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Discovery of the siphonophore *Nectopyramis diomedae* Bigelow, 1911 in the Arctic Basin.

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Siphonophores, being in the majority of cases tropical or boreal organisms, are very poorly represented in the Northern Seas and the waters of the central part of the Arctic Basin, from the standpoint of the number of species. Until now, in the given region, only three species of siphonophore have been recorded: *Dimophyes arctica* (Chun), *Physophora hydrostatica* Forskål, and *Lensia subtilis* (Chun).

In collections made by the drift station "North Pole 2", we have found a fourth representative of the subclass Siphonophora from the region mentioned above.

Class Siphonanthae
Subclass Siphonophora
Family Prayidae
Nectopyramis diomedae Bigelow, 1911

Bigelow, 1911, pl. 1, figs. 1-6; 1913, 63, 64; 1931, 528, 529; Moser, 1925, 116; Totton, 1954, 83-85, text-fig. 39, pl. V, figs. 3, 3; Totton & Fraser, 1955, 2, 3.

The specimen was caught by the "North Pole 2", St. 9, 27 November, 1950, depth horizon 990-310 m, net with a 100 cm diameter (1 eudoxid with a gonophore).

Diagnosis (according to data from literature). Polygastric stage – single nectophore of the colony (38-39 mm in height and 26 mm in width) is flattened laterally. There is a ridge on the dorso-apical angle, and along the edges of the small, rounded nectosac – two truncated protuberances. The nectophore has a triangular shape in cross section. The deep hydroecium opens via a narrow slit on the ventral side of the nectophore. The four canals of the subumbrella unite into a single pedicular canal, giving rise to a complex somatocyst, represented by a system of ascending and descending branches. The stolon, which is deprived of reserve buds and traces of previous attachments of other nectophores, bears clearly defined gastrozooids. Each gastrozooid consists of a distinct "siphon" and "stomach". The bracts are triangular in shape, flattened laterally, and have a characteristic branching of the phyllocyst (see below) making it possible to establish the fact that the corresponding eudoxids belong to the given species. On the stem are arranged buds of gonophore at various stages in maturity, and tentacles bearing numerous tentilla (Bigelow, 1911; Totton, 1954).

Eudoxid. The bract (23-26 mm in height and 19 mm in width) is of triangular shape, flattened laterally, and along the edges of the hydroecium has two small basal protuberances. The hydroecium occupies approximately 1/3 of the height of the bract. The phyllocyst is a system of canals consisting of four main branches: 1) an apical, unpaired, slightly branching; 2) unpaired branching basal; 3 & 4) branching basal canals running above and below the hydroecium. The side branches branch out at their ends into a fork-shaped configuration. The gonophore, with a deep subumbrella cavity, has on the dorsal side two wing-shaped folds. The tentilla of the tentacle are small threads, with two spherical arranged one upon the other (the larger one being 0.3-0.4 mm in diameter and the smaller one 0.1-0.25 mm), representing concentrations of nematocysts of different types (cnidoband).

In our material the polygastric stage is absent. The eudoxids is moderately well preserved.

Dimensions. The height of the bract, together with the protuberances, is 35 mm, its maximum width is 19 mm, and the depth of the hydroecium is 9.37 mm; the height of the gonophore is 13 mm and the width 8mm; the length of the tentillum is 1.18 mm, the diameter of the large head 0.3 mm, and that of the small head 0.16 mm.

