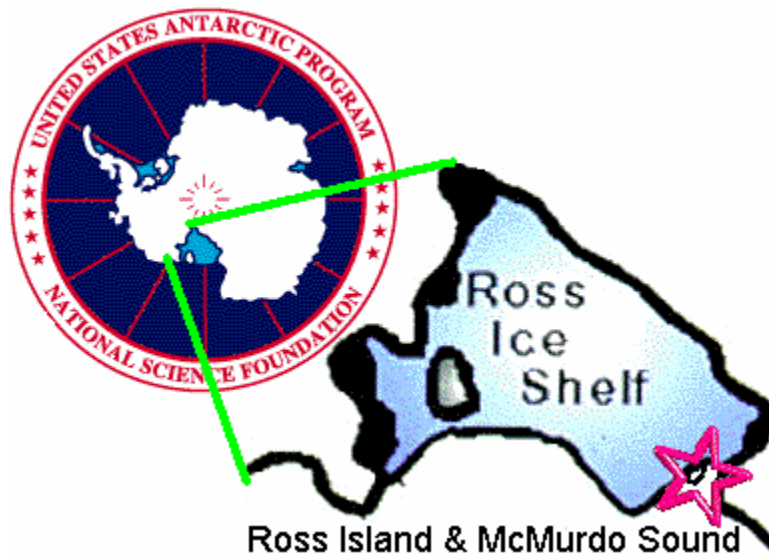


Cnidaria – Scyphozoa: jellyfish

UNDERWATER FIELD GUIDE TO ROSS ISLAND & MCMURDO SOUND, ANTARCTICA

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Photographs: Rob Robbins & Norbert Wu



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

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scyphomedusa *Desmonema glaciale*

page 3



Duncecap or helmet jelly *Periphylla periphylla*

page 5



scyphomedusa *Diplulmaris antarctica*

page 7

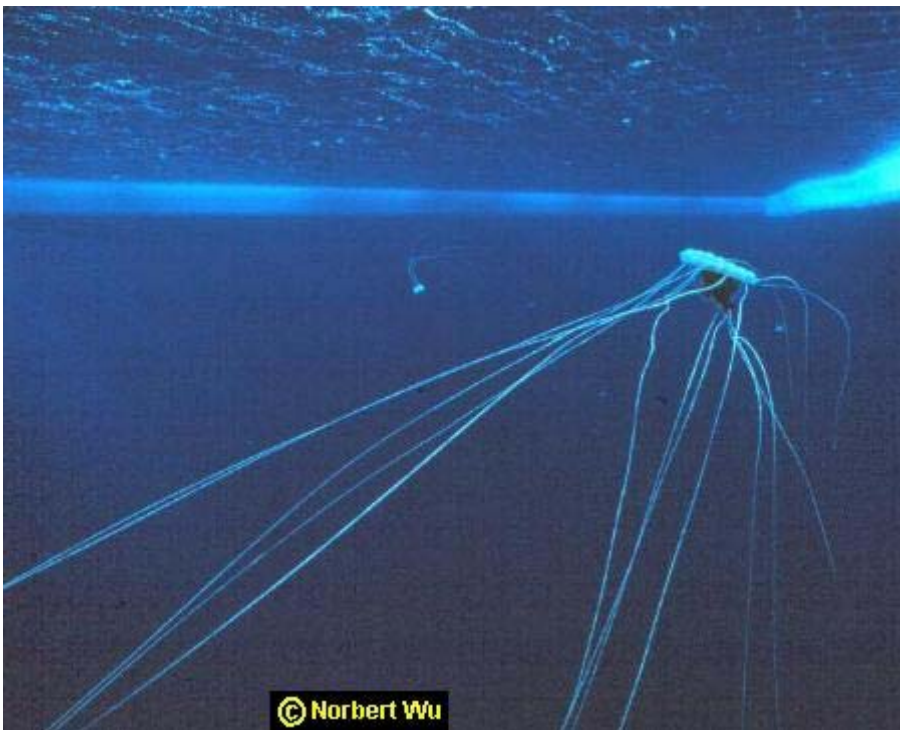
scyphomedusa *Desmonema glaciale*



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]. *D. glaciale* is pink-violet in color and its bell-like umbrella can be over one meter in diameter [1]. *D. glaciale* has broad curtain-like pleated oral arms [1].

