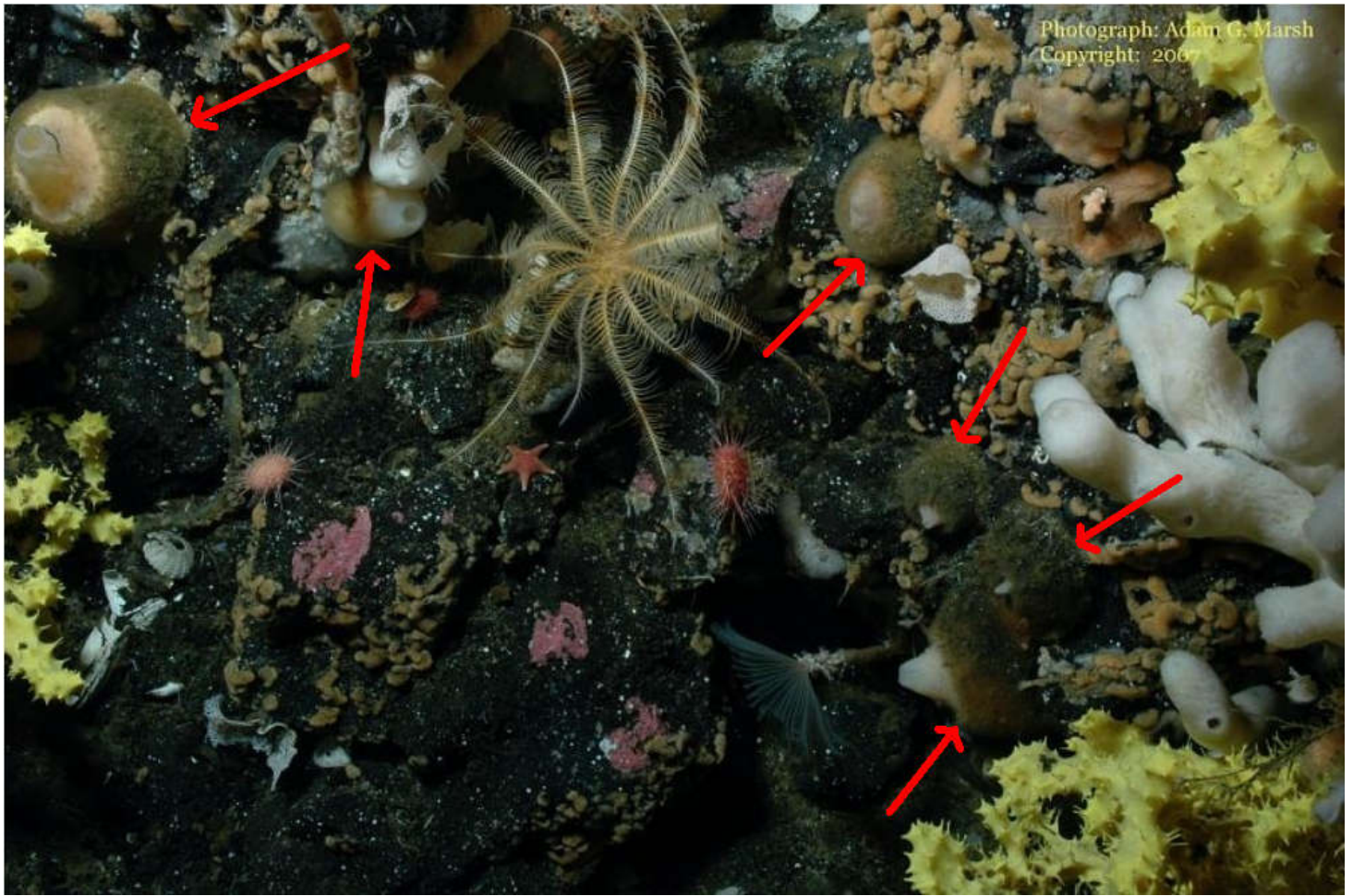
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The body of *Polymastia invaginata* is cushion-shaped, like a flattened sphere, conical, or hemispherical with a diameter up to 11 centimeters and a maximum height up to 20 centimeters [4,7,10,11,15]. *P. invaginata* is solitary and partially burrowing [17]. The surface of *P. invaginata* is covered with a dense bristled or hairy spicule felt especially around papillae or where the sponge is attached to the substrate; its single apical oscular papilla can retract when disturbed [4,6,7,10]. The sponge is firm but compressible [17].



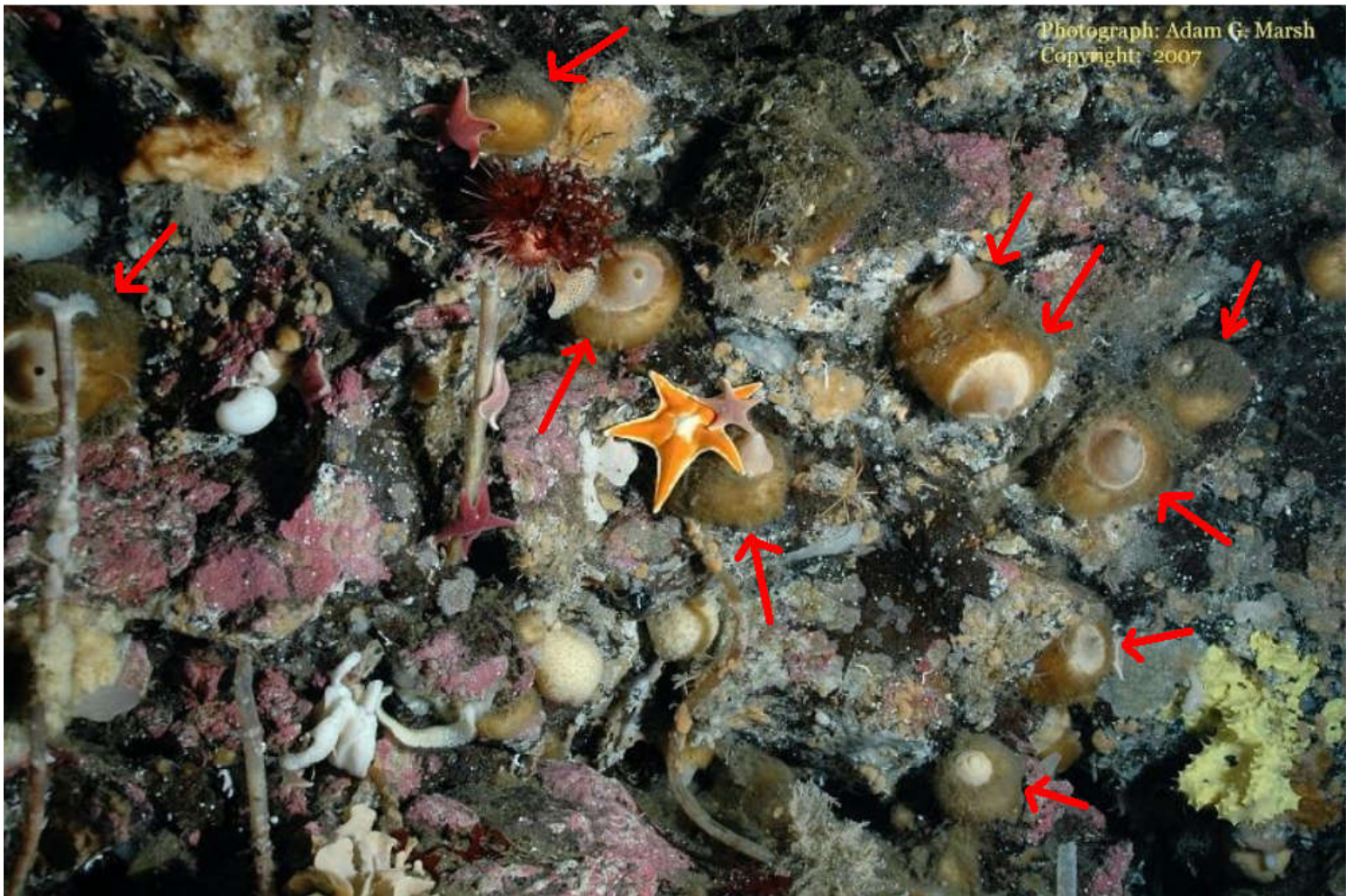






*Polymastia invaginata* is conspicuous on rocks or cobble substrata and in the same areas as the sponge *Homaxinella balfourensis* [5]. The color of *P. invaginata* is whitish gray, pale yellow, dark yellow, gray, light gray, gray brown, or dark brown, and its large central papillae is ivory to cream colored [4,7,8,12,15,17].



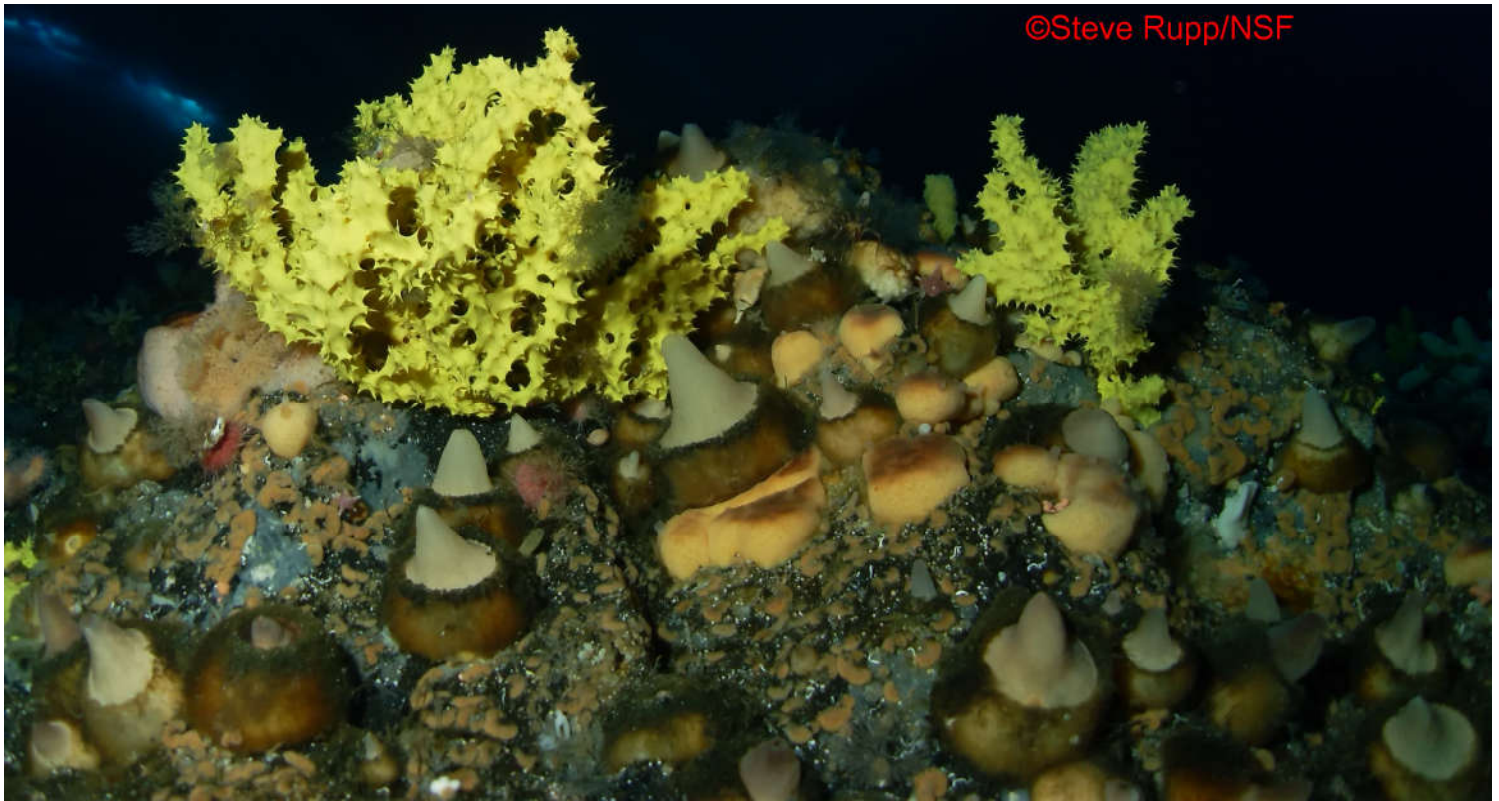


Predators of *Polymastia invaginata* include the seastars *Odontaster meridionalis* and *Perknaster fuscus* (when juvenile), and the nudibranch *Doris kerguelensis* [6].

