Ceriantharia of the Southern California Bight

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The Ceriantharia collected during the Bight Project represent primarily juvenile specimens of the common types in Southern California. While Edwardsiidae survive the collection and preservation process well, Ceriantharia are subject to a number of problems such as missing aboral ends, twisted bodies, and just exploded specimens. The taxa represented are:

Ceriantharia
Arachnanthus sp. A
?*Pachycerianthus* sp..
Ceriantharia, unid.

Remarks on Sub-Order Ceriantharia*

The closest relatives of Ceriantharia are the Antipatharian or Thorn Corals, with which they are united in Order Ceriantipatharia. Therefore, while they superficially resemble the other anemone groups, phylogenetically their internal structure and growth patterns are different than a typical actiniarian in the following ways. First, all mesenteries are perfect i.e. attached to the actinopharynx (throat) along their inner margin, whereas in Actiniaria certain cycles of mesenteries may or may not be attached and which cycles those are is important. Second, All Ceriantharia have two sets of tentacles, an inner or labial ring and an outer or marginal ring.

All Ceriantharia. or Tube Anemones, make a tube manufactured from nematocysts which are discharged from their outer layer of flesh. While the tube has a soft, velvety feel from the massed effect of millions of nematocysts fluffed together, it has no "mucus" in it. There are many diverse symbionts that utilize the tube as a substrate e.g. clams, bryozoa and sipunculans.

In 1893 J. P. McMurrich named *Cerianthus vas* from *Albatross* specimens collected at their one site in Southern California off San Clemente Island. The drawing reveals nothing of value for identification purposes and the specimen is now lost anyway. Torrey and Kleeburger in 1909 published descriptions of three Ceriantharia: *Cerianthus*

* Ceriantharia is the preferred term in a database for unidentifiable specimens. Cerianthidae, a family name, has been used many times, but as a practical matter, the only known Cerianthidae in Southern California are in the genus *Pachycerianthus.*

aestuari, C. benedeni), and *C. johnsoni*. McMurrich revisited these three species in 1910, placing *C. benedeni* in the new genus *Botruanthus*, and the other two species were placed in another new genus, *Pachycerianthus*. While Arai (1965) erected a new species, *P. torreyi*, she soon synonymized it with *P. fimbriatus* from . No other taxonomic treatment has been done for Southern Californian Ceriantharia. According to Carlgren ( ), the order contains three families and 8 genera:

Cerianthidae (no acontioids and no cnidorhagae)
Cerianthus Della Chiaje 1830
Pachycerianthus Roule 1904
Cereantheopsis Carlgren 1912
Ceriantheomorphe Carlgren 1931

Arachnanthidae (acontioids present and no cnidorhagae =Arachnactidae sensu Manuel 1981)
Arachnanthus Carlgren 1912
Isarachnanthus Carlgren 1924

Botrucnidiferidae (no acontioids and cnidorhagae clustered into botrucnids)
Botrucnidifer Carlgren 1912
Botruanthus McMurrich 1910

Two terms stand out in the above and they require further definition. An acontium (pl. acontia) in Actiniaria is a filament that is packed with nematocysts and appended to a mesentery. Its function is to be extruded on disturbance through a pore and deter through stinging. An **acontioid**, however, is appended to the base of a Ceriantharian mesentery and is named for its presumed similarity of function to an acontium, but this function has never been demonstrated. Since an acontioid is merely a very small, flag-like appendage, not at all similar to long stringy *true* acontia, the two should not be confused.

Cnidorhagae are small fleshy balls, also nematocyst-laden, found on the mesenteries. In *Botruanthus*, these balls are found in clusters called **botrucnids** (see illustration X).

While many densely packed pages of descriptions of mesenterial arrangements fill the pages of Ceriantharian literature, the collection of specimens from the EMAP program did not allow any such analysis to be performed. Mesenteries are supposed to be arranged by quartets of mesenteries or rarely by pairs, which arise in the 'multiplication' chamber opposite from the hyposulcus (or grooved structure equivalent to the actinian siphonoglyph). The hyposulcus and the multiplication chamber define the plane of bilateral symmetry. However the extensive observations done on

mesenterial arrangements do not contend with the following observation I have been able to make.

Over the many years I have examined Ceriantharia, I have had several specimens that contained another Ceriantharia. In each instance, the mesenteries of the host anemones were very distorted. Whether the contained anemone developed from a non-liberated egg or whether it was asexually produced, the very presence of the contained anemone distorted the mesenteries. For example, there might be no mesenteries which run in the lower half of the animal because it is occupied. Since every carefully described Ceriantharian so far has illustrations of mesenteries of various lengths running into the base, and the comparative lengths help define the quartets, the "mesenterial space already occupied" state has not been heretofore considered as a factor. I feel it puts in doubt all presumptions about arrangements of mesenteries.

