Phyllorhiza punctata

von Lendenfeld, 1884

White-spotted jellyfish

Phylum Cnidaria
Class Scyphozoa
Order Rhizostomeae
Family Magistiidae

Photo J. Grovhoug

Description

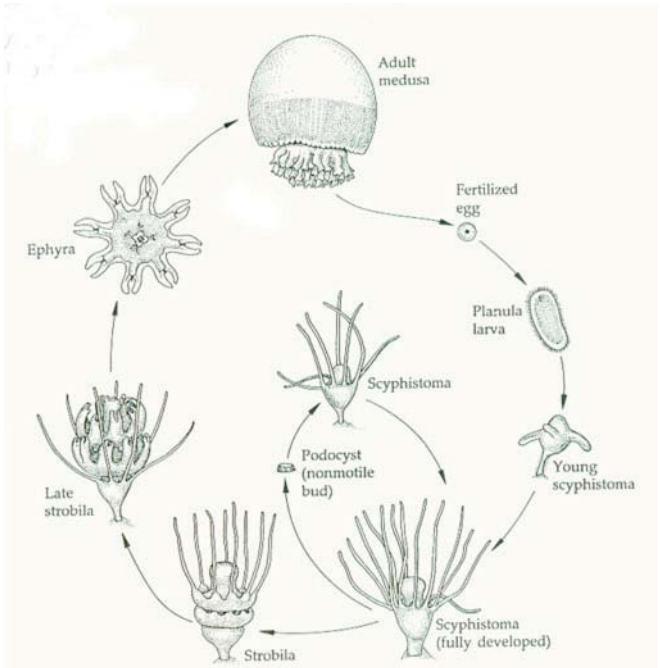
The bell of this large jellyfish may reach 50 cm in diameter. It is typically bluish-brown with many evenly distributed opaque white spots. It has eight thick transparent branching oral arms which terminate with large brown bundles of stinging cells. From each oral arm hangs a longer ribbon-like transparent appendage.

A superficially similar, but smaller species of jellyfish, *Mastigias* sp. (pictured below), is also thought to be an alien.

The similar, and also alien, species *Mastigias* sp. (photo T. Kelly)

Habitat

In Hawaii these jellyfish are found swimming near the surface in the murky waters near estuaries in harbors and embayments. Nothing is known about the habitat of the tiny benthic stages of this species in Hawaii.



The life-cycle of a typical jellyfish. Note the pelagic stages (ephyra, medusa and larva) and the benthic stages (scyphistoma and strobila). These different stages allow the jellyfish to be introduced by different mechanisms (e.g., pelagic stages transported in ballst water, or benthic stages transported as fouling on a ships' hull.). (from Brusca and Brusca 1990.)

Distribution

Hawaiian Islands

Oahu – Pearl and Honolulu Harbors, Ala Wai Canal and Yacht Harbor, Kaneohe Bay.

Native Range

Australia

Present Distribution

Australia, Hawaiian Islands, Caribbean, Gulf of Mexico.

Mechanism of Introduction

Unintentional, as ship-fouling scyphistomae or as ephyrae in ballast water.

Impact

Ecological impact unstudied in Hawaiian Islands, but these jellyfish are known to eat planktonic crustaceans and fish eggs and larvae elsewhere. A population explosion of *P. punctata* in the Gulf of Mexico, where it is an alien species, appeared to threaten the local fish populations and other commercially important species such as shrimp, menhaden, anchovies, and crabs. No comparable population fluctuations are known to occur in Hawaiian waters, but it has been reported that this jellyfish appears to be more common in winter months.

Ecology

Feeding

Phyllorhiza has stinging cells or nematocysts in its tentacles, which are used for protection and capturing plankton.

Reproduction

Basic cnidarian reproduction (see figure on previous page) involves an asexually reproducing polyp stage, alternating with a sexually reproducing medusoid stage. This reproductive strategy is known as "*alternation of generations*". The scyphozoan reproductive cycle is typically dominated by the medusoid stage. The adult planktonic **medusa** is commonly referred to as a jellyfish. The planktonic **planula** larvae of the sexually reproducing medusa typically settles to the bottom where it attaches and grows (**scyphistoma** stage). It may then either directly form additional scyphistoma via a process of budding, and/or develop into a **strobila**, a benthic form which asexually produces and releases young medusa known as **ephyrae**. This alternation of generations may facilitate the transport of jellyfish by shipping through ballast water (planktonic planula, ephyrae or medusa) or fouling (benthic scyphistoma or strobila).

Remarks

Under the name *Cotylorhizoides pacificus*, Cutress (1961) indicated that this lndo-Pacific jellyfish was introduced from the Philippine Islands, as ship-fouling scyphistomae, into Pearl Harbor between 1941-1945. It was restricted to Pearl Harbor until about 1950, but then in 1953-54 it appeared in Kaneohe Bay (Cutress, 1961). Devaney and Eldredge (1977) noted that this rhizostomid "certainly appears to be *P. punctata"*. Wrobel and Mills (1998), regard it as an Indo-Pacific species also found in Hawaii and as introduced to the western tropical Atlantic Ocean. Cooke (1984) felt that the taxonomy of the Hawaiian population was unresolved, and that it should be referred to simply as a "mastigid". We tentatively retain the name *Phyllorhiza punctata* for convinience.

References

Cooke, W.J. 1984. New scyphozoan records for Hawaii: *Anomalorhiza shawi* Light, 1921, and *Thysanostoma loriferum* (Ehrenberg, 1835); with notes on several other rhizostomes. Proc. Biol. Soc. Wash. 97:583-588.

Cutress, C.E. 1961. [Comment on introduced jellyfish in Hawaii] in: Doty, M.S., 1961, *Acanthophora*, a possible invader of the marine flora of hawaii. Pacific Science. 15(4): 547-552.

Devaney, D.M. and L.G. Eldredge. 1977. Class Scyphozoan. in Reef and Shore Fauna of Hawaii. Section 1: Protozoa through Ctenophora. Bishop Museum Spec. Pub. 64(1).

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