*Polymastia invaginata* is commonly seen, being 1.0% of the benthic surface cover and 0.5% of the sponge biomass at a Cape Armitage site [6]. *P. invaginata* is found in the second and third benthic zones of Cape Armitage starting below 15 meters depth [6].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2].





**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **3:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **4:** Antarctic Science 4(2):137-150, 1992; **5:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; **6:** Ecological Monographs 44(1):105-128, 1974; **7:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **8:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **9:** Polar Biology 12:559-585, 1992; **10:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **11:** Zootaxa 3542:1-48, 2012; **12:** Tethys Supplement 4:135-156, 1972; **13:** Polar Biology 29(2):83-96, 2006; **14:** Revista Brasileira de Zoologia 24(3):687-708, 2007; **15:** Zootaxa 1866:95-1138, 2008; **16:** Zootaxa 4658(3):461-508, 2019; **17:** Zootaxa 5369(1):57-88, 2023



tubular sponge *Sphaerotylus antarcticus*

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*Sphaerotylus antarcticus* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, and South Georgia Island, from 3 to 450 meters depth [1,2,3,5,8,10,12].





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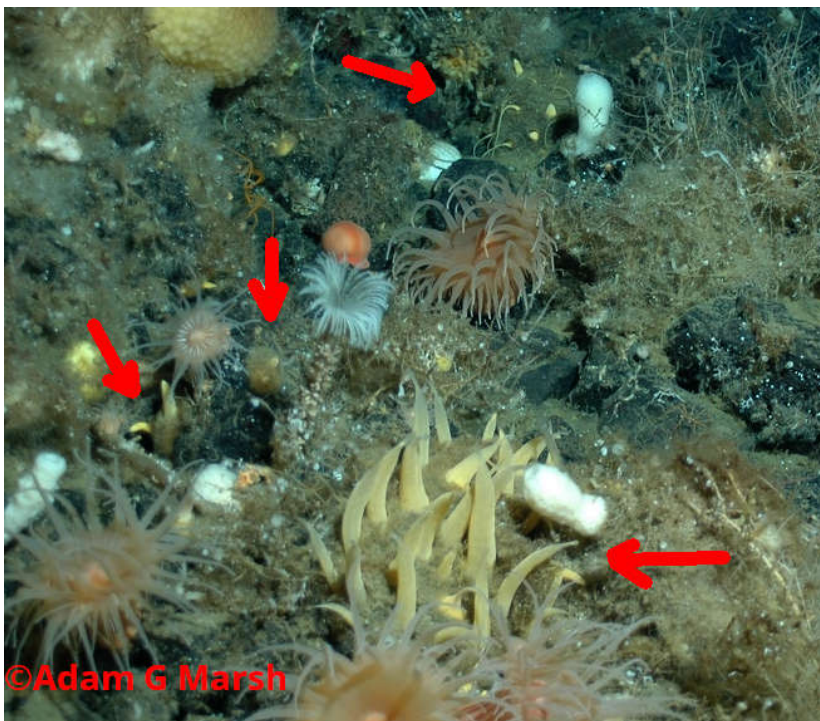
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The surface of *Sphaerotylus antarcticus* is brown and densely bristled; it has up to 20 tube-like oscular papillae which can expand as much as 30 centimeters long, and can be retracted when disturbed [3,4,5,9,10,12]. *S. antarcticus* may "not have its oscula everted... Many of them do not, and they are sort of flat and blend into the... spicule mat background... the *Sphaerotylus* oscula can evert at least 50 cm sometimes as little thin looking tubes, and if you pinch one, it retracts very quickly AND all the rest of them also retract" [11].





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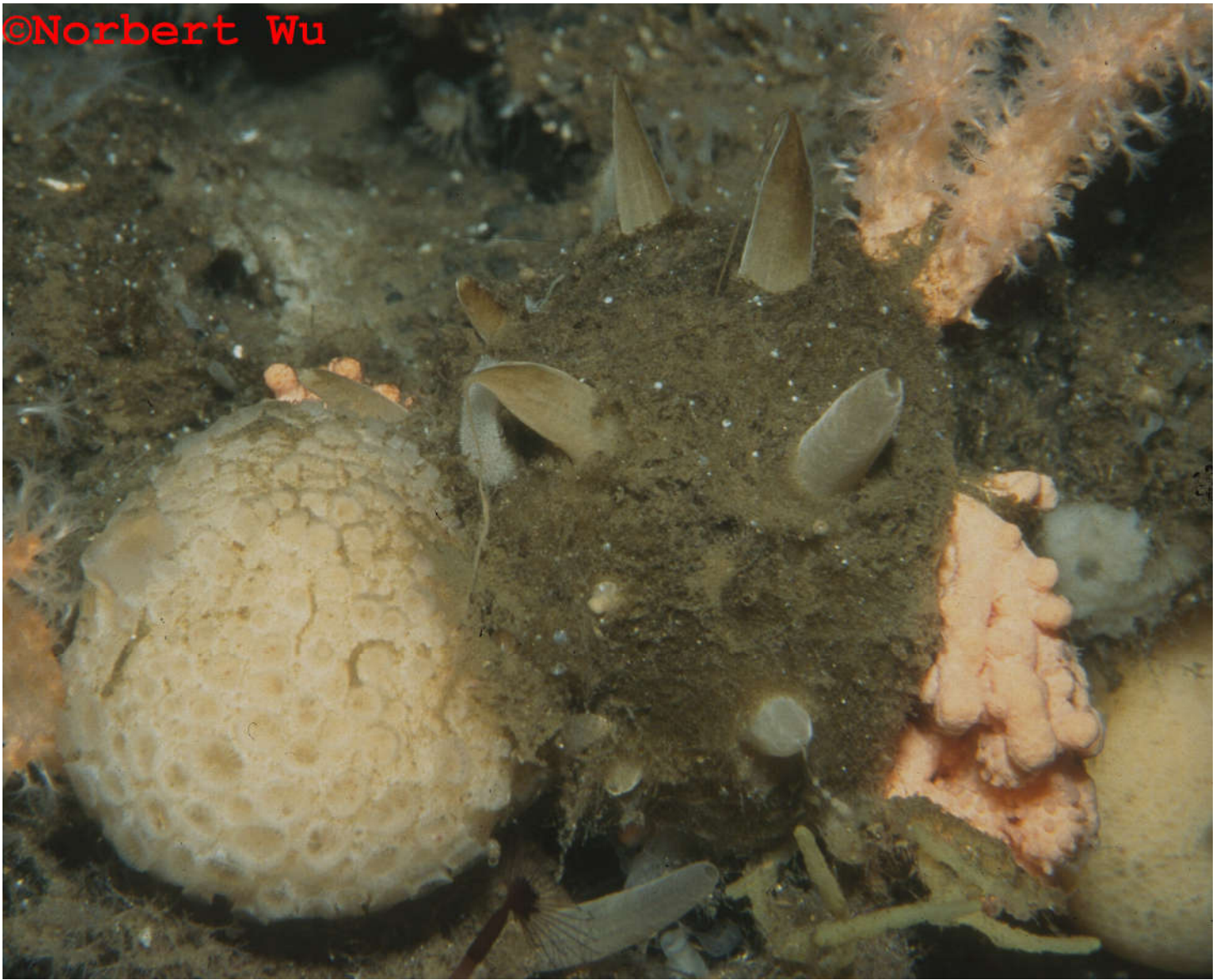


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The color of *Sphaerotylus antarcticus* is grayish, grayish brown, dark brown, or dark gray with yellow, brownish, or orange papillae [3,4,5,6,7,10,12].



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The body of *Sphaerotylus antarcticus* is a low oval lobe, either spherical up to six centimeters in diameter, or cushion-shaped with a maximum width of twelve centimeters (and five centimeters high) [3,5,7,12].



