

PHYLUM CNIDARIA, CLASS ANTHOZOA

By Cadet Hand

This, the largest class of the Cnidaria, has but a modest representation at Woods Hole, chiefly in the group of sea anemones.

A. Subclass ALCYONARIA (=OCTOCORALLIA):

Members of this subclass are at once identifiable by the possession of 8 pinnate tentacles. The group contains several orders, mostly of warmer waters, such as sea pens, sea fans, gorgonians, "organ-pipe coral", the sea pansy (Renilla), well known in experimental work, and the precious red coral of jewelry. In the Woods Hole region, dredging off Martha's Vineyard and in the Sound may yield two species.

1. Order ALCYONACEA ("soft corals"): Alcyonium carneum Agassiz, 1850. Grows as fleshy, finger-like lobes attached to rocks and shells at depths of 20-60 meters; the color varies from bright salmon to pink or flesh-colored. The tissue contains calcareous spicules, but there is no firm skeleton. At collection the polyps are retracted and the general appearance is describable by the common name of "dead men's fingers". In the relaxed condition the delicate polyps reveal the 8 pinnate tentacles characteristic of the subclass. It survives only moderately well under laboratory aquarium conditions.

2. Order PENNATULACEA: Pennatula aculeata Danielson and Koren, 1858. This "sea pen" has the form of a feather, with a bulbous base on which it stands in soft muddy bottoms. The local species, which is taken only occasionally, is 10-25 cm in height and of a purplish-red color.

B. Subclass ZOANTHARIA:

Here are placed the great assemblages of stony corals (Madreporaria), sea anemones (Actinaria), and some other orders, examples of which are rare or lacking in the Woods Hole region.

1. Order MADREPORARIA ("true" or stony corals): Astrangia danae Agassiz, 1847 is the sole local representative. It is a typical coral in form (Plate 3, fig. 4) forming irregular encrustations or low branching growths almost everywhere on rocks, shells and pilings from low-water mark to 30-40 meters. It is hardy, and lives well in laboratory sea-water aquaria.

2. Order CERIANTHARIA: Cerianthus americanus Verrill, 1866. A southern form, this has been taken only very rarely at Woods Hole. It has the form of an elongated (up to 20 cm) burrowing sea anemone with 2 whorls of tentacles, living in a distinct mucoid tube. McMurrich (1890, J. Morph., 4: 131-150) gives a good colored illustration. See Field (1949) for additional information.

3. Order ZOANTHIDEA: Members of this order resemble small sea anemones but are generally colonial. Epizoanthus americanus (Verrill, 1864) is barely includable in the Woods Hole region, being common only at depths of 50 or more meters, off Martha's Vineyard and Nantucket. It generally occurs on shells occupied by hermit crabs, and also on rocks.

4. Order ACTINIARIA (sea anemones): These are familiar animals, generally recognizable as such. Several local species are readily identifiable from the key by form, color, and habitat, but critical identification of the rest is made difficult by the fact that classification is based upon the assemblage of nematocyst types ("cnidome") and upon internal anatomy such as mesenterial arrangement, musculature, and other details requiring microscopical sections. The student who wishes to go beyond the following key would do well to consult the works of Stephenson (1928, 1935) and Carlgren (1949).

KEY TO SEA ANEMONES
(Figure references are to Plate 3)

1. Burrowing or buried in sand, gravel, or mud with only the tentacles exposed; body elongate, even worm-like 2
1. Attached on hard surfaces with most of body well exposed 5
2. Upper part of body with 20 rows of papillae (fig. 5); tentacles 20 in number, blunt and tending to be swollen at tips; up to 10-15 cm body length Haloclava producta
2. Tentacles pointed and body without papillae 3
3. Acontia* present; flattened base attached to pebbles or shells (fig. 6) Sagartia modesta
3. No acontia; aboral end rounded or pointed; no flattened base; normally 16 tentacles 4
4. Small, not over 2 cm long; transparent when extended and without adherent sand (fig. 7) Nematostella vectensis
4. With middle portion of body covered by a rough brown cuticle to which sand adheres; 8 longitudinal grooves (fig. 8); body up to 3.5 cm long Edwardsia elegans
5. Column green to grayish black, with or without orange, yellow, or white lines Haliplanella luciae
5. Column white to salmon or brown, not green or black, sometimes mottled with brown 6
6. Large individuals with lobed or frilled tentacular crown. Tentacles very numerous and short. In extension the column is usually less than twice as long as its diameter Metridium senile
6. Column elongated when extended and usually 3 or more times longer than its diameter. Tentacles elongate. Color white to pinkish, sometimes showing a greenish tinge in the tentacles and upper column. Some specimens may show one or more larger and more opaque inner tentacles known as "catch tentacles", of uncertain function Diadumene leucolena

*) Acontia are ciliated, thread-like structures which arise from the free edges of the mesenteries and project into the gastric cavity. When acontiate anemones are roughly handled the acontia may be extruded through the mouth or through special pores (cinclides) in the body wall.

ANNOTATED LIST OF WOODS HOLE SEA ANEMONES

With some exceptions the sea anemones of Woods Hole are not well known, and a restudy of local species is needed. The original descriptions, based largely on form and color, are inadequate by modern standards.

Anemonia sargassensis Hargitt, 1908. Not in key; an occasional visitor upon drifting Sargassum.

Bicidium parasitica, see Peachia parasitica.

Diadumene leucolena (Verrill, 1866). Listed as Cylista in Hargitt (1914). Most commonly found under stones on rocky beaches. See Hand (1955) for synonymy.

