

# Box Jellyfish

(*Chironex fleckeri*)

The 'Box Jellyfish' or *Chironex fleckeri* is the most venomous animal known to science and is capable of killing a person in two to three minutes. Although it is only one of many species of box jellyfish, it has become infamous by causing more than 100 deaths in Australia over the last 100 years. Species of dangerous box jellyfish similar to *Chironex fleckeri* have been found in Vietnam, Philippines, Brunei, Sabah, Thailand, Japan, Indonesia, Papua New Guinea and India.

*Chironex* inhabits the shallow waters of the northern Australian coast, and although it is occasionally found in the Dry Season, it reaches its greatest numbers, and is therefore most dangerous, from October to May. During this period it is common along the beaches and mangroves around Darwin, as is indicated on prominent warning signs.

## Appearance

The bell of *Chironex* is a rounded box shape with the bottom missing, and there are four fleshy appendages, one at each corner, from which tentacles trail. The jellyfish is difficult to see in the water because the bell is colourless, and although the outermost tentacles are sometimes purple near their base the others are white or dull yellow. In Darwin, an adult jellyfish may have 40 tentacles, each capable of stretching to 2 metres.

## Position in the food chain

Box jellyfish are active swimmers, powered by ejecting water from the body cavity, and they feed on small shrimps, fish, and their larvae. When feeding, the jellyfish rise and sink between the bottom and the surface in search of food, and once the tentacles encounter their prey, that animal is stung and secured. The jellyfish then draws in the tentacles with the prey attached, and settles upside down causing the tentacles to fall into the bell where the food is released and ingested. Despite their venom, *Chironex* are themselves preyed on by fish such as Tailor, Bream, Spanish Mackerel, Queenfish, Batfish, Butterfish, Spinefoot, Toadfish, Parrotfish and even Hawksbill Turtles.

## Sting characteristics

A human sting occurs when the tentacles contact the bare skin causing stinging cells called nematocysts to fire into the body. The nematocysts are so small that 1000 would fit on the head of a pin and each contains a fine, coiled, hollow tube. This long tube is attached to the mouth of the capsule near a little hair-like trigger. When the trigger touches a person, the cell 'fires' and the tube instantly springs out, turning inside out (like the finger of a blown up rubber glove), penetrating the skin and leaving a trail of venom along its path to be absorbed into the bloodstream. Barbs on the thread-like tubes usually cause the tentacles to remain stuck to the skin. These tentacles are still capable of causing further stings, but they can be made harmless by **flooding with any household vinegar**.

The more tentacles that touch the skin, the more venom that is injected, and contact with only two metres can be lethal to a six year old child. In such serious stings, millions of cells will have delivered their venom, causing severe pain, acute inflammation and affecting the ability of the muscles of the heart and blood vessels to work properly. Within minutes of a sting, red marks appear which may blister later, and the skin often shows multiple long whip-like lines with a closely spaced 'ladder' pattern, an image of the arrangement of the stinging cells. Subsequent skin death may lead to permanent scarring. Scientists are unsure of all the actions of the venom. Respiratory difficulties usually occur and a massive dose of venom can cause the heart to stop.

### Further reading:

Williamson, J.A., Fenner, P.J., Burnett, J.W., and Rifkin, J.R. (eds). 1996. *Venomous & Poisonous Marine Animals: Medical and Biological Handbook*. University of New South Wales Press, Sydney.

### Diagrams adapted from:

Covacevich, J., Davie, P. and Pearn, J. (eds). 1987. *Toxic Plants and Animals: A Guide for Australia*. Queensland Museum, Brisbane.

**Photographs:** Surf Life Saving Qld. Inc.; Dr Bart Currie; MAGNT.

### Museum and Art Gallery of the Northern Territory

Conacher Street Fannie Bay

Darwin NT 0801

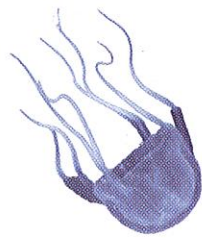
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# Box Jellyfish

# Annual life cycle of Box Jellyfish



(From left to right):  
Blistered skin following a sting.  
Box Jellyfish warning sign and first aid information.  
Box Jellyfish.

