



Conserving marine life in Mozambique

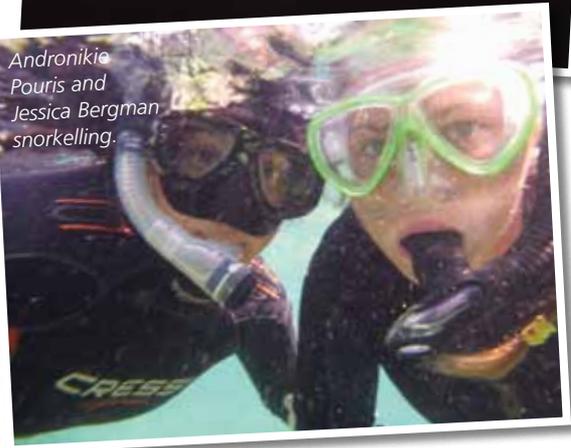
Zavora Lodge, Mozambique.



Sunset at Zavora.



Androniki Pouris and Jessica Bergman snorkelling.



Androniki Pouris on humpback whales, manta rays and nudibranchs at Zavora Marine Laboratory, Mozambique.

A whole month on the sea and by the sea – this is what an internship at the Association of Coastal Conservation of Mozambique (ACCM – Zavora Marine Lab)/Iemanja Research and Conservation Projects, Mozambique means. A whole month of combining diving, my favourite hobby, and studying marine creatures, my future study area – this was a combination of the best things in the world.

I left a cold OR Tambo International Airport and arrived in a very hot Inhambane, Mozambique after a short trip. Another intern, Jessica Bergman, had a much longer flight from California, USA. Once we arrived in Inhambane, Zavora was another two hours' drive – as remote as we were told it would be.

The researchers at the Marine Lab showed us around and the next day we set out to work – and they mean work. We suffered from information overload but it was all interesting and every day brought a new adventure.

When we were not diving, we were snorkelling. Every second day was

spent whale watching. The rest of the time we dived at different reefs, to different depths to find nudibranchs and manta rays and collect data, or went to sea to collect data on humpback whales.

The area around Zavora is wild and beautiful – a truly African experience.

Mantas

The largest types of manta species in the world are the reef manta ray (*Manta alfredi*) and the giant manta ray (*Manta birostris*).

Mantas have triangular wings and paddle-lobes that extend in front of their mouths. Their wing span can be up to 7 m, and they can weigh up to 1 300 kg.

Manta rays are generally found in tropical and subtropical waters. They are commonly seen at cleaning stations, which are areas of the reef where fish such as wrasse, remora and angel fish 'clean' the mantas, eating parasites and dead tissue on the rays.

Mantas are filter feeders, eating plankton and fish larvae. They can consume 20 – 30 kg of plankton a day.



A manata with its mouth open.



Humpback whales. Image: Yara Tibirica



The author diving with a manta.



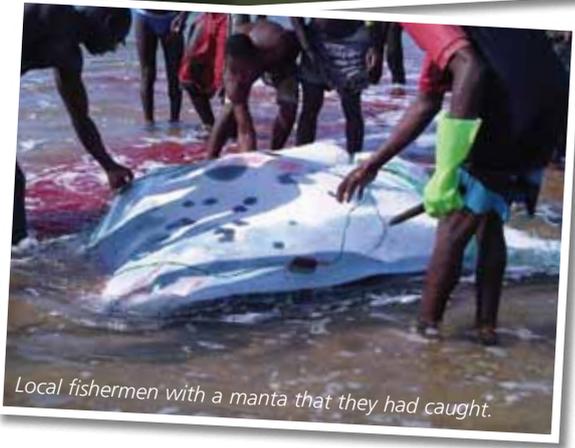
A manta ray with fishing line wrapped around its tail.

At Zavora there are two main cleaning stations – Witches Hat Reef and Vasco’s Reef. Both reefs are 5 km away from the shore and are 12 – 20 m deep. Manta rays are also seen at Great Wall Zavora which is 10 km from shore and 27 m deep.

