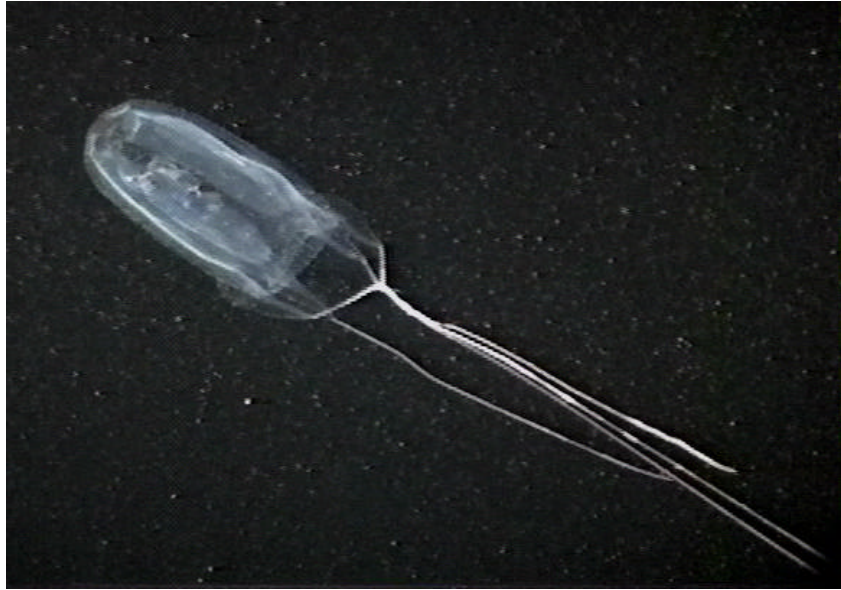


Box Jellyfish at Kwaj

Over just the past 50 years, thousands of people have reportedly been killed by something called a sea wasp. This is not a flying insect, but rather a kind of jellyfish, one species of a group known as the box jellies. Good thing they don't live at Kwaj. Or do they? I haven't yet seen the particularly species commonly called a sea wasp here, but I have seen three other kinds of box jellies. And personal experience can confirm that two of those have a sting that packs quite a wallop.

Fortunately, box jellies do not seem to be common at Kwaj. The first one I saw some years ago on a night dive on the oceanside drop. My dive buddy brought me a jellyfish she'd found, fortunately using a net to bring it over. Even so, a tentacle that may have become caught on her net drifted across the back of her fingers, causing intense pain.



We treated her sting with a bee sting kit we had on the boat and it seemed to help. The two photos on this page show this particular specimen in frames captured from the video. The jelly was moving fast, so the video is not very good, but it is clearly a member of the Cubomedusae, otherwise known as box jellyfish. It has been tentatively identified as *Charybdea alata*.

A more recent encounter took place recently, in late June of this year. On a night dive at approximately 8:30pm, I saw something out of the corner of my eye close to and approaching the left side of my head. I put out my left hand to ward it off and hit the head end of a large bullet-shaped jellyfish. At first because of the shape and rigid jelly texture, I thought it might be a huge salp. It was about a foot long, tubular and a bit torn up, probably from running into

the reef. The elongate bell was translucent to transparent, and there were four relatively short (or retracted) pink tentacles equally spaced around the base of the bell. On the base of the bell where each tentacle connected was a distinct orange spot, and the spots were the only bits of color on the bell itself.

On night dives if I'm not carrying my camera, I carry a 2-foot-long PVC pipe that I use as a "walking stick" to keep me off the bottom and away from the coral while I hunt for small creatures in the ledges and caves. I used the pipe to turn the jelly around to examine it more closely and noticed the four tentacles extending from orange spots around the base. Realizing from the tentacles and general shape it was a box jelly, but one larger than any I had ever even heard of, I showed my dive buddy while continuing to use the pipe to hold the jelly at bay. We let it drift by in the current and continued on our way.

A few minutes later, my bare left hand began to sting. The sting gradually intensified until much of the palm and fingers of my left hand were in considerable pain. What gives? I hadn't touched the jelly with my palm, only batted the bell away with the back of my hand to keep it from running into my face when it first appeared. After that, I touched it only with the stick. The stick! I had used the PVC stick to move the jelly around, then continued handling the stick with my left hand to keep me off the coral while I aimed the flashlight with my right. Even though I thought I hadn't touched the tentacles, some of the box jelly's nematocysts (the cells that act as stingers and contain the venom) must have come off on the stick and I had proceeded to rub whatever traces that remained all over the palm and fingers of my hand. At this point we were nearing the end of our time anyway, so we returned to the boat. By the time I got out of the water, the pain in my palm was quite intense.