**Box Jellyfish Safety**

DANGER

**Box Jellyfish occur in these waters. Their stings can be deadly.**  
 Serious stings have occurred throughout the year. Take vinegar to the beach and when boating.

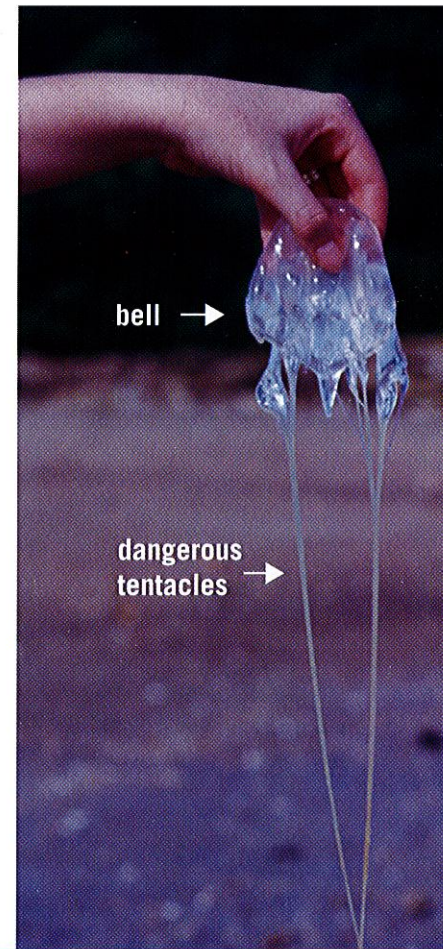
**October - May**  
 Jellyfish are common.
 

- Do not enter the water.

**June - September**  
 Jellyfish are less common but serious stings have occurred during this period.
 

- Be cautious if swimming and preferably wear protective clothing - especially children.

First Aid	Symptoms	Treatment
	<ul style="list-style-type: none"> <li>Immediate and increasing pain</li> <li>Whitish strings adhering to skin</li> <li>Red or purple weals appearing on the skin</li> </ul>	<ol style="list-style-type: none"> <li>Retrieve victim from water</li> <li>Monitor airway, breathing and circulation</li> <li>Perform resuscitation if necessary</li> <li>Flood stings with vinegar for at least 30 seconds</li> <li>Use ice packs for pain</li> <li>Keep victim calm and still</li> <li>Call 000 for an Ambulance or transport to hospital</li> </ol>



## Sexual Reproduction

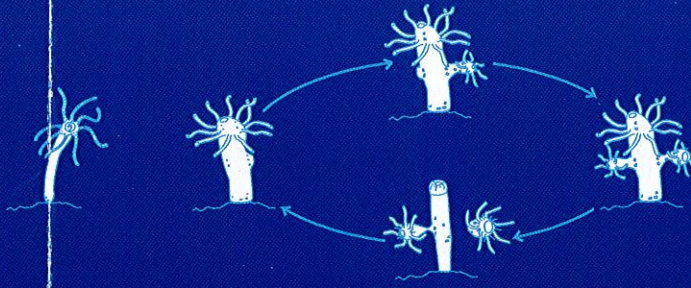


1

The mature *Chironex* (a medusa) spawns from December to May.

Coastal Phase

## Asexual Reproduction

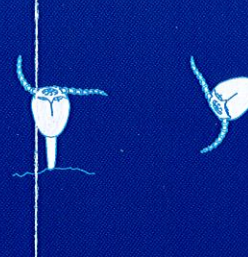


3

The polyp reproduces itself again, but this time asexually, by budding off other polyps from its sides.

River Phase

## Growth to Maturity



4

With the approach of the next Wet Season, a small box jellyfish buds off each polyp and makes its way down the creeks to the beaches, feeding and growing as it goes.



5

Within several months, the reproductive cycle is completed as the juvenile matures and reaches adult size, ready to reproduce sexually.

Coastal Phase