A Key to EMAP Ceriantharia

1. Too small, too torn, too twisted to be dissected; base of animal exploded.....**Ceriantharia**
1. At least, the base is dissectable.....2
2. Two mesenteries run the full length to the pore at the base of the cavity.....***Pachycerianthus* sp**.
2. Two mesenteries, which terminate well above the basal pore, have small appendages called acontioids.....***Arachnanthus* sp. A**

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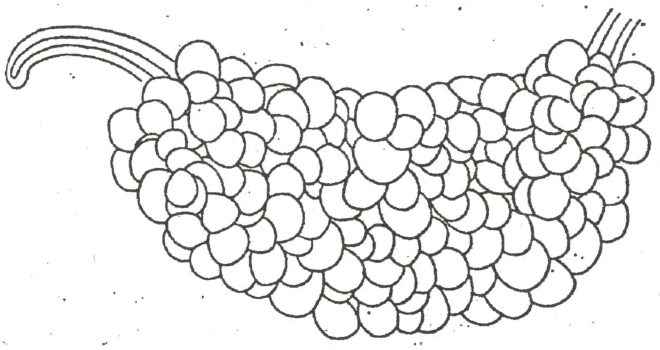

Figure a: a botrucnid from *Borucnidifer* after Torrey and Kleeburger, 1909

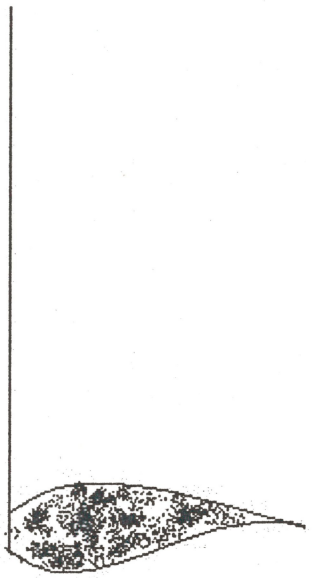

Figure b: an acontioid from Arachnanthus sp A

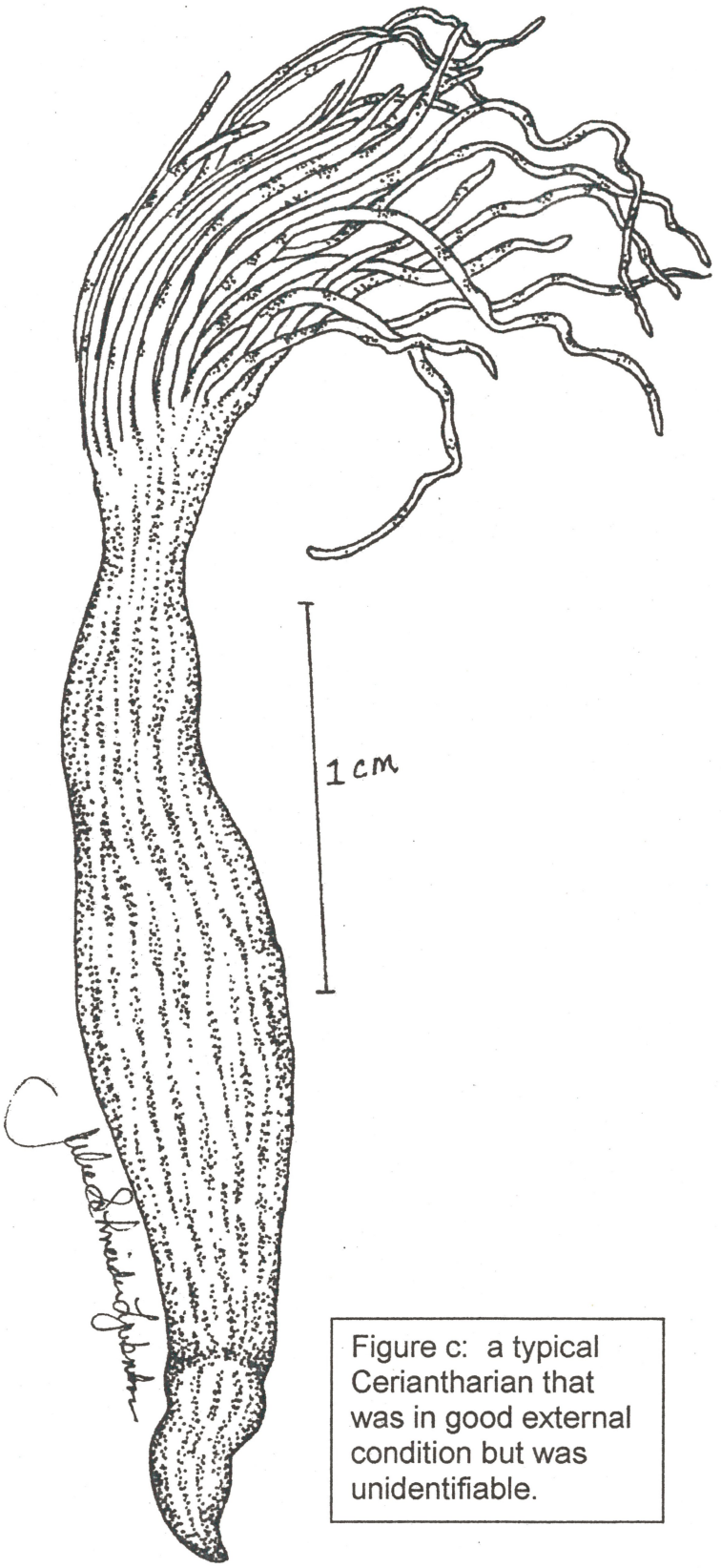

Figure c: a typical Ceriantharian that was in good external condition but was unidentifiable.

Plate I: Ceriantharia Details