



# Jellies

Jellies are some of the simplest and most beautiful animals in the ocean. Though they are sometimes referred to as “jelly-fish,” they are not actually fish. Jellies do not have a skeletal system, scales, gills, a tail or other fish body parts. They do, however, have a bell-shaped structure called a medusa. The medusa is filled with a jelly-like substance called mesoglea, which is 95 percent water and gives jellies their name.

Jellies also have tentacles that typically dangle from the medusa as they drift with water currents. These tentacles are often covered in stinging cells, called nematocysts, which are used for both defense and to capture prey. Jellies prey on a variety of creatures including fish eggs; microscopic, floating animals called zooplankton and even other jellies. Once the nematocysts have stunned or killed the jelly’s prey, tentacles move the food to oral arms, which dangle from and direct food toward its mouth in the center of the medusa.

These floating predators are found in every ocean on earth, the Chesapeake Bay and even Baltimore’s Inner Harbor! Some species even live in fresh water.

## OCEANS OUT OF BALANCE

Jellies have become so abundant they have invaded the world’s oceans. Several

of these species—including moon jellies, lion’s mane jellies and Atlantic sea nettles—are thriving in the waterways neighboring the National Aquarium. This jelly population explosion is due to a number of factors, all of which have disrupted the balance of aquatic ecosystems.

One factor is a decline in jellies’ natural predators. Marine debris, fertilizer, and other pollutants wash off land and into the ocean, making it difficult for predators like sea turtles and sunfish to survive. Jellies, on the other hand, can survive in polluted water and end up thriving in the absence of predators. As jelly populations thrive, they consume more zooplankton, which leaves little food for competitors, such as hatchling fish. This ability to adapt and thrive in a changing environment has enabled jellies to survive on Earth for more than 600 million years.

## UPSIDE DOWN JELLY

The upside down jelly (*Cassiopea xamachana*) lives an unusual life for a jelly. Instead of floating through the water with its tentacles hanging downward, this jelly rests on the bottom of mangrove forests and shallow lagoons along tropical coast with its tentacles facing upward. Using its bell-shaped medusa like a suction cup, the upside down jelly pumps it to bring zooplankton toward its stinging



## KEY TERMS

### Kreisel tank

A tank used to display jellies. Contains currents to keep jellies suspended and circulating in water.

### Marine debris

Trash floating in the ocean. Harmful if ingested by animals like sea turtles.

### Medusa

The bell-shaped “body” of jellies.

### Mesoglea

The jelly-like substance that makes up the medusa.

### Nematocysts

Stinging cells that cover tentacles. They are used to defend jellies and stun or kill prey.

### Symbiosis

A close association between animals or plants of different species that is often beneficial.

### Zooplankton

Small, floating animals that jellies eat.

### Zooxanthellae

Algae that lives in some animals. Provides animals with nutrients and receives shelter in return.



*The lion's mane is the largest known jelly species. Its tentacles grow as long as 120 feet, which is longer than the largest known animal on earth, the blue whale.*

cells. The tentacles of the upside down jelly are especially interesting because they contain a type of algae called zooxanthellae. Zooxanthellae produce food for the jelly and, in return, receive shelter among the jelly's tentacles. This close relationship between two organisms is called symbiosis.

### ATLANTIC SEA NETTLE

The Atlantic sea nettle (*Chrysaora quinquecirrha*) is found along the east coast of the United States from Cape Cod

to southern Texas. This species has been known to enter the Chesapeake Bay during the summer months.

The Atlantic sea nettle's medusa is about the size of a softball and has brown, red or sometimes purple stripes. As a sea nettle, this jelly has very long tentacles that trail from its medusa and are used for defense and catching prey. The Atlantic sea nettle eats zooplankton, other jellies, and sometimes crustaceans, which it stuns with the nematocysts

along its tentacles. These same nematocysts are responsible for stinging about 500,000 humans each year. One treatment for jelly stings is to apply vinegar to the sting site, which neutralizes the toxins released into the skin from the nematocysts. Despite urban myths, urine is not effective in neutralizing a jelly sting.

### LION'S MANE JELLY

Found in cold waters around the world, lion's mane jellies (*Cyanea capillata*) make their way into the Chesapeake Bay during the winter months. The medusa of this species can appear red or purple in older individuals, while younger medusas have a yellow or brown color. Fully grown lion's mane medusas can measure 8 feet across and tentacles can reach 120 feet in length, making it the largest jelly in the world!

Visit [aqua.org/jellies](http://aqua.org/jellies) for more information.

### FAST FACTS

- Jellies are members of the phylum *Cnidaria* (which also includes coral and anemones).
- Instead of a brain, jellies are covered in a network of nerves which detect light, odor, prey and other stimuli.
- Some of the National Aquarium's jellies are on display in oval Kreisel tanks. Currents flowing through them keep jellies circulating through the water.



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