

Jellyfish “blooms”

- signs of ailing seas

By Kelly G. Robertson

Last year, the Jellyfish “Bloom” in Perdido Bay and Old River was impressive due to the volume and variety of individual species, and this summer, jellyfish such as the Man O’ War arrived early at the beach and Sea Nettles can be seen in large numbers inshore along both Perdido Key and Santa Rosa Island. Blooms around the world are raising concerns about the health of marine ecosystems. In the Gulf of Mexico, jellyfish are competing with humans for the larvae of commercially important species such as shrimp. In recent decades, humans’ “expanding influence on the oceans has begun to cause changes, and the ‘blooms’ of jellyfish may be occurring in response to these impacts,” said Claudia Mills of the University of Washington in Seattle. As parts of the ocean are increasingly disturbed and over-fished, jellyfish may be taking the place of fish in the food web of the seas. “Jellyfish feed on the same kinds of prey as adult and young fishes,” said Marsh Youngbluth, a jellyfish researcher at the Harbor Branch Oceanographic Institution in Fort Pierce, Florida, “so, if fish are removed from the equation, jellyfish are likely to move in.

The formation of “blooms” is a complex process that depends on ocean currents, nutrients, temperature and ambient oxygen concentrations. So, over-fishing isn’t the only explanation for rapidly expanding jellyfish populations, said scientist Monty Graham of the Dauphin Island Sea Lab in Alabama. “Ecosystems in which there are high levels of nutrients as a result of agricultural run off provide nourishment for the small organisms on which jellyfish feed. In waters where there is over fertilization, low oxygen levels often result, favoring jellyfish as they thrive in less oxygen-rich water than fish can tolerate. The fact that jellyfish are increasing is a symptom of something happening in the ecosystem.” Graham cited the northern Gulf of Mexico, in which all species of jellyfish are rapidly increasing.

Jellyfish lack basic sensory organs and a brain, but their nervous systems allow them to perceive stimuli, such as light and odor, and



Common jellyfish found around Perdido Key

The **Portuguese Man O’ War**, also known as the bluebubble, bluebottol or the man-of-

war, is actually a colony of specialized polyps and medusoids. It has an air bladder, or sail, that allows it to float on the surface of the ocean, and is pushed by the winds and the current as it has no means of propulsion. Below the main body dangle long tentacles, sometimes reaching 30 feet lone, although 3 feet is the average.

The sting from the tentacles is dangerous to humans, usually causing excruciating pain, have even been the cause of several deaths. Detached tentacles and specimens which wash up on shore remain dangerous and can sting just as painfully weeks later. Medical attention is usually necessary, especially in extreme cases.

The best treatment for a sting is to apply hot water to the affected area, which eases the pain of a sting by denaturing the toxins. Ice is also effective, reducing the activity of the toxins and the sensation of the area of skin affected. Additionally, ice constricts blood vessels, reducing the speed at which the venom travels to other parts of the body.

Loggerhead Turtles and sea slugs commonly feed on the Man O’ War.



The stinging **Sea Nettle** is a bell-shaped, semi-transparent jellyfish that usually has small, white dots and reddish brown stripes. The nettle’s sting is rated from “moderate” to “severe” and can be deadly to smaller prey; it is not, however, potent enough to cause human death except by allergic reaction. Most

respond quickly. They feed on small fish and plankton that become caught in their tentacles. Most jellyfish are passive drifters and slow swimmers. They possess light-sensitive organs that do not form images but are used to determine up from down, responding to sunlight. They have limited control over movement and mostly free-float, but can use the water pouch to accomplish vertical movement through pulsations of the disc-like body. Many jellyfish have a lifespan of two and a half months; few live longer than six months, but one species can live as long as 30 years and another species, *T. nutricula*, is effectively immortal.

Jellyfish are an important source of food to the Chinese community and in many Asian countries. Gulf and southern Atlantic fisheries have even begun harvesting cannonball jellyfish for export to Asian nations. Green fluorescent protein in the jellyfish *Aequorea Victoria* has become a useful tool in biology, used mainly by scientists studying in which tissues genes are expressed. Jellyfish are also harvested for their collagen, which can be used for a variety of applications including the treatment of rheumatoid arthritis.

