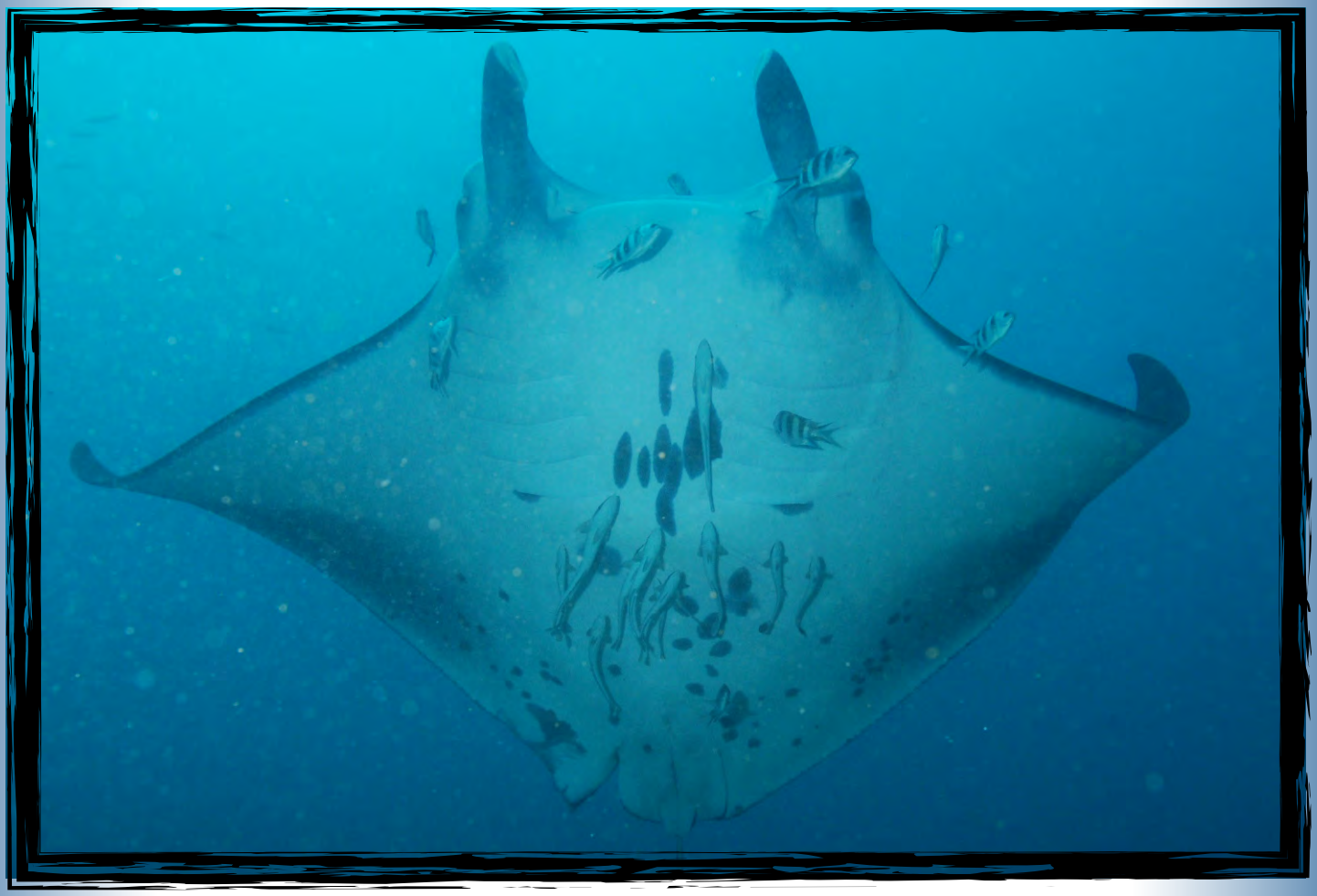
Internship Program

Zavora Marine Lab.



www.zavoralab.com
Internship Program
Mozambique
2012

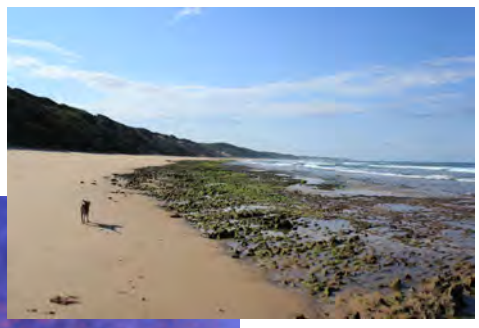
ZAVORA MARINE LAB

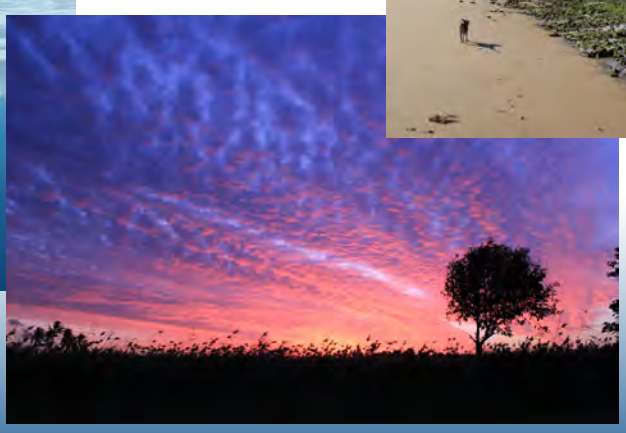
Zavora Marine Lab.