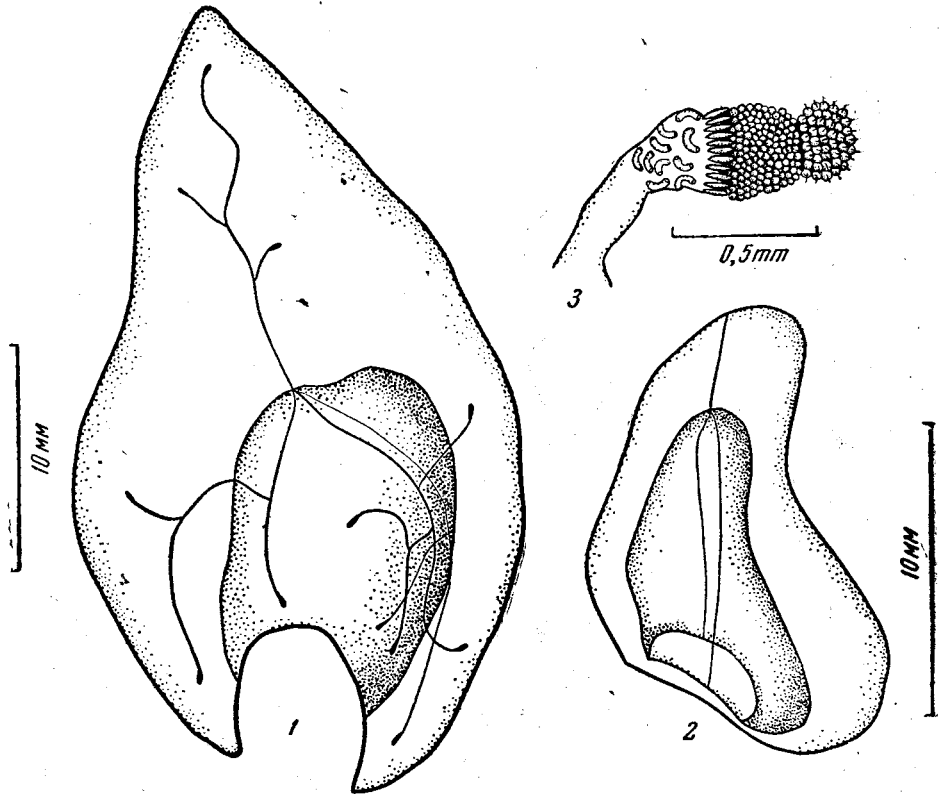


Рис. 1. *Nectopyramis diomedea* Bigelow (дрейфующая станция «Северный Полюс-2»,

Fig. 1. *Nectopyramis diomedea* Bigelow.
(Drift station "North Pole 2" St. 9).
1. Bract; 2. Gonophore; 3. Tentacle

The structure of our eudoxids differs little from that described above (Fig. 1). It is true that the main canals of the phyllocyst of the bract give off fewer lateral branches than those for the specimens described in the literature (Bigelow, 1911), and the lateral branches do not have the fork-shaped endings. It is apparent that this is connected with the young state of our example. Aside from this, together with the tentilla bearing spherical heads, the specimen from the Arctic Basin has tentilla with sausage-shaped clusters of nematocysts, each of which is capped by a small spherical head. The gastrozoid was not preserved. The gonophore has, on its dorsal side, a semblance of a hollow protuberance. We cannot exclude the possibility that this protuberance is a consequence of a strong deformation of the specimen.

The eudoxid of *N. diomedea* was also observed by us in collections made by the research ship "Vityaz (Sts. 588, 591, 611) from the Bering Sea (Fig. 2).

Having compared the material at our disposal with data from the literature, we may conclude that *N. diomedea* is quite a rare species, having an extensive but discontinuous distribution (Fig. 2). This species is encountered chiefly in the tropical

regions, but has also been found in boreal, Arctic and Antarctic waters. It is apparent that, being bathypelagic, it lives and reproduces at quite low temperatures. The possibility is not excluded that *N. diomedea* lives in the depths of the Arctic Basin (a relict form), but because of the fact that it has been little studied it was encountered here for the first time. It is possible that it penetrated there accidentally, via the Atlantic, and, less probably, that this deep-water species was able to overcome the currents and shallow waters of the Bering Strait and the Chukchi Sea.