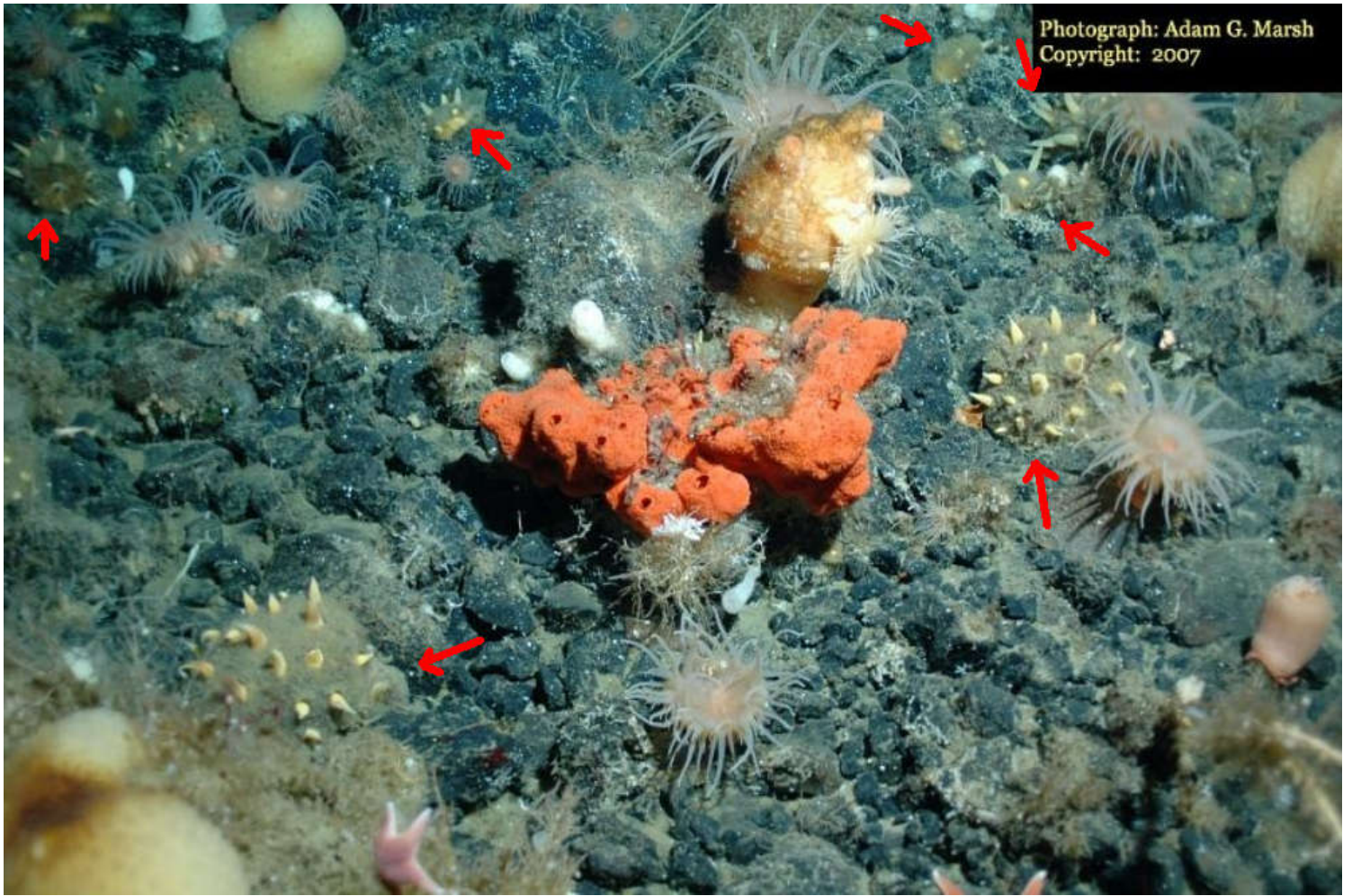


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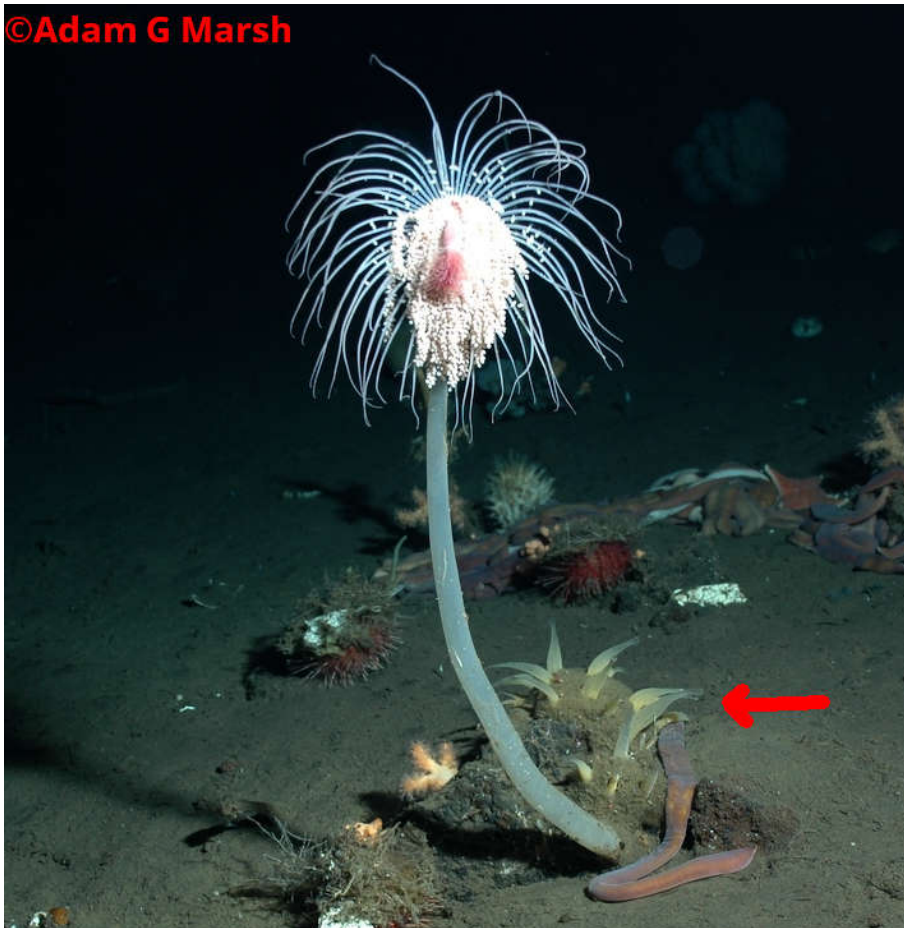


*Sphaerotylus antarcticus* is found in the second and third benthic zones at Cape Armitage below 15 meters depth [4]. *S. antarcticus* is less commonly seen, being 0.5% of the benthic surface cover and 0.3% of the sponge biomass at a Cape Armitage site [4].





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**Taxonomic Note:** Common name taken from Dayton et al, 2016 [9]. Koltun placed *Sphaerotylus antarcticus* in the subgenus *borealis* [1].

**References:** **1:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **2:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **3:** Tethys Supplement 4:9-24, 1972; **4:** Ecological Monographs 44(1):105-128, 1974; **5:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **6:** Instituto Antartico Chileno. Serie Cientifica 39:97-158, 1989; **7:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **8:** Polar Biology 12:559-585, 1992; **9:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **10:** Journal of the Marine Biological Association of the United Kingdom 97(6):1351-1406, 2017; **11:** Paul Dayton, personal communication, 2019; **12:** Zootaxa 4658(3):461-508, 2019



## lollipop sponge *Stylocordyla chupachups*



*Stylocordyla chupachups* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Georgia Island, Crozet Island, Kerguelen Island, and Prince Edward Islands from depths of 13 to 2,880 meters [1,2,4,5,6,8]. *S. chupachups* has a rounded or slightly elongated velvety headed structure (maximum diameter of 2.5 centimeters) on a long, slender, rod-like stalk, with the entire sponge reaching a length of 34 centimeters [1,2,3,6,8,9].

Color of *Stylocordyla chupachups* is white, off-white, gray, light gray, or grayish yellow, pale yellow, or light orange [1,3,8,9]. The parent *S. chupachups* sponge incubates its young internally to about one millimeter in size and fully developed [7]. The young *S. chupachups* then settle in the vicinity of the parent, which accounts for finding these sponges in distinct patches [3].

**Taxonomic Note:** *S. chupachups* was formerly *S. borealis* and with that revision, was dis-established as a bipolar species [8].



**References:** **1:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **2:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976 [reports maximum head diameter of 35 centimeters -- a typo?]; **3:** Antarctic Science 4(2):137-150, 1992; **4:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **5:** Les Demosponges du Plateau Continental de Kerguelen-Heard. N Boury-Esnault & M Van Beveren. CNFRA Number 52, 1982. Paris: Comite National Francais pour les Recherches Antarctiques; **6:** Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; **7:** Polar Biology 25(6): 425-431, 2002; **8:** Polar Biology 34:243-255, 2011; **9:** Antarctic Macrofauna, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 26



sea peach sponge *Suberites caminatus*

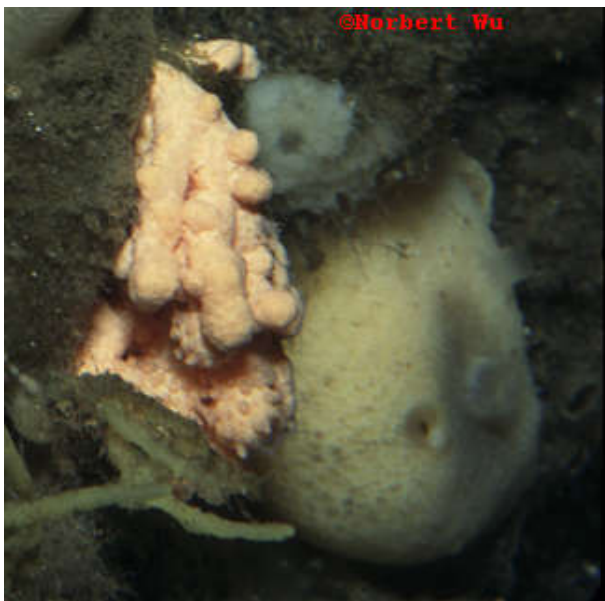


*Suberites caminatus* is found throughout Antarctica and South Georgia Island, Marion and Prince Edward Islands, between Heard and Kerguelen Islands, and in Argentina at depths from 33 to 1,080 meters <sup>[1,2,3,5]</sup>.





The body of *Suberites caminatus* is dense, cushion-shaped or hemispherical, and up to 4.5 centimeters high [2,4,7]. The surface of *S. caminatus* is smooth and can be slightly rough [2]. On the upper part of *S. caminatus*, there are thin-walled tubular papillae with osculae up to 0.5 centimeters long and there may be small tubercles [2,4].





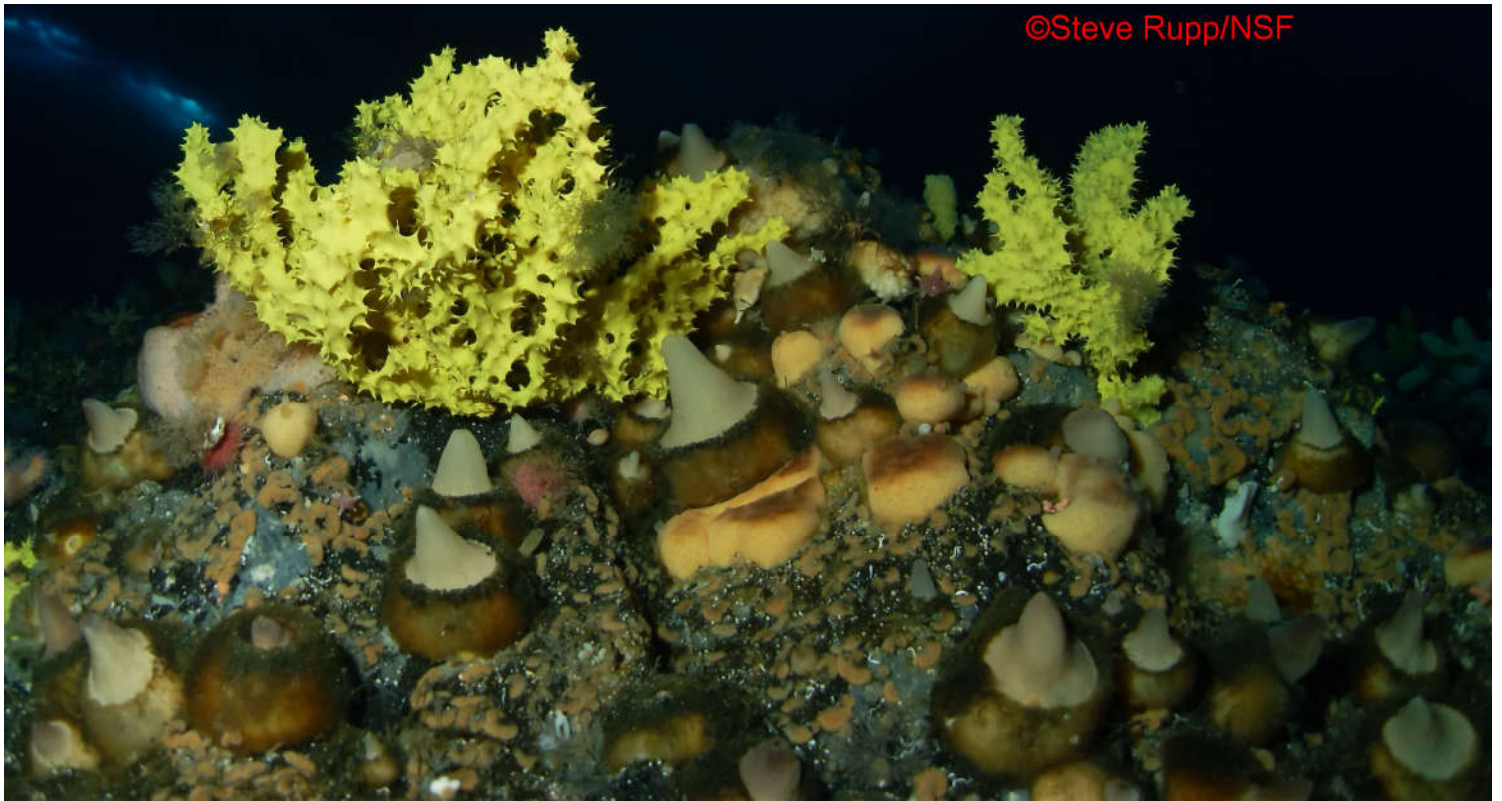


The color of *Suberites caminatus* is grayish yellow, beige, grayish brown, or gray [2,4].

*Suberites caminatus* may host diatoms within its food-capturing cells that line the passages through which the sponge circulates water; these endobiont diatoms live by consuming carbohydrates produced by the sponge and also by photosynthesis [6]. This symbiotic adaptation by the diatoms enhances their survival in the low light levels found down deep under the ice (as well as the dark months of winter) [6].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [7].





**References:** **1:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; **2:** Sponges of the Antarctic. I. Tetraxonida and Cornacuspongida. VM Koltun. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovaniy Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 2. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.6-131; Appendix, Index of Latin Names on pp. 443-448; **3:** Norbert Wu, personal communication, 1999 (33 meters, Ross Island); **4:** Ross Sea Expeditions 1987-1988 and 1989-1990, Straits of Magellan Expedition 1991, Data Report Part 3, Physical, Chemical and Biological Oceanography. F Faranda and L Guglielmo, eds. Genova: Repubblica Italiana, Ministry of the University and Scientific and Technological Research, National Scientific Commission for Antarctica, 1994. pp.67-100; **5:** Polar Biology 12:559-585, 1992; **6:** Biological Bulletin 198:29-33, 2000; **7:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016



volcano sponge *Anoxycalyx (Scolymastra) joubini*



*Anoxycalyx (Scolymastra) joubini* is found throughout Antarctica and South Shetland Islands at depths from 45 to 441 meters [1,3]. *Anoxycalyx (Scolymastra) joubini* is barrel or pear-shaped, can be up to two meters high and 1.4 meters in diameter, but is usually smaller [2,3,5,9].