The Zavora Marine Lab. was established in 2009 to promote and facilitate research and conservation in southern Mozambique. Since its inception our lab has developed vital research for the region and raised environmental awareness through educational programs with local communities and visitors to the area. Zavora is one of the few places in the world where both species of Manta ray (*Manta birostris and Manta alfredi*) can be seen all year round. Analysis of our sighting success rate for manta rays on the inshore reefs was around 62% for the entire year of 2011, which means that you'll have a high chance to interact with manta rays at any time.

The sub-tropical reefs here are stunning and the diversity of life is impressive. In Zavora, diving tourism is still in its infancy and very little is known about the Zavora marine life. Therefore, Zavora offers the unique opportunity to study a marine environment that has had little to no impact from recreational diving activities and where there yet remains a lot of reef to be explored. We are currently working on projects involving Manta Ray populations, diver impact on Manta Rays and cleaning stations used by Manta Rays, diversity and distribution of opisthobranchs (nudibranchs and sea slugs), reef monitoring, socio-economic studies on dive tourism and the relative population abundance and photo ID of Humpback Whales, as well as collaborating with other research projects including sea turtle monitoring, manta ray distribution using acoustic tags and whale shark photo identification.

Zavora Marine Lab. is the research department of the Association of Coastal Conservation of Mozambique (ACCM) and works in partnership with Iemanjá a Mozambican organization dedicated to the study of marine life. Because the ACCM has an excellent relationship with the private sector, and Zavora is still quite wild and remote, our research can effectively be applied to avoid destructive development. The Lab. works closely with Mozdivers Zavora dive center (www.mozdivers.com) on one of the most beautiful African coastlines.





ZAVORA MARINE LAB

Internship

The internship program was developed to provide a world-class opportunity for science students to assist with marine research and conservation. The internship offers a great chance for dedicated students to engage in real world research and meaningfully contribute to our projects. Interns will get experience in all of our projects and experience both the challenges and the pleasures of working in the most beautiful, wild and remote coastal environment of southern Mozambique.

"Interning for Závora Marine Lab was an amazing experience. It is in a truly beautiful environment with an extraordinary diversity of marine life. I was able to learn so much through the field work and data collection which were both demanding and a lot of fun, even at times tedious, but always rewarding. Working so close to the local community gave me an opportunity to observe their day to day life and the ways in which they contribute to the ecosystem. The experience was made even richer because I was working with such a wonderful group of people while also contributing to the understanding and conservation of such an important resource. Hearing the Humpbacks singing as we were diving is an experience I will never forget.".

Catriona, intern August 2011

Intern roles include (but are not restricted to) collecting underwater and land based data, transferring data to the database, assisting with the education projects, giving talks, fundraising, organising and participating in events for environmental protection.

Please note that due the nature of the work, not all applications will be accepted. You will need to 1) be serious about data collection and marine conservation; 2) have 2 years or more of a science degree (or equivalent level of experience and dedication to conservation); 3) have a minimum of 30 logged dives and an advanced certification. If you do not meet the diving criteria you can come a week early (at your own costs) to get any additional qualifications or use the first week of your internship to improve dive skills before you start collecting data.

My internship at Zavora was an incredible experience and I will never forget how it felt to be surrounded by curious Manta rays or how a whale song can make your body shiver. Living at such a remote place and working on diverse research projects is a strange combination, but at Zavora it works! I recommend this internship to everyone who wants to gain experience in a marine conservation project, to everyone who loves to dive and to everyone who simply likes having a good time.

Robbert, intern August 2011

For all prospective interns

It is important to recognise that the internship programs we offer are not holidays. Interns will be joining dedicated scientists who are conducting accredited research projects in some of the world's most challenging, beautiful and remote environments. The projects demand a significant level of dedication to the scientific and practical responsibilities from the participants. However, the demands are well within the capabilities of most students, and whilst being challenging, are both enjoyable and exciting.

The internship program is different than a short-course. During your first week here we will provide practical and theoretical training. For the entire duration of your stay, we will give you research assistance and some supervision, but you are expected to work hard and independently in order to achieve outstanding goals. This is an opportunity to contribute meaningfully to exciting marine research and conservation projects, as well as experience the frustrations, the highs and the lows, and the achievements associated with ambitious and challenging marine research in Africa.

As part of this program, interns can expect to be important members of a focused and dedicated research station and partake in ground-breaking research.

Our laboratory will receive a maximum of four interns per month. The internship cost is U$2,600/month, which is used to cover your expenses whilst in Zavora and help towards the running costs of the centre.