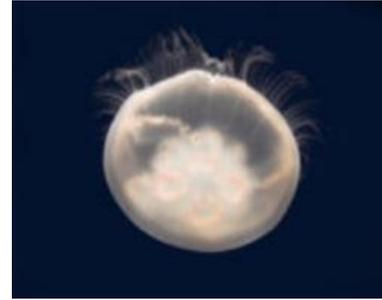
Jellyfish stings are not generally deadly, though some species of box jellies can be fatal. Serious stings may cause anaphylaxis and may result in death, and nonfatal stings are known to be extremely painful. Care may include administration of an antivenin and other supportive care such as required to treat the symptoms of anaphylactic shock.

There are three goals of first aid for uncomplicated jellyfish stings: prevent injury to rescuers, inactivate the nematocysts (stinging cells), and remove any tentacles stuck on the patient. Vinegar should be applied for some stings, however it is not recommended for Portuguese Man O' War stings. In the case of sting on or around the eyes, vinegar may be placed on a towel and dabbed around the eyes, but not in them. Salt water may also be used in case vinegar is not readily available. Fresh water should not be used as a change in the pH can cause release of additional venom. Rubbing the wound, or using alcohol, spirits, ammonia, or urine will encourage the release of venom and also should be avoided. A shower or bath as hot as can be tolerated can neutralize stings.

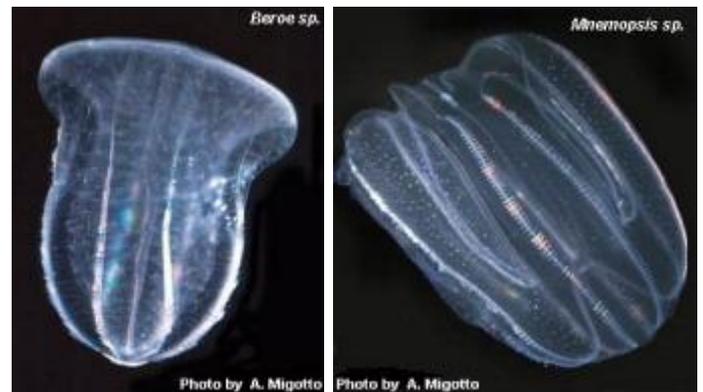
Once deactivated, the stinging cells must be removed. This can be accomplished by picking

often, the sting causes a painful rash typically persisting for about 20 minutes. The sting can be effectively neutralized by misting vinegar over the affected area, which keeps unfired nematocysts from activating and adding to the discomfort.

The **Moon Jellyfish** (common jellyfish, saucer jelly, or crystal jellyfish) is translucent, can be 10-16 inches across, and has characteristic patterns of color within its body. Like other jellyfish, it is capable of only limited motion and drifts with the current. The Moon jelly is an inshore species that can be found in places like estuaries and harbors. It prefers mildly cold salt water with consistent currents.



The adult medusa of the Moon jelly has an umbrella margin membrane and tentacles that are attached to the bottom. It has four bright circular gonads that are under the stomach. It is a common food source for a variety of predators, including the Ocean Sunfish, the Leatherback Sea Turtle, and other jellyfish species. They are also hunted by some birds. Moon jellies are human food sources in countries such as China, Philippines, Thailand, Malaysia and Indonesia.



Ctenophores (pronounced "teen-o-fors", or "comb jellies", can be found as easily far out to sea as they can near the shore. Most of the 150 species of Ctenophores prefer warmer waters although a few species live deep down in the sea and a few others are found around the poles.

Comb Jellies can occur in huge numbers and are known to effect fisheries because they feed on fish egg and hatchlings. Normally, comb jellies feed on copepods or the larval forms of various other marine animals including Oysters. They sometimes accumulate in such vast numbers that they have a negative effect on an areas' Oyster crop. They do not, however, produce

off tentacles left on the body. After large pieces or tentacles of the jellyfish are removed, shaving cream may be applied to the area and a knife edge, safety razor, or credit card may be used to take away any remaining nematocysts.

Beyond initial first aid, antihistamines such as Benadryl may be used to control skin irritation. To remove the venom in the skin apply a paste of baking soda and water and apply a cloth covering on the sting. If possible, reapply paste every 15-20 minutes. Ice can be applied to stop the spread of venom until either of these is available.

harmful stings to humans.

Some species of comb jellies are able to glow with a faint phosphorescent light that is generally visible only at night. Although almost transparent, the external surfaces of ctenophores have eight rows of cilia (small, hair-like structures) that are used for swimming and to maintain correct orientation in the water.