

CHIRONEX FLECKERI - THE NORTH AUSTRALIAN BOX-JELLYFISH

CHIRODROPID BOX JELLYFISH WORLDWIDE

Appearance

Bell

The bell is large and transparent and is very difficult to see in its natural habitat.

Chironex bell size may grow to 30cm diameter in the largest specimens in Queensland. Large Chironex are common at the end of the season (March - May/June), but sometimes, for no apparent reason, large specimens may occasionally be found at the beginning of the season (September - November). Chironex generally appear earlier in the summer season closer to the equator than they do in the tropics. Specimens in Darwin, which usually appear each year in August, do not appear to grow larger than 14cm. bell diameter during the year, unlike their larger cousins in Queensland. The reason for this is not known.

Chiropsalmus quadrigatus is similar to Chironex and occurs in a similar area. However, the trained observer can detect the differences. The bell is always smaller - maximum size about 15cm bell diameter, and the characteristic appearances of the pedalia (see Anatomy Chapter, and below) are different. Many similar species of jellyfish around the world have been given this species name in many areas of the world, making description and discussion very difficult. There is still much uncertainty about the species overlap with subtle differences occurring in the jellyfish anatomy as the geographic area changes.

Tentacles

Chironex fleckeri has up to 15 tentacles in each corner (60 in total). Other chiropsalms may have between 7-16 tentacles when fully-grown.

The tentacles are thick - like bootlaces. They are contracted when the jellyfish is swimming and may be just 5 -15cm. in length, depending on the size of the jellyfish. Whilst the jellyfish is fishing for its food of small fish and prawns, the tentacles are thinner but may be extended up to 3 metres behind the bell in the fully mature specimen. They are almost impossible to see in sunlit water. The theoretical total length of tentacles may be up to 180 metres. Death has occurred from just 1.2m of tentacle contact in an 18 month old child (author s records).

In Chiropsalmus quadrigatus the tentacles are much thinner, more like bootlaces, and the maximum number per corner is usually just 7-8 tentacles.

The shape, size and even colour of the tentacles may change with different species of chiropsalms.

Ecology

Distribution

Chironex fleckeri

A jellyfish present in Australia mainly in tropical waters - In Australia, from Exmouth in Western Australia, all through the Northern Territory, the Gulf of Carpentaria and down the east coast of Queensland to Bustard Heads, about 5 kilometers north of Agnes Water.

It is present in other areas of the Indo-west-Pacific Ocean. Specimens have been identified from Papua New Guinea, the Philippines, and Vietnam, but the full distribution has not been properly identified.

Chironex and most other chirodropids known to date occur in the shallow waters adjoining creek and mangrove outlets, especially on adjoining sandy beaches, where they hunt for their prey of small fish and prawns. Dr Bob Hartwick proved the life cycle of Chironex after he found their polyps in the mangrove swamps and river outlets. Insufficient evidence is present to date, on the distribution and life cycles of all other chirodropids.

Chiropsalmus quadrigatus

The distribution is geographically smaller in Australia than Chironex, extending from near Townsville to the tip of Queensland. Few specimens have been identified from the Gulf of Carpentaria, but knowledge of jellyfish in this area is limited. Surprisingly, hundreds of immature specimens several centimetres across the bell were seen and identified from the Gove area in June 1995 (???). There have been no further reports of sightings in this area.

World distribution of specimens of this name extend from Australia in the south to Japan in the north, Philippines in the east and the Chagos Archipelago, mid Indian Ocean. The distribution may extend further west than this, but is unconfirmed to date.

Other chirodropids

All chirodropids look very similar, and fortunately cause the same, or very similar, symptoms on their victims. Thus species identification is not necessary, although overall identity is important for any specific treatment (e.g. vinegar). Chirodropids are present in tropical waters all through the Indo-Pacific Ocean from the Philippines west to the mid-Indian Ocean. They have not yet been identified on the east coast of Africa, but are probably present, nor from the east coast of the Americas (see maps).

Initial envenomation

Envenomation by any chirodroid is characteristic. There is sudden severe skin pain, described as being branded by red-hot irons, or savage whip-like pain from the many tentacles. The victim is in agony and frequently becomes hysterical with a major sting. Children will frequently bend down in the water and try to pull the tentacles off their legs, thus sustaining stings to the hands, wrists and upper arms and increasing their total envenomation. Adults will frequently pull violently back, thus tearing off the jellyfish tentacles, which then wrap around the legs of the victim, thus increasing envenomation. The severe pain tends to make adults run out the water. Running increases heart and circulation and increases the speed of absorption of the envenomation. Thus an important part of the first aid treatment to prevent further envenomation is to restrain the running victim and retrieve a child who may simply stand in the water screaming with pain.

Children and females, who are relatively hairless, will often sustain a more severe sting as body hair tends to act like a barrier, preventing the tentacle sticking well to the skin - as does any barrier, such as protective clothing - a basis for first aid treatment (see below).

The skin appearance is characteristic. Adherent tentacles are often present and must first be removed, using vinegar (see First Aid Treatment below). The skin lesions are vivid red raised wheals, surrounded by a vivid red flare. Tentacle marks will often glisten in the sunlight with a frosted appearance of the remaining stinging cells (nematocysts) on the skin, with horizontal bars along the length of tentacle contact. This appearance matches the transverse nematocyst bands seen on chirodroid tentacles and has been called the frosted ladder effect.

Very quickly the bright red welts darken and skin death often occurs over the next 12-18 hours. Blistering may become apparent on or around the skin welts over the next few hours.

Broken off, adherent tentacles contain several layers of nematocysts. Thus, the longer then tentacle is in contact with the skin, the greater the envenomation will become - thus the benefit of vinegar to prevent further discharge and thus, the envenomation severity increasing beyond the initial envenomation.

Further effects

The nematocyst thread tube is long enough to penetrate the epidermis. These thread tubes may puncture small blood vessels as they discharge. As has been shown (Chapter *), as the thread tube everts itself, venom covers the outside of the thread tubes and as these pass through some blood vessels in the dermis, direct injection of some of the venom into the bloodstream of the victim can occur. Further quantities of the venom are discharged through the end of the thread tube into tissue spaces in the dermis, where they are picked up, conveyed through the lymphatic system directly into the blood stream of the victim.

The venom is both neurotoxic (attacks nerves), cardiotoxic (attacks the heart) and dermatonecrotic (destroys skin). Thus, within minutes of massive envenomation, the victim may rapidly stop breathing, whilst still on the beach. Expired air may occur from respiratory or cardiac failure.