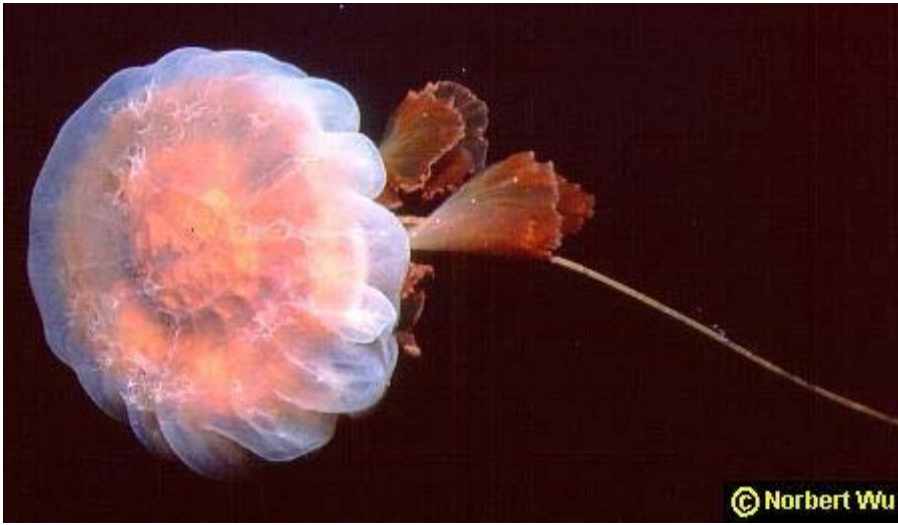
D. glaciale feeds on diverse pelagic and benthic prey including euphausiids and fish; it has been observed engulfing benthic animals like *Parborlasia corrugatus* nemertean worms and *Odontaster validus* seastars [2].

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].



Here's *Desmonema glaciale* at the sea ice edge of McMurdo Sound.

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



Here's a top view of *Desmonema glaciale*.

The hyperiid amphipod *Hyperia macrocephala* can be found riding along on it, 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].

References: **1:** Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semaestomeae) of the Southern Ocean. RJ Larson. 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

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, the Southern Ocean, and worldwide (except in the Arctic) in depths from about 200 to 1000 meters but it can be at the surface in high latitudes especially at night [1]. Diving under the ice in Antarctica is equivalent to this latter condition. *P. periphylla* is the most widely distributed and abundant scyphomedusa in deep water [1]. *P. periphylla* has a thickened and conical or hemispherical central dome and it can be up to 35 centimeters in diameter [1]. *P. periphylla* has a large dark red or dark brown stomach, occupying the upper portion of the dome [1,5]. *P. periphylla* has twelve tentacles and captures small

zooplankton with its rigid upward-pointing tentacles; its tentacles are then bent down and inward in order to bring prey to its mouth [1,2]. 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].



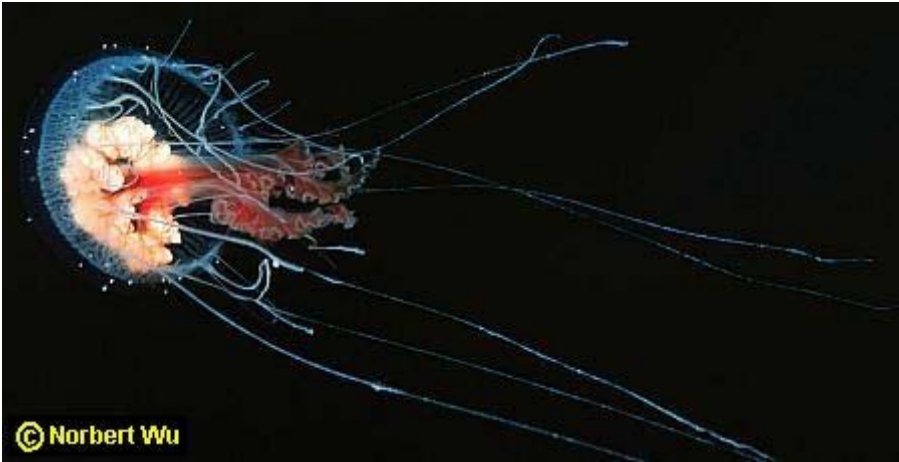
Periphylla periphylla which get close enough to the bottom in shallow water are prey to be captured by tentacles of an anemone (*Isotealia antarctica* shown here) [3]. The struggle can continue for quite awhile. The medusa pulses its bell as it tries to swim away while the anemone slowly pulls the medusa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



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

References: **1:** Pelagic Scyphomedusae (Scyphozoa: Coronatae and Semeostomeae) of the Southern Ocean. RJ Larson. 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

scyphomedusa *Diplulmaris antarctica*



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



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

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



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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].



Diplulmaris antarctica which get close enough to the bottom in shallow water are prey to be captured by the tentacles of an anemone (*Isotealia antarctica* 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. The hitchhiking amphipods are going to get consumed by the anemone too.

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 Semaestomeae) of the Southern Ocean. RJ Larson. 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. pp244-258; **4:** Annales de l'Institut Oceanographique 73(2):139-158, 1997; **5:** Annales de l'Institut Oceanographique 73(2):123-124, 1997