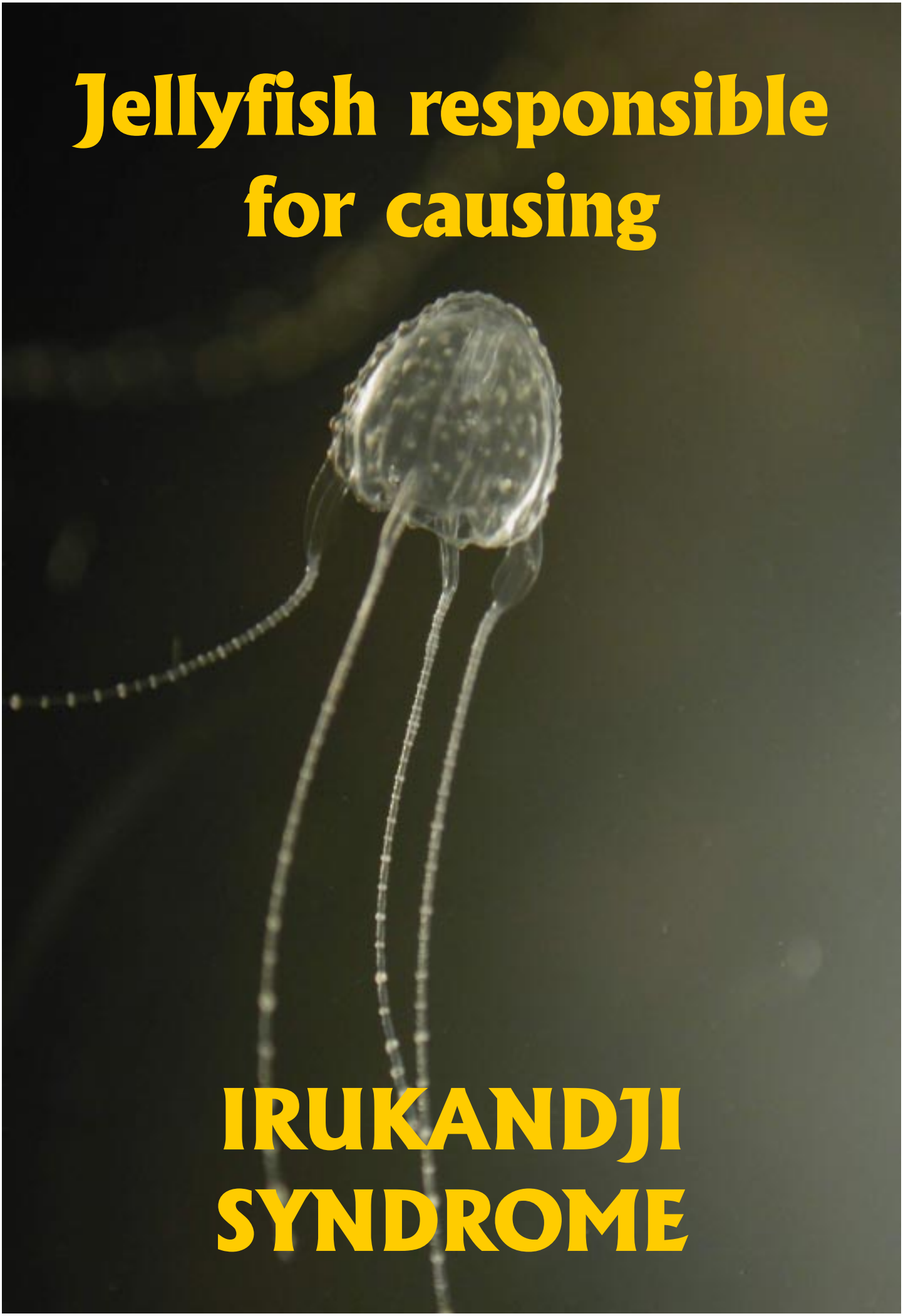
Jellyfish responsible for causing



IRUKANDJI SYNDROME

HISTORY

Traditionally on the beaches of Northern Australia there are two main types of jellyfish stings suffered by bathers. Of most concern are those from the large box


Sting from a large box jellyfish

jellyfish *Chironex fleckeri*. These stings leave big welt marks and cause immediate and severe pain sometimes resulting in death. However, bathers also experience stings which result in only a mild initial irritation, until approximately 30 minutes later when a series of symptoms develop. Usually these stings are very obscure, leaving little to no mark on