Our internship fee includes:

- Up to 25 dives per month including equipment rental
- Return transfer between Inhambane-Zavora on the 1st of each month
- Accommodation
- Transport to Inharrime every two weeks to buy food supplies
- A 5,000Met food allowance
- Research training and assistance.

We also offer the interns the opportunity to participate in a five day reef monitoring course for an additional cost of U$280. This is a formal course with five classroom sessions and two in-water practice sessions. The course is highly recommended for people who have limited knowledge about the marine life in subtropical reefs.

Our internship does not include:

- Flight and transport from country of origin to Mozambique.
- Visa expenses
- Transfers that are not on the 1st of each month
- Internet (available by request. Price: 180Met/hour)
- Any course (technical diving, recreational diving, reef monitoring, etc.).
- Drinks and meals apart from the food allowance.

ZAVORA MARINE LAB

Interns will participate in all research projects including data collection, data entry and, in some cases, data analysis. The normal 'routine' of the internship is to collect data during the morning and enter data during the afternoon, but changes can happen depending on weather conditions, research tasks and special events. Once per week we do environment education activities at the local primary school and we arrange a monthly beach cleanup.

Partnership might be accepted for exceptional students interested in developing their own research in Zavora. Please send your project and contact to info@zavoralab.com for more information.

Some of our past interns have received credits from their university after completing an internship here. Please contact us and your School to investigate this possibility.

Intern activities include:

- Underwater photo identification of manta rays using underwater parallel lasers for measurements
- Underwater coral reef health and status surveys (for interns who do the training)
- Underwater focal diver interaction with manta rays
- Underwater focal diver impact on the reef
- Maintenance of manta ray acoustic listening station
- Nudibranch (sea slugs) belt transects
- Maintenance of the nudibranch tank
- Humpback whale land based survey and photo ID (during season – June-October)
- Conducting user group surveys on marine eco-tourism
- Turtle walks (looking for nesting areas during season – Nov-March)
- Fishing monitoring
- Data entry – using Access, Excel and MID –a software especially designed for Manta Ray identification
- Educational activities including:
    - Regular activities with kids from the local community
    - Educational open eco-cinema in the village and dive center
    - Presentations for divers and fishermen
    - Short talks for divers during surface intervals

How do you apply?

To apply please submit your CV with picture in reduced format along with the Application Form to info@zavoralab.com or contact your travel agent

Our Projects

Research Projects

1. Manta Ray Population using photo ID

Manta Rays are the largest rays in the world. Recently the genus *Manta,* that was historically considered monotypic, was clearly divided into two different species, *Manta birostris* and *Manta alfredi*. In Zavora *M. alfredi* is the most abundant, however both species can be seen all year round. Despite the abundance, little is yet known about our manta population. Manta rays have a unique spot pattern on their belly and between their gills, which make it possible to identify individuals. Photo identification uses the same principles as mark and recapture studies but because of the distinguished pattern we are able to use photos instead of tags. The advantage is that photo-identification is a non-invasive technique and you are still able to gain valuable information about these fabulous animals. The Lab. has created an innovative software, Manta ID (MID), especially designed to easily identify individuals and also the first online database for individual identification of manta rays in the Indian Ocean.

Our research aims to raise knowledge about Zavora's manta population and assist with the conservation of these massive rays. Some of our research questions are:

- What is the structure of the manta ray population?
- To what extent do manta rays in Zavora belong to the same population of manta rays in other southern Mozambique areas (e.g. Tofo and Guinjata)?
- What is the abundance of manta rays over the years and what variables might affect such abundance?

2. Manta ray interaction with divers

Divers from all over the world come to Mozambique, mainly attracted by the megafauna, particularly manta rays and whale sharks. However, there is an evident and growing concern that divers' impact might affect the health of the reefs and manta ray populations. So far most of studies on divers' impacts have been concentrated on benthonic communities in tropical reefs, and no study has been done to evaluate divers impacts on manta rays and subtropical reefs. This study aims to fill this gap in the literature and provide important tools for the management of tourism and the conservation of manta rays.

The project investigates the two different ways that divers might affect mantas – directly by changing its behavior and indirectly due impacts on the manta rays habitat. Data is collected using standardized underwater observation of both divers and mantas behaviour. The information gathered from this study will be invaluable to diving tourism management in Mozambique and other areas with similar characteristics.

3. Nudibranch diversity and distribution

Sea slugs (opisthobranchs) are one of the most diverse marine invertebrates in the world with more than 5000 species described and many that are yet to be described. The biggest group of opisthobranchs is the nudibranchs, well known by experienced divers due to their vibrant colors and amazing camouflage. In the Western Indian Ocean studies on opisthobranchs have been very limited, giving us a unique opportunity to discover and explore! We are conducting the first study on opisthobranchs in Mozambique, looking at diversity and distribution.

So far, more than 120 species have been found in Zavora alone, including some undescribed species. Belt transect technique is used to collect spatial and temporal data of opisthobranchs distribution and focal search to find rare and deep water species. Taxonomy study is done through internal and external descriptions and molecular analyses.

4. Reef Monitoring

Reef monitoring is an important tool used to evaluate changes on the reefs over time.