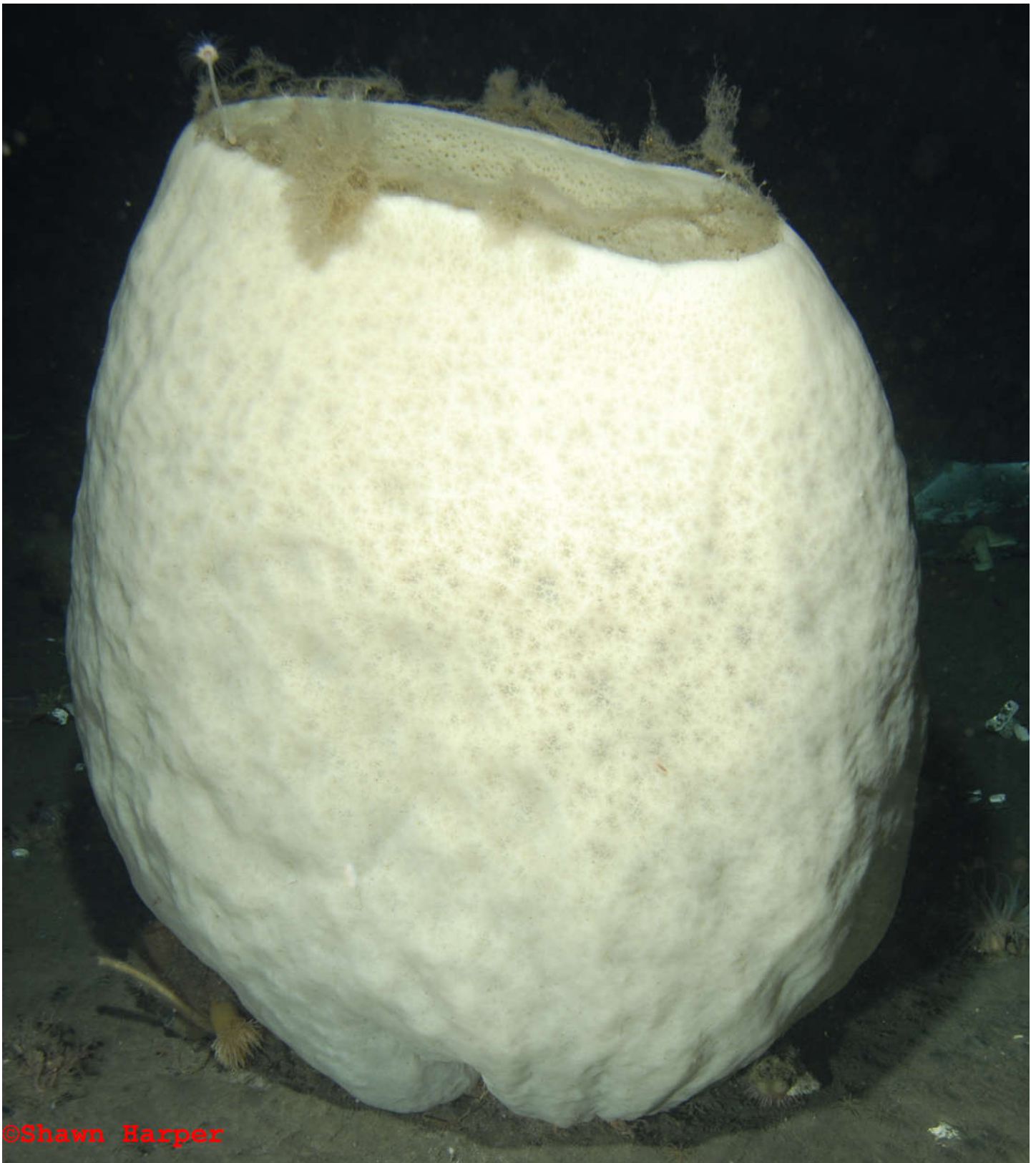




*Anoxycalyx (Scolymastra) joubini* color can be white or beige, sometimes yellowish to light orange [3,4,9].

*Anoxycalyx (Scolymastra) joubini* can have a fast growth rate, with one sponge observed to have grown 30% within two years [8].





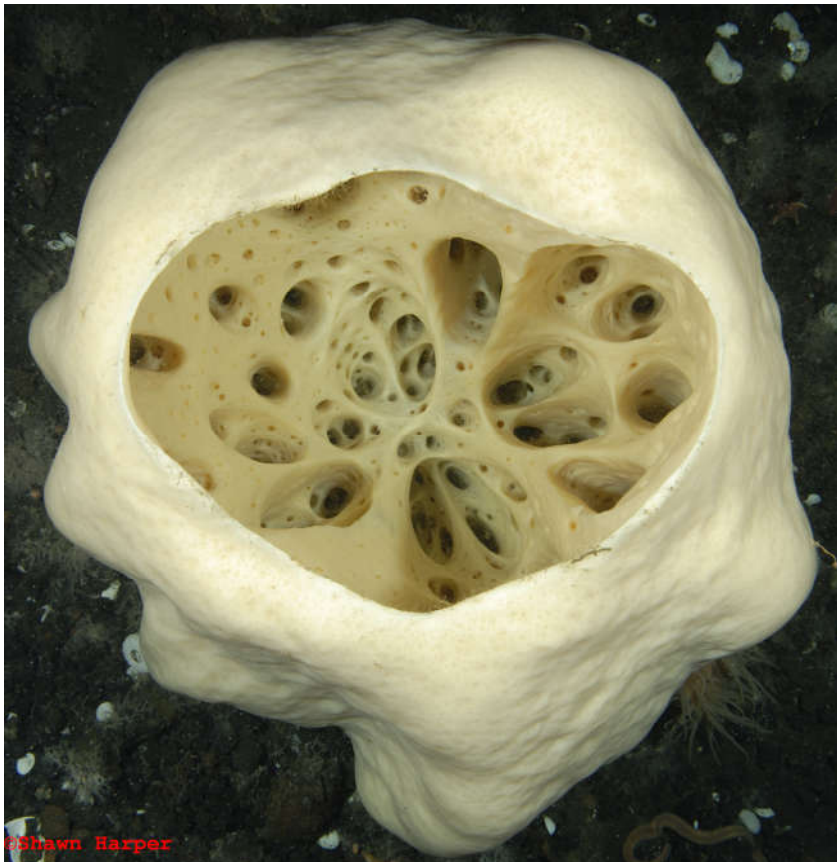
©Shawn Harper

The outer surface of *Anoxycalyx (Scolymastra) joubini* is regular, dense and coalesced, with round pores, and its large excurrent opening (osculum) may be fringed by spicules [3,9].





*Anoxycalyx (Scolymastra) joubini* has a thick robust body wall with a leathery incompressible texture and may show bumps and wrinkles [9].



*Anoxycalyx (Scolymastra) joubini* has large excurrent canal openings on the inside [9].





A common predator of *Anoxycalyx (Scolymastra) joubini* is the seastar *Acodontaster conspicuus* [4,5]. *Acodontaster conspicuus* leaves deep grooves on the surface of the sponge [4,5]. Observations suggest that a single *Acodontaster conspicuus* does not stay long on *A. joubini* but several accumulate, do not leave, and consume enough of the sponge to kill it [5]. Another *A. joubini* predator is the doris nudibranch *Doris kerguelenensis* whose predation leaves circular scars and holes [5].





The diver might find fish sheltering within *Anoxycalyx (Scolymastra) joubini*. Many organisms can be found within *A. joubini* including amphipods, isopods, and polychaete worms [6].





*Anoxycalyx (Scolymastra) joubini* has a short basal spicule tuft 1-5 cm long, with thin, straight inflexible spicules forming a compact or loose mass with no separate strands; since its spicules are short, they are only visible on barren ground and from the side [9].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [2]. In 2002 it was synonymized to the genus *Anoxycalyx* with concepts retained in the subgenus *Scolymastra*, but the subgenera of *Anoxycalyx* may be combined in the future [7].

**References:** 1: Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; 2: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; 3: Antarctic Hexactinellida. Dagmar Barthel & Ole S. Tendal. Champaign, Ill. : Koeltz Scientific Books, 1994. Theses Zoologicae, Volume 23. Synopses of the Antarctic Benthos, Volume 6; 4: Ecological Monographs 44(1):105-128, 1974; 5: Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282; 6: Associated Fauna of Selected Sponges (Hexactinellida and Demospongiae) from the Weddell Sea, Antarctica. Kunzmann, K. Berichte zur Polarforschung / Reports on Polar Research 210, 1996; 7: Systema Porifera. JNA Hooper and RWM Van Soest. New York: Kluwer, 2002; 8: PLoS ONE 8(2):e56939, 1-7, 2013; 9: Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



# barrel sponge *Rossella antarctica*

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*Rossella antarctica* has been found throughout Antarctica and the subantarctic islands, South Georgia Island, Kerguelen Island, off Patagonia, and off southwestern Africa, at depths from 0-1409 meters [1,2,3,8].





*Rossella antarctica* has a spherical, barrel, or pear-shaped body with a large inner cavity, and is cream colored and looks dirty, with its surface covered with a pronounced veil of protruding spicules [1,4,8,9]. *R. antarctica* is anchored by long spicules and is up to 30 centimeters high and 15 centimeters in diameter [1,4,8,9].

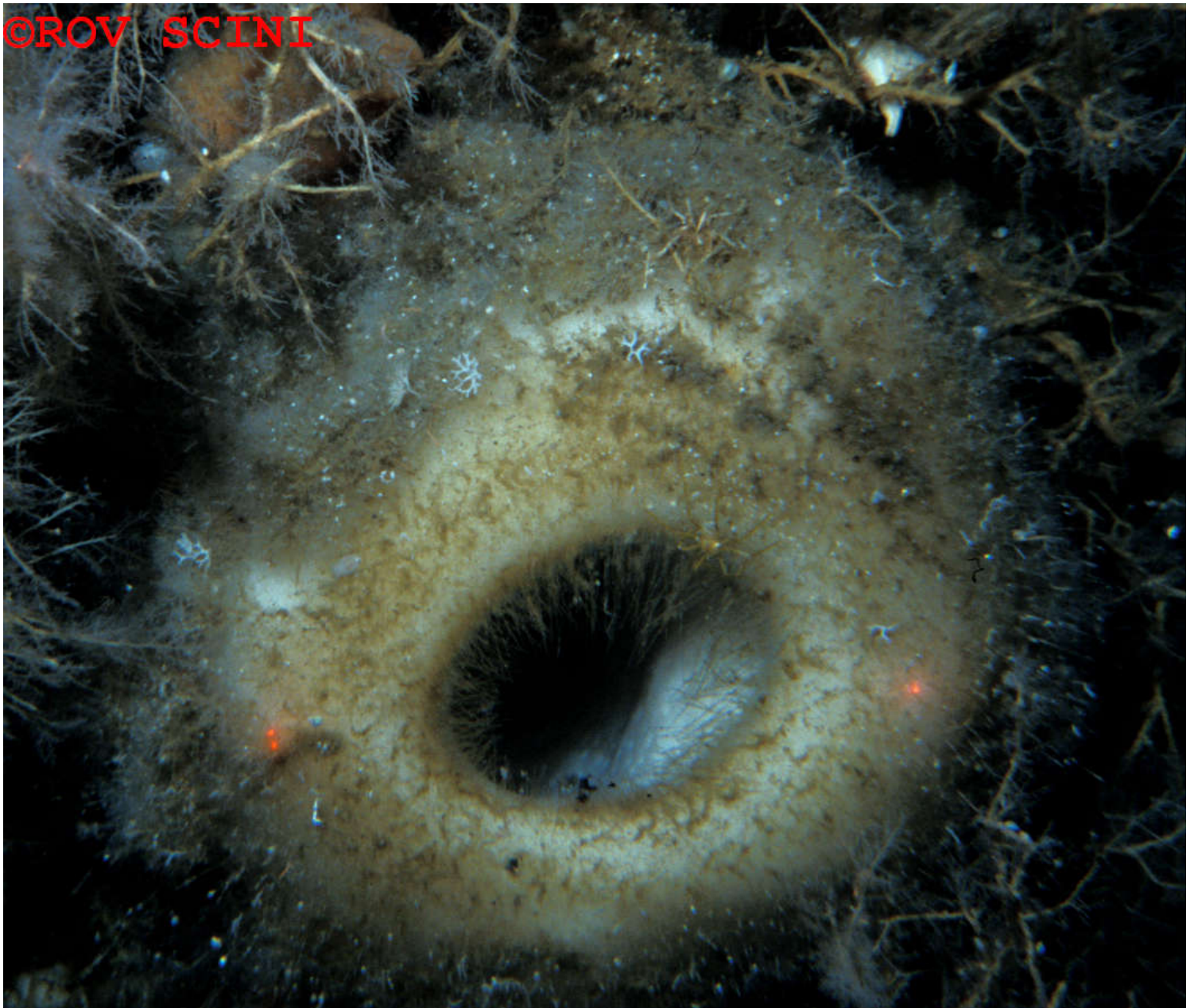
Strongly sedimented *Rossella antarctica* is found on the sediment whereas *Rossella podagrosa* is found partly within the sediment [6,7]. *Rossella antarctica* is rounded in form, usually occurs singly and doesn't bud, whereas *Rossella podagrosa* is elongated in its shape and buds [6,7,9].





