



The phylum Cnidaria: A review of phylogenetic patterns and diversity 300 years after Linnaeus*

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Abstract

Systema Naturae includes representatives of every major lineage of the animal phylum Cnidaria. However, Linnaeus did not classify the members of the phylum as is now done, and the diversity of the group is not well represented. We contrast the Linnaean perspective on cnidarian diversity with the modern, phylogenetic perspective. For each order, we detail diversity at the family level, providing phylogenetic context where possible.

Key words: Systematics, black coral, coral, hydroid, jellyfish, octocoral, sea anemone

The Linnaean perspective on Cnidarian diversity

The phylum Cnidaria is a diverse group of relatively simple animals united by the ability to synthesize a highly complex cellular product, the cnida. Its members, which include corals, hydroids, jellyfishes, sea anemones, and sea fans, are abundant and common in marine environments, and have been known to natural historians for millennia.

Linnaeus (1758) included representatives of all major cnidarian lineages in Systema Naturae in various orders of Vermes Imperfecta. His taxonomic placement of cnidarian species was based largely on whether they were solitary or colonial, and whether they had no skeleton, a stony skeleton, or a proteinaceous skeleton. Linnaeus' Mollusca included three genera with members that are now considered part of Cnidaria: *Priapus*, *Holothuria*, and *Medusa*. Like all members of his Mollusca, these animals have relatively uniform bodies and lack a skeleton. *Priapus* was defined as having a fixed base and a terminal orifice, characteristics common to many sessile animals; the Linnaean species *equinus* remains in use as *Actinia equina*, the type species of the actinarian sea anemone genus *Actinia* (see Williams *et al.* 1982). Linnaeus' *Holothuria* included free-swimming forms with a humped body and tentacles of unequal length and number; this genus includes the hydrozoan *Physalia physalis*, described by Linnaeus (1758) as *Holothuria physalis*. Members of the genus *Medusa* share a pelagic, gelatinous body with a central mouth on the lower surface. This genus includes all of the Linnaean species now assigned to Scyphozoa and Cubozoa. Common hydrozoans, such as the blue button *Porpita porpita* and the by the wind sailor *Verella velella*, were also included in this genus. Not all species of *Medusa* are cnidarians, however: *Medusa beroe* is clearly a member of the ctenophore genus *Beroe*, although identity of the Linnaean species is unclear (Bayha *et al.* 2004). The genus *Priapus* was suppressed for Cnidaria in Opinion 1295 of the International Commission on Zoological Nomenclature (Bulletin of Zoological Nomenclature 42:34–36; April 1985): it has been ruled to belong to phylum Priapulida.