Data from reef monitoring is used to design management strategies in order to prevent any future decrease in reef health. We use indicator species and fish families to examine changes on inshore reefs.

Our monitoring methodology is based on the Reef Check protocol adapted to the local and regional environment.

In order to understand changes from a holistic perspective, we use fish belt transects, invertebrate belt transects and substrate intercept-point line transects. The results from this monitoring are used locally and are also sent to an international database (Reef Check) to contribute to the understanding of global reef changes.

5. Fishing Monitoring

Local and recreational fishermen have been fishing in Zavora for years. For many locals, fishing is the main source of food and income. Unfortunately, the pressure from fishing and coastal development has increased rapidly all around the world, decreasing fish stocks.

In Zavora, fishing techniques have changed, particularly over the last few years. There is now more netting and longline fishing than ever before. The aim of this project is to monitor changes in fishing techniques and identify potential threats for key marine species, such as manta rays, sea turtles, sharks and devil rays.

Land based monitoring is done once per week.

6. Diving Tourism

Diving tourism is an emerging industry in Mozambique. However, there is a lack of understanding and communication between managers and several stakeholders. In order to manage diving tourism in a sustainable way, we need to understand divers' experiences and their impact on the reefs.

The aim of this study is to evaluate divers' preferences and experiences in a diving destination that is still pristine and where tourism in its infancy. This will allow us to determine social and biological carry capacity, to compare data with other more developed areas and draw a robust strategic management plan to improve divers positive experiences and avoid the negative effects of uncontrolled development.

In order to get such important information, socio-economic surveys using self-administered questionnaires have been used daily, as well as standardized underwater diver impact study. A direct result of this project was the creation of the "Fish Police" a friendly management tool used to reduce divers' impacts. In 2012 we will be testing the efficiency of the "Fish Police" and, if needed, make adjustments and modifications to ensure that divers impacts are reduced.

7. Humpback Whales

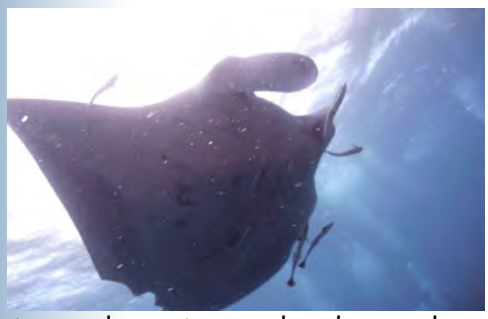
Humpback whales are one of the most fascinating animals on Earth. Every year they come to Zavora to reproduce and give birth to their calves. Small and large groups of these mammals can be easily observed from shore and often heard, even occasionally seen, underwater.

During the whale season we do a land based whale assessment to estimate the relative population of humpback whales using Zavora Bay. Observations are conducted every second day from 6am till dark, during which we collect various data such as the estimated number, behaviour and position of whales. In 2011 a day of survey generated over 60 humpback whales sightings and the data revealed the preferential area for humpbacks in the bay according to the behaviour.

Every Humpback whale have distinct markings on their tail fluke making it possible to identify individuals. Humpback whale photo ID is a challenge, but it is an important tool for migration studies, as it allows us to compare our data with other similar projects, and also try and recognize returning individuals. We are now creating the first national online humpback whales database, www.mozwhales.org allowing our research to reach even further. 2012 will be our second year of extensive humpback whale survey and we are excited to see if there will be any temporal changes in the population.

Collaborative Research

A. Manta Ray Acoustic Tag



This project is coordinated by Dr. Andrea Marshall from the Megafauna Association and aims to identify critical habitats for manta rays around southern Mozambique. The project is also evaluating the distribution and migratory pattern of *Manta alfredi*.

One listening station receiving data from acoustic tags on tagged manta rays has been placed in Zavora at Witch's Hat. We assist on this project by monitoring and replacing the listening stations and downloading the data.

B. Whales Sharks Photo ID

This project is led by Dr. Simon Pierce from the Megafauna Association. The objective of the project is to understand the structure of population of whale sharks of this region, as well as to investigate migratory patterns.

Whale sharks, like manta rays, have a unique spot pattern which allows the study of populations using photo identification.

We collaborate with this project by taking photos and sending all photo-ID from Zavora to Dr. Simon Pierce.

C. Sea Turtle Monitoring

The national sea turtle monitoring is organized by Associação para Investigação Costeira e Marinha (AICM). The project covers a large area of Mozambique coastline and aims to identify hotspots for sea turtle nesting and thereby increase protection.

During the sea turtle nesting season four locals work as monitors walking from 5 to 7 km to patrol the beach. Information on turtle nesting or any evidence of turtle movement on the beach is recorded.

We collaborate with the project by providing supervision of the monitors and getting GPS data of all observed turtle activity. We also participate weekly on patrols.

F.A.Q. (Frequently Asked Questions)

Eligibility?

The internship program is designed for science students or exceptional naturalists aiming to get experience in marine conservation. You must submit your CV with all information required. Note that due the nature of the research, not all application will be eligible.

Do I need any specific qualifications?

