UNDERWATER FIELD GUIDE TO ROSS ISLAND & MCMURDO SOUND, ANTARCTICA, VOLUME 2: CNIDARIA

anemones, soft coral, medusa, siphonophores, hydroids, jellyfish

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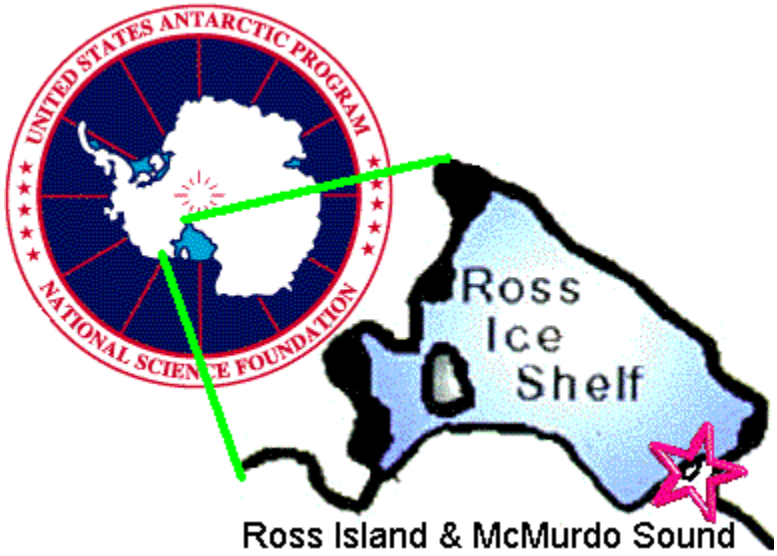
Photographs: Steve Alexander, Jeffrey Bozanic, Peter Brueggeman, Kathleen Conlan/Canadian Museum of Nature, Bill Curtsinger, Paul Cziko, Paul Dayton, Guenter Foersterra, Shawn Harper, Luke Hunt, Adam G Marsh, Jim Mastro, Bruce A Miller, Kevin Raskoff, Rob Robbins/National Science Foundation, Steve Rupp/National Science Foundation M Dale Stokes, & 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, marine, field guide, Antarctica, Ross Island, McMurdo Sound, field guide, anemones, sea anemone, soft coral, medusa, siphonophore, hydroid, jellyfish

anemone *Artemidactis victrix*

anemone *Edwardsia meridionalis* or *Scolanthus intermedius*

anemone *Edwardsiella ignota*

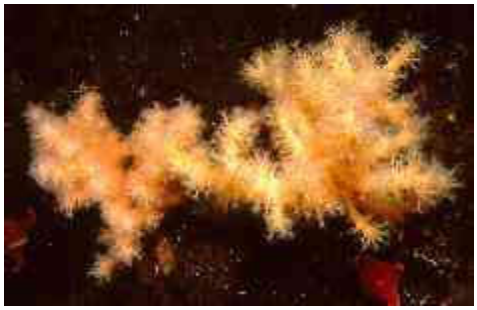
anemone Edwardsiidae family

anemone *Hormathia lacunifera*

salmon anemone *Isotealia antarctica*

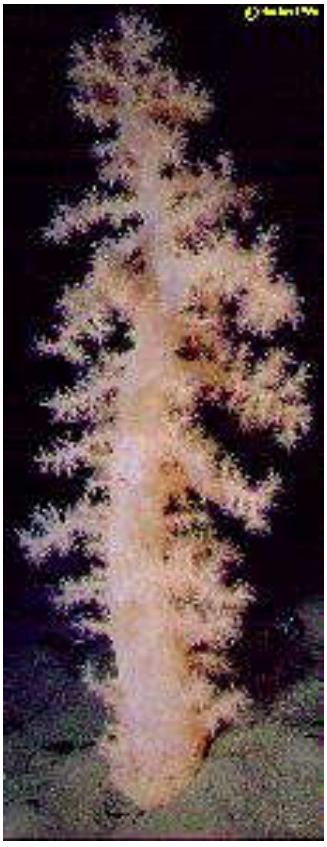
anemone *Stomphia selaginella*

anemone *Urticinopsis antarctica*



soft coral *Alcyonium antarcticum*

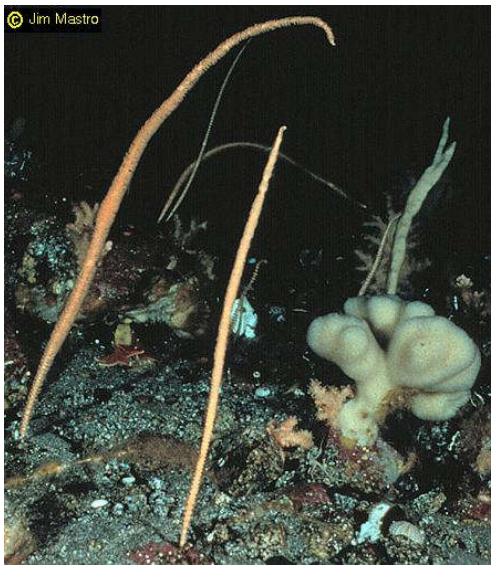
stoloniferous soft coral *Clavularia frankliniana*



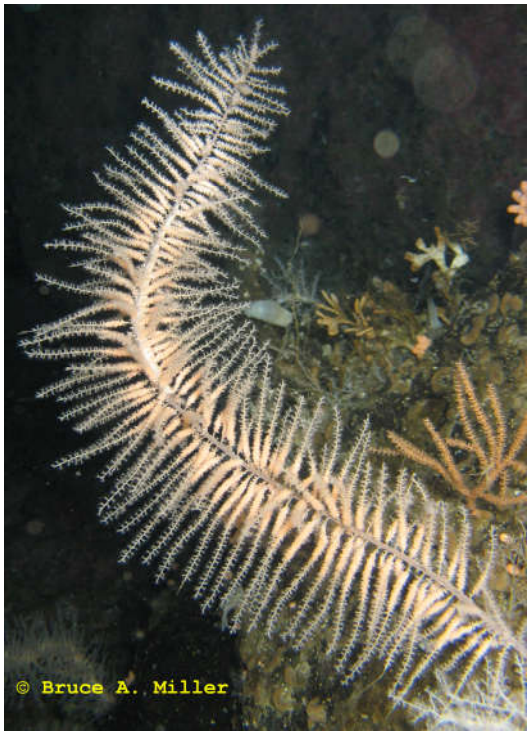
nephtheid soft coral *Gersemia antarctica*

gorgonian *Onogorgia nodosa*

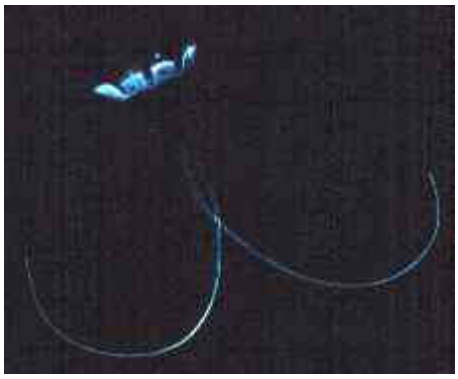
gorgonian, family Ellisellidae, possibly *Ctenocella* sp.



sea whip



soft coral



narcomedusa *Solmundella bitentaculata*

leptomedusa, probably *Cosmetirella davisii*

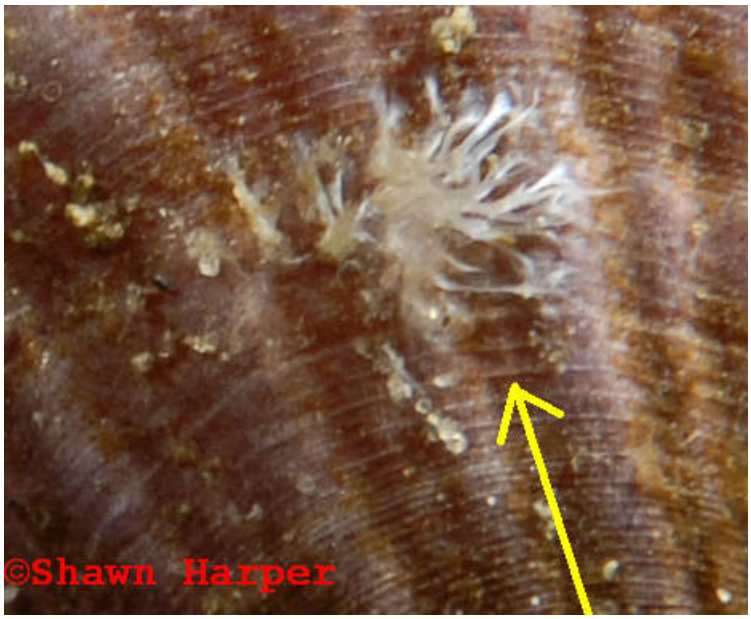
trachymedusa *Benthocodon hyalinus*

physonect siphonophore *Bargmannia elongata*

athecate hydroid *Zyzzyzus parvula*

athecate hydroid *Corymorpha* sp., probably *Corymorpha microrhiza*

athecate hydroid, probably *Ectopleura crocea*



athecate hydroid *Hydractinia angusta*

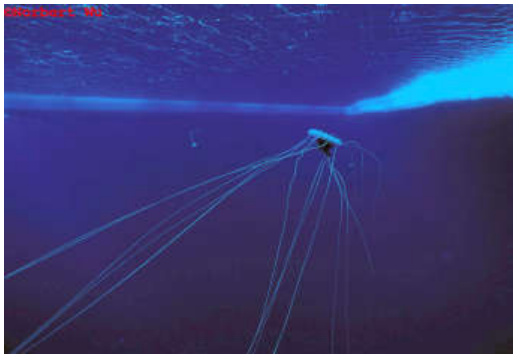
athecate hydroid *Hydrodendron arboreum*

scyphomedusa *Desmonema glaciale*

scyphomedusa *Desmonema gaudichaudi*

Duncecap or helmet jelly *Periphylla periphylla*

scyphomedusa *Diplulmaris antarctica*



coronate scyphomedusa, possibly *Atolla gigantea*

February 2015: Jellyfish/Scyphozoa IDs reviewed by Ron Larson.

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

anemone *Artemidactis victrix*

Artemidactis victrix is found in Antarctica, South Shetland Islands, South Orkney Islands, South Georgia Island, Burdwood Bank, and Punta Arenas/Chile, at depths from 5 to 439 meters [1,4,5,6].

Artemidactis victrix can be up to thirteen centimeters long (preserved) with the pedal disc being 6.5 centimeters wide [1]. It's evident that *Artemidactis victrix* can crawl along on its pedal disc [7].

The column of *Artemidactis victrix* is smooth and cylindrical, dilating into a wide expanded upper portion which can fold backwards and hide the upper part of the column, with tentacles pointing downward in a fringe at the edge of the oral disc [2,6]. The oral disc of *A. victrix* is much wider than its column [2,6].

Artemidactis victrix is white, yellowish-white, salmon, or red in color [1,5].

The oral disc of *Artemidactis victrix* is usually hidden under its partially expanded actinopharynx and is a visual identification character for this species [5,6]. Stephenson said the actinopharynx is "puffed out" and that "the extruded part of the actinopharynx ... forms two great rounded inflated lips, which are strongly and regularly ridged and furrowed" [1,6]. *Artemidactis victrix* tentacles are finely striated and taper from a broad base to a blunt or pointed tip [2].

Artemidactis victrix has up to three hundred tentacles arranged in four or five cycles [1,2,4]. Larger specimens of *A. victrix* have a tentacular crown diameter of 8.4 centimeters and tentacle length of 2.1 centimeters [2].

Artemidactis victrix is found in McMurdo Sound's second and third benthic faunal zone below 15 meters depth [3].

References: 1: Further Zoological Results of the Swedish Antarctic Expedition 1901-1903. Volume 2, Number 3. Actiniaria and Zoantharia. O Carlgren.Stockholm : PA Norstedt & Soner, 1927; **2:** Coelenterata. Part I. Actinaria. TA Stephenson. British Antarctic ("Terra Nova") Expedition, 1910. Natural History Reports. Zoology. Volume V. Coelenterata. London: British Museum (Natural History), 1918; **3:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **4:** A Survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. O. Carlgren. Stockholm: Almqvist & Wiksells Boktryckeri AB, 1949. Kungliga Svenska Vetenskaps-Akademiens Handlingar, 4th Series, Band 1, No. 1; **5:** Invertebrate Zoology 12(1):1–51, 2015; **6:** Zoologiya Bespozvonochnykh 12(1):1-51, 2015; **7:** Polar Record 58(E5)2022 doi:10.1017/S0032247422000031

anemone *Edwardsia meridionalis* or *Scolanthus intermedius*

Edwardsia and *Scolanthus* anemones burrow in mud, sand, or gravel, with the lower part of their column having a thickened cuticle, into which they can retract [3]. *E. meridionalis* and *S. intermedius* co-occur in McMurdo Sound and can be distinguished by nemathybome (series of nematocyst-bearing sacs in column) and tentacle arrangement, and by muscle histology [4,7]. *Edwardsia* and *Scolanthus* anemones are similar to each other, with *Scolanthus* differing from *Edwardsia* in lacking a physa/foot; however, some *Edwardsia* species have very small physa [10,11].

Here is *Edwardsia* sp. removed from the substrate.

Edwardsia meridionalis has been reported from McMurdo Sound locations and the open Ross Sea, though its distribution may be wider to encompass the Antarctic Peninsula, South Georgia Island, Tierra del Fuego, and Chile from 5 to 500 meters depth [1]. *E. meridionalis* typically has sixteen white-tipped colorless tentacles in two circles of eight with the inner tentacles longer than the outer tentacles; twelve to eighteen tentacles have been counted in specimens [1,11]. The column of *E. meridionalis* has been measured up to 3.5 centimeters long and 0.25 centimeters in diameter and has eight white elongated blotches over a chestnut- colored region [1]. Inner tentacles are about 11.25 millimeters long and outer tentacles about nine millimeters long [1].

Edwardsia meridionalis is found burrowed in mud, sand, gravel, sponge spicule mats, and cobbles and is most abundant between 6 to 65 meters [1]. *E. meridionalis* is a dominant species in the McMurdo jetty soft-bottom macrofaunal community [2]. A study examined the gut contents of *E. meridionalis* and found diatoms, egg cases, copepods, polychaetes (pelagic and *Spiophanes tcherniai*), and the tanaid *Nototanais dimorphus* [2]. Its predators include the fish *Trematomus bernacchii* and *Trematomus hansoni* [2].

Scolanthus intermedius has been reported from McMurdo Sound, the Antarctic Peninsula, South Georgia Island, Chile, and Tierra del Fuego, from 6 to 300 meters depth [1,4,5,7,8]. *S. intermedius* has sixteen tentacles in two circles of eight [4,8]. S. *intermedius* is up to 3.8 centimeters long and 0.45 centimeters wide [4,8].

Taxonomic note: *Edwardsia intermedia* was changed to *Scolanthus intermedius* [9].

References: 1: Records of the Australian Museum 33(6):325-360, 1981; **2:** Ophelia 24(3):155-175, 1985; **3:** British Anthozoa: Keys and Notes for the Identification of the Species. RL Manuel. Synposes of the British Fauna, New Series, 18. London: Academic Press, 1981; **4:** Phylogenetic Systematics of the Edwardsiidae (Cnidaria: Anthozoa). M Daly. PhD Dissertation, 2001. George Washington University; **5:** Proceedings of the United States National Museum 16(930):119-216, plates, 1893; **6:** Corallimorpharia and Actiniaria with Description of a New Genus and Species from Peru. O Carlgren. Lunds Universitets Arsskrift. Ny Foljd, Avd. 2. Band 56. No. 6. Kungliga Fysiografiska Sallskapet Handlingar. Ny Foljd, Band 71, No. 6. Reports of the Lund University Chile Expedition 1948-49. Number 38. Lund: CWK Gleerup, 1959; **7:** Marymegan Daly, personal communication, 2001; **8:** Zoantharien. O. Carlgren. Ergebnisse der Hamburger Magalhaensischen Sammelreise. Hamburg: L Friederichsen & Co. 1898. p. 6 plus accompanying figures 4 and 5; **9:** Invertebrate Biology 121(3):212-225, 2002; **10:** Invertebrate Zoology 12(1):1–51, 2015; **11:** Zoologiya Bespozvonochnykh 12(1):1-51, 2015

anemone *Edwardsiella ignota*

Edwardsiella ignota was first described from specimens collected in Chile at depths from 40 to 60 meters; this photo was taken at 24 meters depth on Ross Island (Cape Armitage or Little Razorback Island) [2,5]. *E. ignota* can have twenty to forty tentacles, with the inner tentacles larger and longer than the other ones, and a thin cuticle on the lower part of its column [2,4]. *Edwardsiella ignota* can be distinguished from *Edwardsia meridionalis* by the number of tentacles (in live and preserved material), and the coloration pattern (live material only) [1].

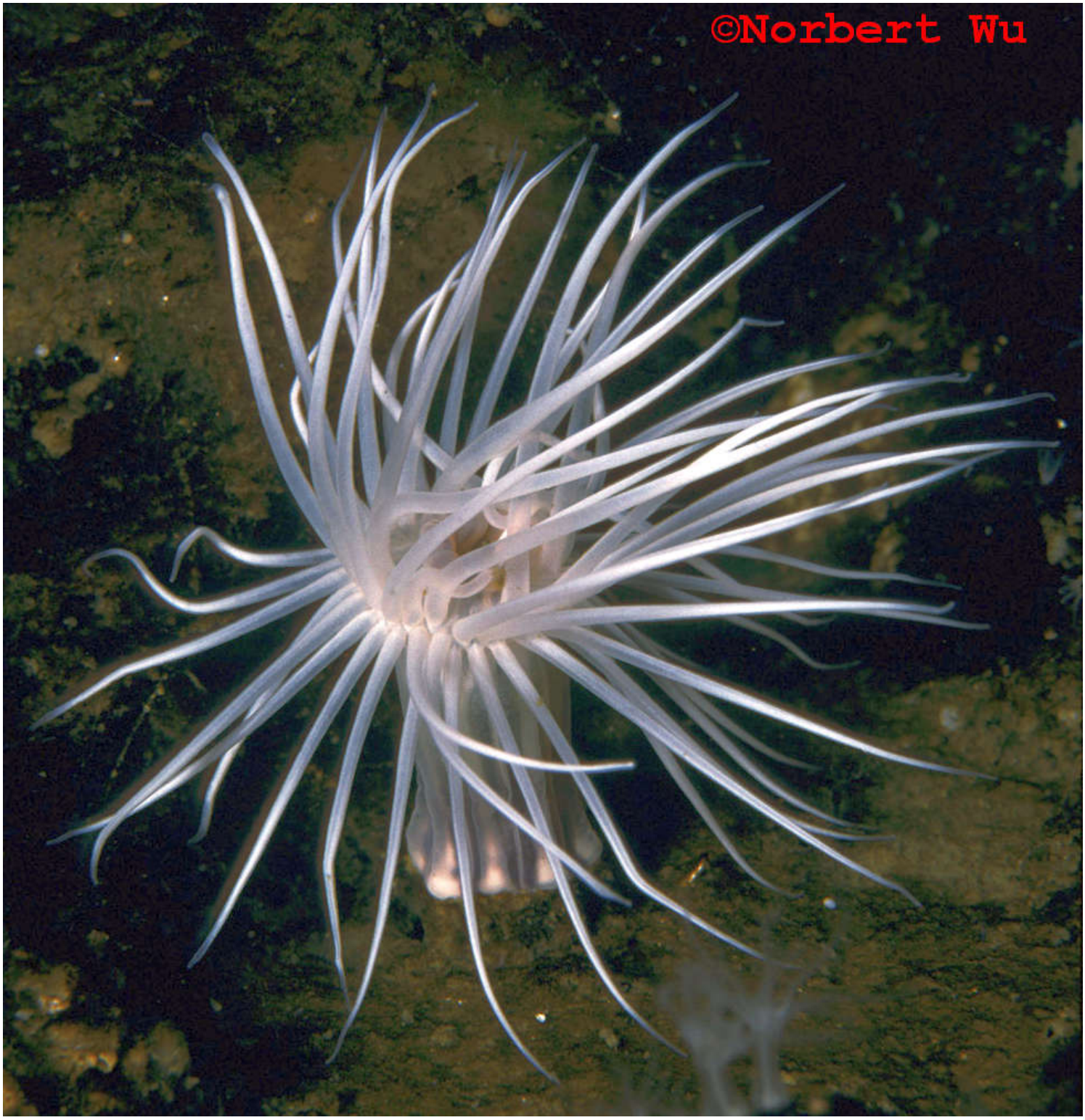
Edwardsiella anemones do not burrow and are usually found in worm holes or holes and crevices among rocks [3,4]. *Edwardsiella* anemones have three cycles of tentacles, are ridged on the upper-most part of their column and have a thickened cuticle on the lower part of their column [3,4,6].

Members of the anemone family Edwardsiidae are generally small and shy; they are seldom found, with the result being that knowledge of their distribution is patchy [3].

Taxonomic Note: First described by Carlgren as *Fagesia ignota* [2]. Carlgren noted the tentacle count and other anatomical details for *Fagesia* in an earlier work [4]. The genus *Fagesia* is a junior synonym of *Edwardsiella* [3,6].

References: 1: Marymegan Daly, personal communication, 2001; **2:** Corallimorpharia and Actiniaria with Description of a New Genus and Species from Peru. O Carlgren. Lunds Universitets Arsskrift. Ny Foljd, Avd. 2. Band 56. No. 6. Kungliga Fysiografiska Sallskapet Handlingar. Ny Foljd, Band 71, No. 6. Reports of the Lund University Chile Expedition 1948- 49. Number 38. Lund: CWK Gleerup, 1959; **3:** British Anthozoa: Keys and Notes for the Identification of the Species. RL Manuel. Synposes of the British Fauna, New Series, 18. London: Academic Press, 1981; **4:** A Survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. O. Carlgren. Stockholm: Almqvist & Wiksells Boktryckeri AB, 1949. Kungliga Svenska Vetenskaps-Akademiens Handlingar, 4th Series, Band 1, No. 1; **5:** Norbert Wu, personal communication, 2001; **6:** Phylogenetic Systematics of the Edwardsiidae (Cnidaria: Anthozoa). M Daly. PhD Dissertation, 2001. George Washington University

anemone Edwardsiidae family



Members of the anemone family Edwardsiidae are generally small and shy; they are seldom found, with the result being that knowledge of their distribution is patchy [1].

References: 1: British Anthozoa: Keys and Notes for the Identification of the Species. RL Manuel. Synopses of the British Fauna, New Series, 18. London: Academic Press, 1981

anemone *Hormathia lacunifera*

Hormathia lacunifera is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Sandwich Islands, South Georgia Island, off Falkland Islands, Bouvet Island, and off Rio Plata in Argentina at depths from 15 to 3,020 meters [1,3,4,7,8].

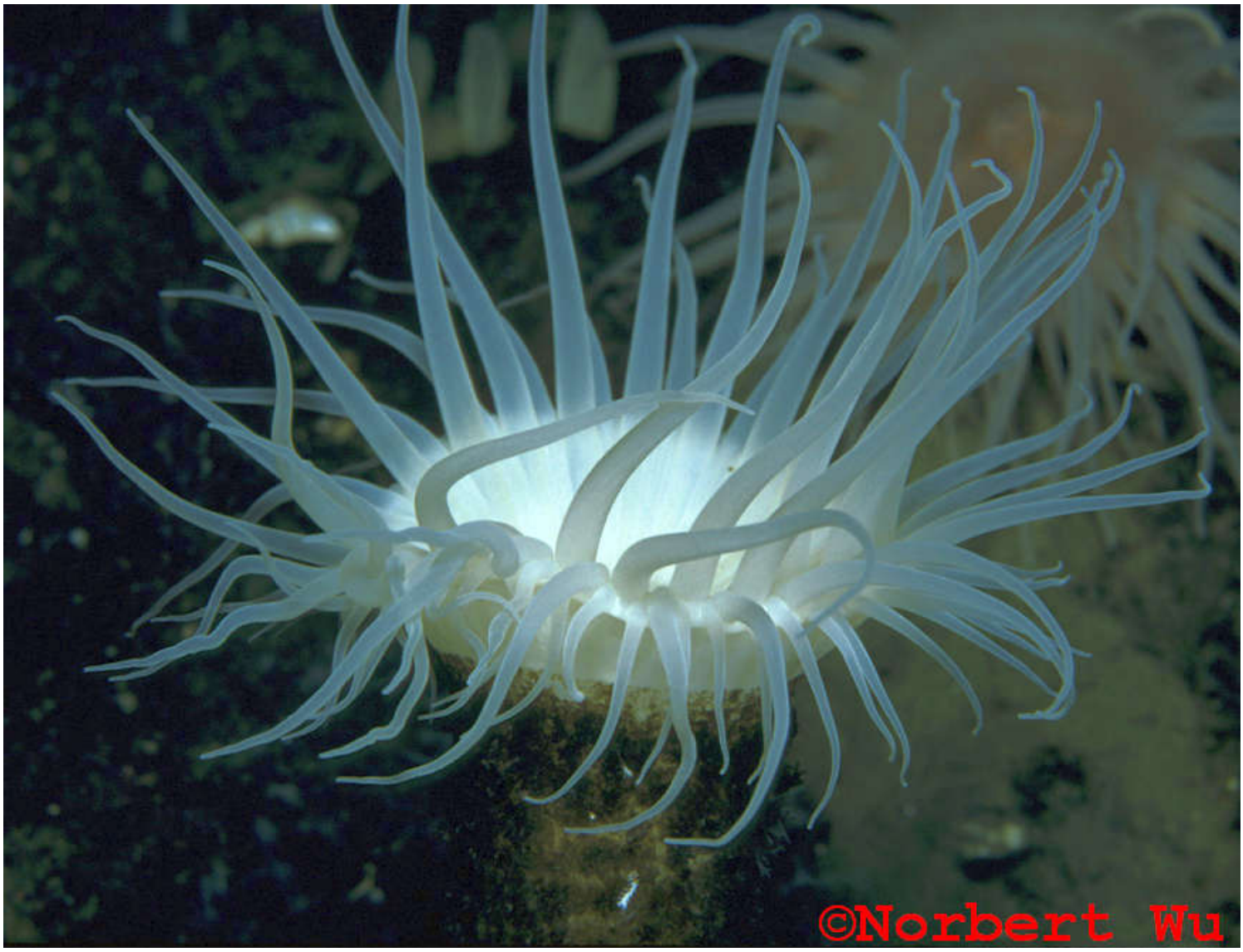
Hormathia lacunifera can be up to 107 millimeters high with a column up to sixty millimeters diameter [1,6].

Hormathia lacunifera is often found attached to rocks [6].

Hormathia lacunifera is found in McMurdo Sound's second benthic faunal zone between 15 and 33 meters depth [2].

The cylindrical column of *Hormathia lacunifera* has two histologically different divisions (shown here), with the lower division (scapus) having a strong reticulated brownish or yellowish cuticle with rectangular tubercles arranged in rows, and the upper division (scapulus) being whitish, yellowish, or pinkish, and is smooth or has shallow longitudinal ridges [1,3,5,6,7,8].

Three externally different morphotypes of *Hormathia lacunifera* have been found, differing in presence and development of cuticle and tubercles in the scapus [6].



The 96 tentacles of *Hormathia lacunifera* are arranged in an inner row of 48 longer tentacles (up to 2.5 centimeters) and a outer marginal row of 48 shorter tentacles (up to 0.8 centimeter) [1,3,6].

The oral disc of *Hormathia lacunifera* is flat, and up to 75 millimeters in diameter, being wider than the column [6].

The tentacles of *Hormathia lacunifera*, like the scapulus (upper part of column) and oral disc, are whitish, yellowish, or pinkish [1,5,6]. The scapulus (upper part of column) and oral disc may be yellow-orange [1,5,6,7]. *H. lacunifera* tentacles are smooth, tapered to a point and relatively long, and are longitudinally ridged [1,5,6].