The single osculum (opening) of *Rossella antarctica* is large and circular, and can have a fringe of spicules [1,4]. Exact identification of *Rossella antarctica* can be verified by the spicules [4,8].





*Rossella antarctica* feels hard to the touch [5,7].

Invertebrates, including bryozoans, can live in close association with *Rossella antarctica* [4].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [7].

**References:** 1: Antarctic Hexactinellida. Dagmar Barthel & Ole S. Tendal. Champaign, Ill.: Koeltz Scientific Books, 1994. 2: World Porifera Database, [www.marinespecies.org/porifera/porifera.php?p=taxdetails&id=172090](http://www.marinespecies.org/porifera/porifera.php?p=taxdetails&id=172090) Accessed 2015; 3: Antarctic Invertebrates, Smithsonian National Museum of Natural History [invertebrates.si.edu/antiz/taxon\\_specimens.cfm?taxon=7209](http://invertebrates.si.edu/antiz/taxon_specimens.cfm?taxon=7209) Accessed 2015; 4: Zootaxa 3692(1):102-122, 2013; 5: Paul Dayton, personal communication, 2015; 6: Zootaxa 4021(1):169–177, 2015; 7: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; 8: Zootaxa 4126(2):207-220, 2016; 9: Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



## brown vase sponge *Rossella fibulata*



*Rossella fibulata* is found in Antarctica at depths from 40 to 460 meters [1,2,4].

The body of *R. fibulata* is barrel or broadly vase-shaped, colored dark brown to reddish brown and sometimes pink, and up to eighty centimeters high and seventy centimeters in diameter [2,5,6,7].

*Rossella fibulata* is narrower towards the osculum, and the wall gets thinner [7]. *R. fibulata* has big ridge-like laterally flattened (not conical) conules without protruding spicules, and conules are most pronounced in lower body where sponge is widest [7].



The body wall of *Rossella fibulata* is up to eight centimeters thick at the base, and the osculum is up to fifty centimeters in diameter, and thin rimmed with a fringe of spicules [2].

Excurent canal openings are visible on the inside of large *Rossella fibulata* sponges [7].





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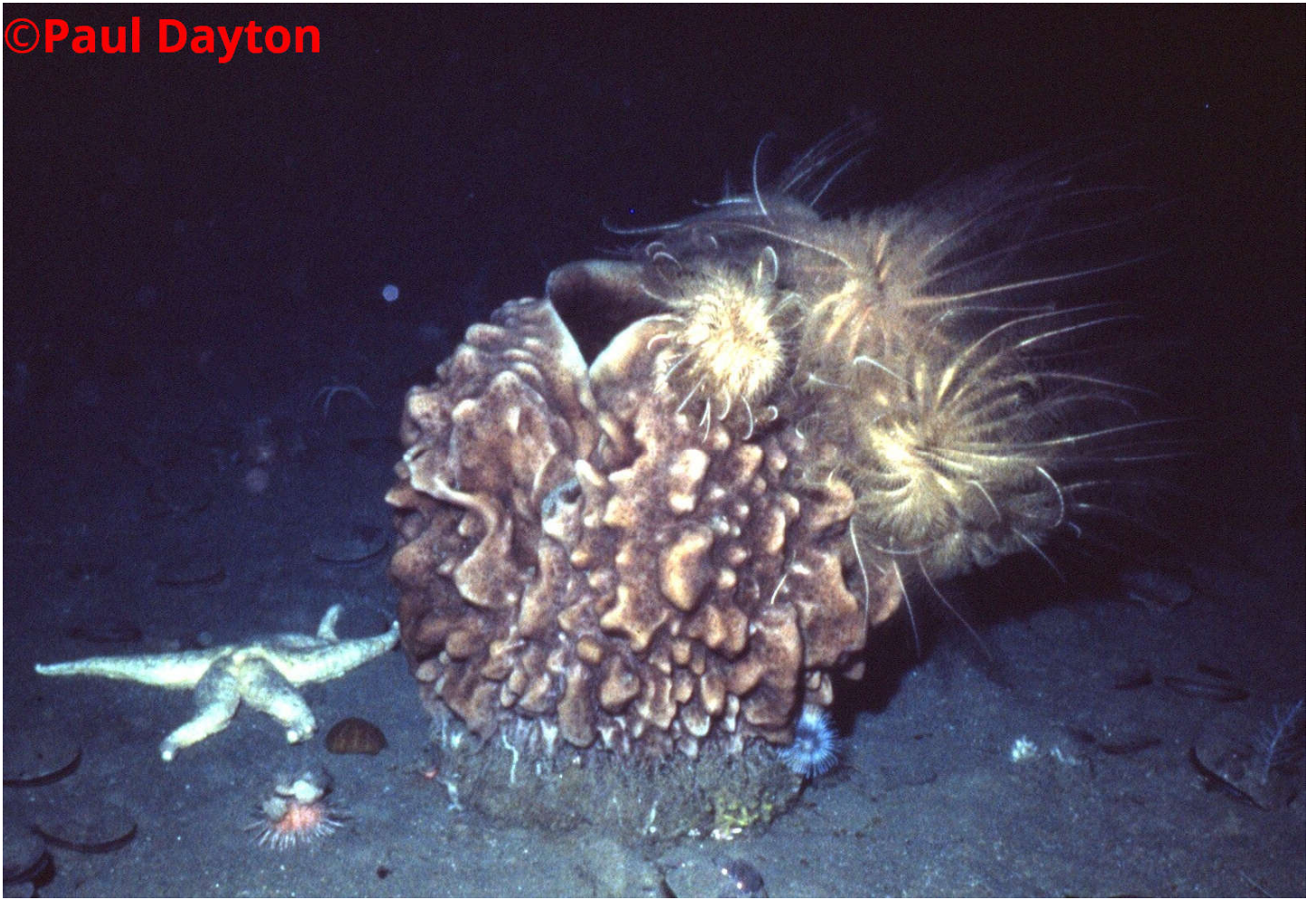
This photo of *Rossella fibulata* was taken at 40 meters depth at Couloir Cliffs in Granite Harbor [4].





Smaller specimens of *Rossella fibulata* are smooth or have only a few small conules that may have thin protruding spicule tufts; larger specimens have many large conules on the lower body that are up to six centimeters in height and diameter and without protruding spicule tufts [2,5].



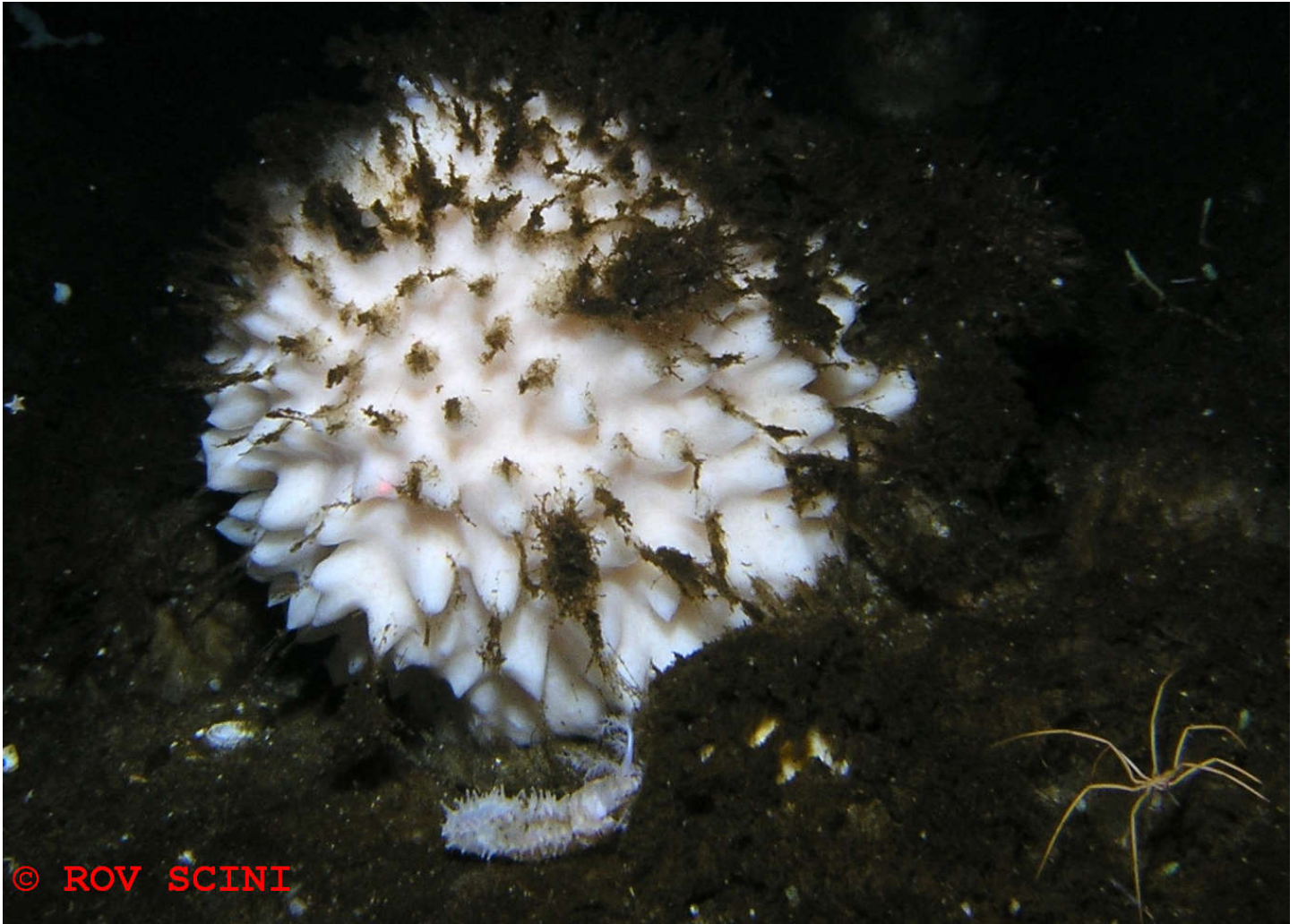


**Taxonomic Note:** Common name taken from Dayton et al, 2016 [6].

**References:** 1: Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; ALSO IN: Australian Faunal Directory (AFD). Australia Department of the Environment and Energy <http://www.environment.gov.au/science/abrs/online-resources/fauna>; 2: Antarctic Hexactinellida. Dagmar Barthel & Ole S. Tendal. Champaign, Ill.: Koeltz Scientific Books, 1994. Theses Zoologicae, Volume 23. Synopses of the Antarctic Benthos, Volume 6; 4: Norbert Wu, personal communication, 1999; 5: Zootaxa 3692(1):102-122, 2013; 6: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; 7: Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



## spiky volcano sponge *Rossella levis*



*Rossella levis* has a white to yellowish elongate or conical barrel-shaped body which tapers in at the top, and ends in a thin tight osculum rim [5,6,7,8].