Sting from *Carukia barnesi* which resulted in Irukandji Syndrome

the victims. The symptoms experienced by these victims can include severe generalized pain, abdominal cramps, nausea, vomiting, headaches, severe back pain and a feeling of impending doom. Together, these symptoms are referred to as **Irukandji Syndrome**. One of the animals re-

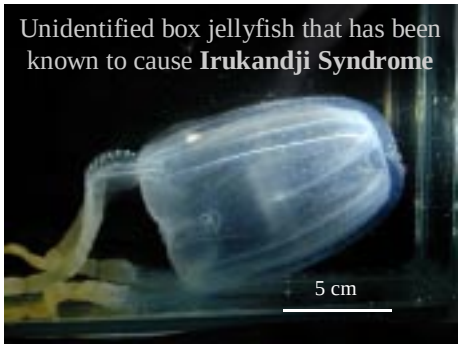

Sting from a box jellyfish that resulted in Irukandji Syndrome

sponsible for this syndrome was discovered by Dr Jack Barnes. He determined that very small box jellyfish (approximately 20-30 mm in size) off the beaches of Palm Cove were responsible. This animal was later named ***Carukia barnesi*** after Dr Barnes himself and is commonly known

The Irukandji jellyfish *Carukia barnesi*

as the Irukandji jellyfish (named after a local Aboriginal tribe).

Since then a number of different species of small box jellyfish (six so far) have been identified as also leading to victims developing **Irukandji Syndrome**. Of these new species, some have



Unidentified box jellyfish that has been known to cause **Irukandji Syndrome**

been determined as also causing heart and breathing difficulties in their victims.

BIOLOGY

The box jellyfish responsible for causing **Irukandji Syndrome** are

An unidentified tropical box jellyfish which causes **Irukandji Syndrome**

related to the larger box jellyfish *Chironex fleckeri*. Like their larger relatives they are box-like or cuboidal in shape however they have only one tentacle per corner of the bell and are generally smaller in size (ranging from 3 mm to over 100 mm in length). They also have stinging cells on the body as well as on the tenta-


Red wart like clusters of stinging cells on the body of a box jellyfish

cles. Because of their small size and the near transparency of their body, it is extremely difficult to spot these animals in the water and very few victims see the animal which is responsible for their sting.

SEASONALITY

Jellyfish causing **Irukandji Syndrome** are predominantly present in tropical Australian waters from November to May but cases of **Irukandji Syndrome** have been recorded from the waters off Far North Queensland for all months

of the year. These species are predominantly offshore animals and are only found on mainland beaches under specific weather patterns. With long periods of north easterly breezes (approximately 7-10 days) onshore currents are produced which push these animals towards the shoreline. They are then present in these areas until the currents change and push them offshore. For North Queensland, the appearance of these animals on mainland beaches usually occurs for 3-4 days per season, however, they may be present around reefs and offshore islands right throughout the season.

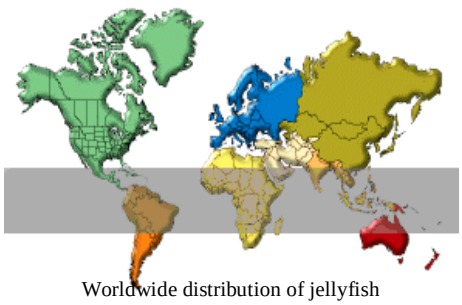
The lifecycle for box jellyfish that cause **Irukandji Syndrome** is only known for one species, *Carybdea alata*, from Hawaii.


Hawaiian box jellyfish *Carybdea alata*

For these animals, juveniles, or polyps, are thought to live on coral reefs. These polyps bud off a single juvenile box jellyfish which then grows and develops in the waters around these reefs. For the species of jellyfish which cause Irukandji syndrome in Australia, their lifecycles still remain a mystery.

DISTRIBUTION

Specimens of the Irukandji jellyfish, *Carukia barnesi*, have only been recorded from around the Cairns area. Cases of **Irukandji Syndrome** however, have been recorded from various locations around the world but are mainly restricted to areas lying between the Tropic of Capricorn and the Tropic of Cancer. This adds further weight to the belief that there are many species of box jellyfish causing **Irukandji Syndrome**.

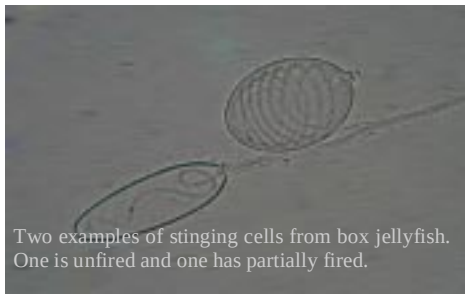

Worldwide distribution of jellyfish causing **Irukandji Syndrome**

HABITS

In offshore waters around coral reefs, box jellyfish that cause **Irukandji Syndrome** are usually well dispersed and the incidence of stings is very small. However, when they are swept inshore they become concentrated at the waters edge. They are also attracted to lights and night divers on the reef are occasionally stung.

