

Upside-down jellyfish

Phylum Cnidaria
Class Scyphozoa
Order Rhizostomeae
Family Cassiopeidae



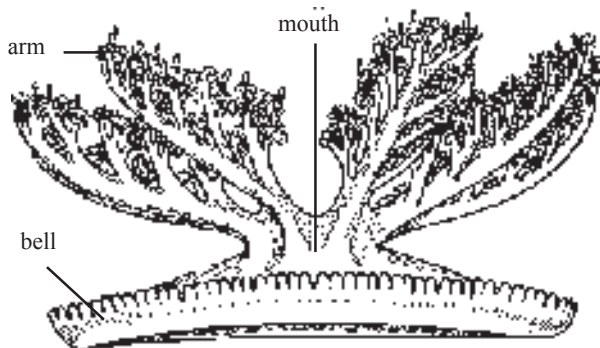
Photo by J. Hoover

DESCRIPTION

This jellyfish usually lies mouth upward on the bottom, in calm shallow water, gently pulsating its bell to create water flow over its arms. The bell of *Cassiopea* is yellow-brown with white or pale spots and streaks. The outstretched arms are also brownish with extended frilly tentacles. Adults can grow to 30 cm in diameter. They are often mistaken as sea anemones.

HABITAT

Cassiopea are typically found in shallow lagoons, intertidal sand or mud flats, and around mangroves. *Cassiopea* feed on drifting zooplankton. Individuals also harbor photosynthetic dinoflagellate algae that provides food to the jellyfish. The zooxanthellae live in the tissues on the ventral surface of the jellyfish, and the jellyfish sits on the bottom upside-down to provide sunlight to the symbiotic algae.

An upside-down *Cassiopea*.

DISTRIBUTION

HAWAIIAN ISLANDS

Throughout main Hawaiian Islands.

NATIVE RANGE

Indo-Pacific

PRESENT DISTRIBUTION

Indo-Pacific and Hawaiian Islands

MECHANISM OF INTRODUCTION

Unintentional introduction, juvenile benthic stage in ships' hull-fouling or pelagic stage in ballast water.

IMPACT

A nuisance species, which can sting people. Ecological impact unstudied.

ECOLOGY

Feeding

Like other jellyfish, *Cassiopea* has stinging cells or nematocysts in both its epidermis and gastrodermis, which is used for protection and capturing food. A sting from *Cassiopea* may result in skin welts, skin rash, itching, vomiting and skeletal pains depending on the individuals sensitivity to the toxin of the nematocysts.

Reproduction

Basic cnidarian reproduction involves an asexually reproducing polyp stage, alternating with a sexually reproducing medusoid stage, as described for *Phyllorhiza punctata*. This jellyfish is dioecious; an adult female jellyfish produces eggs and holds them until a male jellyfish releases sperm into the water. The female uses her arms and tentacles to gather sperm from the water to fertilize the eggs.

REMARKS

Pacific basin *Cassiopea* are currently placed in the one species *C. andromeda* (Hummelinck, 1968), but have been reported from Hawaii under two separate names, *Cassiopea medusa* Light 1914 and *Cassiopea mertensii* Brandt 1835. Cooke (1984) noted that these *Cassiopea*, with “their pseudobenthic habits are the most improbable adult immigrants.” As *C. medusa*, Chu and Cutress (1954) note that it was “common the year round in bays and salt-water canals.”

Cutress (1961) considered it to be introduced from the Philippines by ships as hull-fouling scyphistome to Pearl Harbor between 1941-1945. It was restricted to Pearl Harbor until about 1950, when it appeared in Honolulu Harbor and Ala Wai Canal. As *C. mertensii* Brandt, Uchida (1970) reported it from “the sandy bottom at a depth of 2 feet from Kaneohe Bay.”

Under the name *C. mertensii*, it was previously known from only several locations in the South Pacific Ocean, especially the Caroline Islands. *Cassiopea* were seen in the early 1990s in fishponds on Molokai and in fishponds in Waikalua area of the island of Hawaii .

REFERENCES

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