References: 1: Some Antarctic and Sub-Antarctic Sea Anemones (Coelenterata--Ptychodactiaria and Actiniaria). D Fautin Dunn. Washington DC: American Geophysical Union, 1983; **2:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **3:** A Survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. O. Carlgren. Stockholm: Almqvist & Wiksells Boktryckeri AB, 1949. Kungliga Svenska Vetenskaps-Akademiens Handlingar, 4th Series, Band 1, No. 1; **4:** Berichte zur Polar- und Meeresforschung 402:76-81, 2001; **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 30; **6:** Zootaxa 3624(1):1-100, 2013; **7:** Invertebrate Zoology 12(1):1–51, 2015; **8:** Zoologiya Bespozvonochnykh 12(1):1-51, 2015

salmon anemone *Isotealia antarctica*

Isotealia antarctica is found in Antarctica and in Bouvet Island, Chile, Argentina, and on the mid-Atlantic Ridge off southern Brazil, at depths from 25 to 1,401 meters [2,3,5,7,9,11,13,14].

The somewhat blunt and conical tentacles of *Isotealia antarctica* are arranged in six cycles and are 168 in number (also reported as 192) [2,3,4,7,13]. The points of the tentacles are often pulled inward, and the inner tentacles are longer than outer tentacles [3,4,11,13].

The column of *Isotealia antarctica* is cylindrical, flat-surfaced with fine wrinkles and folds (visible mesenterial insertions), and is colored light pink, salmon, brown-violet or orange [3,5,12,13].

Oral disc and tentacles of *Isotealia antarctica*. The margin of *I. antarctica* has up to 100 small pseudo-acrorhagi (marginal pseudospherules without special nematocysts) [3].

The pedal disc of *Isotealia Antarctica* is wider than the oral disc [13].

Isotealia antarctica is among the largest and most conspicuous benthic invertebrates in the second benthic zone of Cape Armitage between 15 and 33 meters depth [1].

Here *Isotealia antarctica* is shown devouring the medusa *Periphylla periphylla*. Large medusae or jellyfish which get close enough to the bottom in shallow water are prey to be captured by an anemone's tentacles [1]. The struggle can continue for quite awhile. The medusa pulses its bell as it tries to swim away while the anemone slowly pulls the medusa into its mouth.

Isotealia antarctica (on the right) is probably grabbing at the same prey as *Urticinopsis antarctica* (on the left).

Isotealia antarctica (on the left) grabbing at the same *Desmonema glaciale* jellyfish as *Urticinopsis antarctica* (on the right). It appears that *I. antarctica* has been pulled off its attachment, probably by the struggles of the jellyfish, and has been seen attached to jellyfish it is consuming [10].

Here is *Isotealia antarctica* at Puerto Chacabuco, Chile in 25 - 30 meters depth, with the pedal disc being 2-3 centimeters diameter [8].

The anemone column was nearly invisible being covered with mud [8].

Here is a side-by-side comparision of *Urticinopsis antarctica* (on the left) and *Isotealia antarctica* (on the right).

Taxonomic Note: Dell 1972 states that *Isotealia antarctica* is believed to be a synonym of *Tealianthus incertus* by Carlgren, citing Carlgren's 1939 and earlier works [6]. Carlgren in 1949 and 1959 refers to it as *Isotealia antarctica* and differentiates the two genera in 1949 [5,7]. *Isotealia antarctica* in Patagonian Chile is reported with 96 tentacles [11].

References: 1: Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **2:** Further Zoological Results of the Swedish Antarctic Expedition 1901-1903. Volume 2, Number 3. Actiniaria and Zoantharia. O Carlgren. Stockholm: PA Norstedt & Soner, 1927; **3:** Mitteilungen Hamburg Zoologisches Museum und Institut 77:19-33, 1980; **4:** Zoantharien. O. Carlgren. Ergebnisse der Hamburger Magalhaensischen Sammelreise. Hamburg: L Friederichsen & Co. 1898. pp. 25-26 plus accompanying figures 8 and 9; **5:** Corallimorpharia and Actiniaria with Description of a New Genus and Species from Peru. O Carlgren. Lunds Universitets Arsskrift. Ny Foljd, Avd. 2. Band 56. No. 6. Kungliga Fysiografiska Sallskapet Handlingar. Ny Foljd, Band 71, No. 6. Reports of the Lund University Chile Expedition 1948-49. Number 38. Lund: CWK Gleerup, 1959; **6:** Advances in Marine Biology 10:1- 216 (on page 43), 1972; **7:** A Survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. O. Carlgren. Stockholm: Almqvist & Wiksells Boktryckeri AB, 1949. Kungliga Svenska Vetenskaps-Akademiens Handlingar, 4th Series, Band 1, No. 1; **8:** Vreni Haeussermann, personal communication, 2001; **9:** Polar Biology 29(2):83-96, 2006; **10:** Paul Dayton, personal communication, 2003; **11:** Marine Benthic Fauna of Chilean Patagonia. V Haussermann, G Forsterra. Puerto Montt, Chile: Nature in Focus, 2009. p. 258; **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 32; **13:** Zootaxa 3624(1):1-100, 2013; **14:** Bulletin of the American Museum of Natural History 444:1-69, 2021

anemone *Stomphia selaginella*

Stomphia selaginella is found in Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Georgia Island and Shag Rocks, and Bouvet Island at depths from 9 to 1,674 meters [2,3,5,7,8,9]. Above, *Stomphia selaginella* is perched on a hydroid above a *Tritoniella belli* egg mass.

Stomphia selaginella perched on a featherduster worm tube.

Stomphia selaginella is found in McMurdo Sound's third benthic faunal zone below 33 meters depth [1].

Specimens of *Stomphia selaginella* have been measured up to ten centimeters high and six centimeters in diameter; the pedal (foot) disc diameter a bit less than length [2,3].

The skin of *Stomphia selaginella* has a distinct coloration, with a white column with irregular orange spots, an oral disc that is light red or orange with dark orange radial lines at mesenterial insertions, a light orange mouth and actinopharynx, and light orange tentacles with two darker orange bands [3,6,7,8,9].

The white balls within the tentacles of the upper *Stomphia selaginella* anemone are embryos. *Stomphia selaginella* females brood their young internally [3]. The tentacles of *Stomphia selaginella* are thick and pointed, numbering 64 to 68 in most anemones [some authors report 37 to 80], and are restricted to the margin of the anemone's column, with inner tentacles longer than outer ones [2,3,4,7,9].

Young *Stomphia selaginella* have oral disc diameters of three to six millimeters with their pedal disc shaped into a cone [3].

Stomphia selaginella has two morphotypes: thin and delicate, or thick and robust [7].

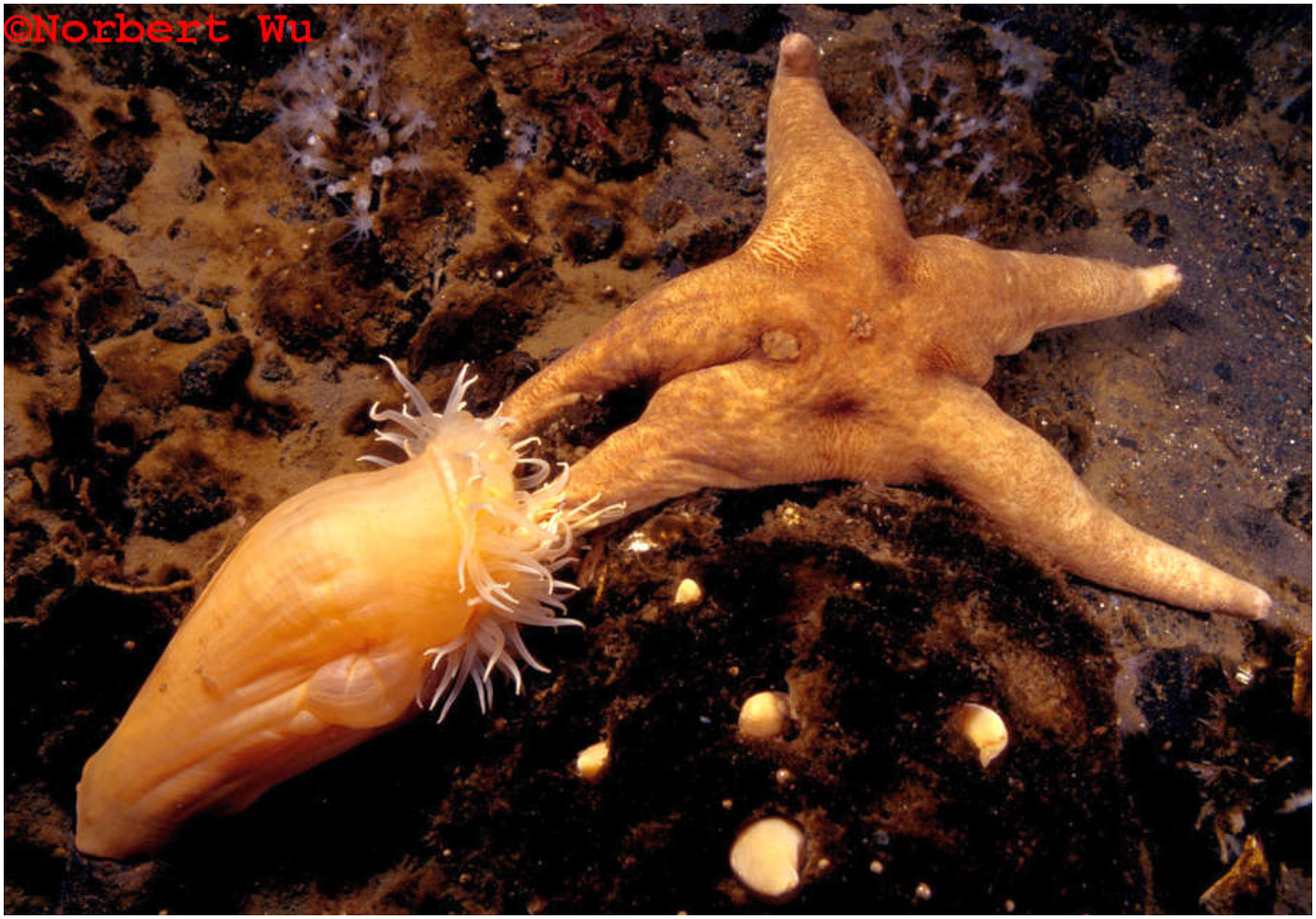
References: 1: Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **2:** Soviet Journal of Marine Biology 1(5):307-315, 1975; **3:** More Antarctic and Subantarctic Sea Anemones (Coelenterata: Corallimorpharia and Actiniaria). DG Fautin. Washington, DC: American Geophysical Union, 1984. Biology of the Antarctic Seas 16. Antarctic Research Series 41(Paper 1):1-42; **4:** Actiniaria. O Carlgren and TA Stephenson. Australasian Antarctic Expedition 1911-1914, Scientific Reports. Series C, Zoology and Botany. Volume 9, Part 2. Sydney: David Harold Paisley, Government Printer, 1929; **5:** A Survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. O. Carlgren. Stockholm: Almqvist & Wiksells Boktryckeri AB, 1949. Kungliga Svenska Vetenskaps-Akademiens Handlingar, 4th Series, Band 1, No. 1; **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 31-32; **7:** Zootaxa 3624(1):1-100, 2013; **8:** Invertebrate Zoology 12(1):1–51, 2015; **9:** Zoologiya Bespozvonochnykh 12(1):1-51, 2015

anemone *Urticinopsis antarctica*

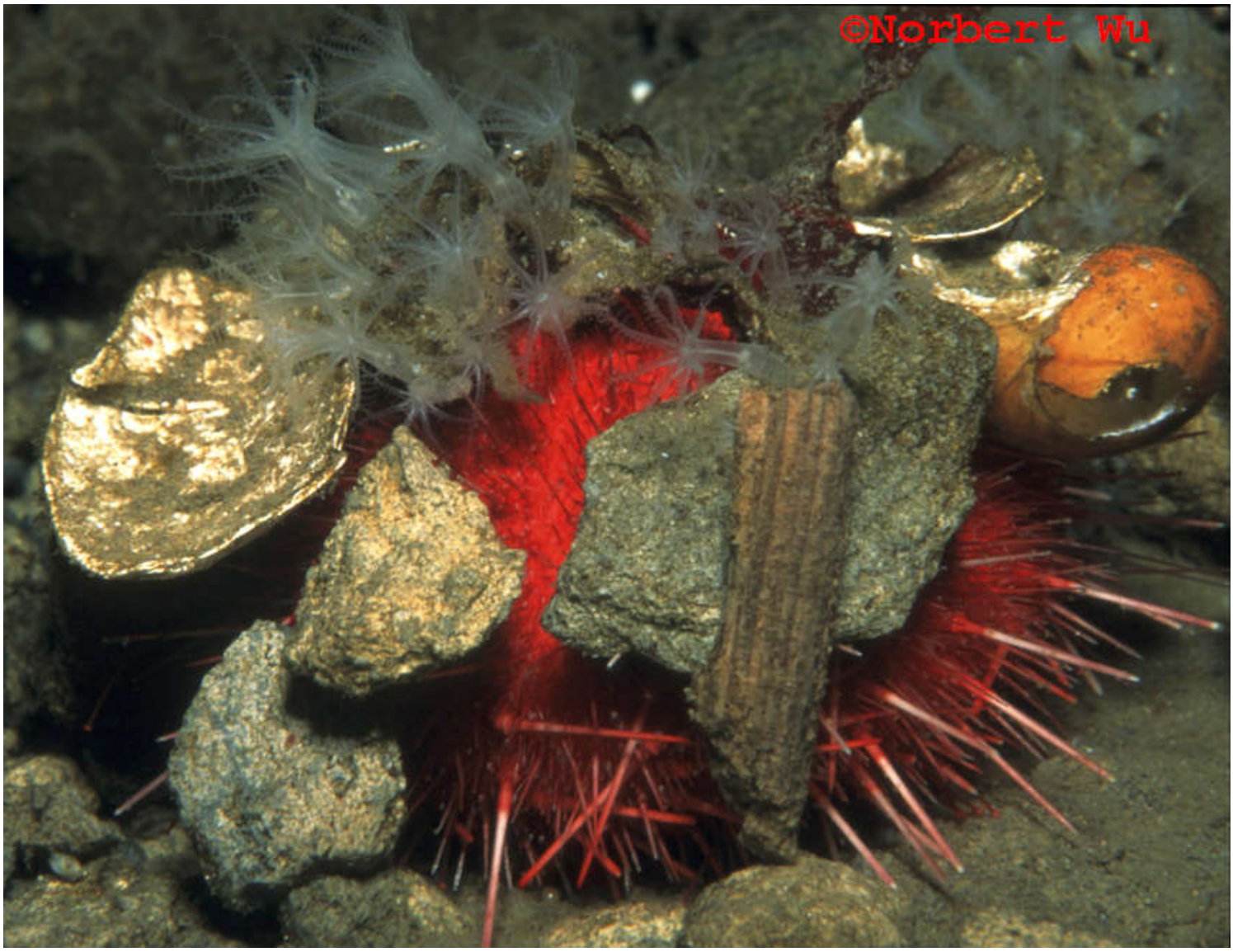
Urticinopsis antarctica is found in Antarctica and the South Shetland Islands from 6 to 223+ meters depth [2,5,6].

Urticinopsis antarctica has a cylindrical massive sandy-colored body column up to fifteen centimeters high and eleven centimeters in diameter [2,7]. *Urticinopsis antarctica* is among the largest and most conspicuous benthic invertebrates in the Cape Armitage community between 15 and 33 meters depth and is found below 33 meters as well [1].

The tentacles and oral disk of *Urticinopsis antarctica* are dirty white [2,7]. *U. antarctica* tentacles range in number from 120 (1.2 centimeter diameter anemone) to 600 - 800 (10 centimeter diameter anemone) [2,4]. Contracted tentacles are short and conical with slight longitudinal furrows and sometimes rounded on the end [2,4,6].



Urticinopsis antarctica may bend over to engulf a seastar (*Perknaster fuscus* shown here). *U. antarctica* feeds predominantly on seastars and sea urchins which are 77% of its diet [1].



The sea urchin *Sterechinus neumayeri* is the most frequent prey of *Urticinopsis antarctica* at 65% of its diet [1]. *Sterechinus neumayeri* shields itself from the anemone's tentacled grasp with attached bits of shell, debris and algae; the shells and debris often have stinging hydroids on them (see the whitish polyps on top of the urchin at left). If the anemone touches the urchin's hydroids, it releases the urchin. If the urchin is aware of the anemone's tentacles, the urchin releases its protective camouflage and escapes. If this camouflage isn't present on the urchin, *Urticinopsis antarctica* captures and eats the urchin [1].

The seastars *Odontaster validus* (shown being devoured above) and *Diplasterias brucei* are significant prey items at 4% and 5% of the diet of *Urticinopsis antarctica* respectively [1]. Combined predation on the seastar *Acodontaster conspicuus* by *Urticinopsis antarctica* and the seastar *Odontaster validus* minimally killed 3.5% of the population of the seastar *Acodontaster conspicuus* in one year at Cape Armitage [3].

Urticinopsis antarctica is a generalist in its diet, and one study found in its gastrovascular cavity molluscs (*Adamussium colbecki*, *Laevilacunaria pumilia*, *Eatoniella caliginosa*, a Rissoid gastropod), a Comatulida crinoid, sea urchin *Sterechinus neumayeri*, ophiuroid *Ophiurolepis brevirima*, and fish *Trematomus* sp. [8]. Several *Conicostoma* sp. amphipods have been found undigested in *U. antarctica* and may be commensal organisms [8].

Urticinopsis antarctica also feeds on large medusae or jellyfish (*Desmonema glaciale* shown here) which get close enough to the bottom in shallow water to be captured by the anemone's tentacles; 21% of its diet are medusae [1]. Study of the stinging capsules in the endodermal epithelium of the pharynx of *Urticinopsis antarctica* showed them to be typical for scyphozoan medusas and properly oriented, indicating their use by the anemone in prey capture [8].

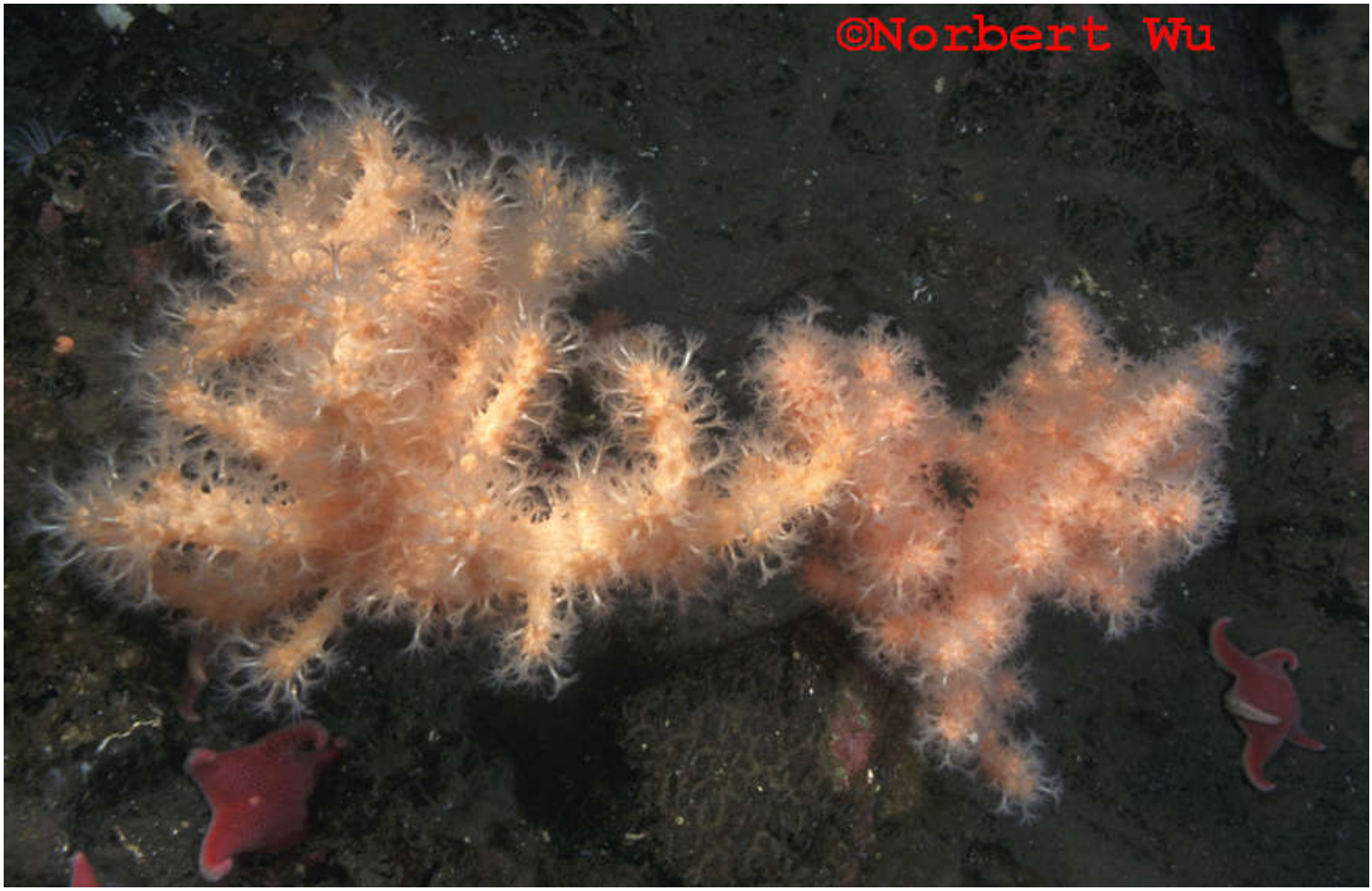
Divers may occasionally see two *Urticinopsis antarctica* anemones devouring the same medusa, *Diplulmaris antarctica* shown here.

A *Diplulmaris antarctica* jellyfish with its hitchhiking hyperiid amphipods, being devoured by the anemone *Urticinopsis antarctica*.

Here is a side-by-side comparison of *Urticinopsis antarctica* (on the left) and *Isotealia antarctica* (on the right).

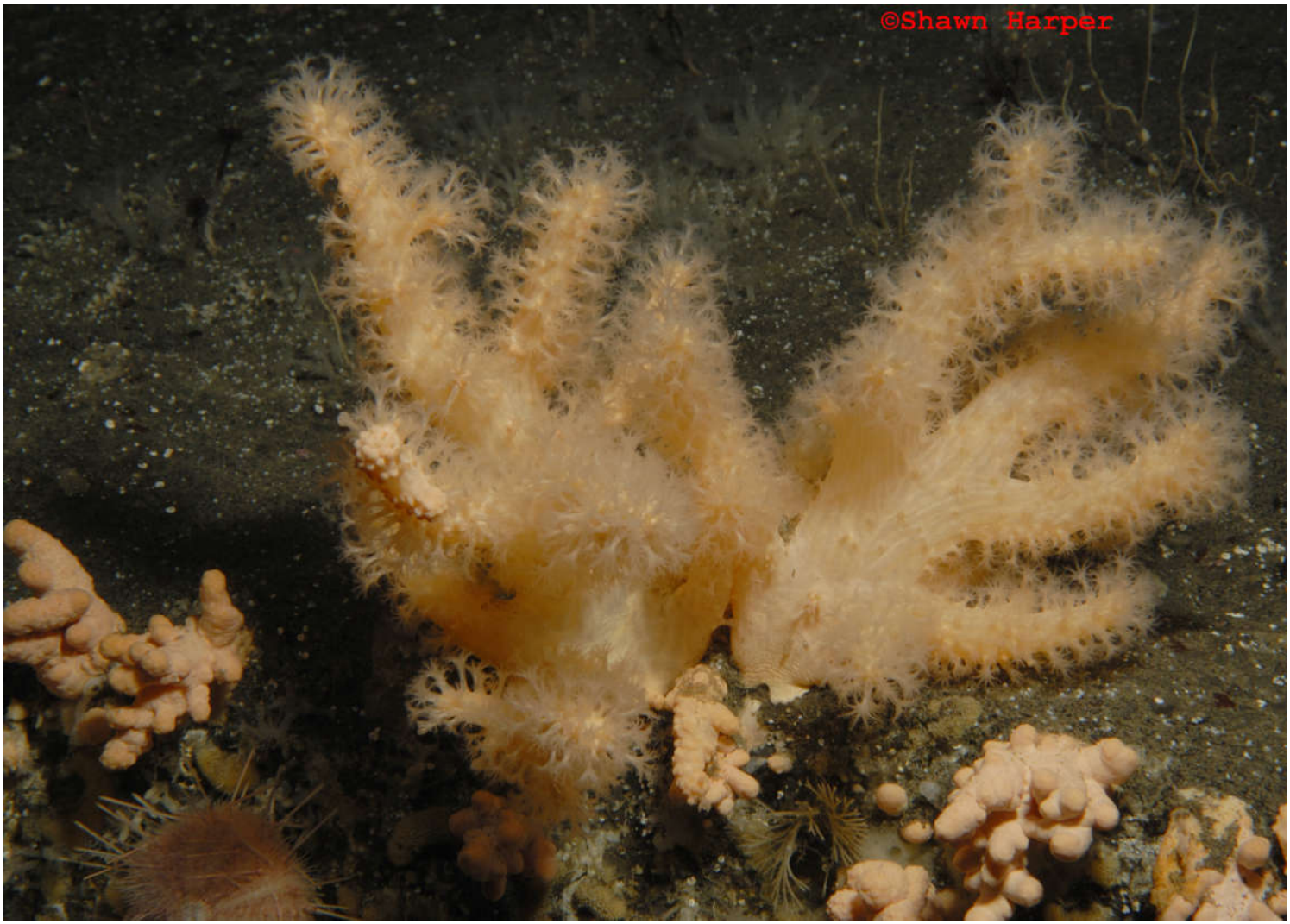
References: 1: Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp. 244-258; **2:** Soviet Journal of Marine Biology 1(5):307-315, 1975; **3:** Ecological Monographs 44(1):105- 128, 1974; **4:** Further Zoological Results of the Swedish Antarctic Expedition 1901-1903. Volume 2, Number 3. Actiniaria and Zoantharia. O Carlgren. Stockholm: PA Norstedt & Soner, 1927; **5:** Polar Biology 20(4):229-247, 1998; **6:** A Survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. O. Carlgren. Stockholm: Almqvist & Wiksells Boktryckeri AB, 1949. Kungliga Svenska Vetenskaps-Akademiens Handlingar, 4th Series, Band 1, No. 1; **7:** 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 32; **8:** Journal of the Marine Biological Association of the United Kingdom 97(1):29-34, 2017

soft coral *Alcyonium antarcticum*



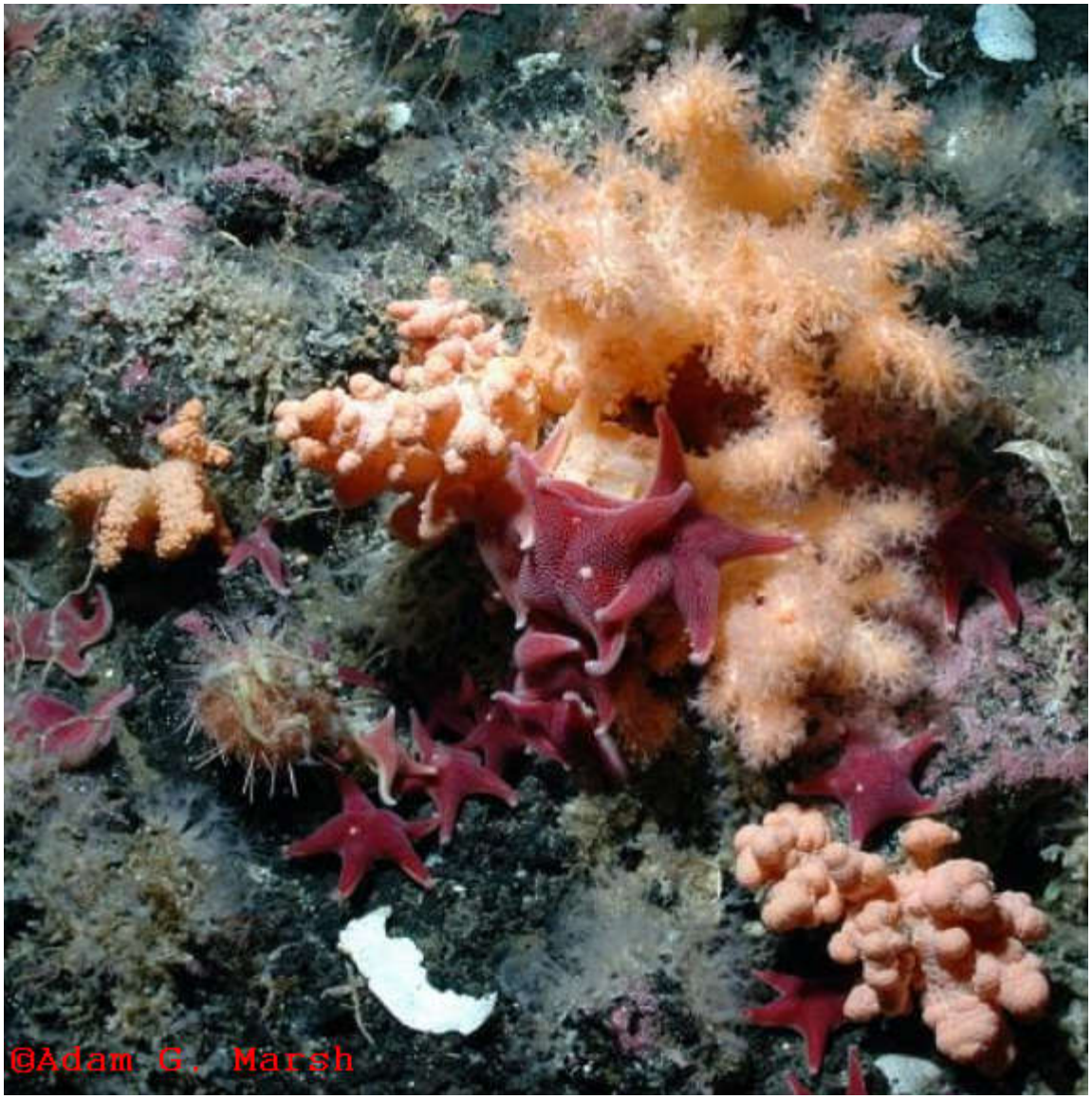
Alcyonium antarcticum is found in Antarctica and the Antarctic Peninsula, South Shetland Islands, South Georgia Island, Shag Rocks, Kerguelen Island, Heard Island, Burdwood Bank, Falkland Islands, and Argentina from shallow depths down to 642 meters [6,7,8,9,10,11,12,15].