Interns must be competent SCUBA divers with a minimum of an "advanced" level diving qualification and 30 logged dives. Why? Because to collect underwater data you need to have good buoyancy control and many of our reefs are deeper than 18 meters. If you don't have enough underwater experience you might come a week in advance or alternatively use your first week of the internship to improve your dive skills, gain qualification and experience. Training on site from open water to all levels including technical diving is offered at your own cost by Mozdivers. Please contact Mozdivers directly for prices jon@mozdivers.com. Don't forget to mention that you will be doing an internship as they have reduced rates for the ZML team.

For how long?

Interns will be asked to stay for a minimum of one month although a longer stay is recommended, especially if you wish to develop your own project.

Where?

The Lab. is located in Zavora Beach in southern Mozambique, approximately 1.5 hours south of Inhambane town and 9 hours north of the South Africa-Mozambique border. We are a remote destination with the closest town (Inharrime) around 30km away. With the exception of mid-December to mid-January, which is the busiest tourist season, Zavora is very quiet and peaceful. It is an excellent place for people who enjoy being close to nature, and who enjoys the thrills of exploring untouched reefs.

How to get there?

The best way to get to Zavora is undoubtably by plane. You should easily be able to find a flight from your home country to Johannesburg and then from Johannesburg to Inhambane Airport. A few airlines also fly directly in to Maputo, but this is usually a more costly option. At the moment LAM is the only company that flies to Inhambane. You can buy your ticket on-line at www.lam.co.mz . Always consider a few extra hours in Maputo or Johannesburg for your returning flight as LAM rarely runs on schedule.

A cheaper, but lot more tiring and uncomfortable alternative is to get a 'chapa' (local, over-crouded bus) from Maputo to Inharrime.

You can also catch a shuttle from Johannesburg all the way to Inharrime, although this option is not available everyday and can also be a bit tricky to arrange. For more information you need to contact Rudi by facebook (Shuttle Mozambique) or try one of his phone numbers. Unfortunatly getting an answer from him can be somewhat challenging...

Rudi's contact details are: +27 828291540 (South Africa) or +258 827576540 (Mozambique)
Email: rudi@shuttlemozambique.co.za

Arrival dates and arrangements:

Pick-ups and drop offs on the 1st are included in the cost. Interns arriving or leaving outside this time will be required to arrange transport from the airport to the research station (about 100km- 1.5hours) at their own cost. We offer this service at the cost of U$50 (one way).

How much money should I bring?

There is not much to spend money on in Zavora apart from a small souvenir shop, the bar and the restaurant. However, interns often like to spend 2 days in Tofo to do Ocean Safaris or party, so depending on the applicant habits and lifestyle, we usually suggest adding about U$300-500 to their monthly budget for their souvenirs, excursions, entertainment and other personal daily needs.

Can I cancel or change the dates of the internship?

Due to the number of applications received and the limited places available, we can unfortunately not accept all applying interns. Therefore, we do not welcome cancellations or date changes after the final confirmation has been sent to us. Please, make sure that the dates you indicate in your application form suit your own schedule/budget before applying.

We request that a 1 month deposit (the equivalent of U$2800) is paid on acceptance into the program as confirmation **(foreign and local bank fees are at the applicant's cost)**. The remaining fee must be paid in full within **two weeks** following arrival in Mozambique. Cancellations prior to 6 months before internship begins are accepted without cancellation fee (deposit will be refunded in full). Cancellations between 6 and 3 months before the start of the internship will be charged a penalty of 50% (50% refund of deposit). Cancellations that are done less than 3 months before the start of the internship will include a 25% refund. We would, however, appreciate it if you could let us know of any changes or cancellations as soon as you are aware of these, so that we are able to welcome another applicant.

Do I need a VISA?

Yes, but you can get it at the border. Upon entering Mozambique, you will be issued with a 30 day VISA (around US$80: it can vary), which is extendable for another 30 days. If you wish to stay longer you will need to extend it in Maxixe (100 North from Zavora) or do a trip to the border at your own costs.

If you plan to stay longer we recommend applying to the Mozambiquan Embassy in your home country and request a 3 months visa with single entry, as a multiple entry means you will have to renew your visa at the border every 30 days. When you apply please highlight in the application form that you will be far from the border and therefore you would prefer a single entry rather than a multiple entry. A single entry can sometimes be difficult to get, as multiple entry is the norm, it just depends on your persuasion skills and your luck!

For interns who buy a one way flight we recommend to consult your airline and the Mozambican Embassy in your home country to ensure that you can get your visa at the border.

Do I need insurance?

Yes. When you are accepted in this program, you will have to sign liability and copyright documents, as well as an agreement that you are knowingly partaking in potentially dangerous activities. You will not be covered for accidents or illnesses through the Lab., so please do organise your own medical and health insurances.

You may apply for a normal travel insurance policy. Chances that you will be injured are very small if you follow the safety guidelines and do not try anything foolish of which we would not approve. However, you will be working on a boat in conditions which can, at times, be less than comfortable. Accidents on a boat may occur, so it is important to be covered in case of an emergency or accident. Please make sure you have insurance cover for your entire stay in Mozambique, and also make certain that your insurance also covers diving accidents, as many normal travel insurance policies will not cover it.