*Rossella levis* has numerous small pointed conules that are regularly distributed on its surface, with spicule tufts protruding through the ends of the conules [5,6,7,8]. Protruding spicules are short or absent in the upper body, and get longer towards the lower half; at the base, there are distinct bundles of very long flexible anchoring spicules (up to 10 cm) originating from the conules, anchoring the sponge like roots to the substrate [5,6,7,8].

















This sponge was at 80 foot depth at Arrival Heights [4].





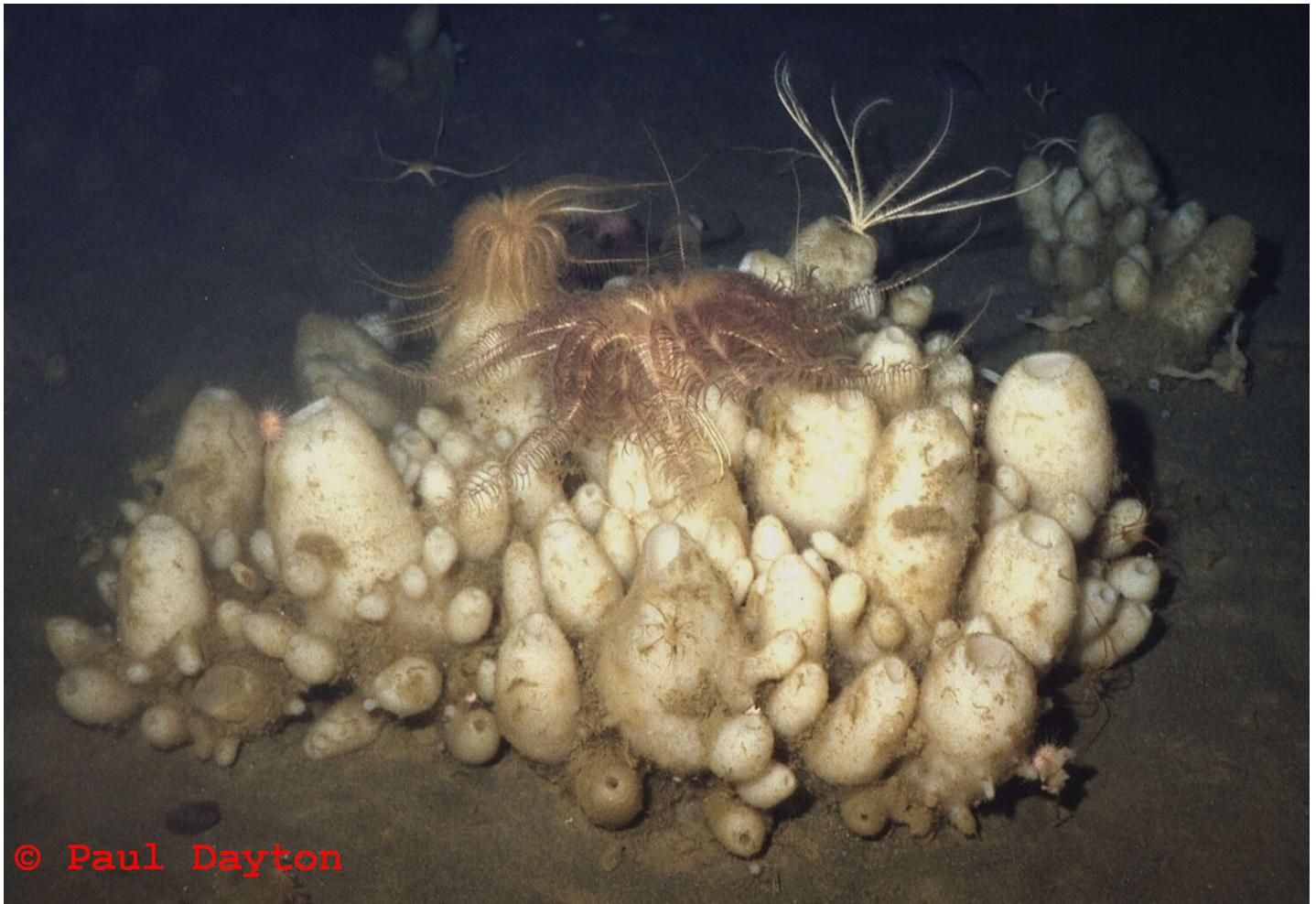
This sponge was at 80 foot depth at Arrival Heights [4].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [7]. Specimens of spiky volcano sponge *Rossella levis* in the SCINI (Stacy Kim) photos were identified by Henry Reiswig [1,2,3].

**References:** **1:** Kirkpatrick, R. 1907b. Porifera Hexactinellida. National Antarctic Expedition (S.S. 'Discovery') 1901-1904. Natural History: 1-25, pls 1-7; **2:** Paul Dayton, personal communication, 2013; **3:** Henry Reiswig to Paul Dayton, personal communication, 2013; **4:** Rob Robbins, personal communication, 2005; **5:** Zootaxa 3692(1):102-122, 2013; **6:** Antarctic Macrobenthos, a Field Guide of the Invertebrates Living at the Antarctic Seafloor. Martin Rauschert & Wolf Arntz. Arntz & Rauschert Selbstverlag, Wurster Nordseekueste, Germany, 2015. Page 25; **7:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **8:** Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



## root sponge *Rossella podagrosa*



The root sponge *Rossella podagrosa* is found in Antarctica at depths from 18-300 meters [1,3,7].

*Rossella podagrosa* has a slender and elongate body without any conules and with a small osculum [2,3,4,6,7].

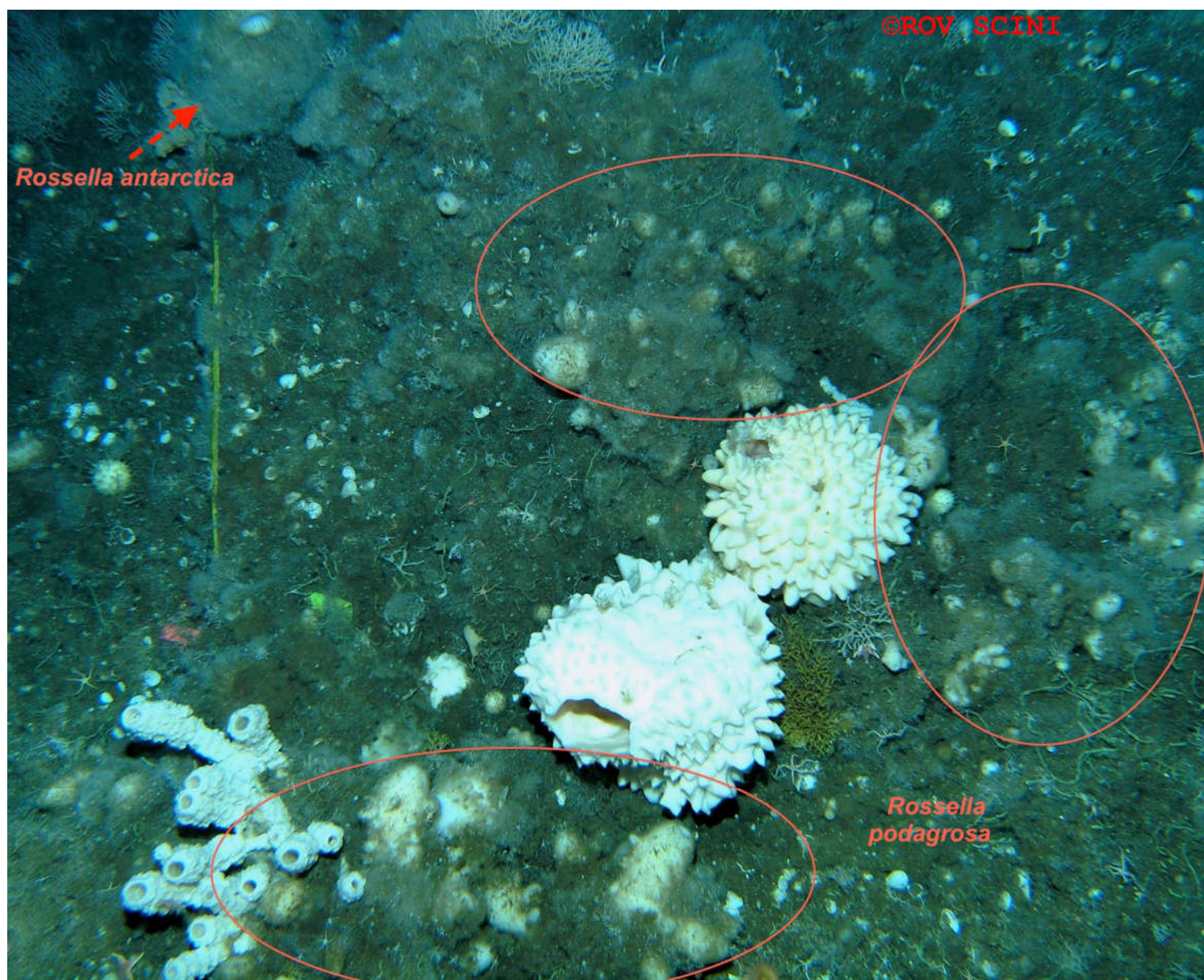
*Rossella podagrosa* is light gray in color, it can be found buried in the sponge spicule mat anchored by long basal spines, with its osculum (opening) extending above the surface [2,3,4,6].