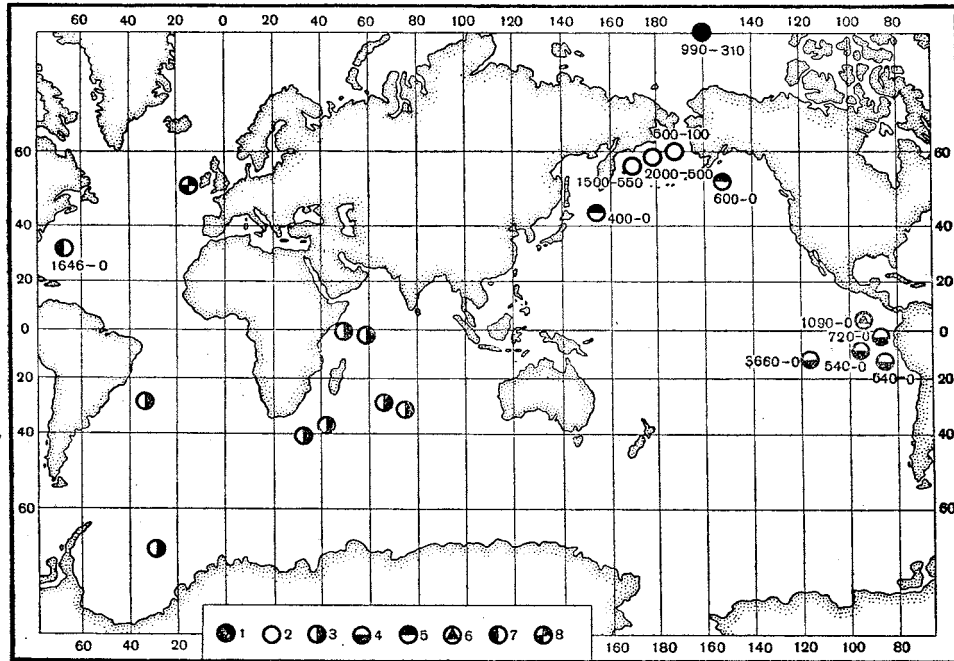


Fig. 2. Geographical distribution of *Nectopyramis diomedea* Bigelow, 1911, from various expeditions (according to data from the literature and original data). 1. Drift Station "North Pole 2" (figures on the map indicate the depth horizons within which the species was observed); 2. Research ship "Vityaz"; 3. "Discovery II" (depth horizons for each station not given by the author, but general depths of observations given as: 650-1600, 1500-2000 m – Totton, 1954); 4. "Albatross", 1900-1901; 5. "Albatross", 1906 (precise co-ordinates of stations not given by author – Bigelow, 1913); 6. "Arcturus"; 7. Collected by Beebe off Bermuda (Totton, 1954); 8. According to data of Totton and Fraser (1955).

The three other species of siphonophores previously noted from the Arctic Basin and Northern Seas also belong to the class Siphonanthae.

Dimophyes arctica (Chun (Calycophorae). For a long time this was considered a cold water, high Arctic species (Romer, 1902). Later it was observed in the Atlantic, Pacific and Indian Oceans, at very different temperatures (-1 to $+22^{\circ}\text{C}$), although it is true that the great majority of finds were in the range -1 to $+6^{\circ}\text{C}$ (Totton, 1954).

Physophora hydrostatica Forskål (Physophorae) is a widely distributed warm water species. It is encountered in the Pacific and Indian Oceans, and is common in the Mediterranean Sea and Atlantic where it is found as far north as the Lofoten Islands and North Cape. It is found in the Barents Sea only from time to time, in years when the pulsations of the North Cape current are intensified (Naumov, 1951).

Lensia subtilis (Chun) (Calycophorae) is a widely distributed species (Atlantic, Pacific and Indian Oceans, Mediterranean Sea) at depths from the surface to

3000 m (Leloup, 1955). It is found in the Arctic Basin in collections made by the American polar stations (Mohr, 1959, 1959a).

The Arctic Basin is very poor in siphonophores. All of the species encountered there are either eurythermic (*D. arctica*, *L. subtilis*) or stenothermic, deep water species (*N. diomedae*), or penetrate there in waters of a warm current (*P. hydrostatica*).

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