The color of *Alcyonium antarcticum* is white, grayish white, grayish brown, light rose, orange, pale orange, or orange pink with white tentacles [1,6,7,9,10,11].



Alcyonium antarcticum has been measured at population densities of 0.02 and 7.3 colonies per square meter at Explorer's Cove and Arrival Heights respectively [5].

Individual colonies of *Alcyonium antarcticum* live at least 4.5 years, and many adults have shown no measurable growth over four years [5].



Alcyonium antarcticum produces chemicals that it releases into the water surrounding itself to deter predators and bacterial growth [4]. These anti-predator chemicals cause tube-foot retraction in the seastars *Perknaster fuscus* and *Odontaster validus* [2].

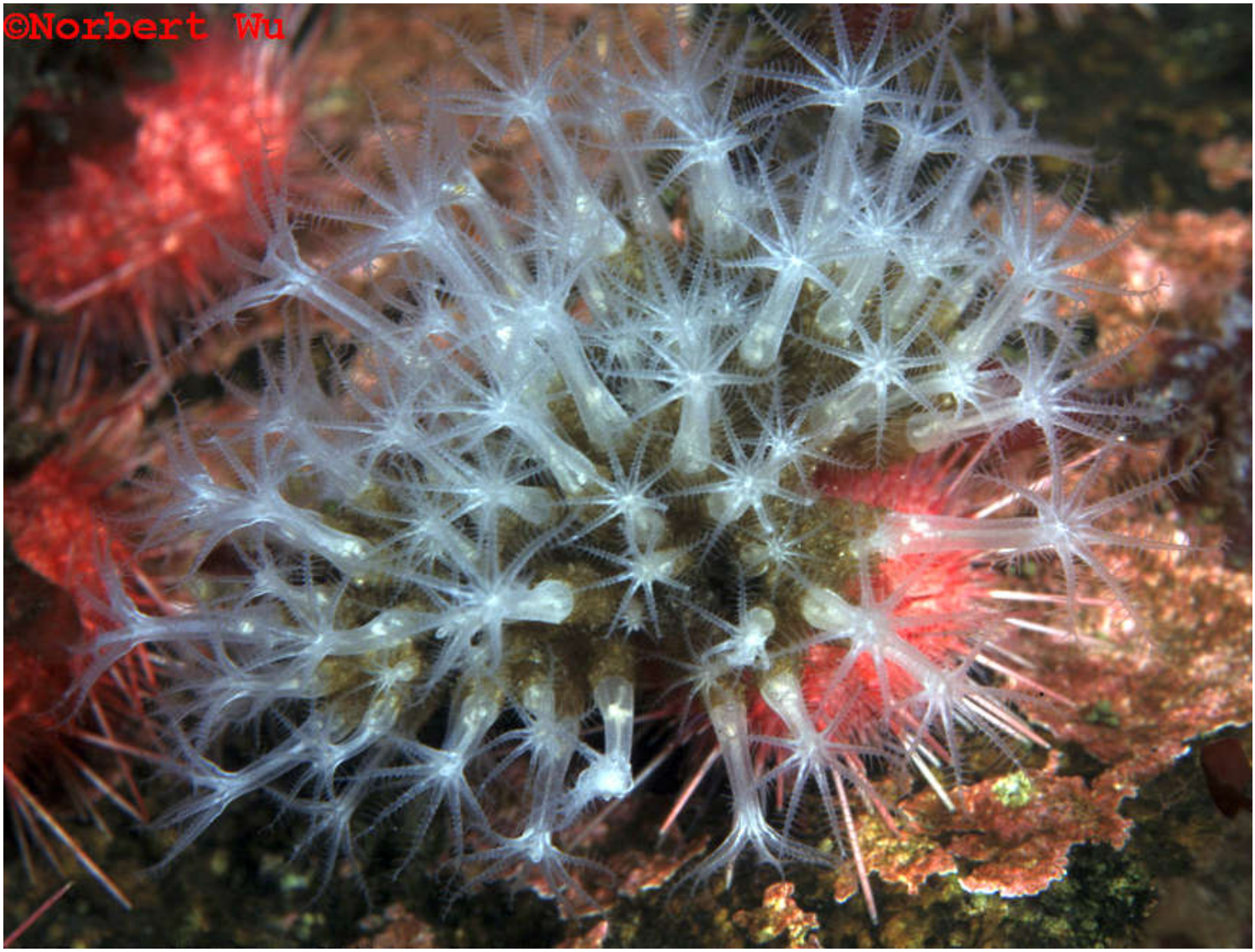
Juvenile *Alcyonium antarcticum* about two centimeters tall [14].

Alcyonium antarcticum feeds on plankton [3]. It has few predators and is preyed upon by the sea spider *Colossendeis megalonyx* [2].

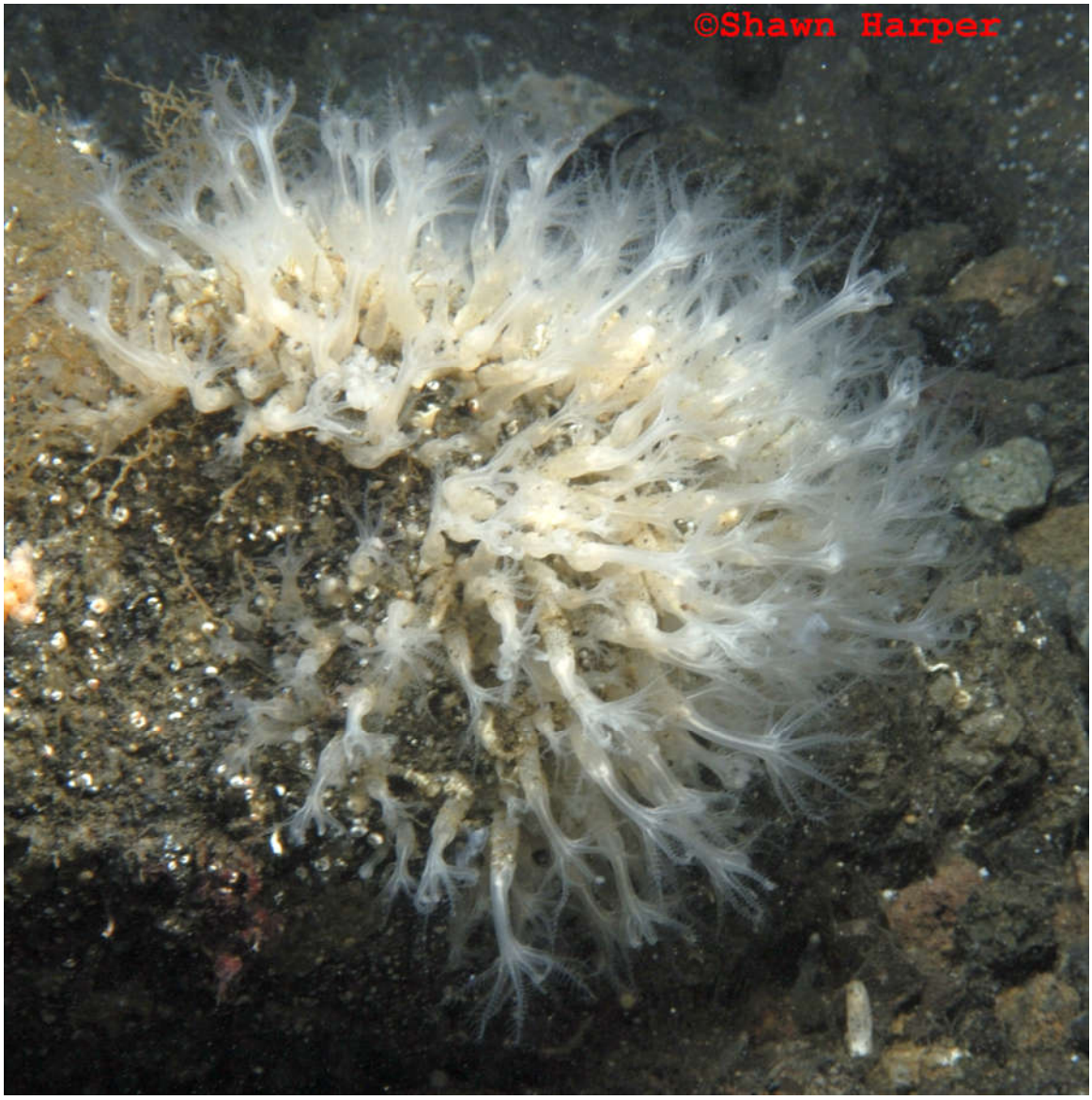
Taxonomic Note: *Alcyonium paessleri* was synonymized with *A. antarcticum* in 1992 [6]. The diagnosis of the genus *Alcyonium* was revised in 1986 [13].

References: 1: Ecological and Faunistic Investigations of the Marine Benthos at McMurdo Sound, Antarctica. John Holmes Dearborn. Ph. D. Dissertation, Dept. of Biological Sciences, Stanford University, 1965; **2:** Marine Biology 122(3):461-470, 1995; **3:** Science 197:55-58, 1977; **4:** Marine Ecology Progress Series 161:133-144, 1997; **5:** Antarctic Communities: Species, Structure, and Survival. B Battaglia, J Valencia, and DWH Walton, eds. Cambridge: Cambridge University Press, 1997. pp.309-315; **6:** Zoologische Mededelingen 66(1-15):155-181, 1992; **7:** Coelentera. I. Alcyonaria. National Antarctic Expedition 1901-1904. Natural History. Volume III. Zoology and Botany (Invertebrata: Marine Algae, Musci). SJ Hickson. London: British Museum, 1907; **8:** Die Octactiniarien. AR Molander. Further Zoological Results of the Swedish Antarctic Expedition, 1901-1903. Volume II, Number 2. Stockholm: PA Norstedt & Soner, 1929; **9:** American Museum Novitates 2282:1-19, 1967; **10:** Annals of the South African Museum 96(6):241-270, 1986; **11:** Report on the Alcyonaria Collected by H.M.S. Challenger during the Years 1873-76. EP Wright and T Studer. Report on the Scientific Results of the Voyage of H.M.S. Challenger during the Years 1873-76. Zoology. Volume 31, Part 1 London: Eyre & Spottiswoode, 1889; **12:** HJ Broch. Some Octocorals from Antarctic Waters. Scientific Results of the "Brategg" Expedition, 1947-48. Number 5. Publikasjoner Number 26 fra Kommandor Chr. Christensens Hvlafangstmuseum i Sandefjord. Bergen: AS John Griegs Boktrykkeri, 1965. pp.18-38; **13:** Journal of Natural History 20(1):53-63, 1986; **14:** Paul Cziko, personal communication, 2015; **15:** Zoologische Mededelingen 71(26):299-311, 1997

stoloniferous soft coral *Clavularia frankliniana*



Clavularia frankliniana is found in Antarctica and the Antarctic Peninsula and South Georgia Island at depths from 12 to 675? meters [2,3,4,7,9,22]. *C. frankliniana* is nearly transparent, white or pinkish to yellowish white [2]. *C. frankliniana* is shown here attached to sea urchin *Sterechinus neumayeri.*



Clavularia frankliniana can be found on rock or gravel bottoms, attached to stones, worm tubes, and shells [2,3,4,8].

An individual polyp (zooid) of *Clavularia frankliniana* averages 8.3 millimeters in height (can be up to 25 millimeters), has eight feathery tentacles [4,8,16,18].

Individual polyps die within 1.5 years though clones may live much longer [7].

An individual polyp of *Clavularia frankliniana* is connected by ribbon-like or spreading stolons to other polyps [4,8,16,18]. The stolon adheres to hard objects, thus attaching the colonies [18]. *C. frankliniana* has been measured at population densities of 0.18 and 1,337.3 polyps per square meter at Explorer's Cove and Arrival Heights respectively [7].

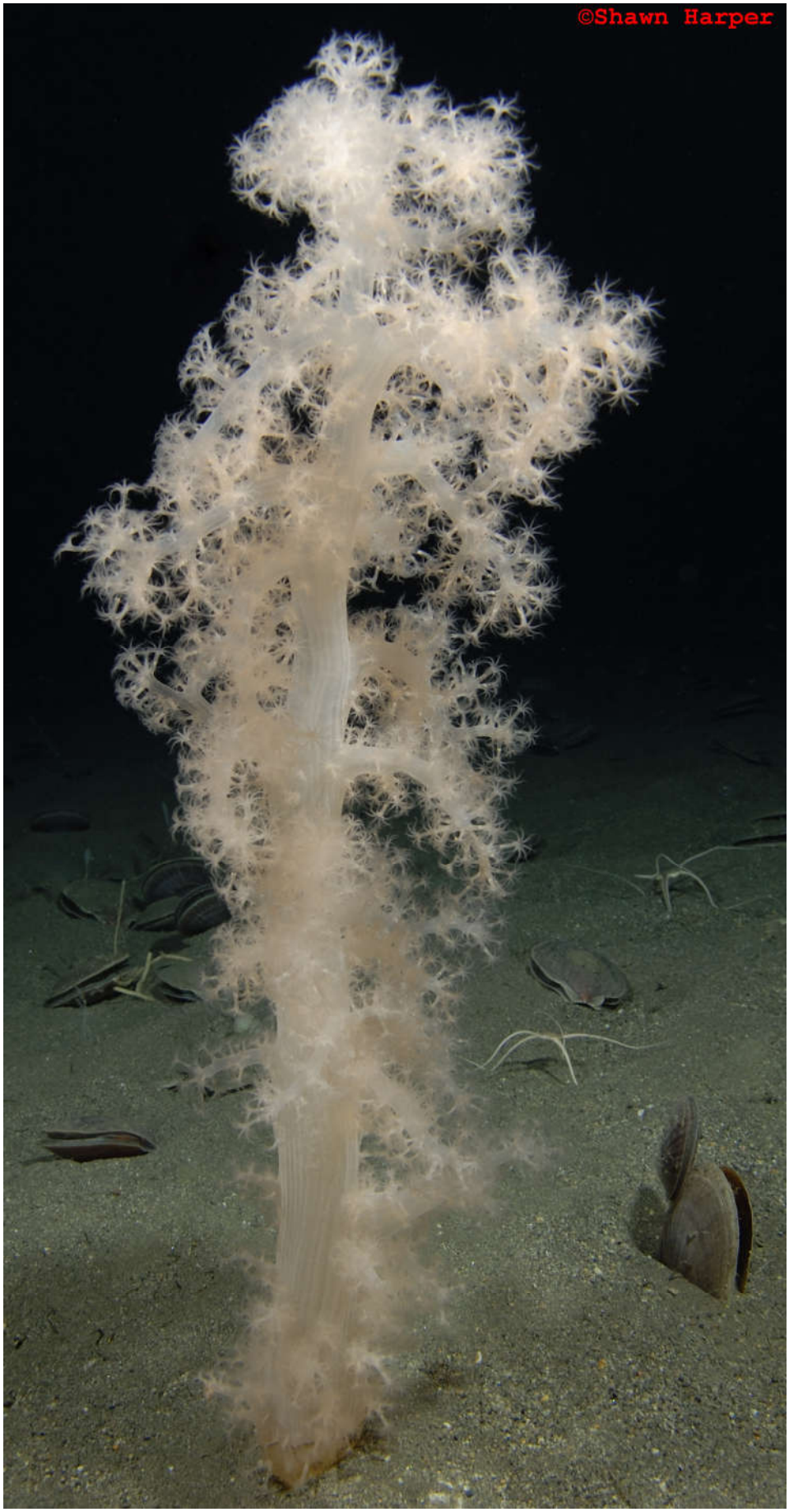
Clavularia frankliniana has a diet linked to food resuspended from the seafloor, probably by currents, bivalve molluscs, echinoderms, and fish; its polyps are located close to the bottom, and it feeds on diatoms, protozoans, foraminiferans, nematodes, and invertebrate larvae [21]. *C. frankliniana* has few predators and is preyed upon by the nudibranchs *Tritoniella belli* and *Notaeolidia gigas* and also by the sea spiders *Colossendeis robusta*, *Colossendeis megalonyx*, and *Thavmastopycnon striata* [1,3,4].

Extracts from *Clavularia frankliniana* cause tube-foot retraction in the seastars *Perknaster fuscus* and *Odontaster validus* which indicates feeding deterrence [4]. Extracts of the nudibranch *Tritoniella belli* and the soft coral *C. frankliniana* have chimyl alcohol in common. The common predatory seastar *Odontaster validus* shows feeding deterrence to *Tritoniella belli* mantle tissue and to chimyl alcohol [6]. *Tritoniella belli* probably defends itself chemically against predators using chimyl alcohol that it obtains from *C. frankliniana*.

Taxonomic Note: In 1906, Kukenthal changed *Clavularia frankliniana* to *Anthelia frankliniana* [11]. In 1929, Molander changed *Clavularia frankliniana* to *Pachyclavularia cylindrica* var. *frankliniana* [9]. In 1940, Gohar reassigned *Anthelia frankliniana* to *Clavularia frankliniana* and affirmed *Clavularia* as the genus instead of *Pachyclavularia* [12]. In 1960, noting Gohar, Verseveldt affirmed Molander's change to the genus *Pachyclavularia* and noted *Clavularia frankliniana* as properly being in the genus *Pachyclavularia* (though this work only sorted out genera and didn't sort out species characters) [10]. In 1974, it is referred to as *Clavularia cylindrica* [19]. In 1990, *Clavularia cylindrica* is referenced from original description and reports in South Africa; author notes inadequate descriptions in literature and need for revision of genus [20]. In 1990, *Pachyclavularia cylindrica* is noted as resembling *Pachyclavularia frankliniana* so the two species are deemed distinct [17]. Recent non-taxonomic publications referred to this soft coral as *Clavularia frankliniana*; those authors verified the ID as *Clavularia frankliniana* with Frederick M Bayer of the Dept of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution [4,6,7,14]. The Smithsonian's US National Museum Polar Invertebrate Catalog refers to *Clavularia frankliniana* [15]. In 1981, Bayer published a key to Octocorallia genera which sorted out *Clavularia* and *Pachyclavularia* so it is assumed his later identification of the genus of this organism as *Clavularia frankliniana* is based on that published key [16]. Reassignment of the species *frankliniana* to the genus *Clavularia* appears to be unpublished as of August 2022.

References: 1: Ecological Monographs 44(1):105- 128, 1974; **2:** Ecological and Faunistic Investigations of the Marine Benthos at McMurdo Sound, Antarctica. John Holmes Dearborn. Ph. D. Dissertation, Dept. of Biological Sciences, Stanford University, 1965; **3:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **4:** Marine Biology 122(3):461-470, 1995; **5:** Science 197:55-58, 1977; **6:** Journal of Chemical Ecology 20(12):3361-3372, 1994; **7:** Antarctic Communities: Species, Structure, and Survival. B Battaglia, J Valencia, and DWH Walton, eds. Cambridge: Cambridge University Press, 1997. pp.309-315; **8:** Coelentera. I. Alcyonaria. National Antarctic Expedition 1901-1904. Natural History. Volume III. Zoology and Botany (Invertebrata: Marine Algae, Musci). SJ Hickson. London: British Museum, 1907; **9:** Die Octactiniarien. AR Molander. Further Zoological Results of the Swedish Antarctic Expedition, 1901-1903. Volume II, Number 2. Stockholm: PA Norstedt & Soner, 1929; **10:** Temminckia, a Journal of Systematic Zoology 10:209-250, 1960; **11:** Alcyonacea. W Kukenthal. Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898-1899. Volume 13, Part 1. Jena: G Fischer, 1906; **12:** A Revision of Some Genera of the Stolonifera (with an amended system of classification and the description of two new species). HAF Gohar. Publications of the Marine Biological Station, Ghardaqa (Red Sea). Number 3. Cairo: Fouad I University, 1940; **13:** American Museum Novitates 2282:1-19, 1967; **14:** Marc Slattery, personal communication, 1999; **15:** US National Museum Polar Invertebrate Catalog at http://www.nmnh.si.edu/iz/usap/usapdb.html; **16:** Proceedings of the Biological Society of Washington 94(3):902- 947, 1981; **17:** Fauna der Antarktis. J Sieg & JW Wagele, eds. Berlin: P. Parey, 1990; **18:** Coral Reef Octocorals, an Illustrated Guide to the Soft Corals, Sea Fans, and Sea Pens Inhabiting the Coral Reefs of Northern Natal. GC Williams. Durban, South Africa: Durban Natural Science Museum, 1993; **19:** Tethys 6(3):631-653, 1974; **20:** Systematics and Zoogeography of Southern African Octocoral Cnidarians. GC Williams. PhD Dissertation, University of Cape Town, 1990; **21:** Polar Biology 24(8):620-627, 2001; **22:** Berichte zur Polar- und Meeresforschung 402:76-81, 2001 (increased reported depth from 250 meters in other sources to 675? meters)

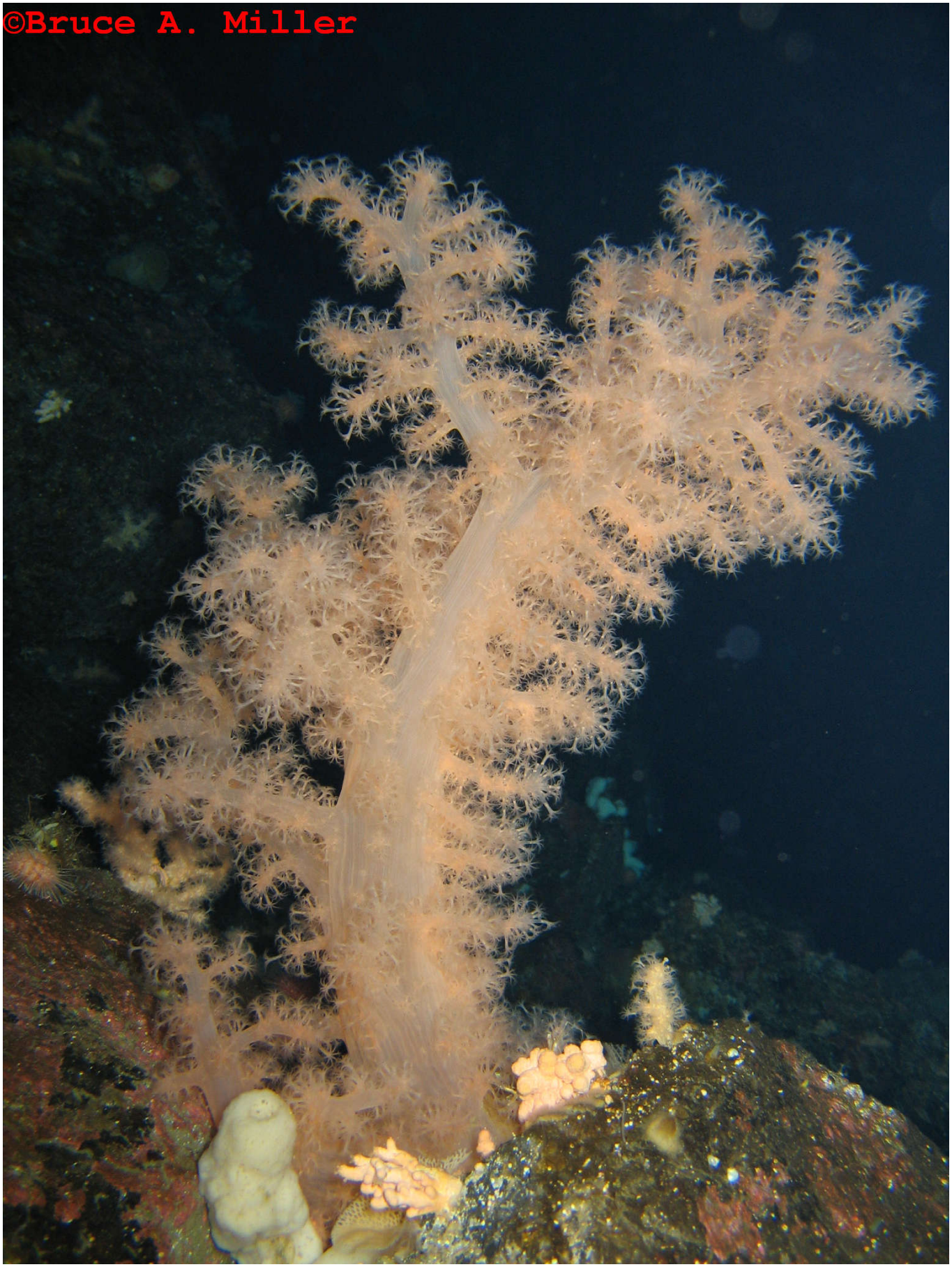
nephtheid soft coral *Gersemia antarctica*



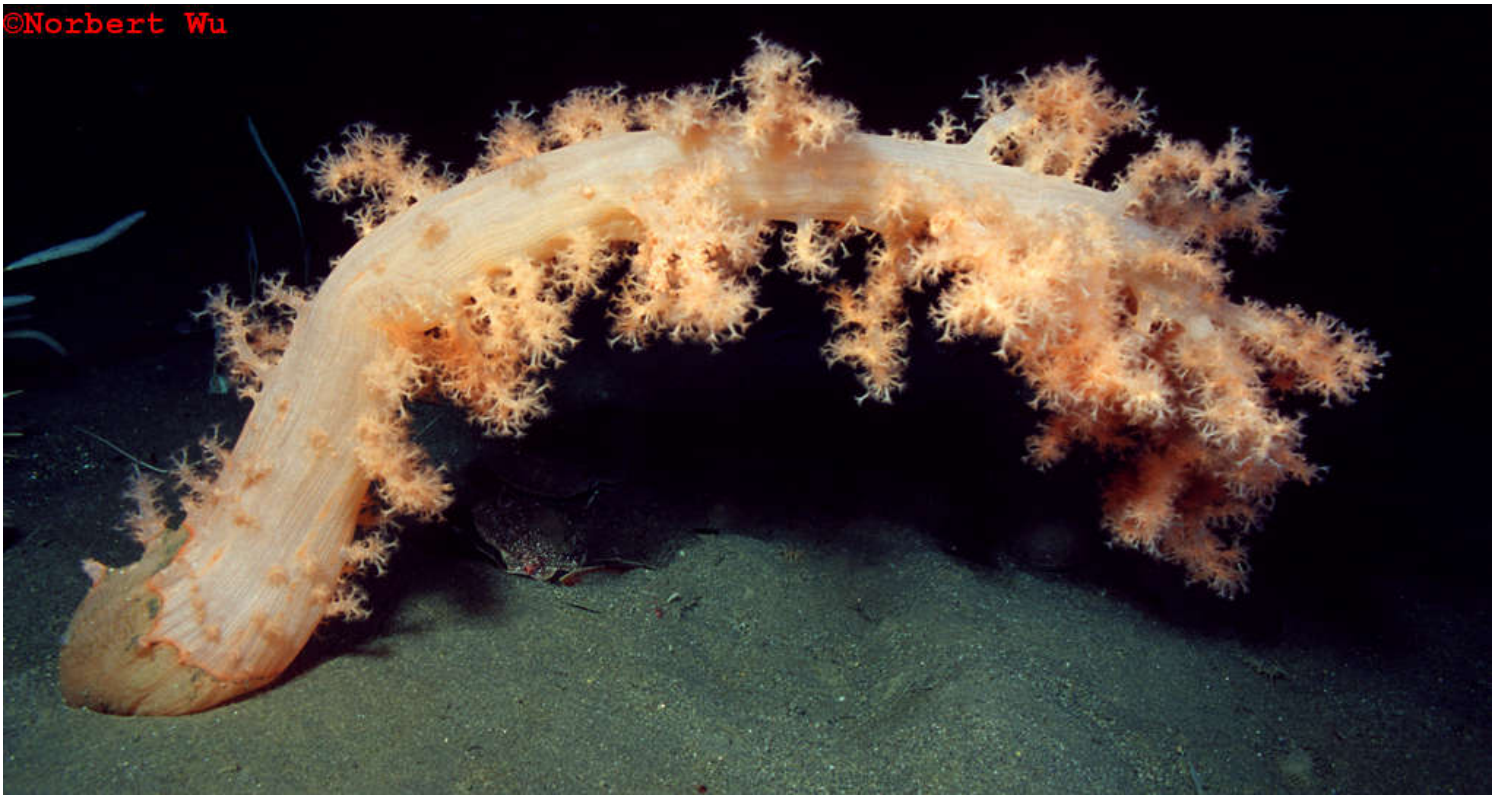
Gersemia antarctica is found in McMurdo Sound, South Georgia Island, South Sandwich Islands, and Bouvet Island from 12 to 3,144 meters depth [3,6,7,8,11,14,16]. *Gersemia* spp. have been reported from the eastern Weddell Sea, Bransfield Strait off the Antarctic Peninsula, and the South Shetland Islands [13].