- Edwardsia elegans Verrill, 1869. Reported burrowing in intertidal sand flats (Hargitt); apparently not common.
- Edwardsia leidy Verrill, 1898. This name applies to a larval stage found parasitic in the ctenophore Mnemiopsis leidy. The adult has not been determined. Length 2-3 cm, color pink.
- Eloactis producta, see Haloclava producta.
- Halcampa duodecimcirrata (Sars, 1851). One specimen, reported by Verrill dredged in mud off Gay Head, had 10 tentacles. Species was described as having 12 tentacles, from Maine specimens. On present evidence, rare, not in key.
- Halcampa farinacea, see Halcampa duodecimcirrata.
- Haliplanella luciae (Verrill, 1898). This common and well known species has a very discouraging synonymy, having been assigned to the genera Sagartia, Chrysoela, Diadumene, Aipaisiomorpha, and Haliplanella, without there being much question of its specific name luciae (after Verrill's daughter Lucy) since Verrill's description. H. luciae is thought to be of Japanese origin; it appeared near New Haven in 1892 and has since become one of the commonest anemones of New England; the first British record was in 1896, and it has also become widespread on the California coast. The color is variable: dark brown, olive or green, with or without lines of orange, yellow, or white. The orange lines when present, are diagnostic, but the unlined individuals are more difficult to identify. Very common, on pilings, among mussels, in salt marshes, often in brackish water. See Hand (1955) for synonymy.
- Haloclava producta (Stimpson, 1856). A burrowing form on intertidal sand flats.
- Metridium dianthus, fimbriatum, marginatum, see Metridium senile.
- Metridium senile (Linnaeus). In systematic work this is referred to as M. senile senile, while the Pacific coast subspecies is M. senile fimbriatum. The species at Woods Hole has also been variously called M. dianthus, M. marginatum, and M. fimbriatum, a not unusual situation when a very widespread and variable form is concerned. See Hand (1955) for synonymy.
- Nematostella vectensis Stephenson, 1935 (= N. pellucida Crowell, 1946). A small delicate form found in the Mill Pond, Woods Hole, where salinity may fluctuate greatly. Up to 20 mm long and 2-4 mm in diameter when extended. Lives in soft mud with disc and tentacles exposed. Crowell's account of anatomy is excellent. See Hand (1957) for synonymy.
- Peachia parasitica (L. Agassiz, 1859). Young stage reported parasitic in the jellyfish Cyanea. Adults not yet recorded south of Eastport, Maine. Not in key.
- Sagartia leucolena, see Diadumene leucolena.
- Sagartia luciae, see Haliplanella luciae.
- Sagartia modesta Verrill, 1866. There is some doubt as to the proper generic name for this species; see Carlgren (1950) for discussion of this problem.

REFERENCES ON SEA ANEMONES

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- Crowell, S., 1946. A new sea anemone from Woods Hole, Massachusetts. J. Wash. Acad. Sci., 36: 57-60. (good account of Nematostella).
- Field, L. R., 1949. Sea anemones and corals of Beaufort, North Carolina. Duke Univ. Mar. Sta. Bull. 5, 39 pp, 10 pl. (useful for Cerianthus but otherwise not much help in the Woods Hole region).
- Hand, C., 1955. The sea anemones of central California. Part 111. The acontian anemones. Wasmann J. Biol., 13: 189-251. (synonymies and redescriptions of several Woods Hole species).
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- Stephenson, T. A., 1928. The British Sea Anemones. Vol. I, 148 pp. (Ray Soc. Vol. 113) London.
- Stephenson, T. A., 1935. The British Sea Anemones. Vol. II, 426 pp. (Ray Soc. Vol. 121). London.

Admonitory note: Generic name changes may occasionally lead the experimentalist using this manual to give way to Frustration and Despair. Let him remember, however, that systematists are professional gentlemen who are doing the best they can, supported by such declarations as the following:

OPINIONS AND DECLARATIONS RENDERED
BY THE INTERNATIONAL COMMISSION
ON ZOOLOGICAL NOMENCLATURE

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DECLARATION 4

On the need for avoiding intemperate language
in discussions on zoological nomenclature

DECLARATION.--In the opinion of the Commission the tendency to enter into public polemics over matters which educated and refined professional gentlemen might so easily settle in refined and diplomatic correspondence is distinctly unfavorable to a settlement of the nomenclatorial cases for which a solution is sought. It may be assumed that the vast majority of zoologists agree with the Commission in desiring results rather than polemics, and the Commission ventures to suggest that results may be obtained more easily by the utmost consideration for the usual rules of courtesy when discussing the views of others.

The dangers attending the use of sarcasm and intemperate language in discussions on zoological nomenclature were specially considered by the International Commission on Zoological Nomenclature at their Session held at Monaco in March 1913 during the Ninth International Congress of Zoology. The Commission considered that this question was sufficiently pressing to require special treatment in their report to the Congress. In framing that report the Commission accordingly devoted paragraphs (68) and (69) to this subject.

2. Paragraph (68) of that report reads as follows:--

(68) Intemperate Language.--Whether or not it be an actual fact, appearances to that effect exist that if one author changes or corrects the names used by another writer, the latter seems inclined to take the change as a personal offense. The explanation of this fact (or appearance, as the case may be) is not entirely clear. If one person corrects the grammar of another, this action seems to be interpreted as a criticism upon the good breeding or education of the latter person. Nomenclature has been called "the grammar of science" and possibly there is some inborn feeling that changes in nomenclature involve a reflection upon one's education, culture and breeding. Too frequently there follows a discussion in which one or the other author so far departs from the paths of diplomatic discussion, that he seems to give more of less foundation to the view that there is something in his culture subject to criticism. It is with distinct regret that the Commission notices the tendency to sarcasm and intemperate language so noticeable in discussions which should be not only of the most friendly nature, especially since a thorough mutual understanding is so valuable to an agreement, but which are complicated and rendered more difficult of results by every little departure from those methods adopted by professional gentlemen.