There is no recompression chamber in Mozambique and in case of a diving accident you will need to be transported to South Africa. We highly recommed Divers Alert Network (DAN) insurance. DAN is a non-profit organization focused on diving accidents, and they also offer plans that cover travelling accidents. To apply or to find more information please visit www.diversalertnetwork.org

Do I need any specific vaccination or medication before coming to Mozambique

Zavora is located in a malaria zone, some interns prefer to use prophylactic medication, while others prefer to protect themself using repellents and a mosquito net. It is up to you. Recommended medicines are: Malarone (side effects: damages liver so it is advisable to drink alcohol in small quantities or, even better, avoid it), or Doxycycline (side effects: short periods of increased photosensitivity, thus recommended to be taken around dinner with food). Malaria tests and treatment are also available on site. Bear in mind that SCUBA diving whilst using some prophylactic medications (such as Larium or Mefloquine) is not recommended – your choice of medication should be made accordingly.

In any case it is recommended to bring mosquito repellents to be used mostly during dusk and dawn periods.

Please consult your doctor for any other recommended vaccinations.

What do I need to bring?

A waterproof wind breaker jacket, a wide brim hat, a fleece or other warm clothes (Zavora can get surprisingly cold, especially during the winter months), repellent, factor 30+ sun block, towel. Bed sheets will be provided.

We also recommend polarised sunglasses (allows you to see through the water better), and please don't forget your diving certification! Please note that a water proof (to min. 30 meters) watch OR a dive computer is compulsory! You can use the dive centres gear, but we recommend that you bring your own, particularly wetsuit, mask, snorkel, fins and inflatable deploy buoys. It is advised to use wetsuits of at least 3-5mm in summer and 5-7mm in winter, some divers also like to use hoods for extra warmth during the winter months.

Do we have days off?

No, but yes... You will have days off whenever the weather and sea conditions do not allow field work, and no other work on the data or maintenance is needed. You will be allowed two-three days off per month for excursions or activities not included in the internship. This must be requested some days ahead so we can work our schedule around it.

USEFUL INFORMATION ABOUT ZAVORA AND YOUR STAY HERE

Remoteness

The remoteness of Zavora is what makes this place quiet, special and unexplored. Many things that you normally take for granted (e.g. cheese, ham, red meat, coffee, a washing machine), are luxuries, or even non-existent, here. We are about 30km from the closest town – Inharrime. Mozambique is classified as a least developed country (LDC), being one of the 20 poorest countries in the world. We are far from the capital, which means that products are scarce. Inharrime town, where we do the shopping is very small and a typical 'African village'. Here you will find only your basic foods such as seasonal vegetables and fruits, chicken, eggs, rice, beans, pasta and (most of the time) milk. Products such as batteries (apart from very poor quality AA), repellents and sunscreen are NOT available. You are therefore advised to bring anything you might need apart from basic food.

Food

Our 2012 food arrangement has been made based on previous experiences and past intern suggestions. Due to the differences in food preferences amongst interns and the limitations of products, we have decided to give each intern a 5000Met food allowance on arrival, so each intern can self choose what they prefer to eat. This way, we can give you the freedom of choice and we can concentrate on what is more important: our conservation and research projects! We will provide transport to Inharrime town once every 2 weeks to buy supplies. For those who don't like to cook, we can organize a local lady to cook traditional meals once per day, six times per week (she charges Met2000 for this service which will be deducted from your allowance). She follows a weekly routine and cook meals like pasta, chicken, matapa (a local favourite made with cassava leaves), cassava, etc.

Accommodation

We are temporarily based in Nhanombe Lodge while we are building our new research centre using eco-friendly techniques. Nhanombe Lodge is located in a beautiful spot, in front of the sea, a 5 to 10 min. walk from our partner dive centre – Mozdivers. It has a big common kitchen and lots of green area. The interns' house has two shared bedrooms, a dry lab., and female and male toilets. The house also has a large veranda with space to work or relax. Depending on the month and amount of interns you might share a room with other interns of the same gender. Mosquito nets and bed sheet are provided.

If you wish to arrive before your internship start or extend your stay in few days a fee of $15/night is charged to stay at the interns' house.

Electricity

In Zavora there is no main electricity lines. The local community lives under the light of the stars, but we are lucky enough to have electricity powered by solar panels. However, solar power has its limitations. There are lights in the interns house and the kitchen, but please bring a torch (with lots of batteries) to use outside the house! Be aware that the solar power system will not give you unlimited electricity like you are used to at home, but will allow you to recharge camera batteries and computers. The lack of electricity is part of the charm though, and nothing beats enjoying a starlit sky with nothing but the light from an oil lamp...

Money exchange

You are advised to change your currency to the Mozambique Meticais when arriving to Mozambique. You can also withdraw cash from the ATM in the closest town once every two weeks (VISA card normally works better than other cards). Zavora lodge can accept credit card, but a fee of 5% applies and the machine is not always working. The lodge can accept other currencies but the exchange rates are worse than in the bank. Please take care if changing money with people on the streets or at the border crossings.