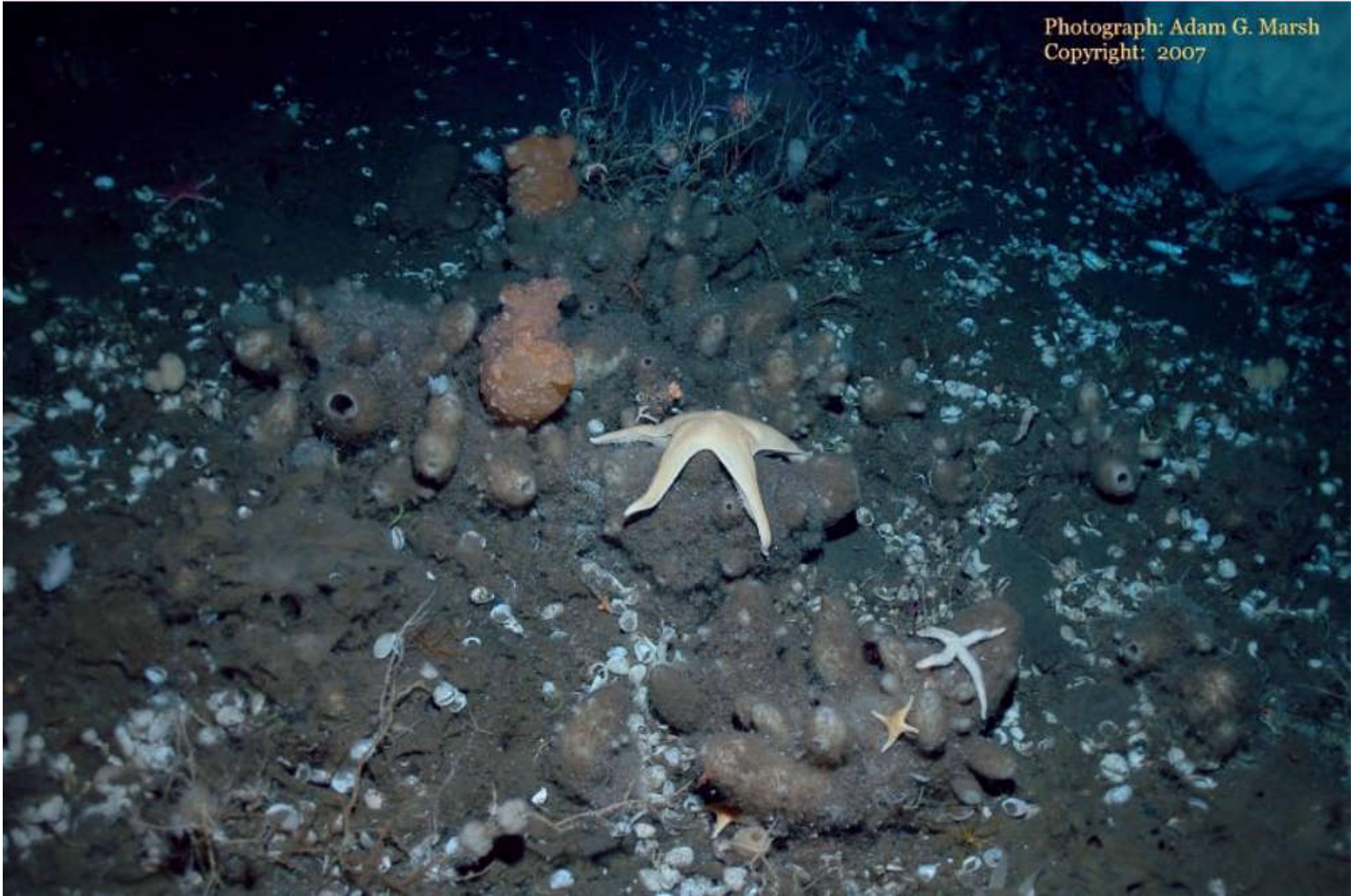


The body surface of *Rossella podagrosa* is rough and covered by a thin spicule veil which collects sediment and debris, giving the sponge a dirty appearance [7]. Burial in the sponge spicule mat shields *Rossella podagrosa* from predation [4]. *Rossella podagrosa* is eaten by the seastars *Odontaster meridionalis*, *Odontaster validus*, *Acodontaster conspicuus*, and *Acodontaster hodgsoni* and the dorid nudibranch *Doris kerguelensis* [3].



*Rossella podagrosa* usually occurs in groups with individuals of different size, sometimes attached to each other at their base [7]. *R. podagrosa* usually has numerous buds growing from the base of the mother sponge, that separate as they grow larger [2]. Newly separated buds of *R. podagrosa* may grow new buds with a year, leading to dense colonies of several sponges growing closely together [2]. Small *R. podagrosa* may increase their volumes almost 300% in three years [4].

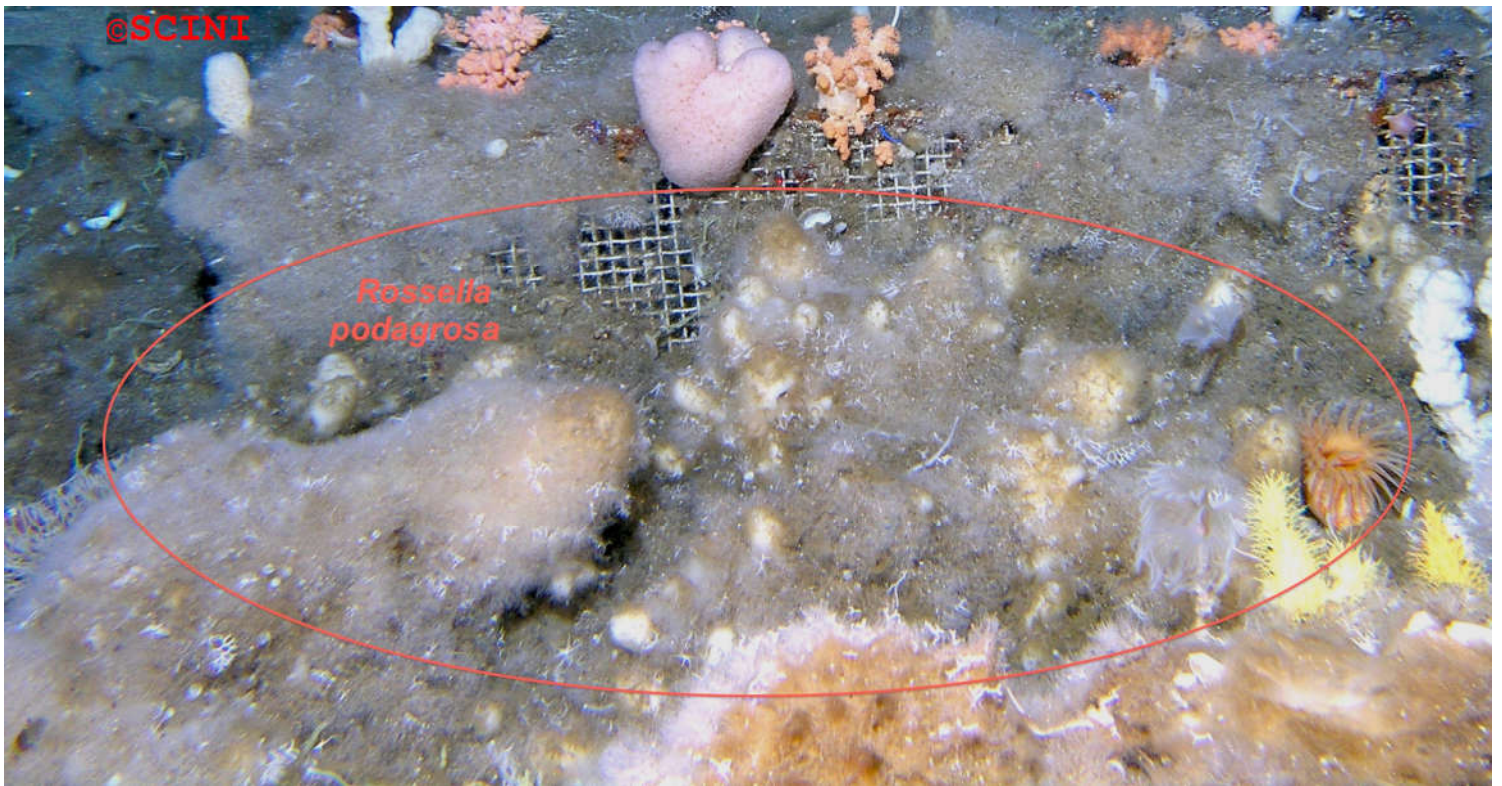




*Rossella podagrosa* has been reported as the most abundant member of the Cape Armitage sponge community being 41.8 percent cover of the benthic surface and 70.9 percent of the sponge biomass [3]. *R. podagrosa* forms extensive aggregations in soft sediment and is rarer on hard substrates [7].

*Rossella podagrosa* feels soft and squishy to the touch [5].





**Taxonomic Note:** Common name taken from Dayton et al, 2016 [6].

**References:** **1:** Kirkpatrick, R. 1907b. Porifera Hexactinellida. National Antarctic Expedition (S.S. 'Discovery') 1901-1904. Natural History: 1-25, pls 1-7; **2:** Zootaxa 4021(1):169–177, 2015; **3:** Ecological Monographs 44(1):105-128, 1974 (Paul Dayton, personal communication, 2015: Observations pertaining to *Rossella racovitzae* are for *R. podagrosa*, due to later sponge identification); **4:** Biologie des Spongiaires, Sponge Biology. C Levi and N Boury-Esnault, eds. Colloques Internationaux du Centre National de la Recherche Scientifique Number 291. Paris: Centre National de la Recherche Scientifique, 1979. pp.271-282 (Paul Dayton, personal communication, 2015: Observations pertaining to *Rossella racovitzae* are for *R. podagrosa*, due to later sponge identification); **5:** Paul Dayton, personal communication, 2015; **6:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **7:** Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



## knobby volcano sponge *Rossella racovitzae*



*Rossella racovitzae* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Georgia Island, Falkland Islands, and Argentina from depths of 18 to 2,000 meters [2,3,4,5,10].

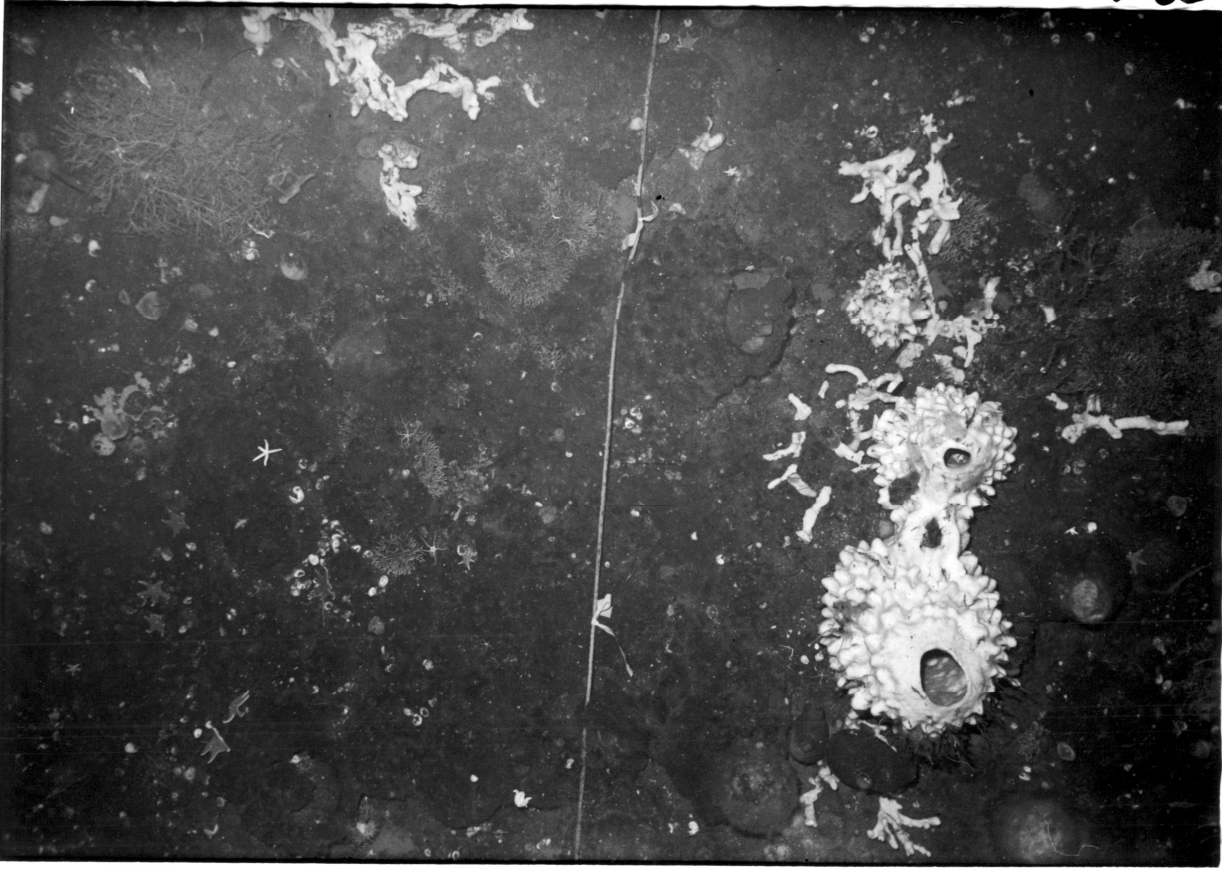
The color of *Rossella racovitzae* is shades of white, yellowish, beige, and light brown [10]. *R. racovitzae* is barrel shaped with pronounced conules and protruding spicule bundles with a tapered osculum [1,10]. The form and distribution of *R. racovitzae* conules over the body surface may be regular or irregular, with large conules sometimes bent [1,10].

The rooting structure of *Rossella racovitzae* is comprised of long spicules merging into a compact structure at the base of the sponge [1,8].



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1975 transect photo showing *Rossella racovitzae* at lower right [9].

*Rossella racovitzae* has several morphotypes varying in conule pointiness with presence or absence of protruding spicules, and may be several cryptic species [6,7,8,10].