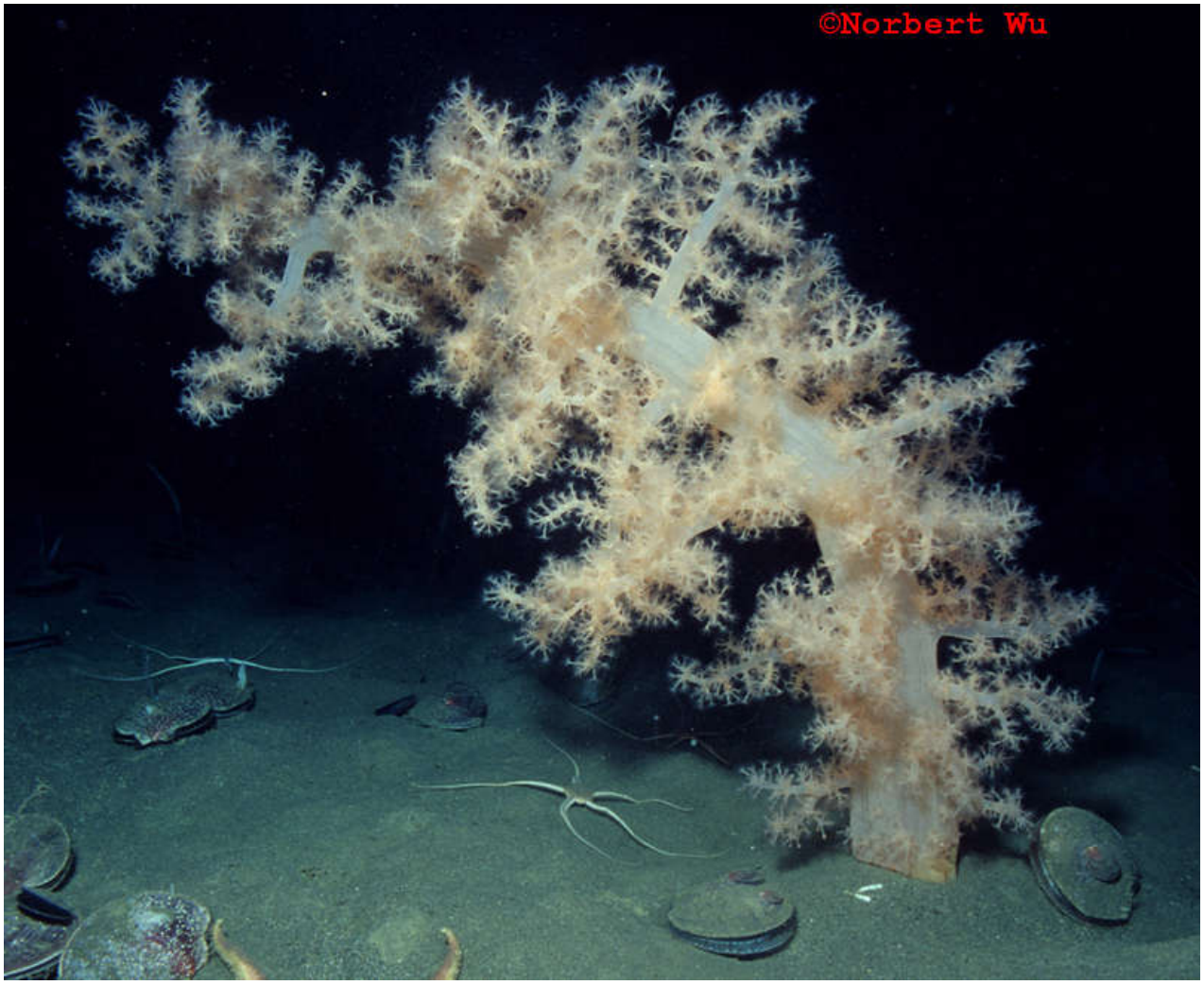
In McMurdo Sound, *Gersemia antarctica* is found on White Island and on the Antarctic coastline from Granite Harbor down to Cape Chocolate at depths from 18 to 250 meters, and has been found on Ross Island at the south end of Cape Evans from 12 to 24 meters depth, and at the McMurdo Intake Jetty at 12 meters depth [3,7,11,14,16].

In Explorer's Cove at New Harbor, *Gersemia antarctica* is found in soft sediment communities where it is anchored to scallop shells, small rocks, or clay substrate [3]. At Explorer's Cove, *Gersemia antarctica* averages 0.04 colonies per square meter and is found there between 18 and 33 meters depth, with most colonies found from 27 to 33 meters depth [3].

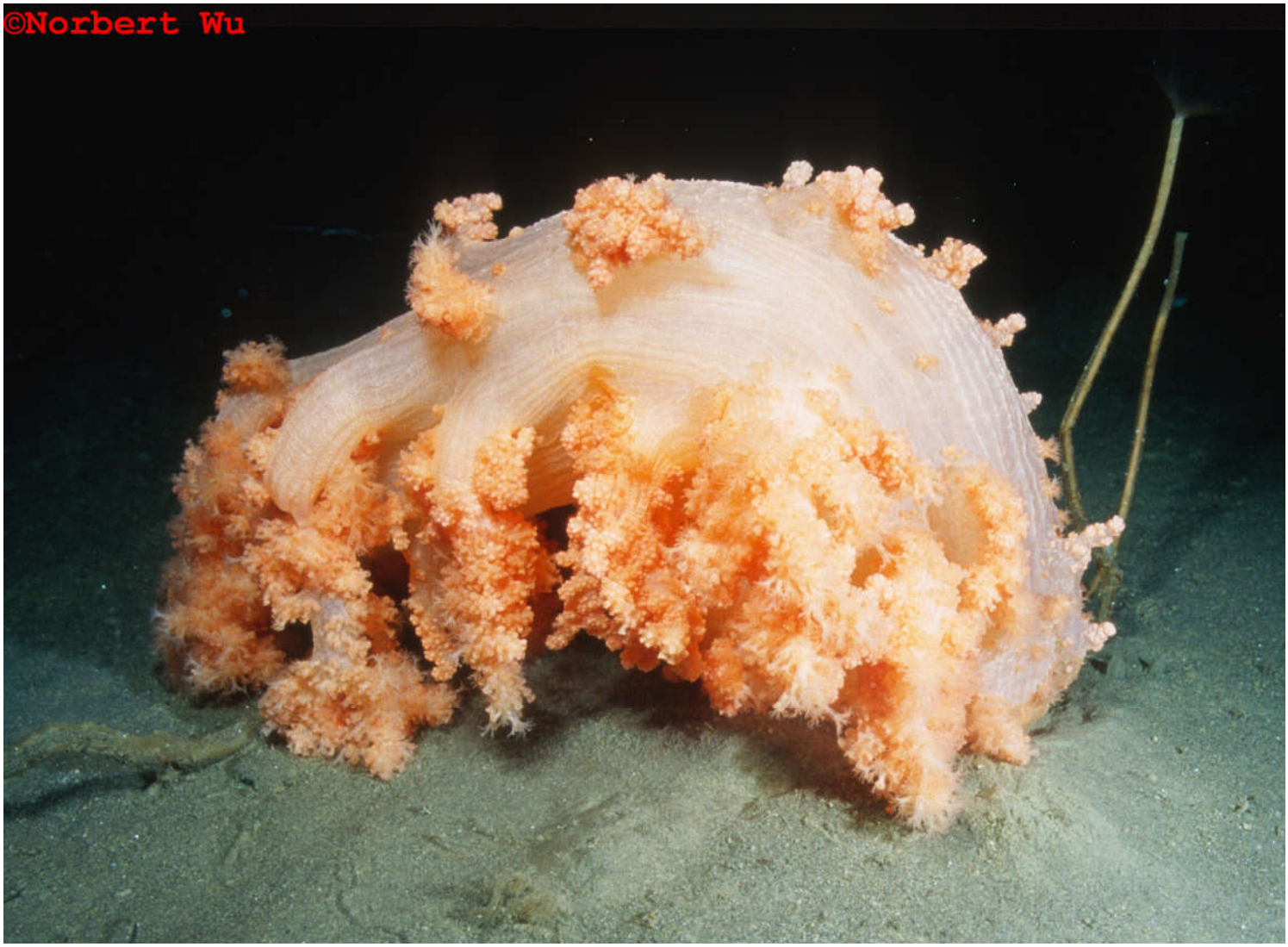


Gersemia antarctica colonies can inflate to over two meters in height [1].





In addition to an upright feeding posture, *Gersemia antarctica* can bend its entire colony down so that the polyps reach the bottom to feed there [1].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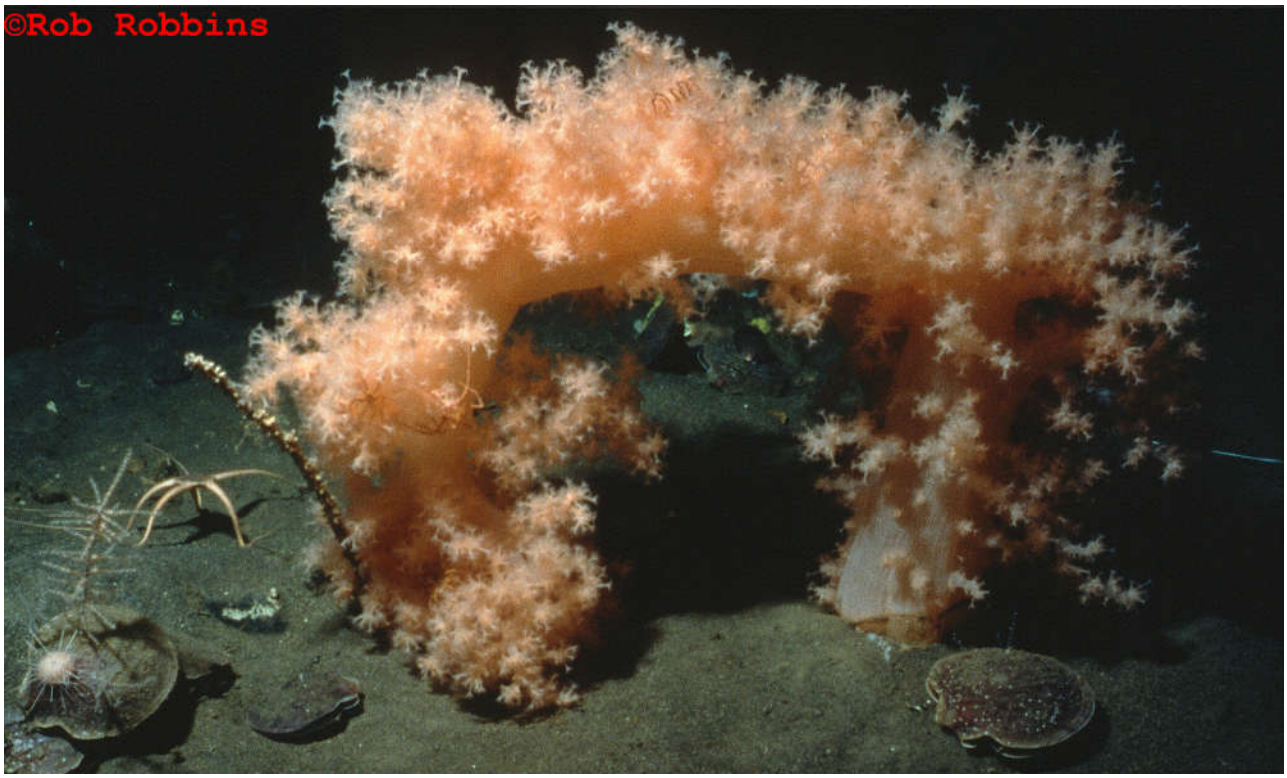
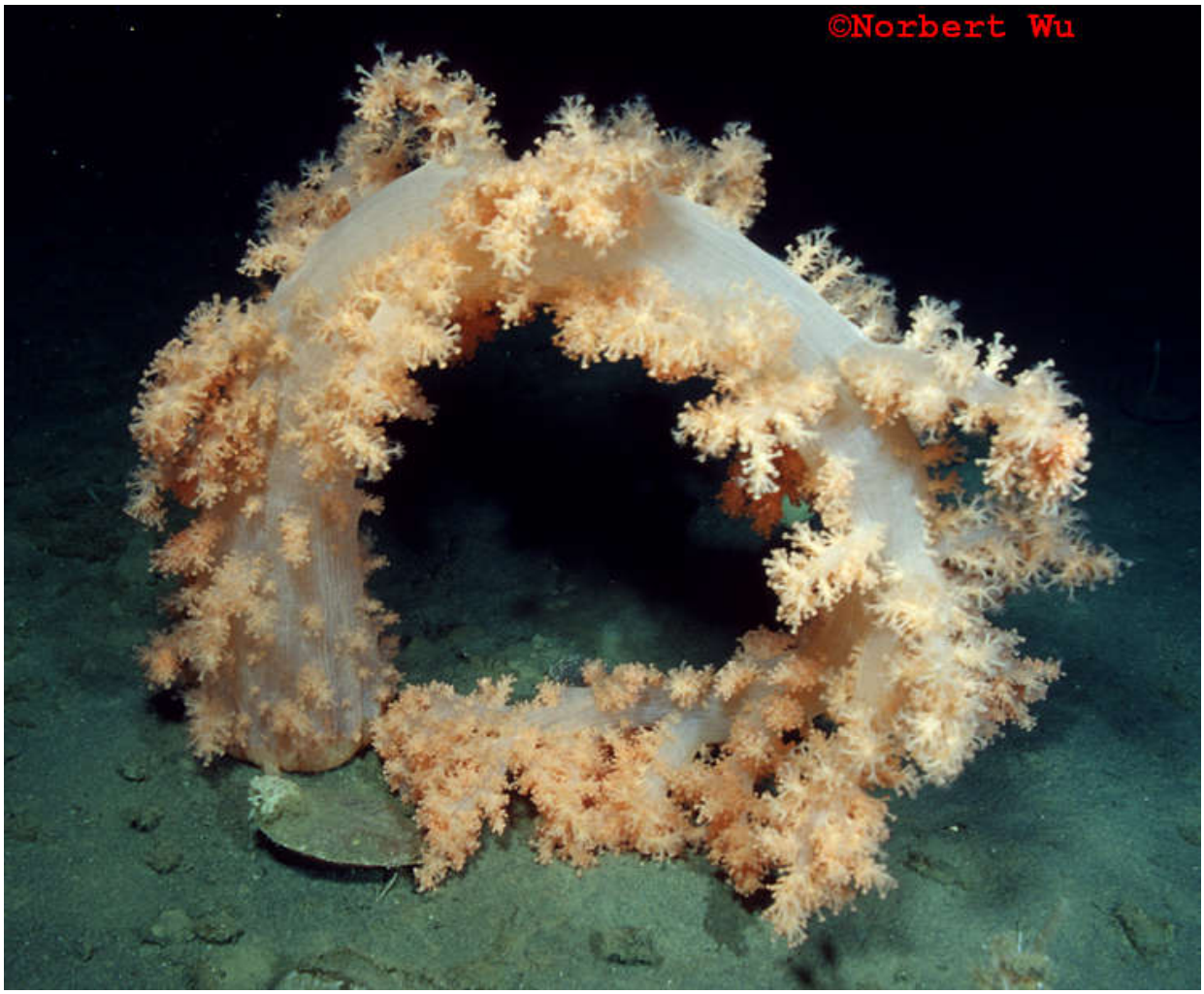
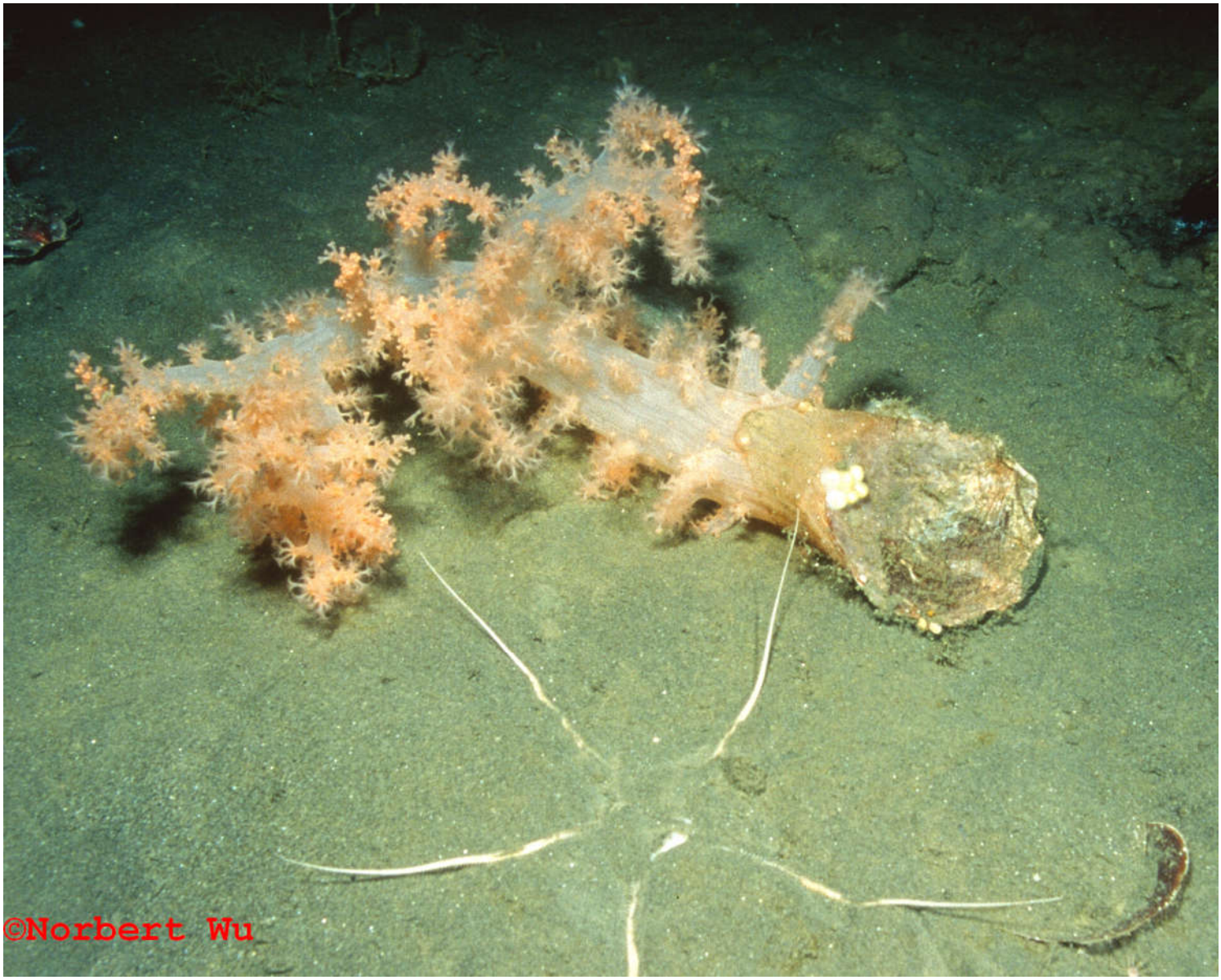

©Rob Robbins



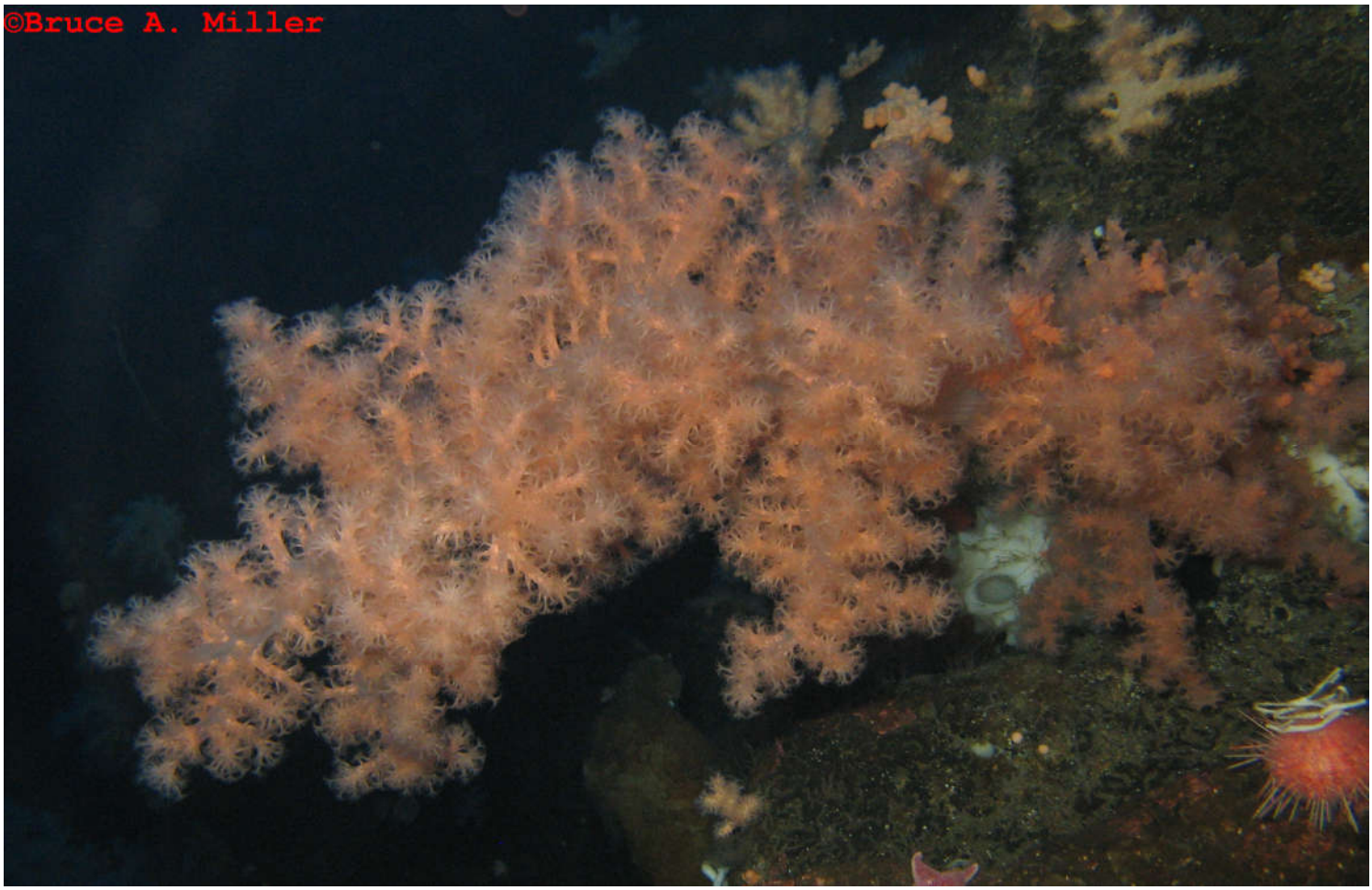
The food that *Gersemia antarctica* seeks on the bottom includes benthic diatoms, foraminiferans, and particulate organic matter [1].

This grazing behavior has likely evolved to supplement plankton capture from the water and is useful in Antarctica where plankton in the water column is seasonal [1].



A *Gersemia antarctica* colony can move like an inch worm, to reach undisturbed sediments for grazing [1]. *Gersemia antarctica* colonies have been observed moving over fourteen meters in one year's time [1].

When a *Gersemia antarctica* colony encounters sediment previously grazed by *G. antarctica*, it contracts from it [1].



Gersemia antarctica colonies have been observed surviving for at least 4.5 years [4].

Sea spiders *Achelia* sp. clinging to *Gersemia antarctica*. Adult *Achelia* sea spiders are small, spending their lives clinging to the substrate on which they feed [12]. The protonymphon stage of *Achelia* may be passed in the tissues of the organism on which juveniles and adults feed [12].

The sea spider *Thavmastopycnon* sp. is also a predator of *Gersemia antarctica* [3].

Gersemia antarctica produces chemicals that it releases into the water surrounding itself to deter predators and bacterial growth [2].

Rob Robbins, McMurdo Station's Scientific Diving Coordinator, photographed *Gersemia antarctica* at the south end of Cape Evans at 12 to 18 meters depth; this was the first recorded location for *Gersemia antarctica* on Ross Island [3,6,7,8,11].

Shown here at 24 meters depth, *Gersemia antarctica* hangs down from the wall at the south end of Cape Evans [14].

Several *Gersemia antarctica* are at the McMurdo Intake Jetty at 12 meters depth [16].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Taxonomic Note: First described by Kukenthal as *Eunephthya antarctica* in 1906 and discussed in 1914 by Gravier in comparison with another species of *Eunephthya* [6,10]. In 1961, Utinomi revised the family Nephtheidae for the genera *Gersemia*, *Duva*, *Drifa*, and *Pseudodrifa* and renamed *Eunephthya antarctica* to *?Drifa antarctica* and also synonymized *Paraspongodes antarctica* under *?Drifa antarctica* [5]. Recent non-taxonomic work referred to this soft coral as *Gersemia antarctica*; those authors verified the ID as *Gersemia antarctica* with Frederick M Bayer of the Dept of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution [1,2,3,4,7]. The Smithsonian's US National Museum Polar Invertebrate Catalog refers to *Gersemia antarctica* [8]. In 1981, Bayer published a key to Octocorallia genera which sorted out *Gersemia* and *Drifa*, so it is assumed his later identification of the organism as *Gersemia antarctica* is based on that published key [9]. A reassignment of *Eunephthya antarctica* or *?Drifa antarctica* to the genus *Gersemia* appears to be unpublished as of August 2022. *Gersemia antarctica* superficially resembles *Gersemia juliepackardae* but differs internally in radiates and sclerites [9].

