WhaleSwim ADVENTURES

NOTES ON TONGAN HUMPBACK WHALES – by Libby Eyre

- Southern Hemisphere humpbacks migrate along the coast of the continents from Antarctic feeding grounds to tropical mating and calving grounds.
- The whales which visit Tonga each year winter in the Antarctic south of Australia and NZ, but little is known of their present day migration path to Tonga, and their movements between South Pacific islands.
- The initial Southern Hemisphere population of humpback whales is thought to have numbered around 120,000 in 1900, with an additional 160,000 whales reportedly killed from 1900-1963. However, in 1994 it was revealed that illegal hunting had taken about 48, 000 humpbacks after the species was protected. Many of the whales taken in this illegal hunting are thought to have come from the population that includes the Tongan whales.
- When commercial whaling stopped in Australian and NZ in 1963, the population of these humpbacks was reduced to less than 500 animals.
- Subsistence hunting with hand-held harpoons continued in Tonga until 1979.
- The Tongan population of whales has never recovered from whaling, whereas there has been a marked increase in whale numbers along the east coast of Australia.
- Humpback whales average 15 metres in length and can weigh up to 45 tonnes.
- The females give birth to a single calf usually every third year. Tonga is an ideal nursery, as it provides sheltered areas with shallow warm water. Here the calves suckle the fat-rich milk, which helps them to quickly grow and lay down a layer of blubber in preparation for the journey south to the chilly Antarctic waters.
- During the breeding season, males can be very aggressive towards one another. They use their head, tails and whole body in combat, in an effort to repel rivals and mate with available females.
- Male humpback whales are known to produce long complex sounds we call songs. These songs can be heard over long distances, but their function remains unknown. Each population of humpbacks have their own song, which all the individual males sing, but the song changes over time, and the new versions are taken up by all.
- The songs of the whales are recorded with an underwater microphone called a hydrophone.
- Humpback whales can be very hard to study, as they spend their entire life in an environment that is alien to human beings. Research techniques can include observing whales from land, boats or aircraft, or from underwater.
- The tail is called a fluke, and the underside of each whale's fluke has distinct markings, which differ from each individual, much like our fingerprints. By photographing this pattern, researchers can collect a catalogue of individuals. If they re-photograph a whale in another year or another location, they can start to build up what is called a life history for that individual, and learn a bit more about where the whales go, how often they calve, what other individuals they associate with, and so on.
- Another way of studying the life history of the whales is by collecting a tiny sample of skin and testing its DNA. This is like a molecular fingerprint, and can tell the sex of the whale, who it is related to, and which population it belongs to. This can be done either by using a small dart fired into the side of the whale, which takes out a tiny plug of tissue, or by collecting loose, floating skin from the whales as they swim along.
- There are rules for watching whales in Tonga. These rules are designed to protect the whales and provide safe conditions for the whale watchers.

HUMPBACK WHALE BIOLOGY

- The whale's tail is called the fluke. There are no bones in the flukes, just tough, fibrous tissue with a broad network of blood vessels. One way a whale cools down is by raising its flukes in the air. It can hang like this for some time, in a behaviour called "sailing", which allows a cool sea breeze to pass over the surface of the flukes and cool the blood down. This cool blood can then be shunted around the rest of the body to cool the whole animal down. The flukes propel the whale through the water in an up and down movement. The

upward stroke is called the 'power stroke', and that is what moves the whale forward. When looking for where whales are, you can sometimes see a 'footprint' on the water's surface, which is the swirling pattern created by the whale's tail moving upwards.

- The long flippers help give the humpback whale its scientific name *Megaptera novaeangliae*, which is Latin for "big-winged New Englander". The flippers are about a third the length of the body, and have bumpy knuckles along the leading edge. A whale's flippers are called pectoral fins. These too are rich in blood vessels, and can be used to cool the body down. The fins help to steer the whale and give it balance.
- On the back is a tiny fin called the dorsal fin. It varies slightly in size and shape between individuals. The humpback gets its common name from the way it arches its back as it dives. The dorsal fin acts as a stabilizer in some species of dolphin and whale.
- Under the humpback's chin and going halfway along the belly are a series of grooves that look like corderoy. These are the whale's throat pleats. When the whale is feeding, it takes in a mouthful of water and food. The throat expands to take in this large volume using these pleats.
- Humpbacks are baleen whales, and so they don't possess any teeth. Instead, they have plates of keratin, which are fringed along the edge and hang from the upper jaw. To feed, the whale will swim into a swarm of krill or small fish, take a mouthful, and then close its mouth. Using its tongue, it pushes the mouthful of food against the baleen plates, so that the water is strained out, leaving behind the food on the inside of the mouth.
- On the top of the humpback's head, and along the jaws, are a series of bumps. These are called 'tubercles', and each possesses a hair. They probably have a sensory function, providing the whale with information about its environment like temperature and water flow.

HUMPBACK WHALE BEHAVIOUR

- When a whale comes to the surface to breathe, it lets out a column of water vapour, called a blow. It looks like the whale is spouting out water, but the warm air from the whale's lungs condenses as it hits the cooler air, causing a steam-like effect. Humpback whales have two blowholes, and when traveling slowly will come to the surface to breathe every 8 minutes or so. The usually take a series of breaths before diving again.
- When a whale dives, it is called 'sounding'.
- Often as the whale sounds, it will lift its flukes into the air. This is called 'fluking up', and provides an excellent photo opportunity.
- Another behaviour which uses the tail is called 'tail lobbing'. This is where the whale slaps the surface of the water repeatedly with its tail. This could be a form of long distance communication, as the sound travels a long distance underwater. It could be a show of strength or aggression, as the whale may be using its very powerful tail to warn off a rival or another animal. Sometimes the whales lie on their back, with their flippers in the air and tail lob. This is called 'inverted fluke slapping'.
- A whale may raise its head above the water to have a look around. This is called 'spy-hopping'. The eyes are on either side of the head, and so the whale may spin around slowly to orientate and get a better look. Another behaviour involves raising the head and slapping it down forcibly. This is called 'head slapping', and may serve as a signal of aggression.
- The most spectacular behaviour, and the one everyone has their camera ready for, is the breach. Breaching is where the animal launches itself out of the water. You can have half body breaches, where only the first half of the whale comes out, or full body breaches, where the whale literally flings its whole body into the air. There is a lot of speculation as to why whales breach, and no doubt the behaviour is used for more than one purpose. It could be used to see what's going on. Often when a whale breaches near a boat, it is orientated with its belly towards the boat, allowing it to get a good look at what is in the area. Like tail lobbing, breaching makes a loud noise under the water, which may be used to communicate over long distances. Breaching could be a way of signaling to your rivals that you are big and strong and not going to be pushed around. Whales can throw themselves at one another aggressively to warn away their rivals. Breaching is often seen on windy days. Perhaps it is a good way of communicating in these conditions, or perhaps whales are affected by windy weather much the same way as cats and children are, with lots of energetic behaviour.