Diving

All dives included in the internship are scientific diving only. You will be collecting data that will be used to manage the dive sites, check the health of the reefs and the manta ray population. Please concentrate on your task. You will enjoy your dive and see lots of marine life, but you must be aware of your role as a researcher. We will not admit 'fun recreational diving' during scientific dives. Remember that a doctor is responsible to the health of a patient, in the same way a marine scientist is responsible to the health of the reefs. If a doctor makes a mistake it might result in injury and death of the patient. If the scientist does not provide the right information based on serious research, the results might be wrong and its use will result in bad management and potential damage to the marine environment. Being responsible with the data is essential.

Extras available on request:

- PADI advanced diving course
- First level IANTD (International Association of Nitrox and Technical Divers) Nitrox course– as well other advanced technical courses.
- Nitrox refills – Mozdivers offers 50% of discount for interns
- Reef Monitoring course

Visibility

The waters of southern Mozambique have visibility ranging from 5-30 metres, with an average of 12-15 metres. Offshore reefs usually have better visibility than inshore reefs as wave action is not such a factor. Poor visibility can be the result of bad weather and big waves stirring up the bottom or can be caused by the upwelling of cold nutrient rich water from the Mozambique Channel. This upwelling water usually causes a chain of events, starting with a bloom in Phytoplankton, tiny plants trapping the suns energy by photosynthesis. This tends to turn the water greener. This plant life then supports a bloom in Zooplankton, small animals and jelly fish, this then turns the water a slightly milky blue colour as they grow and eat the Phytoplankton. Then the animals that divers want to see, the mantas and whale sharks, get involved to complete the cycle by eating the Zooplankton. So, without some days of poorer visibility, Mozambique would not have the charismatic mega fauna that makes it such a fantastic place to dive.

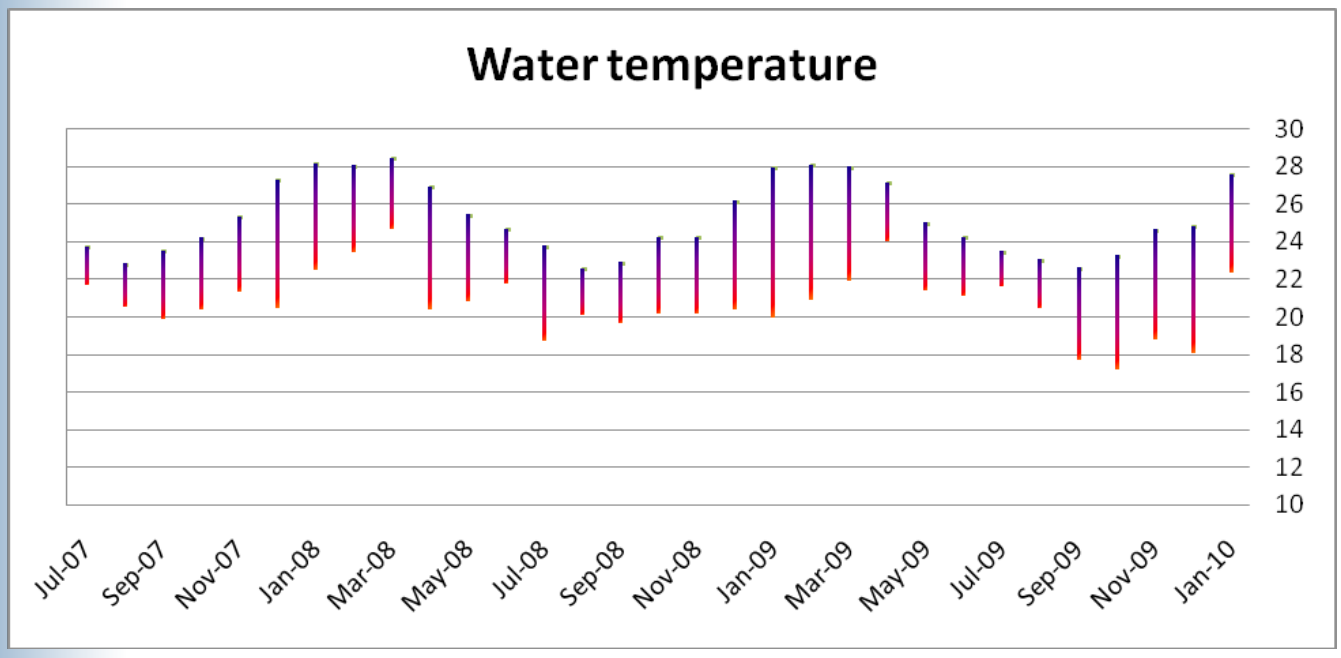
Best time of year to come.

It is difficult to recommend a 'best time' here in Zavora as all times of year have positive attributes. From 15th December to the 15th January and Easter are the busiest seasons due to South African school holidays. All other months are quieter. November to March have warmer water and usually better visibility with mating manta ray events, but with December to March being cyclone season, we can miss some days diving due to storms we are unlucky, although this is seldom the case. The temperature on land can get up to 40 degrees C in January and February, whilst it can get as low as 15-20 degrees C in June-August.