References: 1: Marine Ecology Progress Series 149(1-3):299-304, 1997; **2:** Marine Ecology Progress Series 161:133-144, 1997; **3:** Marine Biology 122(3):461-470, 1995; **4:** Antarctic Communities: Species, Structure, and Survival. B Battaglia, J Valencia, and DWH Walton, eds. Cambridge: Cambridge University Press, 1997. pp.309-315; **5:** Publications of the Seto Marine Biological Laboratory 9(1):229-246, 1961. Contributions from the Seto Marine Biological Laboratory, Number 366; **6:** Alcyonacea. W Kukenthal. Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898-1899. Volume 13, Part 1. Jena: G Fischer, 1906; **7:** Marc Slattery, personal communication, 1999; **8:** US National Museum Polar Invertebrate Catalog, formerly at www.nmnh.si.edu/iz/usap/usapdb.html; **9:** Proceedings of the Biological Society of Washington 94(3):902-947, 1981; **10:** Alcyonaires. C Gravier. Deuxieme Expedition Antarctique Francaise (1908-1910). Sciences Naturelles: Documents Scientifiques. Extrait. Paris: Masson, 1914; **11:** Rob Robbins, personal communication (south end of Cape Evans at 12-18 meters), 1999; **12:** Fauna of the Ross Sea, Part 7. Pycnogonida, 1. Colossendeidae, Pycnogonidae, Endeidae, Ammotheidae. WG Fry & JW Hedgpeth. New Zealand Department of Scientific and Industrial Research Bulletin 198. New Zealand Oceanographic Institute Memoir 49. 1969; **13:** Berichte zur Polar- und Meeresforschung 402:76-81, 2001; **14:** Luke Hunt, personal communication (south end of Cape Evans at 24 meters/80 feet), 2003; **15:** Zoologische Mededelingen 83(4):1067 -1081, 2009; **16:** Rob Robbins, personal communication (McMurdo Intake Jetty), 2019

gorgonian *Onogorgia nodosa*

Onogorgia nodosa is found in Antarctica and the Antarctic Peninsula, South Shetland Islands and South Georgia Island at depths from 21 to 433 meters [1,3,4].

Onogorgia nodosa has unbranched pinkish-yellow whip-like colonies with a thin holdfast and its axis having longitudinal grooves [3,4]. *O. nodosa* has 2-3 whorls per centimeter of axial length, and up to 4.5 mm at middle part of colonies, with its polyps in one row at each whorl [3,4].


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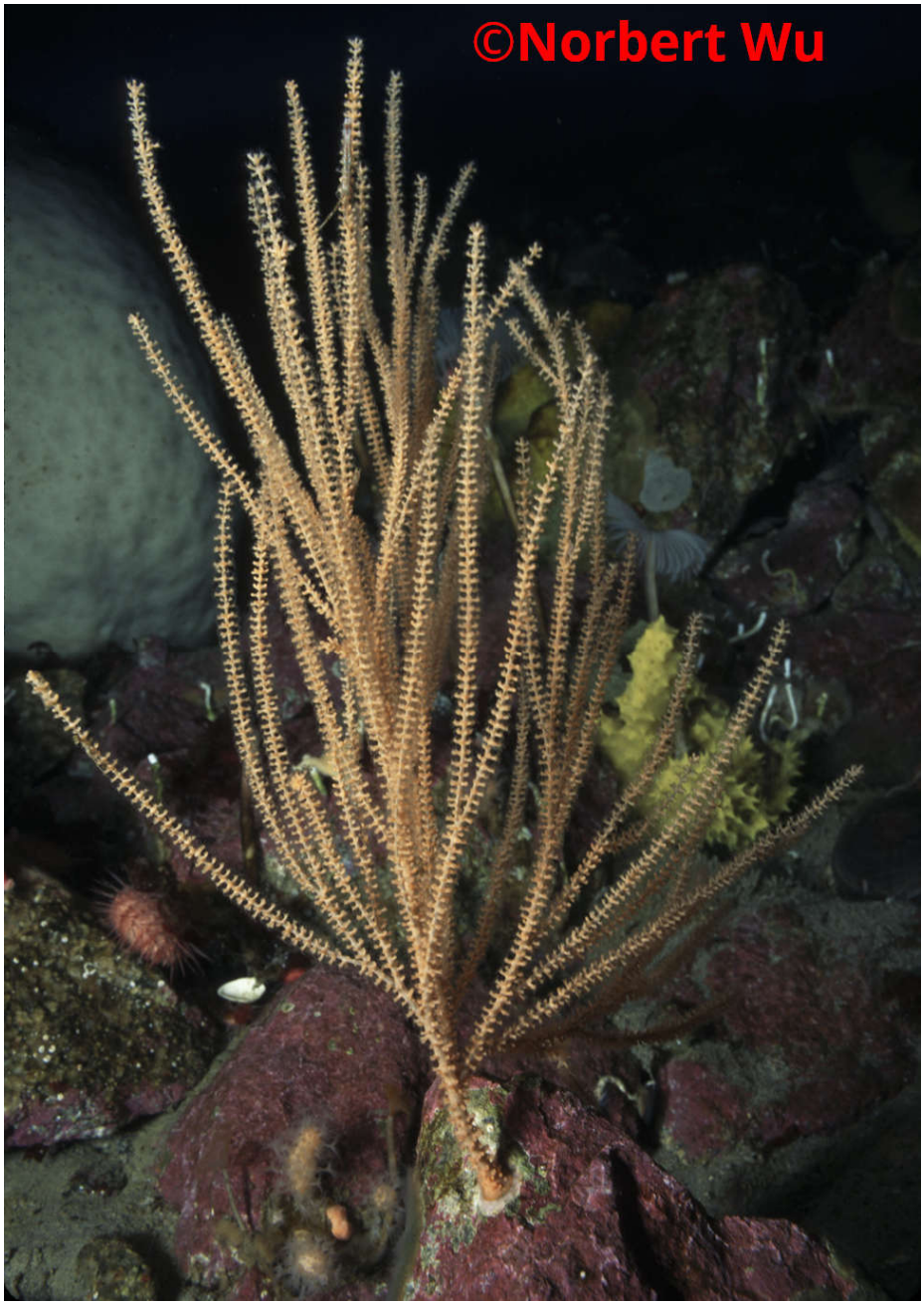
Onogorgia nodosa with contracted polyps.

References: 1: Smithsonian National Museum of Natural History, Antarctic Invertebrates naturalhistory.si.edu/iz/antiz/index.cfm ; **2:** 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 39; **3:** Animal Systematics Evolution and Diversity 28(2):84-96, 2012; **4:** Smithsonian Contributions to Zoology 629:1-79, 2009

gorgonian, family Ellisellidae, possibly *Ctenocella* sp.

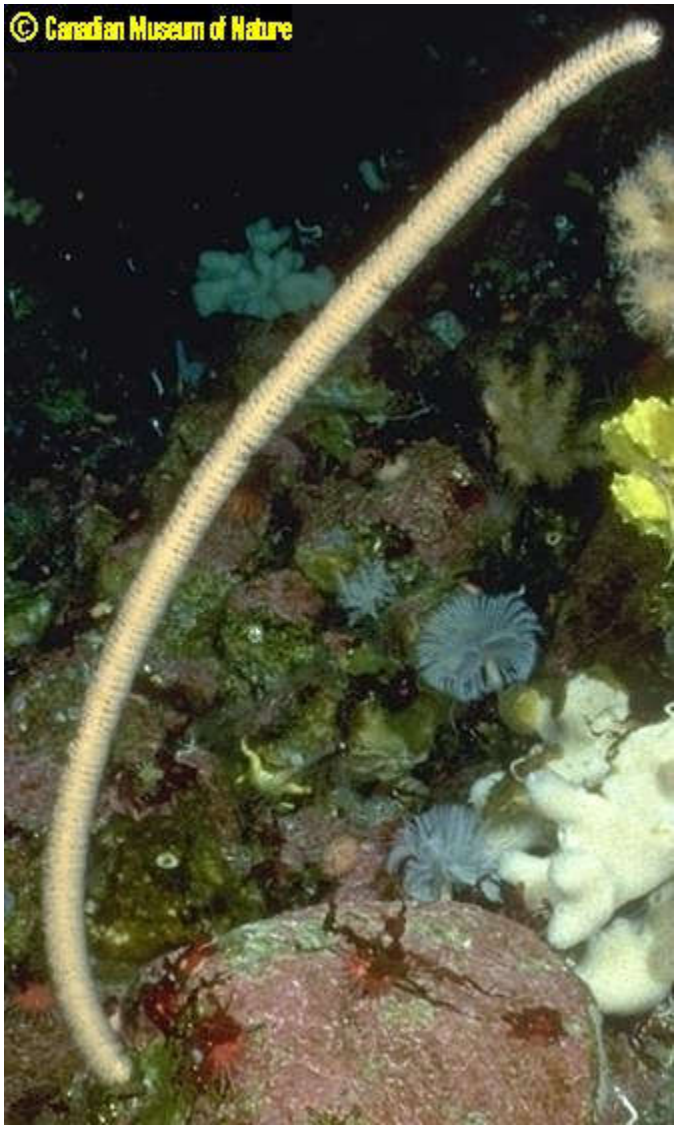


Cnidarian predators like gorgonians hunt passively, waiting with outstretched tentacles for prey to drift by [1].

The individual gorgonian polyps are linked by a body wall [1]. A horny protein called gorgonin contains fused calcareous spicules or sclerites and forms a solid or jointed central rod [1].

References: Encyclopedia of Life Sciences. Hampshire, England: Macmillan Publishers, 1999

Sea Whip



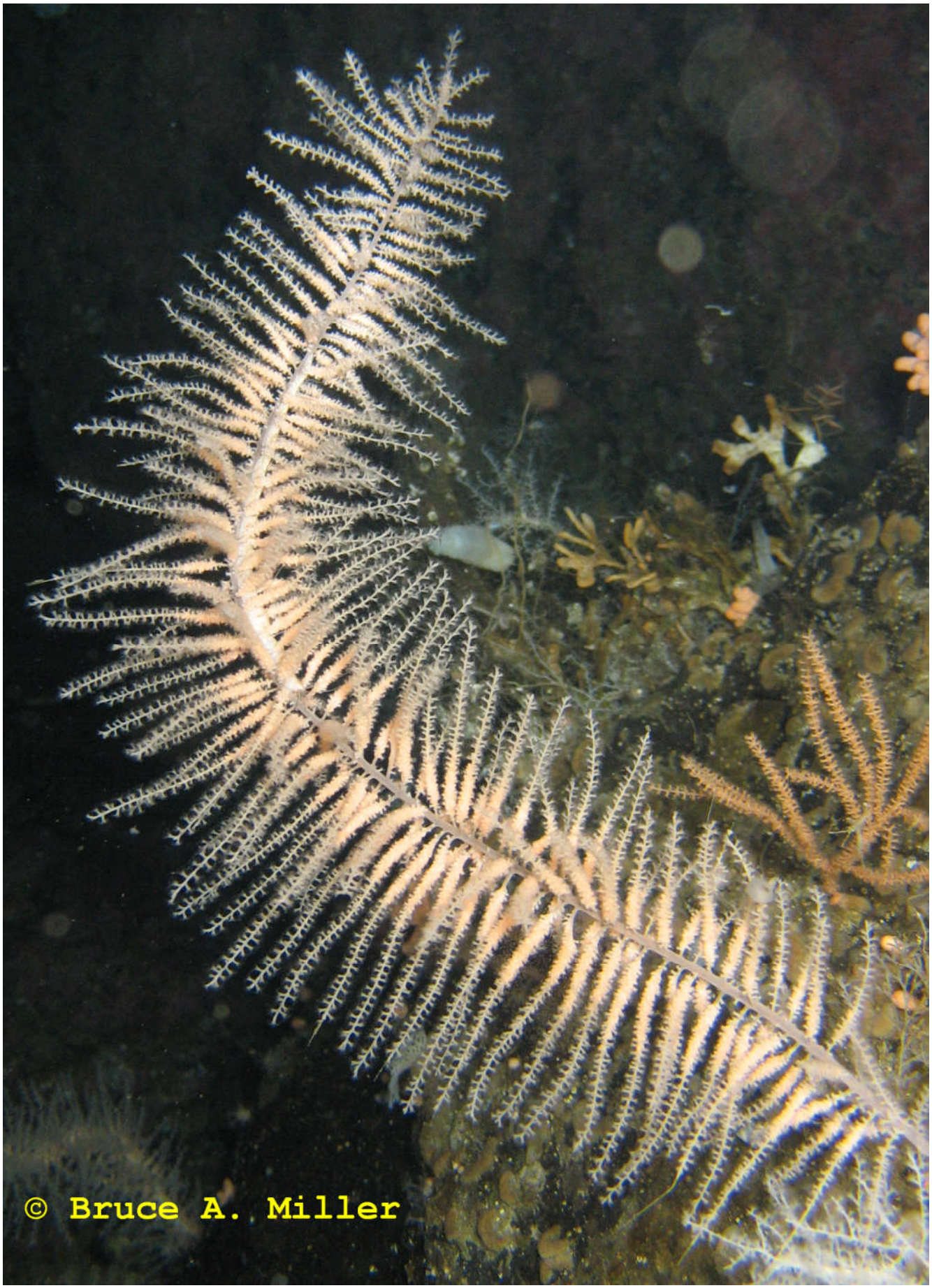
Sea whips are several genera of corals of the order Gorgonacea, characterized by long, whiplike growth [1]. The whip is a colony of tentacled polyps growing one upon one another in a continuous single stem. Spicule needles of lime are embedded in the polyp which provides firm, flexible support for the whip [1].

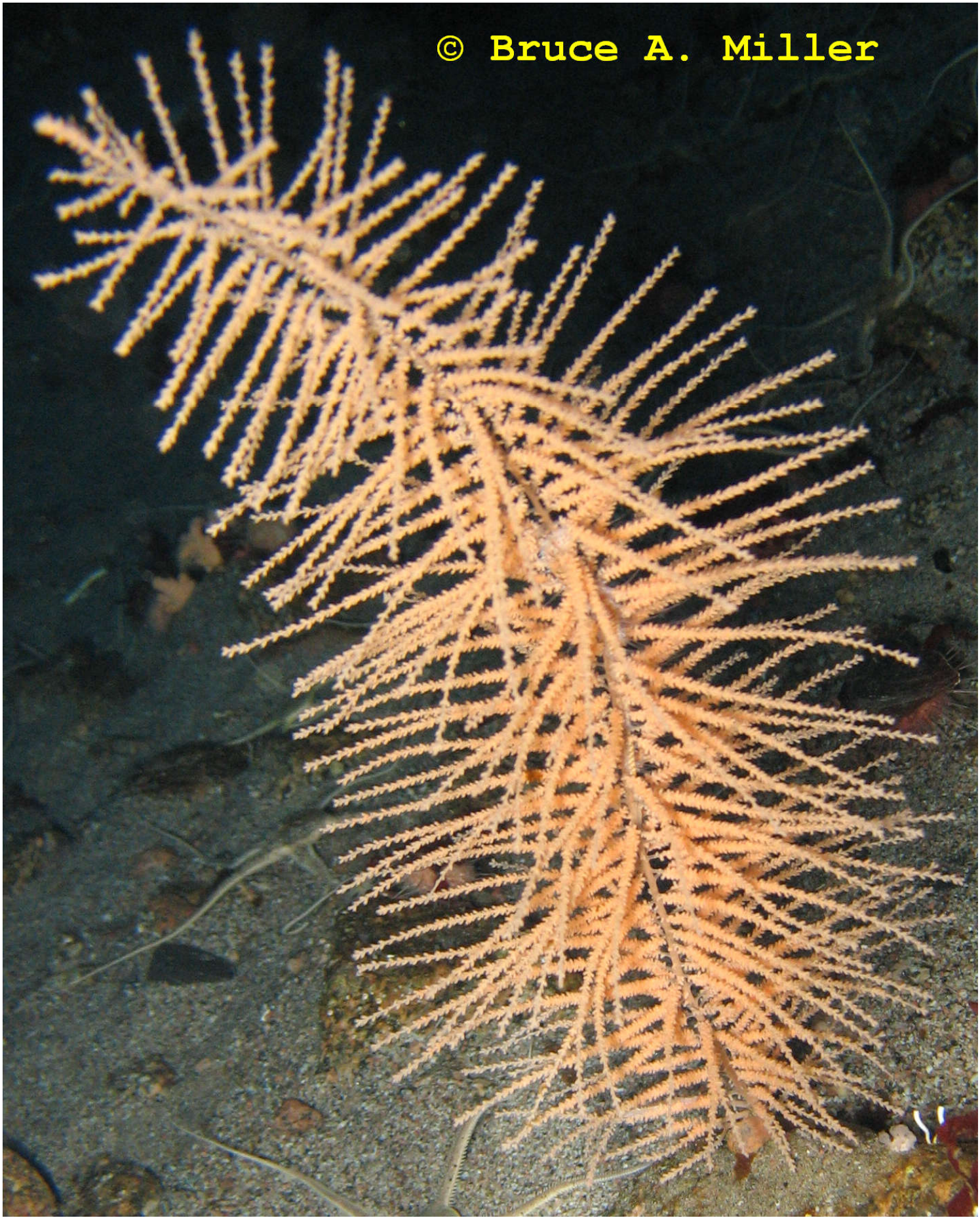

© Jim Mastro

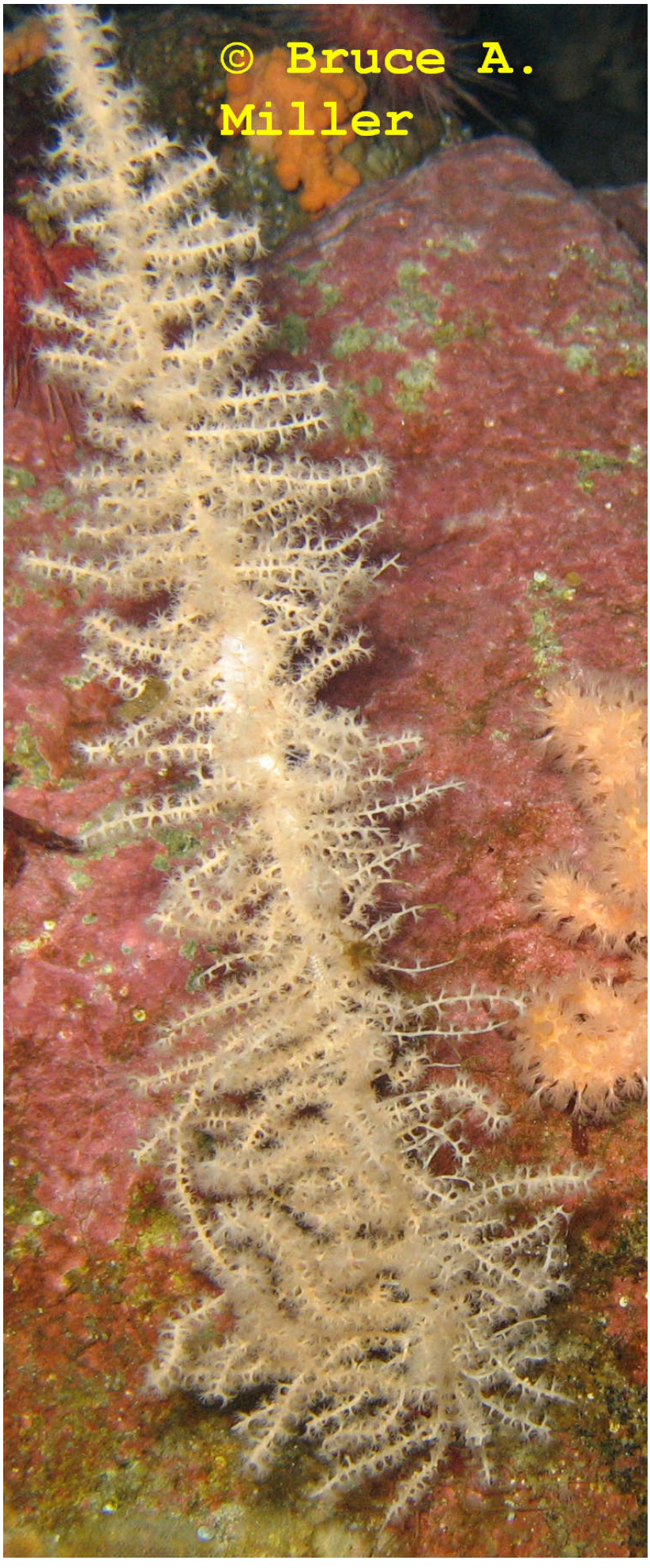
Sea whips differ from sea pens in that the sea whip polyps come directly off the center stalk, whereas sea pen polyps are on branches from the central stalk.

References: 1: Encyclopedia Britannica at www.eb.com; **Taxonomic Overview:** Fauna der Antarktis. J Sieg & JW Wagele, eds. Berlin: P. Parey, 1990; **Callozostron / Primnoella / Convexella:** Proceedings of the Biological Society of Washington 109(1):150- 203, 1996; **Armadillogorgia / Tokoprymno / Aglaoprimnoa:** Bulletin of Marine Science 58(2):511-530, 1996

soft coral




© Bruce A. Miller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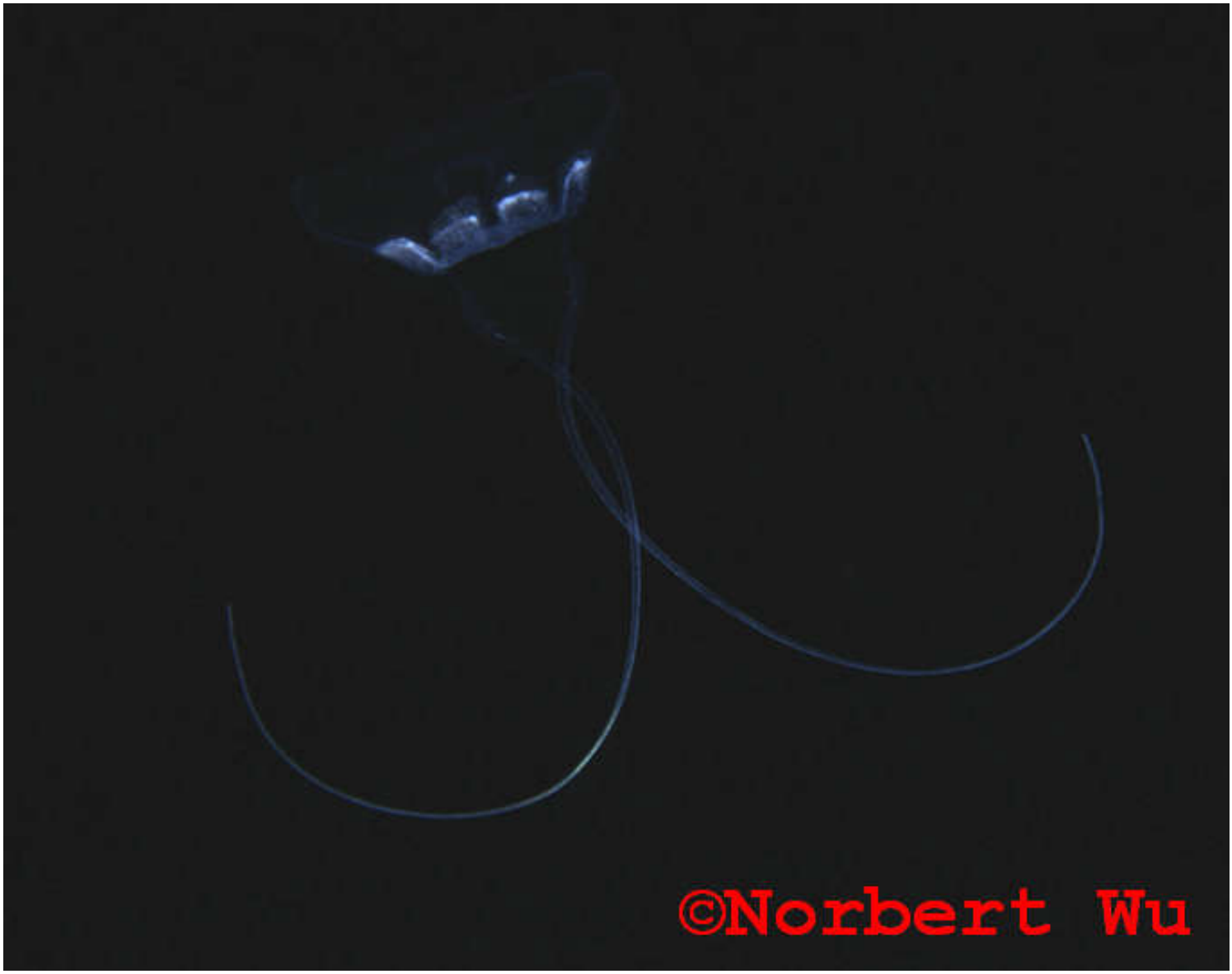
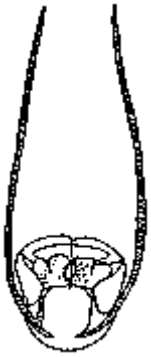
narcomedusa *Solmundella bitentaculata*



Solmundella bitentaculata is found in the Atlantic, Pacific, and Indian Oceans and the Mediterranean and is particularly common in the southern hemisphere; it has been found throughout Antarctica [1,3,5]. Found at depths from the surface down to 1,100 meters, *S. bitentaculata* is usually found between 100 and 500 meters [1,3]. *S. bitentaculata* can be up to 7.2 centimeters wide and is higher than wide [1]. *S. bitentaculata* has thick apical jelly and the apex of the bell tends to be sharp-edged and keel-shaped, with the line of the keel between the two long tentacles [3,5].

Here's *Solmundella bitentaculata* taken from above, looking down at its central circular mouth, which opens to the aboral surface. Its two long tentacles issue from near the apex of its umbrella and are up to ten centimeters long [3]. *S. bitentaculata* swims with those two tentacles held in front of its umbrella, rather than trailing like most medusae.

S bitentaculata can be abundant and has been measured at average of 200 individuals per 1,000 square meters in the Antarctic Peninsula, with highest quantity at 1,000 to 1,200 meters depth with a mean of over 300 individuals per 1,000 square meters [6].



Here's a line drawing of *Solmundella bitentaculata* showing its features [1]. In this drawing *S. bitentaculata* is not in its swimming posture because its two tentacles are trailing behind the umbrella rather than being held in front of the umbrella.

S. bitentaculata can have the hitchhiking hyperiid amphipod *Hyperiella dilatata* on its exumbrella [2]. One prey item of *S. bitentaculata* is the shelled pteropod *Limacina rangii* [2,4].