We had to identify the mantas we saw when we dived. Reef mantas have patterns/spots/grey area on their belly and between the gills. Giant mantas do not have these features. Each manta is unique – the patterns can be used in the same way as fingerprints.

The gender of the mantas is determined by the length of the pelvic fins in the genital area – females have two pelvic fins that conform to the contour of their body, while the males have two pelvic fins that look different from those of the females. Males also have two claspers, which grow longer than the pelvic fins.

In August we saw and identified four giant mantas and 27 reef mantas, all with wing spans in the region of 3 - 4 m. They are spectacular creatures with unique >>



Local fishermen with a manta that they had caught.



Halgerda wasiniensis



Chromodoris quadricolor



Nembrotha aurea

Nudibranchs

Yara Tibirica (the coordinator of the Zavora Lab internship) is studying the taxonomy of nudibranchs.

She writes: 'About three years ago I moved to Zavora to start a research programme mainly focused on manta rays. Soon other creatures also got my attention. I fell deeply in love with the [sea] slugs and I started a new research project looking at the distribution and diversity of sea slugs in Zavora.'

Much smaller than manta rays but equally interesting, sea slugs are full of mysteries and undiscovered facts. As a group they have some of the biggest diversity of behaviour, feeding and survival strategies. You can imagine that being a soft-bodied slug in a sea full of predators would not be easy if they hadn't developed the most amazing and complex ways to protect themselves. These animals are a strange combination of chemical industries with the butterflies' beauty. At global level their biology and ecology are poorly understood, with many species still being discovered every year. In Mozambique they have never been studied before so almost every day of field work we find exciting new information. One of my favourite parts of the day is spending an hour or so with the head down and fins up moving like plankton looking for the colourful and extraordinary sea slugs.

There is currently a huge scientific discussion about the evolutionary nature of sea slugs and their taxonomy is changing, but while it is not yet defined we use the old classification, grouping them as opisthobranchs. The most famous opisthobranchs are the nudibranchs, which are also the largest group. Looking for nudibranchs while you are diving in Zavora is almost like looking for birds in Kruger National Park. There are all these impressive big animals which are hard to take your eyes off but if you can do so, you might discover a completely new world often ignored by most people. Under the magnificent lens of the microscope, the details highlight the perfection of these creatures and unexpected things are observed. One day I saw a worm coming out of the nudibranch *Glossodoris*' anus, how amazing was that!

Over two hundred species of opisthobranchs have been found during

our study in Zavora and we are still finding more and more. Most of them are new recordings for the country and around thirty of them described species for science. In order to correctly identify the species and further describe them, it is necessary to look at both the external and internal morphology, as well the radula, a kind of slug "tongue". Radulas contain tiny teeth in different numbers and shapes that are unique to the species depending on what the species feed on, just like sharks.

The correct identification of species is crucial to understand their ecology; therefore our project is focused on both the taxonomy and the ecology. Most studies to date are done by scientists who do not live in the field and only go for expeditions from time to time to collect material. At Zavora Marine Lab we are lucky enough to live and work in our study area. Although living in such a remote place makes it harder to do part of the taxonomy analyses, it facilitates better understanding of the ecology of the group. Through a combination of underwater techniques such as quadrat, roving diver, substrate analyses and traps we are able to find out a lot of new information such as feeding and mating behaviour and population flux.

Our continuous discovery of new species and facts about the sea slugs shows how little we know about marine life and how limited our capacity is to see what is just in front of our eyes. On one hand it fascinates me but on the other, it worries me that much of this natural beauty will be lost before we get to know it as the pressure on the ocean increases every single day.'

behaviour.

Mantas are very confiding creatures. Sometimes they came swimming right up to us and got so close that you could almost touch them.

Mantas are vulnerable to fishing – not just to being caught, but to becoming entangled in fishing line. We saw one manta with fishing line wrapped around its tail and body. We managed to cut one part of the line, but each time we tugged on the line and freed it, the manta would swim off. But, the ray seemed to realise that we were trying to help it and it swam backwards and forwards to us until we had managed to get all the line off. It was a wonderful feeling to free this beautiful creature.