**Taxonomic Note:** Common name taken from Dayton et al, 2016 [1].

**References:** **1:** Journal of Experimental Marine Biology and Ecology 482:38-55, 2016. Supplement B, Natural History Observations for Selected Sponge Species; **2:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **3:** B.A.N.Z. Antarctic Research Expedition, 1929-1931, under the command of Sir Douglas Mawson, Kt., O.B.E., B.E., D.Sc., F.R.S., Reports -- Series B (Zoology and Botany). Volume 9, part 4. Porifera -- Part 1: Antarctic Sponges. VM Koltun. Adelaide: Mawson Institute for Antarctic Research, University of Adelaide, 1976; **4:** Antarctic Hexactinellida. Dagmar Barthel & Ole S. Tendal. Champaign, Ill.: Koeltz Scientific Books, 1994. Theses Zoologicae, Volume 23. Synopses of the Antarctic Benthos, Volume 6; **5:** Issledovaniia Fauny Morei 19:49-55, 1972; **6:** Antarctic Science 4(2):137-150, 1992; **7:** Ophelia 36(2):111-118, 1992; **8:** Zootaxa 3692(1):102-122, 2013; **9:** Ecological Applications 29(1):e01823, 2019. Appendix S1. Movement and Behavioral Observations; **10:** Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



smooth volcano sponge *Rossella* sp.



Perhaps a morphotype of *Rossella racovitzae* or perhaps a different species [5]. The smooth volcano sponge *Rossella* sp. is common around McMurdo Station below 40 meters depth [3]. The smooth volcano sponge *Rossella* sp. has long conules (in some sponges, over 30 cm), with no spicules protruding from their ends as does *Rossella levis* [3]. The smooth volcano sponge does not have anchoring spicules, whereas *R. racovitzae* and *R. levis* have them [4].





**Taxonomic Note:** Common name taken from Dayton et al, 2016 [3]. Fragments of the smooth volcano sponge *Rossella* sp. in the ROV SCINI (Stacy Kim) photos were examined by Henry Reiswig [1,2].

**References:** 1: Paul Dayton, personal communication, 2013; 2: Henry Reiswig to Paul Dayton, personal communication, 2013; 3: Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; 4: Paul Dayton, personal communication, 2019; 5: Polar Biology 43(2):91-110, 2020; see also Federwisch, Luisa; Janussen, Dorte; Richter, Claudio (2019): Reference images for identification of common Antarctic glass sponges (Porifera: Hexactinellida: Rossellidae) based on macroscopic characteristics. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, PANGAEA, <https://doi.org/10.1594/PANGAEA.897623>



rubber sponge *Leucascus leptoraphis*



*Leucascus leptoraphis* is found in Antarctica and the Falkland Islands, South Georgia Island, and Kerguelen Islands, from shallow depths down to 450 meters [1,2,3,6,7,8].

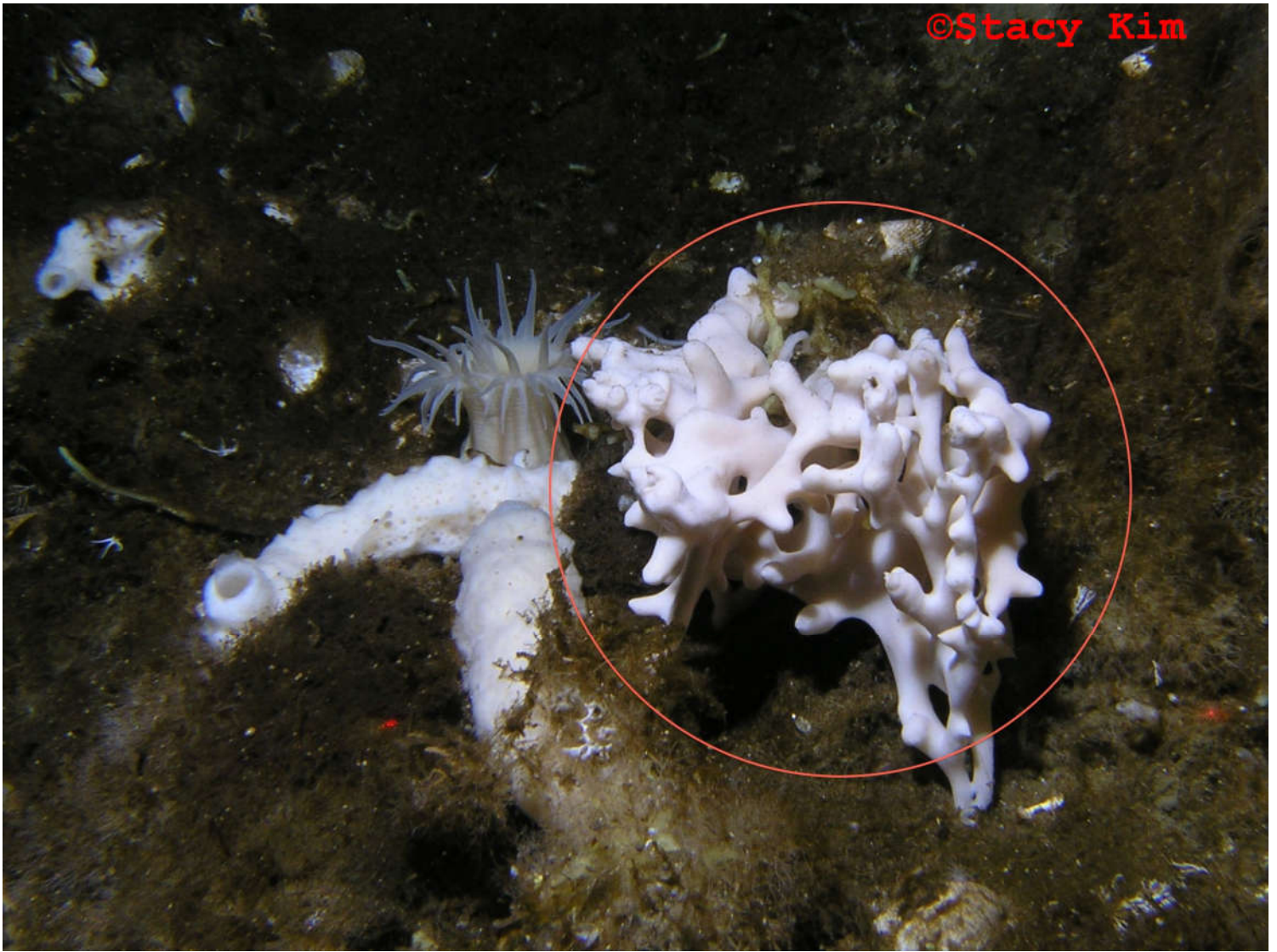
The color of *Leucascus leptoraphis* is light tan, greyish-white to olive-green, and (rarely) pink, and has a soft consistency [2,3,4,5,6].





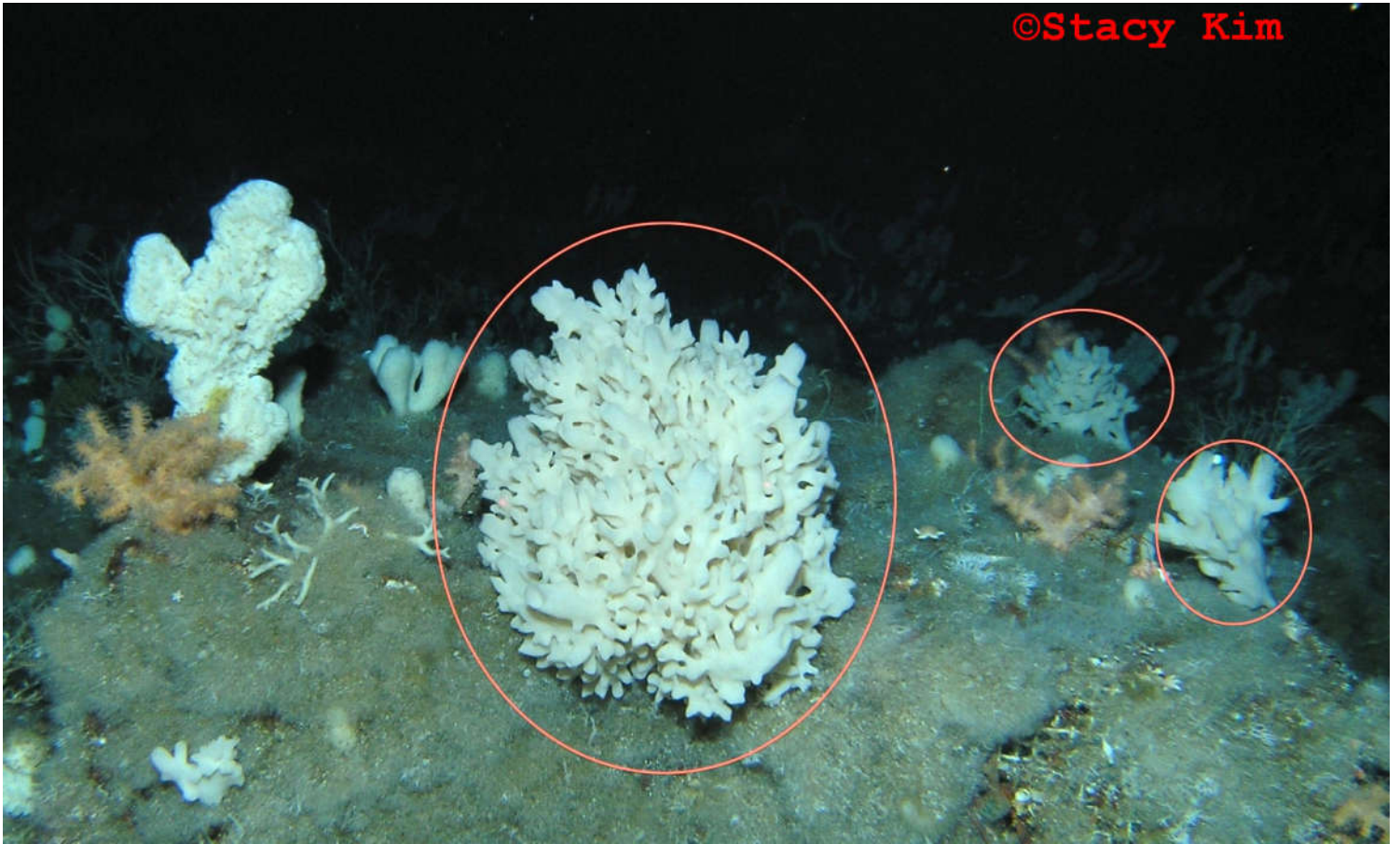
*Leucascus leptoraphis* is less commonly seen, being 0.2% of the benthic surface cover and 0.04% of the sponge biomass at a Cape Armitage site [2].





*Leucascus leptoraphis* may be found attached to the valves of *Limatula hodgsoni* or small rocks, and is usually found in the third benthic zone below 33 meters at Cape Armitage [2]. *Leucascus leptoraphis* grows quickly and may reach 30 cm asymptote height [4].





**Taxonomic Note:** Common name taken from Dayton et al, 2016 [4]. First described by C. F. Jenkin in 1908 [5]. Species assigned from *Leucetta* to *Leucascus* in 2013 [6]. Sometimes the species name is misspelled as *leptorhapsis*.

**References:** **1:** Hooper, JNA & Wiedenmayer, F. Porifera. IN: Zoological Catalogue of Australia. Volume 12. Wells, A, ed. Melbourne: CSIRO Australia, 1994; **2:** Ecological Monographs 44(1):105-128, 1974; **3:** A revision of the classification of the Calcareous sponges; with a catalogue of the specimens in the British Museum (Natural History). Burton, Maurice. London: British Museum (Natural History), 1963; **4:** Journal of Experimental Marine Biology and Ecology 482:38-55, plus 2 supplements, 2016; **5:** Jenkin, C.F. 1908b. Porifera. III. Calcareous. National Antarctic Expedition, 1901-1904 Natural History 4, Zoology: 1-49, pls XXVII-XXXVIII; **6:** Zootaxa 3619(3):275-314, 2013; **7:** Revista del Museo Argentino de Ciencias Naturales, n.s. 7(2):191-219, 2005; **8:** OBIS, Ocean Biogeographic Information System, [iobis.org/mapper/?taxon=Leucascus%20leptorhaphis](http://iobis.org/mapper/?taxon=Leucascus%20leptorhaphis), accessed February 2017