References: 1: Guide to the Hydromedusae of the Southern Ocean and Adjacent Waters. David O'Sullivan. ANARE Research Notes 5 (Australian National Antarctic Research Expedition). Kingston, Tasmania, Australia: Australia Dept of Science and Technology, Antarctic Division, 1984; **2:** Polar Biology 11(1):19-25, 1990; **3:** Marine Invertebrates of Southern Australia Part I. SA Shepherd and IM Thomas, eds. Handbook of the Flora and Fauna of South Australia. South Australia: DJ Woolman, 1982; **4:** Antarctic Journal of the United States 23(5):135-136, 1988; **5:** Marine Fauna of New Zealand: Hydromedusae (Cnidaria: Hydrozoa). J Bouillon & TJ Barnett. NIWA Biodiversity Memoir 113, Wellington, NZ: National Institute of Water and Atmospheric Research, 1999; **6:** Polar Biology 33(8):1131-1143, 2010

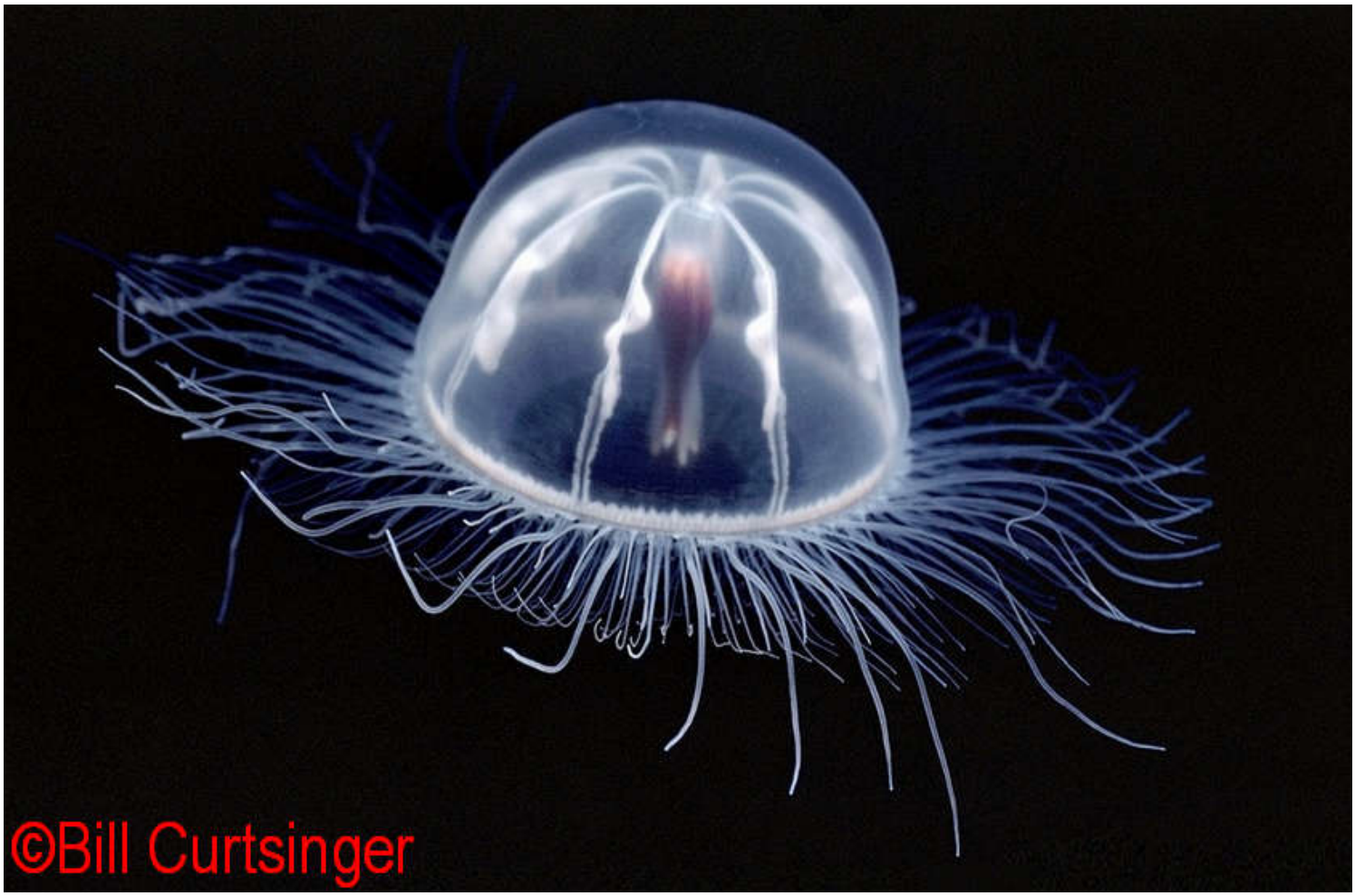
leptomedusa, probably *Cosmetirella davisii*

Cosmetirella davisii is found in Antarctic and subantarctic neritic waters as well as the Magellan region and South Africa [1,2,4]. *Cosmetirella davisii* is up to 6 centimeters wide, has an almost hemispherical umbrella with a variable number of tentacles up to 180, and has four radial canals, along which its linear sinuous gonads run for half to two-thirds of the radial canals [1,4]. Leptomedusae have a hemispherical or flattened umbrella and have gonads on radial canals [1].

Taxonomic Note: *Cosmetirella simplex* was described with 32 or more tentacles and is now synonymous with *C. davisii* which was described with about 80 tentacles; in this synonymy a smaller Antarctic growth form with 28-48 tentacles was recognized and a larger sub-Antarctic growth form with 56-150 tentacles was recognized. Therefore this photo could be the *C. simplex* form [3].

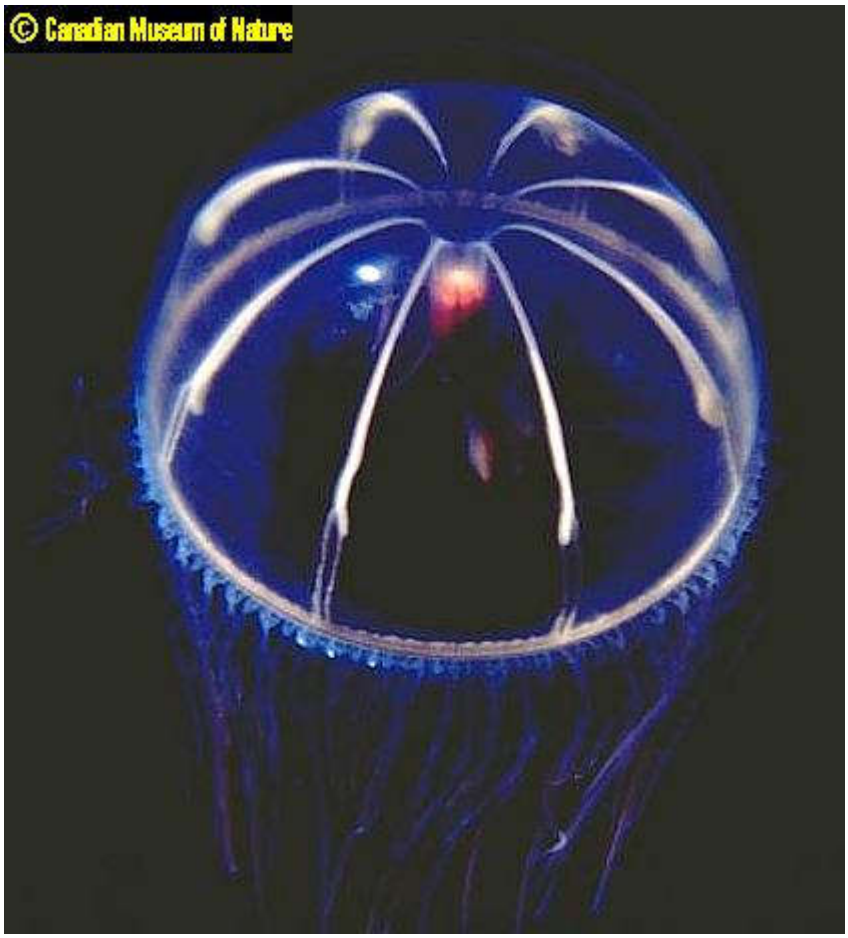
References: 1: Guide to the Hydromedusae of the Southern Ocean and Adjacent Waters. D O'Sullivan. ANARE Research Notes 5 (Australian National Antarctic Research Expedition). Kingston, Tasmania, Australia: Australia Dept of Science and Technology, Antarctic Division, 1984; **2:** Scientia Marina 63(Suppl 1):51-57, 1999; **3:** Biodiversity Data Journal 9: e69374, https://doi.org/10.3897/BDJ.9.e69374 , 2021; **4:** African Invertebrates 46:27-69, 2005

trachymedusa *Benthocodon hyalinus*



Benthocodon hyalinus has been seen at scuba diving depths in McMurdo Sound, and may normally occur in deeper water [4,7]. *Benthocodon hyalinus* has also been reported from the Chukchi Sea in the Arctic Ocean [6].

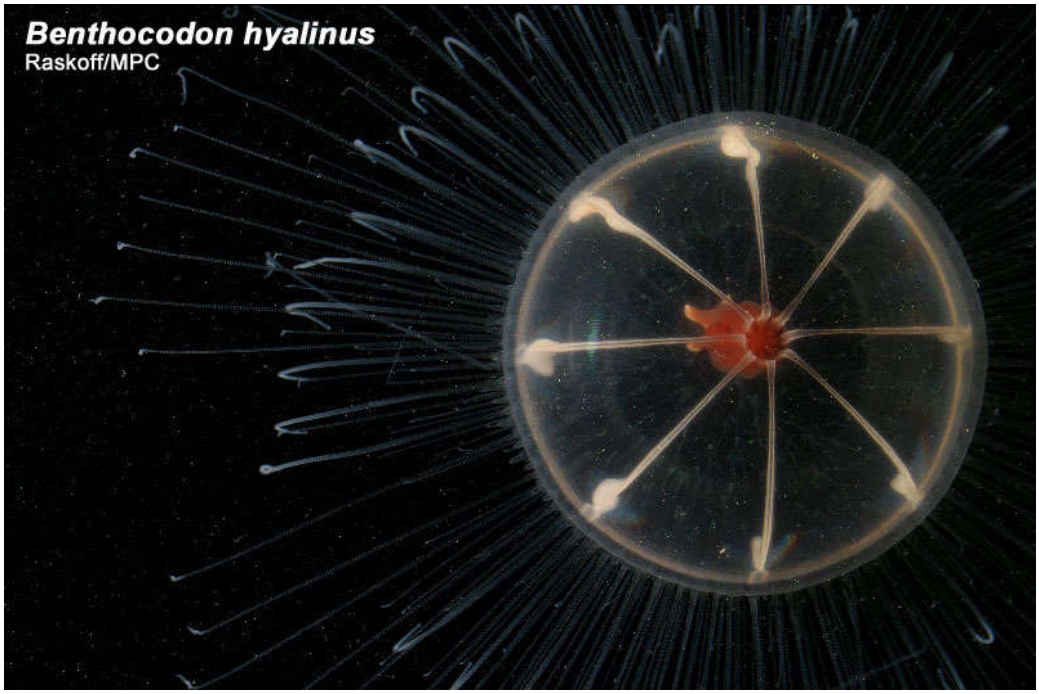
Benthocodon hyalinus has a transparent dome-shaped umbrella up to four centimeters in diameter, with its white gonads as eight linear to wavy bands along its radial canals, and its tentacles are colorless or have light reddish-brown tips [4,5].



Trachymedusae have the margin of their umbrella entire and not divided into lobes, have a thickened marginal nematocyst ring, have radial canals with their gonads usually confined to those radial canals, and have solid or both solid and hollow marginal tentacles [1].

Benthocodon hyalinus photographed in the Chukchi Sea in the Arctic Ocean [6].

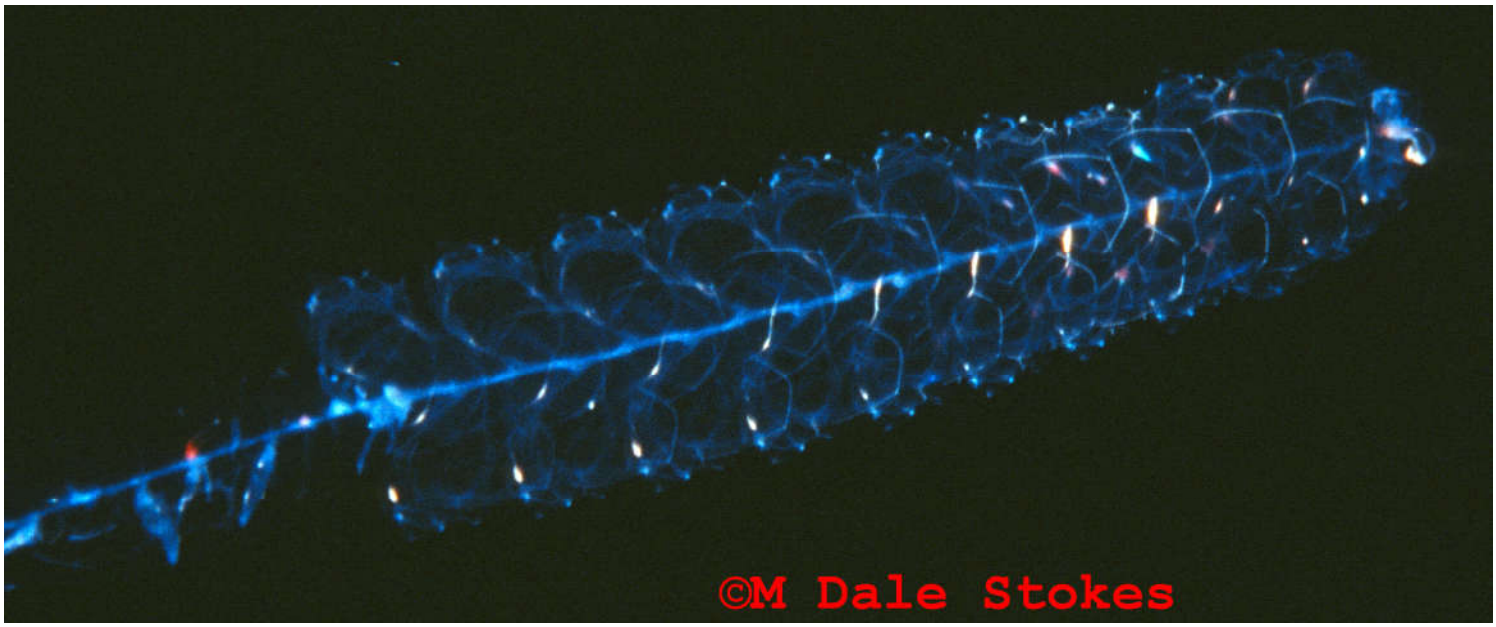
Gelatinous carnivores are a predominant and sometimes the main component of the macroplankton and nekton community in the Southern Ocean [2]. Gelatinous carnivores are important components of the food web because they are a control mechanism for its structure [3].



Benthocodon hyalinus photographed in the Chukchi Sea in the Arctic Ocean [6].

References: 1: Guide to the Hydromedusae of the Southern Ocean and Adjacent Waters. D O'Sullivan. ANARE Research Notes 5 (Australian National Antarctic Research Expedition). Kingston, Tasmania, Australia: Australia Dept of Science and Technology, Antarctic Division, 1984; **2:** Annales de l'Institut Oceanographique 73(2):139-158, 1997; **3:** Annales de l'Institut Oceanographique 73(2):123-124, 1997; **4:** Polar Biology 11(1):19-25, 1990; **5:** National Geographic Magazine 169:497-511, 1986 (identified as *Arctapodema*); **6:** Kevin Raskoff, http://www.arcodiv.org/watercolumn/cnidarian/Benthocodon_hyalinus.html , Accessed 8 February 2020; **7:** National Geographic 169(4):494-511, 1986

physonect siphonophore *Bargmannia elongata*



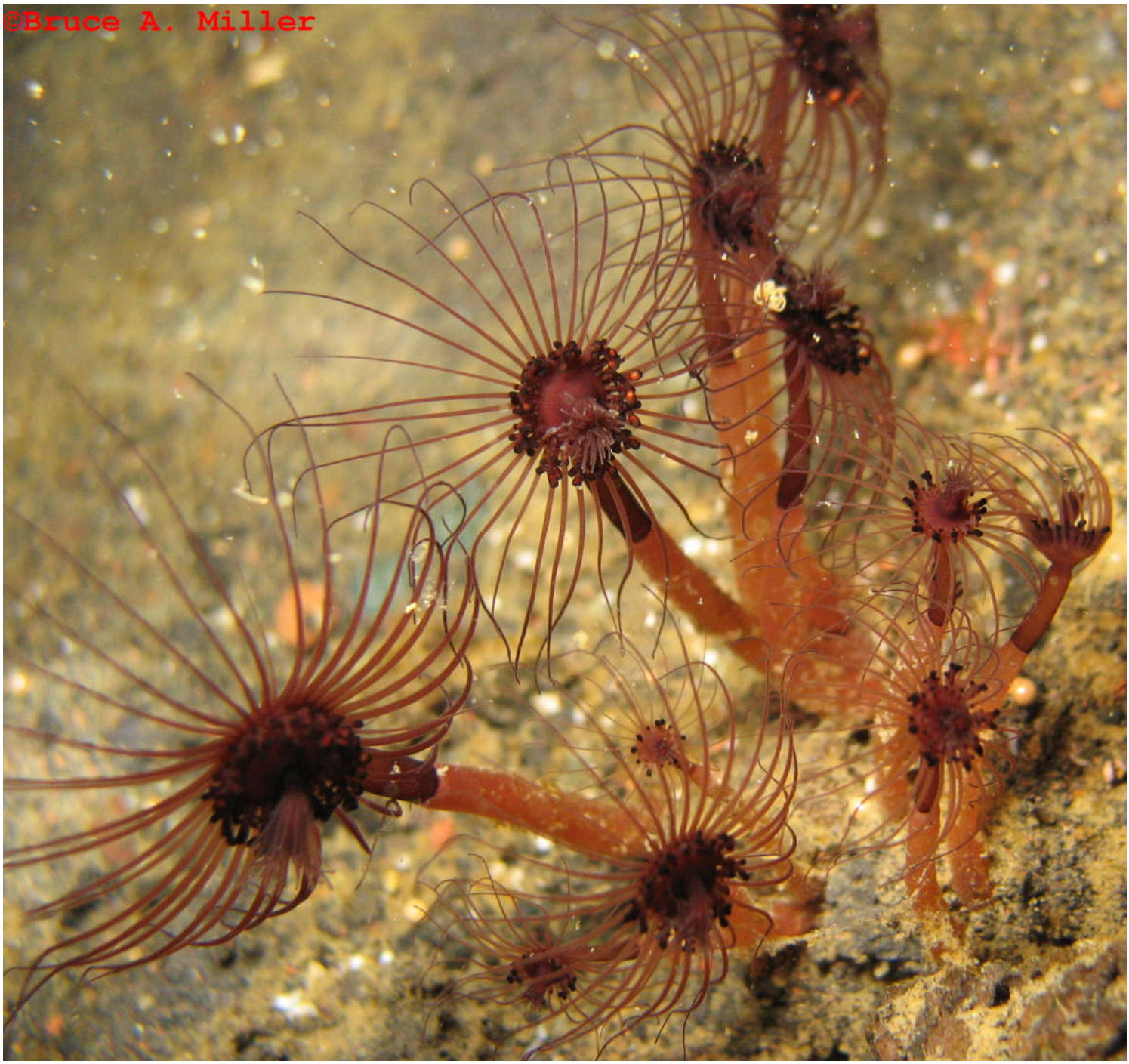
Bargmannia elongata occurs worldwide [4]. Siphonophores occur throughout Antarctica and subantarctic waters, with warm-water species observed in high latitudes during the spring and summer and cold-water species surviving at low latitudes during the winter [2].

Siphonophores are swimming/floating colonies consisting of different zooids specialized for feeding, sensing, flotation, and reproduction [1]. Siphonophore colonies bud from a stem whose gastrovascular canal is continuous with the canals of all the zooids in the colony [1]. Physonect siphonophores have an apical gas-filled float with a budding zone on either side of the base [1]. *Bargmannia* species are the only physonect siphonophores with siphosomal (tail-end) tentacles and they also lack dactylozooids (defensive stinging individual zooids) [3]. Siphonophores are active predators, feeding on other plankton like fish larvae and krill [2].

References: 1: A General Guide to the Metazoan Zooplankton Groups of the Southern Ocean. D O'Sullivan and G Hosie. ANARE Research Notes 30 (Australian National Antarctic Research Expedition). Kingston, Tasmania, Australia: Australia Dept of Science and Technology, Antarctic Division, 1985; **2:** Antarctic Siphonophores from Plankton Samples of the United States Antarctic Research Program: ELTANIN Cruises for Spring, Summer, Fall, and Winter (Cruises 3-5, 8-23, 25-28, 30, 35, and 38). A Alvarino, JM Wojtan, and MR Martinez. Washington DC: American Geophysical Union, 1990; **3:** Bulletin of the Natural History Museum. Zoology Series 65(1):51-72, 1999; **4:** Global Biodiversity Information Facility https://www.gbif.org/species/2264856 , Accessed 8 February 2020

athecate hydroid *Zyzzyzus parvula*

Zyzzyzus parvula has been collected in Antarctica from depths of 3 to 144 meters [1,8].



Zyzzyzus parvula has a distinctive dark reddish-brown or brick-red color with about 30 aboral tentacles, each about 1 centimeter in length [3,5]. *Zyzzyzus parvula* has been collected at sizes up to 3.5 centimeters in length [2,3]. *Zyzzyzus parvula* may have a sudden diminution in diameter about halfway from its base to the tentacles [3].

Here's a closeup of the hydranth (head) of *Zyzzyzus parvula*. The reddish-white beads are the reproductive sex cells (gonophores) which arise in the space between the oral and aboral tentacles. After fertilization, those gonophores containing eggs develop free-swimming medusae borne from stalks above the aboral tentacles; the medusae have a pointed apex and apical canal, with one extensile marginal tentacle with beads of sting-cells [6].

The small tentacle-fringed structure rising up in the middle of the gonophores is the hypostome with the hydroid's mouth and smaller oral tentacles at the end.

Here *Zyzzyzus parvula* is living in an ice pocket.

Zyzzyzus parvula is a conspicuous member of Cape Armitage's second benthic faunal zone between 15 and 33 meters depth; its distribution is patchy [7]. *Zyzzyzus parvula* is also a conspicuous member of McMurdo Sound's third benthic faunal zone below 33 meters depth [7].

Zyzzyzus parvula preys on benthic species, primarily diatoms, but also amphipods, copepods, nematodes, invertebrate eggs, sea urchin juveniles, and hydrozoans [8].

Taxonomic Note: Genus was changed from *Lampra* [3] to *Corymorpha* in 1972 [2], though it was referenced earlier in 1949 and 1967 as *Corymorpha parvula* [4,9]. Listed as *Corymorpha* in 1979 [1]. The *parvula* species was assigned to the *Lampra* genus in 1999 [13], assigned to the *Monocaulus* genus in 2001[10] (the illustrations of the *parvula* and *microrhiza* species in this 2001 publication are switched [12,14]), and assigned to the *Corymorpha* genus in 2009 [11]. Assigned to the *Zyzzyzus* genus in 2019 [15]. The firm perisarc in the lower part of the stem and the gregarious habit are indicative for *Zyzzyzus*, which is defined by the way it attaches to the substrate [12,14].

References: 1: Hydroids of the Antarctic and Subantarctic Waters. SD Stepanjants. Rezultaty biologicheskikh issledovanii Sovetskoi antarkticheskoi ekspeditsii , 6. [Biological Results of the Soviet Antarctic Expeditions Volume 6]. Issledovaniia fauny morei 20(30). [Explorations of the Fauna of the Seas 20(30)]. Academy of Sciences of the USSR, Zoological Institute. 1979; **2:** Gidroidi pribrezhnikh vod moria Deivtssa po materialam XI Sovetskoi antarkticheskoi ekspeditsii 1965/1966 gd. [Hydroids of coastal waters of the Davis Sea from the materials of the 11th Soviet Antarctic Expedition]. SD Stepanjants. Rezultaty biologicheskikh issledovanii Sovetskoi antarkticheskoi ekspeditsii , 5. [Biological Results of the Soviet Antarctic Expeditions, 5] Issledovaniia fauny morei 11 (19). [Explorations of the Fauna of the Seas 11 (19)]. Leningrad, Academy of Sciences of the USSR, 1972. pp. 56-80; **3:** British National Antarctic Expedition 1901-1904. Natural History. Volume 3 Zoology and Botany, Part 2 Hydroid Zoophytes. Hickson, SJ & Gravely FH. London: British Museum, 1907; **4:** Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening 111:183-215, 1949 (C. parvula corrected from Lampra parvula on page 201?); **5:** Proceedings of the Royal Society of Edinburgh 33(pt. 1 no. 2):9-34, 1913; **6:** Monograph on the Hydroida of Southern Africa. NAH Millard. Annals of the South African Museum 68, 1975; **7:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **8:** Berichte zur Polar- und Meeresforschung 402:41-46, 2001; **9:** Biologicheskie Soobshchestva Pribrezhnykh Raionov Moria Deivisa (po Rezul'tatam Vodolaznykh Nabliudenii. YN Gruzov, MV Propp, AF Pushkin. Informatsionnyi Biulletin Sovetskoi Antarkticheskoi Ekspeditsii 65:124-141, 1967 (translated in: Soviet Antarctic Expedition Information Bulletin 6(6):523-533, 1968); **10:** Marine Ecology 22(1-2):53-70, 2001 (the illustrations of the *parvula* and *microrhiza* species in this publication seem to be switched re: personal communications 12 and 14); **11:** Zoologische Mededelingen 83 (July 2009) http://www.zoologischemededelingen.nl/83/nr03/a21; **12:** Peter Schuchert, personal communication, 2015; **13:** Proceedings of the Zoological Institute, Russian Academy of Sciences, Volume 281. Zoological Sessions, Annual Reports 1998, St. Petersburg, Russia: Zoological Institute, 1999. pp. 47-54; **14:** Alvaro L. Peña Cantero, personal communication, 2015; **15:** Zootaxa 4570(1):1-78, 2019

athecate hydroid *Corymorpha* sp., probably *Corymorpha microrhiza*

Corymorpha microrhiza is found in Antarctica (McMurdo Sound, Weddell Sea, and Lazarev Sea) at depths from 33 to 761+ meters [1,8,9,10]. *C. microrhiza* is up to 14 centimeters long [1,8].

Corymorpha microrhiza has forty to fifty aboral tentacles about four centimeters in length [1]. In *Corymorpha* hydroids, there are two sets of filiform tentacles (long, slender tentacles with stinging cells scattered along their length): the short, numerous, and densely crowded oral tentacles and the longer basal aboral tentacles in a single whorl [11]. The aboral tentacles of *Corymorpha* hydroids are only slightly contractile [11].

The stalk and the numerous attaching root filaments of *Corymorpha microrhiza* have a thin chitinous covering called the perisarc [1]. *Corymorpha* hydroids are solitary and anchor themselves by root filaments [11].

Corymorpha microrhiza is a conspicuous organism in Cape Armitage's third benthic faunal zone below 33 meters depth [9].

Here's a closeup of the hydranth (head) of the hydroid. The small pale orange beads are the reproductive sex cells (gonophores) which arise in the space between the oral and aboral tentacles. The pink tentacle-fringed conical structure rising up in the middle of the gonophores is the hypostome with the hydroid's mouth and smaller oral tentacles surrounding the mouth.

After fertilization, those gonophores containing eggs develop free-swimming medusae borne from stalks above the aboral tentacles; the medusae have a pointed apex and apical canal, with one extensile marginal tentacle with beads of sting-cells.


©Shawn Harper

Taxonomic Note: The specimen described by Hickson & Gravely as *Lampra microrhiza* is in a poor state and is generic; it seems similar to the hydroid shown above but could be any of several species [1,2,7]. The *microrhiza* species of Hickson & Gravely was assigned to *Corymorpha* in 1972 [3], assigned to *Lampra* in 1999 [4], assigned to *Monocaulus* in 2001 [5], and then assigned to *Corymorpha* in 2009 [6]. Redescribed in 2019 [8].