Unfortunately, the needs of local people and the conservation of the mantas come into conflict on occasion and I saw a manta caught and cut up by local fishermen. This is a great loss to the manta population as they only breed every two to three years.

Humpback whales

Humpback whales (*Megaptera novaeangliae*) is a species of baleen whales. Baleen whales are characterised by their baleen plates (filter-feeding system) that filter their food from water. They do not have teeth.

They can grow up to 12 - 15 m and weigh anything from 25 to 40 tons when they are adults. When the young are born they are 4 - 4.5m in length and

weigh 1 - 2 tonnes. The gestation period is 11.5 months and a mature female humpback whale can only have one calf every second or third year. The whales' average age is 48 years but they can live up to 100 years.

They feed on krill (small shrimp-like crustaceans) almost exclusively, but some humpbacks also feed on small schooling fish. When they feed, they swim in groups using a bubble net – they blow bubbles in a circle, which creates a cylinder-like hole in the water that traps their prey in the middle. In time the bubble circle starts to shrink and eventually a group (with one leader giving the signal) all come up with their mouths open and filter the krill or small fish into their mouths.



Whale tails.

We were at Zavora during the breeding season. Mothers and calves swim together so that the mothers can protect their calves from killer whales, the species' main enemy.

We monitored the number of whales we saw, their group size, whether they had calves, what behaviour they were displaying and where they were going. Our team took a 12-hour shift every second day.

When these magnificent whales jump out of the water it is called breaching. We often saw a mother do something and the calf copying the behaviours.

We also went on ocean safaris with the Mozdivers (the only dive school in Zavora). When we were at sea we recorded the GPS coordinates when we saw whales, how many were in the group and if they had calves. We followed them till they dived or until we found another group. We tried to take photos of the underside of the tail (fluke), so that we could identify individual whales. Each whale has a different pattern on its fluke, much like a human finger print.

Back in the lab we uploaded the pictures to a database so that when a whale is spotted elsewhere, it can be identified and its pattern of movement can be recorded. Everyone can participate in this project. Just take a picture (pictures must be taken in Mozambique) of the under part of the fluke, and e-mail it to info@zavoralab.com and the photo will be uploaded to the database and website www.mozwhales.org.

The experience

This was an amazing month of diving and photographing, but most of all

learning about, marine life in the Indian Ocean.

A team of vibrant young women with a particular interest in marine life and all its wonders showed me how to enjoy these animals and how marine research is done. No matter how difficult it was to help a manta, or to see one being killed, or how wonderful it was to see the humpback whales and enjoy the colours and shapes of the nudibranchs, this was a lifetime experience that is worth remembering for ever.

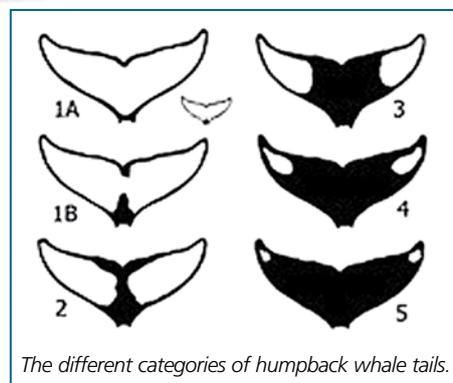
Thank you team for a wonderful life experience. ☐

(All photographs by Androniki Pouris except where otherwise stated.)

Androniki Pouris was born on 21 November 1989 in Pretoria, attended Lynnwood Ridge Primary School, and matriculated at St Mary's DSG in 2007. She is currently studying for her BTec at TUT (Tshwane University of Technology). She's an avid photographer and is qualified as a PADI Scuba Diver Instructor and a Scientific Diver. She had her first scientific scuba diving experience, utilising her photography skills at Zavora Marine Lab in Mozambique in August 2012.



First sight of a humpback whale.



The different categories of humpback whale tails.



The team (from left to right): Emma Hayes, Yara Tibirica, Comex (the dog), Sabrina, Jessica Bergman, Androniki Pouris.