Once out of the water, I doused my hand with Adolph's meat tenderizer, which we always keep on the boat for jelly stings. It did not seem to help. Finally, to diminish the pain somewhat, I held ice cubes from the cooler in my left hand, and for a while even dunked my hand fully into the ice water in the ice chest. It numbed it enough to be tolerable, but the pain would come back whenever I took my hand out of the water. I hate to give up on getting back into the water, but about one and a half hours after the sting, we decided to forgo the second dive and return to Kwaj.

The stinging had diminished a bit by the time we got home, but once there I immersed my hand in very hot tap water. While in the water, the pain was gone, but whenever I took it out, it started to come on again. Soon, however, the pain started to subside, and about 4 hours after the sting, it was not intolerable even with my hand out of the water. Now, though, it felt like needles were being jabbed into various parts of my hand and some welts were visible, although it did



not look as bad as I would have expected from the way it felt. It took at least a couple of hours to get to sleep, but by morning (10 hours or so after the sting) most of the pain was gone. There were still isolated spots on the left palm that were sore, probably areas that got the worst of the sting, but it was mostly ok. By morning, no visible welts remained.

I shudder to think what might have happened if I got a direct sting from the tentacles on skin more tender than the palm of my hand, which is usually tough enough to resist stings from the nematocysts of most coral relatives. I can see why box jellies can be deadly.

The third box jelly observed at Kwaj is a very small one, well under an inch in diameter. The single specimen found was wafted from *Halimeda* algae in the lagoon near Gugeegue Island. It was a fast swimmer, pulsing



quickly through the water and was difficult to catch on film. This one is tentatively identified as *Carybdea sivickisi*, a species that often sticks to rocks or algae on the bottom. When it rested, it tucked its tentacles completely within its bell.

The two photos show the same specimen under different lighting conditions. I decided not to test the sting of this one.



You can read more about box jellies on various web sites, including Wikipedia at http://en.wikipedia.org/wiki/Box_jellyfish, or the site <http://www.ucmp.berkeley.edu/cnidaria/cubozoa.html>. For those who don't want to dig through the web pages, some salient points from the site include:

- There are about 19 known kinds of box jellies worldwide, including the infamous sea wasp of Australia. They are actually in a separate taxonomic class called Cubozoa, rather than Scyphozoa where most of the other “true” jellyfish reside.
- They are often roughly square-shaped when viewed from the top, and have four tentacles or four clusters of tentacles evenly spaced around the edge of the bell.
- The sea wasp, *Chironex fleckeri*, and one other species also not yet found here at Kwaj are the most venomous known creatures in the world, with stings that are extremely painful either initially or as an after-effect, and which are often fatal.
- Some are thought to actively hunt their prey and can swim up to 3.5 knots! One reference even reports 4 knots. Much faster than a diver can swim. Could you really be chased down and attacked by a jellyfish?
- Their eyes are constructed in a way that would allow them to actually form images, although with a simple nervous system and no real brain it is hard to tell how they could be interpreting what they are seeing.

- Use vinegar to treat a sting to disable any as yet undischarged nematocysts, then remove any tentacles stuck to the body. Do NOT use meat tenderizer, urine, alcohol, or any other sting remedies. They may cause the discharge of more nematocysts, making the sting worse. (Now they tell me.)
- Get medical help. The sting of *Chironex fleckeri* is strong enough to “easily kill 60 adult humans in as little as 3 minutes.”

The Wikipedia section on *Chironex fleckeri* states that “The sting produces excruciating pain accompanied by an intense burning sensation, and the venom has multiple effects attacking the nervous system, heart and skin at the same time. While an appreciable amount of venom (contact from about ten feet or three metres of tentacle) needs to be delivered in order to have a fatal effect on an adult human, the potentially neurotoxic venom is extremely quick to act. Fatalities have been observed as little as four minutes after envenomation, notably quicker than any snake, insect or spider; and prompting its description as the world's deadliest venomous animal. Frequently a person swimming who gets stung will have a heart attack or drown before they can even get back to the shore or boat.”

The recent Kwaj box jelly was an unusual one and did not look much like *Chironex fleckeri*. In researching box jellies after the recent incident, I could find photos of only a few of the 19 known species, and none of them looked anything like the big one we saw. Further, the largest known species is *Chironex fleckeri* and it is reported to grow to about the size of a human head. I think the one we saw was longer than that, although not as wide. There's a chance it could be a new, undescribed species. That ALMOST makes me wish I'd collected it for the jellyfish biologists. But not quite. If it is unknown, there's no telling how venomous it is. Certainly it's not something to mess with unless you really know what you're doing.

Fortunately, box jellies seem to be rare here. We've made many hundreds of night dives oceanside in the lagoon, and thousands of day dives, while seeing only three specimens for sure. But it would be good to keep an eye out for them, especially while night diving. They are said to be attracted to lights. Wear a dive suit to cover most of your bare skin.

And I don't know about you, but I plan on carrying a little plastic bottle of vinegar on my boat from now on.

Text by S. Johnson

Photos by J. & S. Johnson, Indepth Images Kwajalein

<http://www.underwaterkwaj.com>