References: 1: British National Antarctic Expedition 1901-1904. Natural History. Volume 3 Zoology and Botany, Part 2 Hydroid Zoophytes. Hickson, SJ & Gravely FH. London : British Museum, 1907; **2:** Peter Schuchert, personal communication, 2015; **3:** Gidroidi Pribrezhnikh vod Moria Deivtssa po Materialam XI Sovetskoi Antarkticheskoi Ekspeditsii 1965/1966 gd. [Hydroids of Coastal Waters of the Davis Sea from the Materials of the 11th Soviet Antarctic Expedition]. SD Stepanjants. Rezultaty Biologicheskikh Issledovanii Sovetskoi Antarkticheskoi Ekspeditsii , 5. [Biological Results of the Soviet Antarctic Expeditions, 5] Issledovaniia Fauny Morei 11 (19). [Explorations of the Fauna of the Seas 11 (19)]. Leningrad, Academy of Sciences of the USSR, 1972. pp. 56-80.; **4:** Proceedings of the Zoological Institute, Russian Academy of Sciences, Volume 281. Zoological Sessions, Annual Reports 1998, St. Petersburg, Russia: Zoological Institute, 1999. pp. 47-54; **5:** Marine Ecology 22(1-2):53-70, 2001; **6:** Zoologische Mededelingen 83 (July 2009) http://www.zoologischemededelingen.nl/83/nr03/a21; **7:** Alvaro L. Peña Cantero, personal communication, 2015; **8:** Zootaxa 4570(1):1-78, 2019; **9:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp. 244-258; **10:** Polar Biology 20(4):229-247, 1998; **11:** PL Kramp. Origin of the Hydroid Family Corymorphidae. Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening 111:183-215, 1949

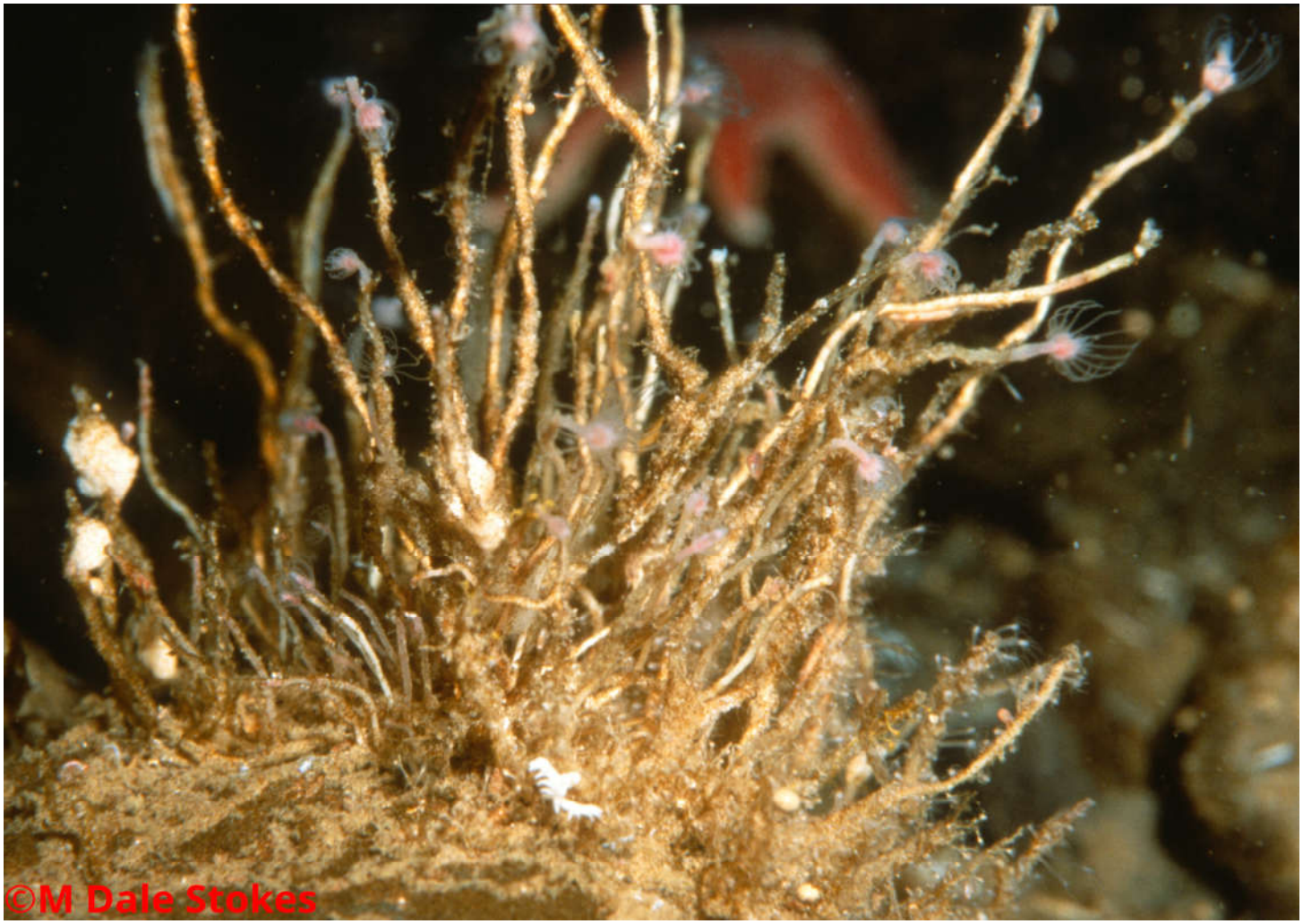
athecate hydroid, probably *Ectopleura crocea*

These hydroids are usually colonial, forming a tangled mat with long unbranched stalks, a thin perisarc covering, and are attached to the substrate by stolons [1,2,4,11]. These hydroid colonies do not anchor by rooting filaments as do the solitary *Monocaulus* hydroids [1,2,3].

These hydroids have two sets of filiform tentacles (long, slender tentacles with stinging cells scattered along their length): the short, numerous, and densely crowded oral tentacles and the longer basal aboral tentacles in a single whorl [1,2,3,11].

On the hydranth (head) of these hydroids, the small beaded area between the oral and aboral tentacles are the reproductive sex cells (gonophores). The tentacle-fringed conical structure rising up in the middle of the gonophores is the hypostome with the hydroid's mouth and smaller oral tentacles at the end.

Hydroids have a complex life cycle -- a sexual reproduction stage involving medusae or is medusoid in character, and an asexual reproduction stage, often colonial, involving asexual budding.



A prominent McMurdo hydroid is *Ectopleura crocea* [5,6,11]. *Ectopleura crocea* is colonial, with a few to several hundred mostly smooth stems arising from a mat [9]. *E. crocea* is found at depths from 0 to 234 meters and has been collected up to 12-17 centimeters in length [6,7,8.9,11]. *E. crocea* has white or greenish stems, orange red hydranth and gonophores, and white tentacles [9,11]. *E. crocea* can form creeping colonies on stones [10]. *E. crocea* has a diet dependent on the water column, capturing planktonic prey like copepods and invertebrate eggs [10].

Taxonomic Note: *Tubularia hodgsoni* was synonymized into *Tubularia ralphi*, and *T. ralphi* was synonymized into *Ectopleura crocea* [6,11,12].

References: 1: Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening 111:183-215, 1949; **2:** Monograph on the Hydroida of Southern Africa. NAH Millard. Annals of the South African Museum 68, 1975; **3:** South African Journal of Antarctic Research 23(1-2):3-24, 1993; **4:** Hydroids and Hydromedusae of the USSR. (Gidroidy i Gidromeduzy Morskikh, Solonovatovodnykh i Presnovodnykh Basseinov SSSR). DV Naumov. Jerusalem: Israel Program for Scientific Translations / NTIS. 1969; **5:** Ecological Monographs 44(1):105-128, 1974; **6:** Hydroids of the Antarctic and Subantarctic Waters. SD Stepanjants. Rezultaty biologicheskikh issledovanii Sovetskoi antarkticheskoi ekspeditsii , 6. [Biological Results of the Soviet Antarctic Expeditions Volume 6]. Issledovaniia fauny morei 20(30). [Explorations of the Fauna of the Seas 20(30)]. Academy of Sciences of the USSR, Zoological Institute. 1979; **7:** Some Ecological Peculiarities of the Hydroid Tubularia ralphii Bale, 1884, in Antarctic Waters (from the Material of the 16th Soviet Antarctic Expedition) [Nekotorye osobennosti ekologii gidroida Tubularia ralphii Bale, 1884 v priantarkticheskikh vodakh (po materialam XVI Sovetskoi antarkticheskoi ekspeditsii)]. Stepaniants, SD. IN: Teoreticheskoe i prakticheskoe znachenie kishechnopolostnykh (Theoretical and Practical Significance of Coelenterates) edited by D.B. Naumov and S.D. Stepaniants: Leningrad, 1980. pp.109-113; **8:** Antarctic Hydroids. Broch, H. Scientific results of the Norwegian Antarctic Expeditions, 1927-1928. Number 28. Oslo, I Kommisjon hos J. Dybwad, 1948; **9:** Marine Invertebrates of Southern Australia, Part 1. SA Shepherd & IM Thomas. Adelaide, South Australia: DJ Woolman Government Printer, 1982; **10:** Polar Biology 24(8):620-627, 2001; **11:** Revue Suisse de Zoologie 117 (3): 337-555, 2010; **12**: Zootaxa 3753(5):421–439, 2014

hydroid *Hydractinia angusta*

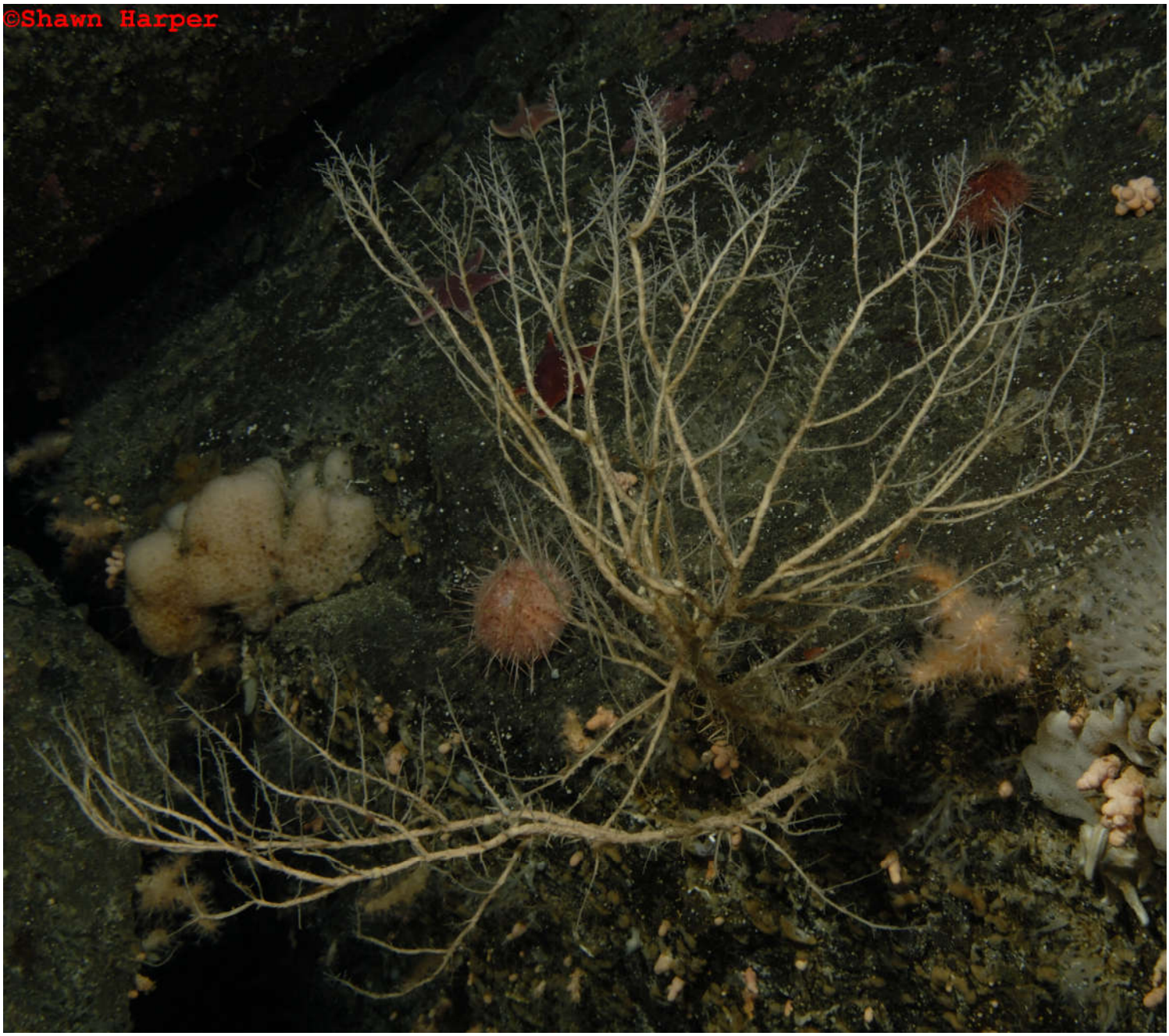
The Antarctic scallop *Adamussium colbecki* may be colonized on either shell by the small hydroid *Hydractinia angusta* [1,3].

Hydractinia angusta hydroids eat tube feet and pedicellariae of sea urchins including *Sterechinus neumayeri*, which grazes on the algal film growing on the surface of the scallop's shell but is not a predator of the scallop [1]. *A. colbecki* shells are very thin and such urchin grazing may damage the shell; thus the hydroids act in defense of the scallop [1]. *Hydractinia angusta* hydroids eat the film (includes agglutinated diatoms) that it can remove with its tentacles from the scallop shell, as well as bottom sediment exposed to it due to clapping activity of the scallop [1]. *Hydractinia angusta* hydroids also reduce the settling of young *Adamussium colbecki* scallop larvae onto the shells of adult scallops, competing successfully for shell space with the young scallops [2].

References: 1: Polar Biology 23(7):488-494, 2000; **2:** Polar Biology 24(8):577-581, 2001; **3:** Zootaxa 3321:1-21, 2012; **4:** Zootaxa 3972(3):369-392, 2015

athecate hydroid *Hydrodendron arboreum*

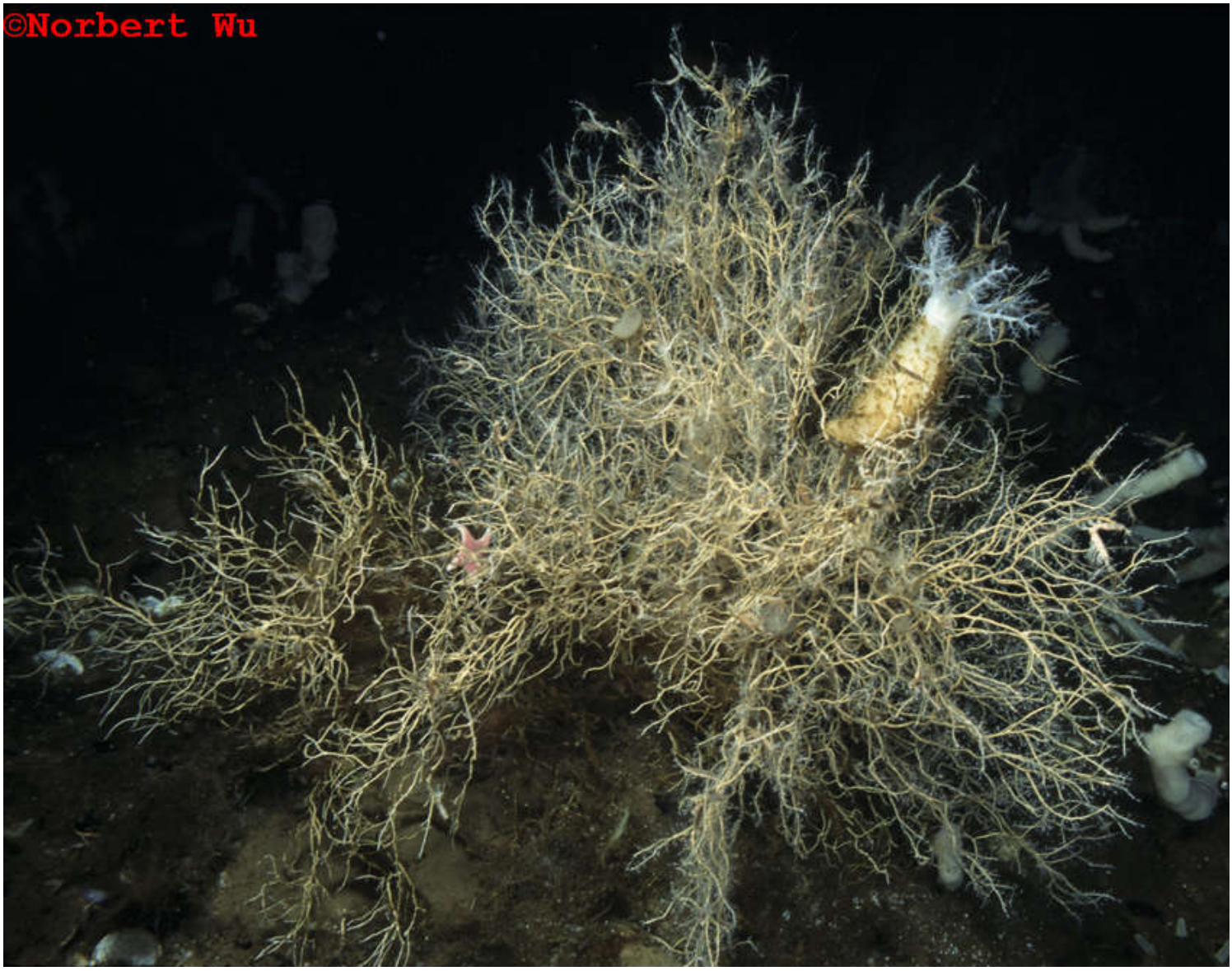
Hydrodendron arboreum is found throughout Antarctica and South Shetland Islands, Bouvet Island, Kerguelen Island, Marion and Prince Edward Islands, and Patagonia at depths from 18 to 1,370 meters [3,4,5,9,10,13,14,15].



Hydrodendron arboreum is found in shrubby woody colonies with thick fascicled stems and irregular branching in different planes, reaching up to 35 centimeters high [3,4,7,10,13,14,16].

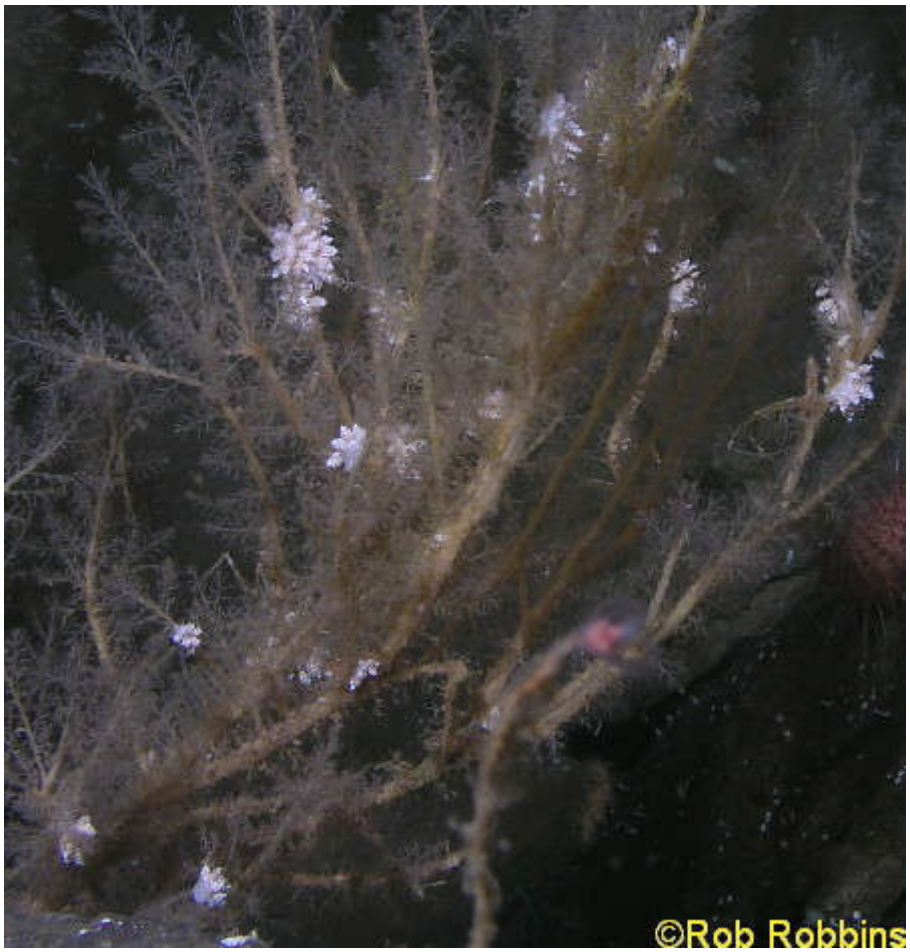
Hydrodendron arboreum color is typically light greenish-brown or honey brown, with younger branches being pale yellowish to colorless [7,14].

The center of the colony may have a mass of sex cells with developing larvae, clustered on a specialized branch, that are 15-25 millimeters in diameter [6,10].



Hydrodendron arboreum is a conspicuous organism in Cape Armitage's third benthic faunal zone below 33 meters depth, and is also found scattered around in the second benthic faunal zone between 15 and 33 meters depth [8].

Hydroids feed on plankton suspended in the water. During the Antarctic winter, it is dark for four months and plankton is greatly reduced though still present during that period; Antarctic suspension feeders may continue to feed at a low level or suspend their feeding activity for a few months centered on July [2].



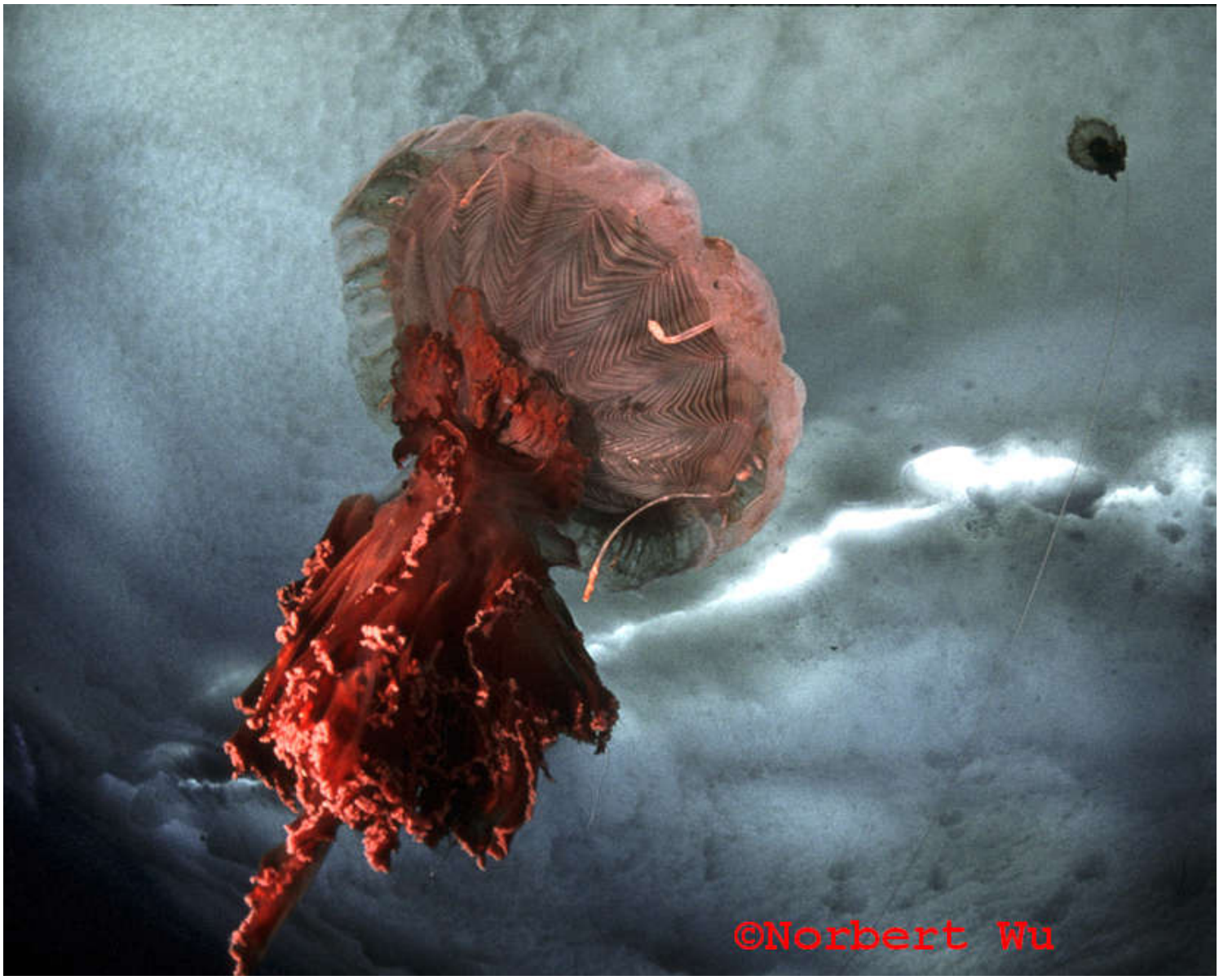
Several *Doto antarctica* nudibranchs are shown here on *Hydrodendron arboreum*.

Hydrodendron arboreum is preyed upon by the seastar *Odontaster validus*, the nudibranch *Doto antarctica*, and two unidentified aeolid nudibranchs (possibly *Eubranchus* sp. and *Coryphella* sp.) [1].

Taxonomic Note: Genus was *Halecium arboreum* in 1966 [3], then changed to *Hydrodendron arborea* in 1977 [4], followed by a change to *Ophiodes arboreus* in 1979 [5]. Several subsequent authors continued using the *Hydrodendron* genus and *Hydrodendron arboreum* [6,10,11,12,13]. Reassigned to *Hydrodendron arboreum* in 2008 [14].