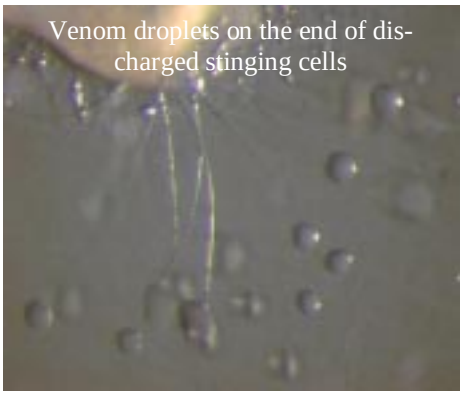
HOW DO THESE JELLYFISH STING?

Like all jellyfish, they have stinging cells called nematocysts present on their tentacles. However unlike *Chironex fleckeri*, (the larger box jellyfish which are capable of killing people), these often small jellyfish also have stinging cells on the bell or 'body'. This means that any contact with these animals will result in the person being stung. The stinging cells

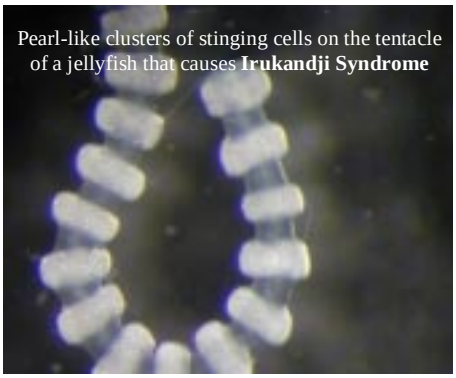

Two examples of stinging cells from box jellyfish. One is unfired and one has partially fired.

are like round bulbs, which contain venom and a hollow shaft

that everts. This shaft penetrates the prey or victim upon contact


Venom droplets on the end of discharged stinging cells

and delivers the venom. Although small, these stinging cells hold a very potent venom and are generally in clusters on the animal. On the tentacles of the Irukandji jellyfish, *Carukia barnesi*, they appear like a string of pearls,


Pearl-like clusters of stinging cells on the tentacle of a jellyfish that causes **Irukandji Syndrome**

while on the body of the animal they appear as small clusters. When such a jellyfish stings a person, the characteristic sting site appears like a cluster or line of dots which mirror the position of stinging cells on the animals.


Sting site from a jellyfish that caused **Irukandji Syndrome**

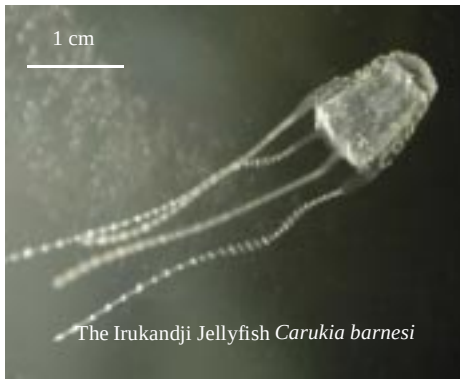
FIRST AID FOR IRUKANDJI SYNDROME

As with all box jellyfish stings the area of the body on which the sting has occurred should immediately be flooded with vinegar. Generally the victim will feel little initial discomfort with the onset of symptoms occurring around 20-30 minutes after the sting. If a person is suspected of an Irukandji type sting, during this initial time period they should be kept cool and reassured while remaining under observation. If symptoms do start to develop medical assistance should be contacted and the patient transported to hospital.

CAN WE CONTROL IRUKANDJI TYPE JELLYFISH?

It is practically impossible to eradicate jellyfish from the waters, and even if it were possible, the effects that this may have on the environment are unknown. We need to learn to live with these animals. With increased knowledge on these animals biology we will be able to more accurately predict their presence and absence on our beaches and which areas are likely to be inhabited by them at which times. Unfortunately stinger nets, while effective in excluding large box jellyfish, are not as yet of use for the smaller box jellyfish so information from the lifeguards on duty should be heeded. For the majority of the season the risk of being stung is small especially if precautions are taken such as the wearing of protective stinger suits.


Stinger nets in Far North Queensland



The Irukandji Jellyfish *Carukia barnesi*

Further Information:

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