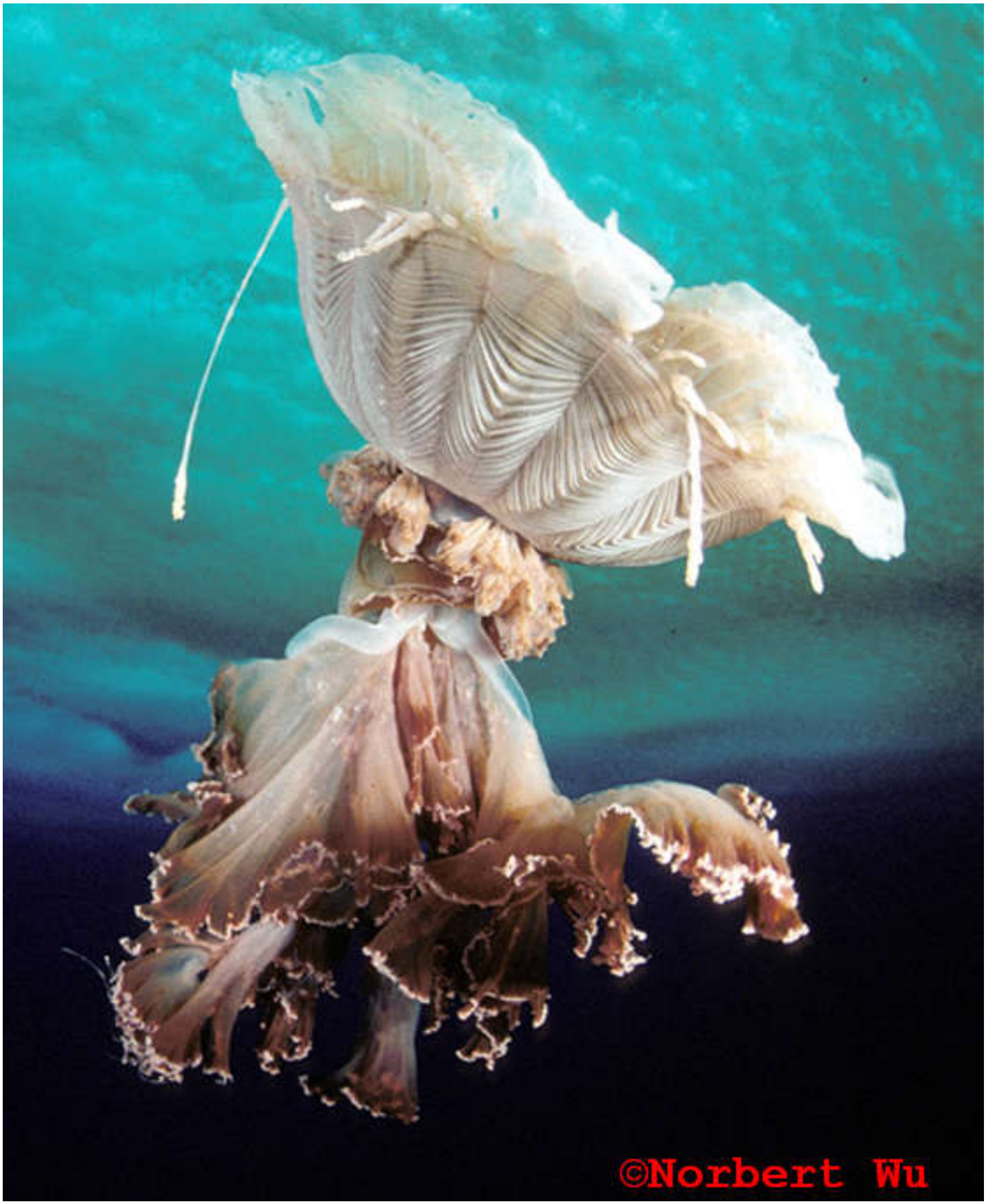
References: 1: Ecological Monographs 44(1):105-128, 1974; **2:** Polar Biology 15(5):335-340, 1995; **3:** Hydroidea (Thecaphora) Collected by the Soviet Antarctic Expedition on the M/V "Ob", in Antarctic and Subantarctic Waters. DV Naumov and SD Stepaniants. IN: Biological reports of the Soviet Antarctic Expedition, 1955-1958 (Rezultaty biologicheskikh issledovanii Sovetskoi antarkticheskoi ekspeditsii, 1955-1958). Volume 1. EP Pavlovskii, ed. Jerusalem: Israel Program for Scientific Translations. 1966. pp.68-106; **4:** Annals of the South African Museum 73(1):1-47, 1977; **5:** Hydroids of the Antarctic and Subantarctic Waters. SD Stepanjants. Biological Results of the Soviet Antarctic Expeditions Volume 6. Explorations of the Fauna of the Seas 20(30). Academy of Sciences of the USSR, Zoological Institute. 1979; **6:** Fauna der Antarktis. J Sieg & JW Wagele, eds. Berlin: P. Parey, 1990; **7:** Hydroida. EA Briggs. Australasian Antarctic Expedition 1911-1914, Scientific Reports. Series C, Zoology and Botany. Volume 9, Part 4. Sydney: David Harold Paisley, Government Printer, 1938; **8:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **9:** Proceedings of the Royal Society of Edinburgh 33(part 1 number 2):9-34, 1913; **10:** South African Journal of Antarctic Research 23(1-2):3-24, 1993; **11:** Scientia Marina 63(Supplement 1):209-218, 1999; **12:** Polar Biology 27(12):767-774, 2004; **13:** Polar Biology 29(9):764-771, 2006; **14:** Memoirs of the Museum of Victoria 65: 165-178, 2008; **15:** Zootaxa 4570(1):1-78, 2019; **16:** Polar Biology 31:451-464, 2008

scyphomedusa *Desmonema glaciale*

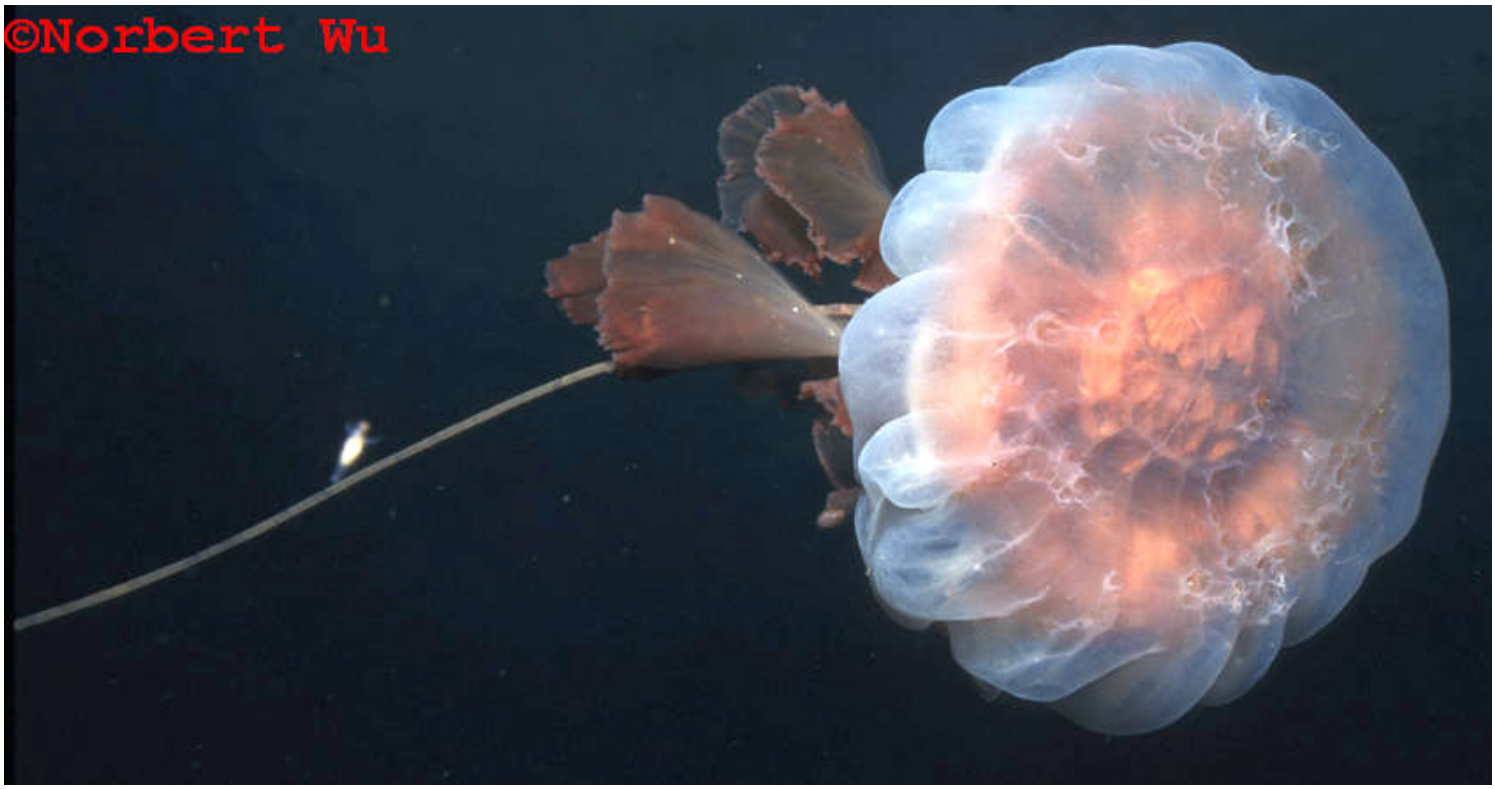


Desmonema glaciale is found in Antarctica and the Antarctic Peninsula, South Orkney Islands, and South Georgia Island, where it is found near the surface in continental shelf waters [1].

Desmonema glaciale is pink-violet in color and its bell-like umbrella can be over one meter in diameter [1].



Desmonema glaciale is distinctive for its thick, flattened, cord-like tentacles that are few in number (less than ten), and may be over five meters long [1].



Desmonema glaciale has broad curtain-like pleated oral arms [1].

Desmonema glaciale feeds on diverse pelagic and benthic prey including euphausids and fish; it has been observed engulfing benthic animals like *Parborlasia corrugatus* nemertean worms and *Odontaster validus* seastars [2].

The hyperiid amphipod *Hyperia macrocephala* can be found riding along on jellyfish, living as a juvenile in the medusa's gastrovascular system (where they avoid becoming a food item for the medusa) and becoming a parasite feeding on the epidermis when adult [2,3].

This *Desmonema glaciale* jellyfish got close to the bottom in shallow water and was captured by tentacles of two *Urticinopsis antarctica* anemones [6]. The struggle can continue for quite awhile. The medusa pulses its bell as it tries to swim away, while the anemones slowly pull the medusa into their mouths.

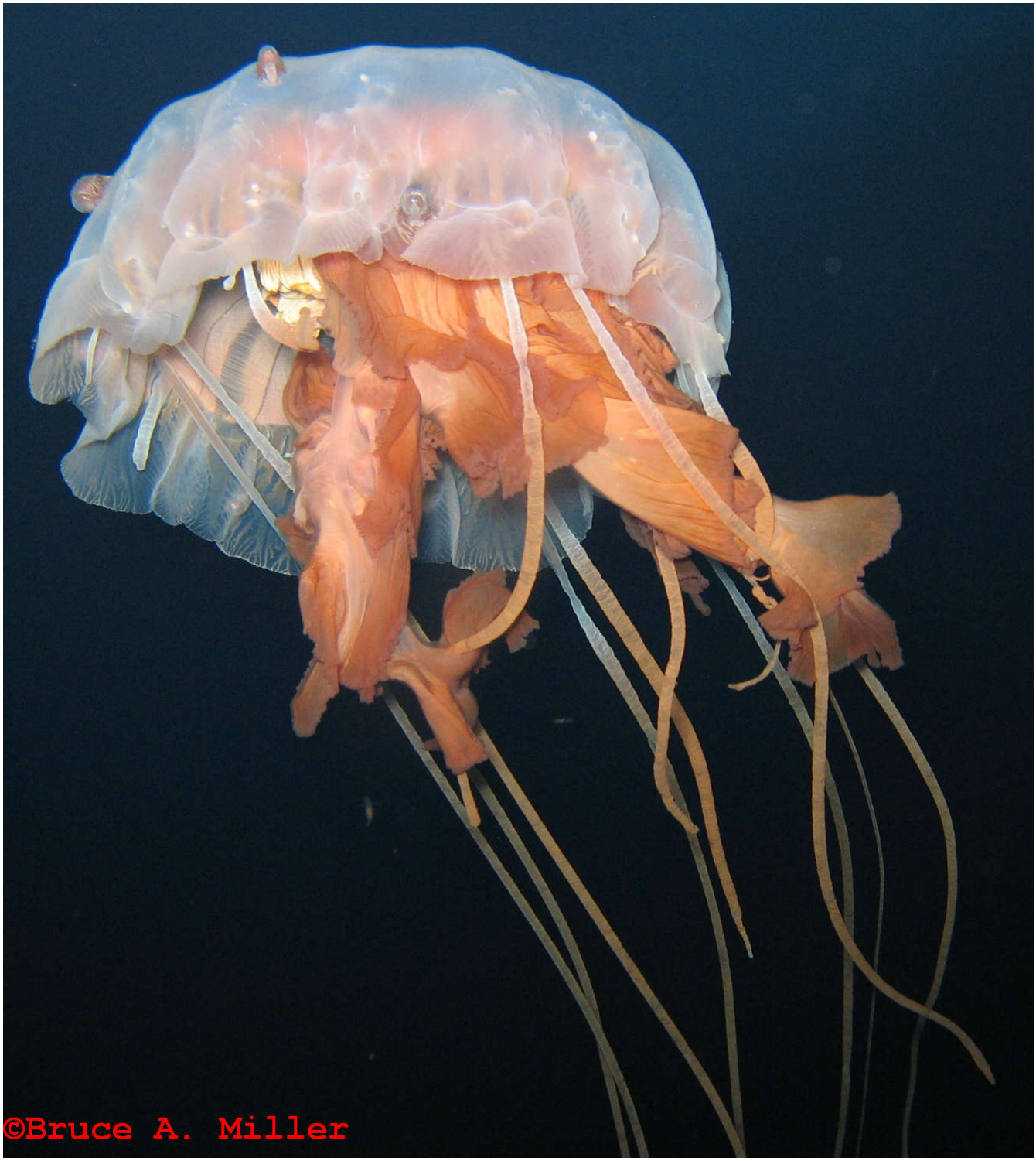
This *Desmonema glaciale* jellyfish is being consumed by nemertean worms *Parborlasia corrugatus*.

Gelatinous carnivores are a predominant and sometimes the main component of the macroplankton and nekton community in the Southern Ocean [4]. Gelatinous carnivores are important components of the food web because they are a control mechanism for its structure [5].

References: 1: Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semaeostomeae) of the Southern Ocean. RJ Larson. Biology of the Antarctic Seas XVI. Antarctic Research Series, Volume 41, Paper 3, Pages 59-165. Washington, DC: American Geophysical Union, 1986; **2:** British Antarctic Survey Bulletin 27:39-49, 1972; **3:** Polar Biology 11(1):19-25, 1990; **4:** Annales de l'Institut Oceanographique 73(2):139-158, 1997; **5:** Annales de l'Institut Oceanographique 73(2):123-124, 1997; **6:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258

scyphomedusa *Desmonema gaudichaudi*

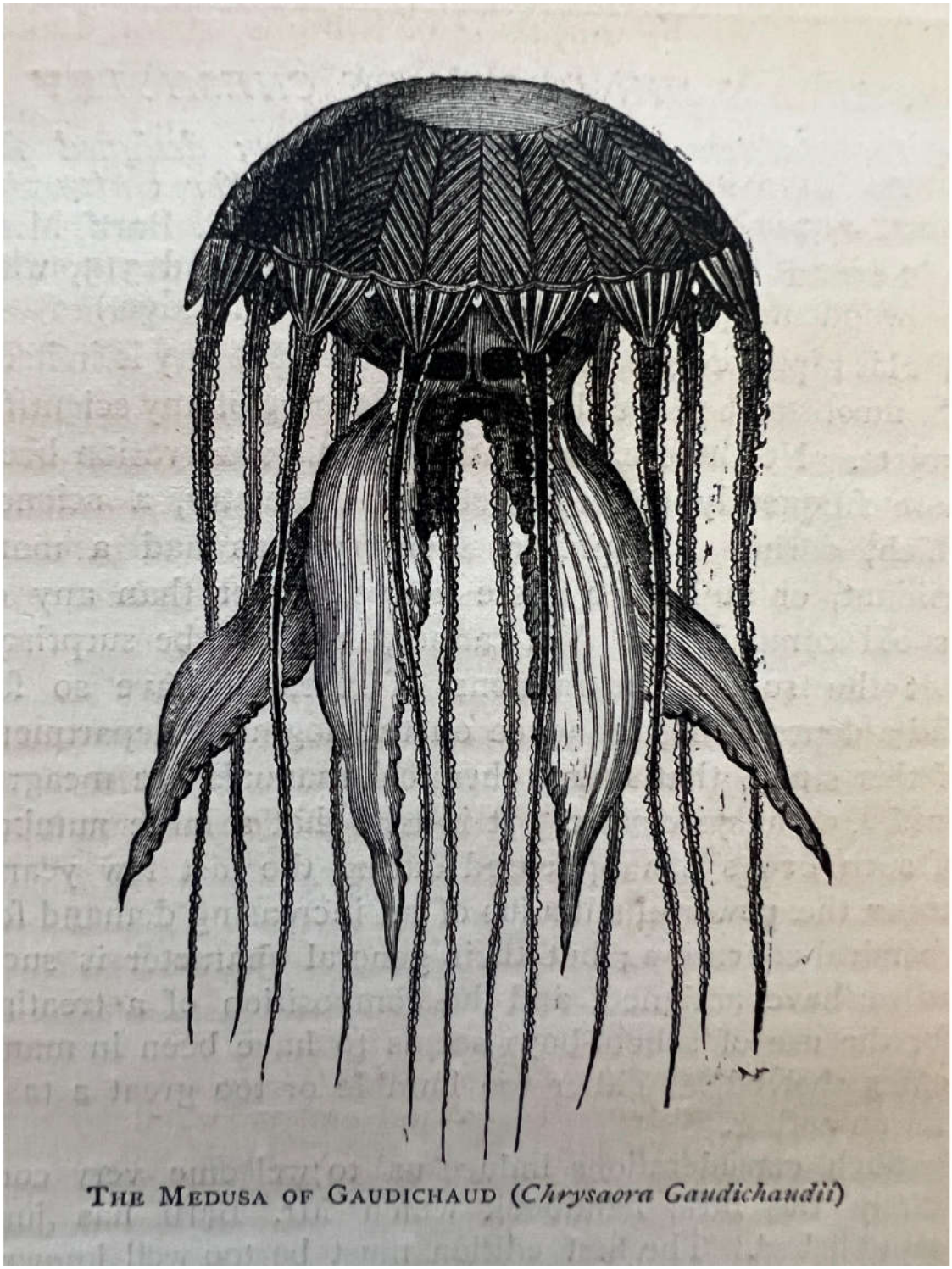
Desmonema gaudichaudi is found in Antarctic and subantarctic waters, Tierra del Fuego, Falkland Islands, Argentina, Kerguelen Island, Heard Island, southern Australia, and New Zealand [1,4,5,6,7].



The umbrella of *Desmonema gaudichaudi* is up to 100 centimeters in diameter, and it has 10 to 60 thickened tentacles in specimens over 25 centimeters in bell diameter [1,5]. *Desmonema gaudichaudi* may have symbiotic fish living among its tentacles [6].

The hyperiid amphipod *Hyperia macrocephala* can be found riding along on jellyfish, living as a juvenile in the medusa's gastrovascular system (where they avoid becoming a food item for the medusa) and becoming a parasite feeding on the epidermis when adult [2,3]. Gelatinous carnivores are a predominant and sometimes the main component of the macroplankton and nekton

community in the Southern Ocean [4]. Gelatinous carnivores are important components of the food web because they are a control mechanism for its structure [4].



From: Nature, Volumne 1, page 79, November 18, 1869

References: 1: Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semaeostomeae) of the Southern Ocean. RJ Larson. Biology of the Antarctic Seas 16. Antarctic Research Series 41(Paper 3): 59-165. Washington, DC: American Geophysical Union, 1986; **2:** British Antarctic Survey Bulletin 27:39-49, 1972; **3:** Polar Biology 11(1):19-25, 1990; **4:** Scientia Marina 63(Supplement 1):51-57, 1999; **5:** Latin American Journal of Aquatic Research 46(2):240-257, 2018; **6:** Transactions of the Royal Society of South Australia 111(1-2):131-132, 1987; **7:** A Guide to the Scyphomedusae of the Southern Ocean and Adjacent Waters. David O'Sullivan. ANARE Research Notes 4. Australia Department of Science and Technology, Antarctic Division, 1984

Duncecap or helmet jelly *Periphylla periphylla*

Periphylla periphylla is found in Antarctica and the Antarctic Peninsula, South Shetland Islands, South Sandwich Islands, South Georgia Island, Argentina, the Southern Ocean, and worldwide in depths from about 200 to 1000 meters, but it can be at the surface in high latitudes especially at night [1,7]. Diving under the ice in Antarctica is equivalent to this latter condition.

Periphylla periphylla is the most widely distributed and abundant scyphomedusa in deep water [1].

Periphylla periphylla has a thickened and conical or hemispherical central dome, which is higher than it is wider, and it can be up to 35 centimeters in diameter [1,7]. *Periphylla periphylla* has a large purple, violet, dark red, or dark brown stomach, occupying the upper portion of the dome [1,5,7].

Periphylla periphylla has twelve tentacles in groups of three, with sense organs in between; it captures small zooplankton with its rigid upward-pointing tentacles, which are then bent down and inward to bring prey to its mouth [1,2,7]. The coronal groove around the lower portion of its bell or umbrella acts as a hinge to provide flexibility for swimming and to contain prey during feeding [2].

Periphylla periphylla jellyfish which get close to the bottom in shallow water are prey to be captured by tentacles of an anemone (*Isotealia antarctica* anemone shown here with a *P. periphylla* jellyfish with the tentacles of some other jellyfish on top of its umbrella) [3]. The struggle can continue for quite awhile. The medusa pulses its bell as it tries to swim away while the anemone slowly pulls it into its mouth.

Anemone-captured *Periphylla periphylla* can be nibbled by sea spiders passing by the anemone [4].

References: 1 Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semaeostomeae) of the Southern Ocean. RJ Larson. Biology of the Antarctic Seas 16. Antarctic Research Series 41(Paper 3): 59-165. Washington, DC: American Geophysical Union, 1986; **2:** Marine Behavior and Physiology 6(2):123-129, 1979; **3:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp.244-258; **4:** Peter Brueggeman, personal communication (observed sea spider eating anemone-captured medusa), 1999; **5:** Scientia Marina 56(Supplement 1):1-64,1992; **6:** Latin American Journal of Aquatic Research 46(2):240-257, 2018; **7:** A Guide to the Scyphomedusae of the Southern Ocean and Adjacent Waters. David O'Sullivan. ANARE Research Notes 4. Australia Department of Science and Technology, Antarctic Division, 1984

scyphomedusa *Diplulmaris antarctica*

Diplulmaris antarctica is found in Antarctica and the Antarctic Peninsula near the surface in continental shelf waters [1,8].

Diplulmaris antarctica has 16 - 48 whitish laterally compressed tentacles [1]. *Diplulmaris antarctica* has frilled curtain-like reddish-orange oral arms and its stomach gastrodermis is also reddish-orange [1].

The colorless bell-like umbrella of *Diplulmaris antarctica* can be up to eighteen centimeters in diameter [1,2].

Diplulmaris antarctica feeds on copepods, euphausiid larvae, medusae, ctenophores, fish larvae, and the molluscan pteropods *Clione antarctica* and *Limacina rangii* [1,2].

Diplulmaris antarctica is usually infested with a hyperiid amphipod *Hyperiella dilatata* which sits with its dorsal (top) surface against the outside top of the medusa's bell, the exumbrellar surface [2]. The hyperiid amphipods are those white dots on the surface of the clear bell in the picture at left. Collectors have found up to 54 of these hyperiid amphipods riding along, clinging tightly to the medusa.

These riding amphipods are predominantly juveniles and females; this suggests that the medusa is both an amphipod mating platform (where females await more mobile males) and a predation refuge for juveniles and females [2]. The hyperiid amphipods do not appear to feed on the medusa and probably use it as a safe harbor between feeding forays [2].

Diplulmaris antarctica has also been reported in association with the hyperiid amphipod *Hyperia macrocephala* [1].

Jellyfish which get close to the bottom in shallow water are prey to be captured by tentacles of an anemone (*Diplulmaris antarctica* jellyfish and *Urticinopsis antarctica* anemone shown here) [3]. The struggle can continue for quite awhile. The medusa pulses its bell as it tries to swim away while the anemone slowly pulls the medusa into its mouth.

Here's a *Diplulmaris antarctica* jellyfish with some hitchhiking amphipods, that is nearly swallowed by an *Urticinopsis antarctica* anemone.

Another predator of *Diplulmaris antarctica* is the Adelie penguin [6,7].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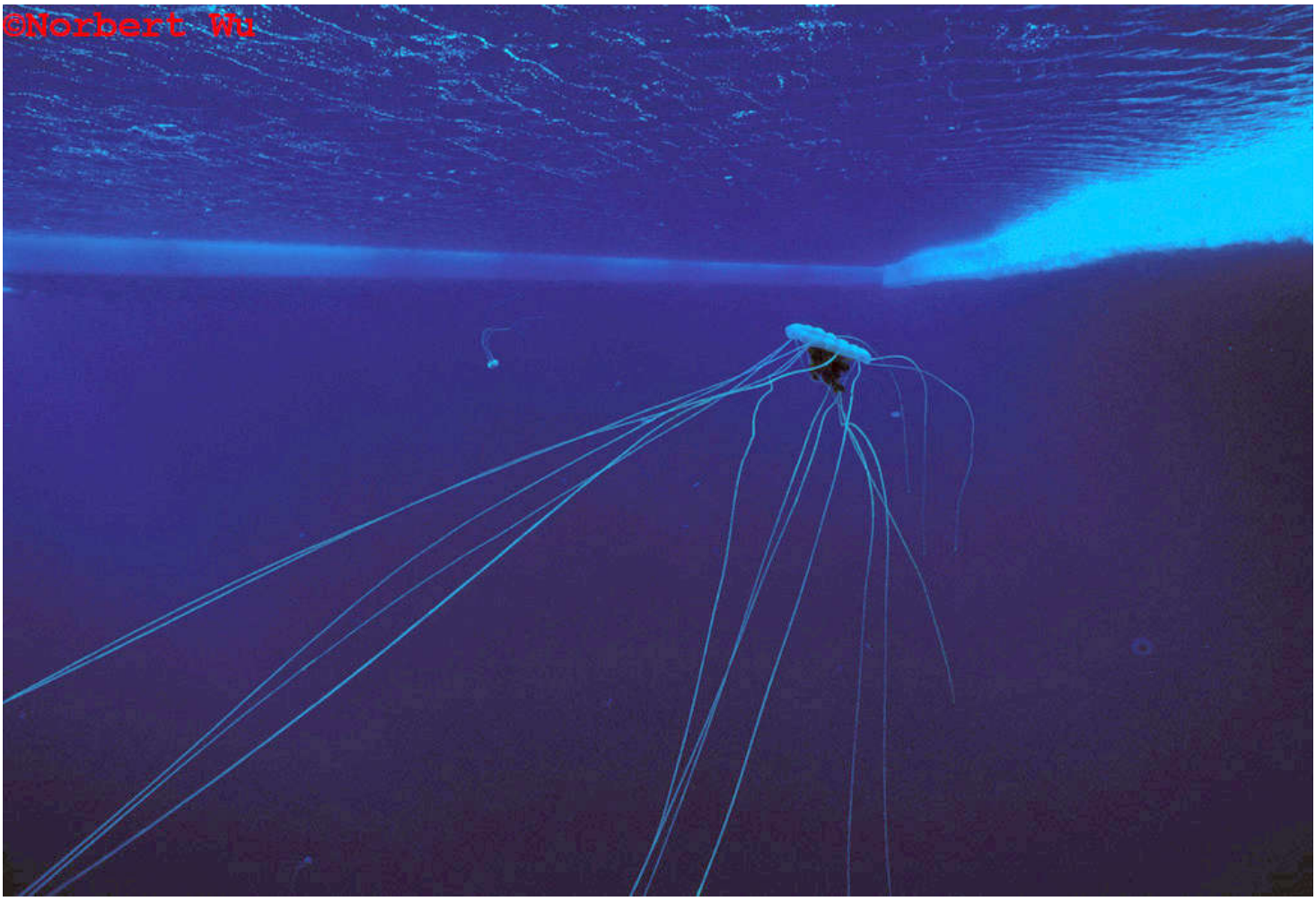
Gelatinous carnivores are a predominant and sometimes the main component of the macroplankton and nekton community in the Southern Ocean [4]. Gelatinous carnivores are important components of the food web because they are a control mechanism for its structure [5].

References: 1: Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semaeostomeae) of the Southern Ocean. RJ Larson. Biology of the Antarctic Seas 16. Antarctic Research Series 41(Paper 3): 59-165. Washington, DC: American Geophysical Union, 1986; **2:** Polar Biology 11(1):19-25, 1990; **3:** Antarctic Ecology, Volume 1. MW Holdgate, ed. NY: Academic Press, 1970. pp 244-258; **4:** Annales de l'Institut Oceanographique 73(2):139-158, 1997; **5:** Annales de l'Institut Oceanographique 73(2):123-124, 1997; **6:** Frontiers in Ecology and the Environment 15(8):437-441, 2017; **7:** Marine Biology 163(5):108, 2016; **8:** A Guide to the Scyphomedusae of the Southern Ocean and Adjacent Waters. David O'Sullivan. ANARE Research Notes 4. Australia Department of Science and Technology, Antarctic Division, 1984

coronate scyphomedusa, possibly *Atolla gigantea*



Seen at the ice edge of McMurdo Sound, this coronate scyphomedusa could be *Atolla gigantea*; it has long tentacles like *Desmonema* but has a short black manubrium like *Atolla* [1].

Atolla gigantea has a large umbrella up to fifteen centimeters in diameter, with a broad flattened central disc, and usually 28 tentacles, but also 24, 26, or 27 [2].

References: 1: Ron J Larson, personal communication, 2015; **2:** Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semaeostomeae) of the Southern Ocean. RJ Larson. Biology of the Antarctic Seas 16. Antarctic Research Series 41(Paper 3): 59-165. Washington, DC: American Geophysical Union, 1986