June to October is colder and the visibility is lower but the mantas appear to love the green, plankton-filled water. In 2009 summer was the best time for seeing mantas, however in 2010 and 2011 the winter months had higher numbers. June to October is the humpback whale season and we can see these magnificent animals daily from the shore, from the boat and even on SCUBA.

Water temperature.

We have collected this data from two temperature sensors that were on one of our inshore reefs during the period of the 12th July 2007 until the 18th of February 2010. These sensors have been replaced and we will continue to monitor them.



As you can see, there are some surprisingly cold minimum temperatures during the summer months. These are usually a result of upwellings forming a thermocline, and will normally only last for a couple of days.

Current

The Algulas current runs through the Mozambique Channel from North to South and as such we usually have a mild current on our offshore reefs, predominantly at the surface, although anything from zero to strong can occur. We are lucky enough to have over 7 km of inshore reef lying parallel to the shore, so on the days when the current is strong, drift diving is the order of the day.

Equipment

We work in partnership with the dive centre Mozdivers. Mozdivers currently has one 9 metre deep V design rigid inflatable boat (RIB), powered by two 130 horsepower Honda four stroke outboards, providing a very stable, smooth and quiet ride with the ability to safely navigate a big sea. The boat is equipped with a GPS chart plotter and sonar sounder as well as an auxiliary GPS to provide accurate navigation and exploration. A full range of safety equipment is always on board including life jackets, first aid kits, flares and, of course, oxygen. Communications are looked after by a high quality marine VHF radio permanently mounted in the console of the boat and a base station at the Lodge, giving us a range in excess of 30 nautical miles. A mobile phone is also always on board and we do get good reception whilst at sea.

Mozdivers rental dive equipment is from Scubapro and we are qualified to carry out maintenance and repairs in house to ensure it is always in top condition. We have 5mm full length wetsuits in a variety of sizes to accommodate everyone. We use Faber steel cylinders in sizes 10, 12 and 15 litre, accepting both DIN and International regulators. We also have manifold twinsets in 2x10 and 2x12 litre configurations, mounted on Halcyon backplates/harness/wings and a variety of stage/deco cylinders and regulators for technical divers.

Cylinder filling is taken care of by a Bauer Mariner 250 litre/min. compressor, fitted with secondary filtration and continuous Nitrox mixing for air and recreational Nitrox.

Partial pressure blending is used when we want to mix decompression gasses and Trimix.

Mozdivers is a Rebreather friendly dive centre and can provide Oxygen to 150 Bar. Sorb and 3 litre cylinders are available by request.

What can I expect to see?

Zavora is a world class destination with miles of pristine sub tropical reef, much of it still to be explored. Zavora marine life is extremely rich from mega to macrofauna. Over 250 fish species have been identified to date, and our fish assessment added seventeen new species to the fish species record in Mozambique, proving that there are still lots to be discovered!





Megafauna

Manta Rays

Both species of manta ray (*Manta birostris* and *Manta alfredi*) are present all year round in varying numbers with periods of huge abundance. November to January seems to be the time that Mantas begin to engage in mating behavior, with the opportunity to see many males chasing a female in a long 'train' across the reef.

Humpback whales

June to November is humpback season and to see these 16+ meters long animals from the boat or even on SCUBA is a real thrill. Every year we get multiple encounters in the water with these whales, and their song can be heard continuously on most dives. They are here to calve and breed so we also regularly see young calves as well as jostling bulls.

During land survey in 2011 we noted over 60 humpback whale sighting on certain days. The whales were observed in groups, alone or with calves and we witnessed some spectacular behaviour, such as breaches, tail slaps and rolls.

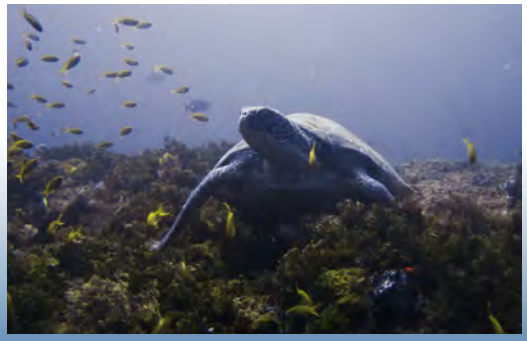
Sharks and Rays

We have unfortunately seen a drop in numbers of larger shark sightings, probably due to fishing pressure, but we do still get encounters with Zambezi, Spinner and Hammerhead sharks on our off shore reefs. We can also see Bow Mouth Guitar, Leopard, Nurse and White Tip reef sharks. Whalesharks are also present and we see these magnificent fish from time to time, more frequently in our summer months.

Mozambique was the first country in the world where a live individual of the mystical Small Eyed Stingray, the largest stingray in the ocean, was captured on film, and here in Zavora we see it occasionally. Other rays to look out for are Jenkins, Fan Tail, Shovel Nosed and Eagle rays, to name but a few.

Sea turtles

Five of the seven species of sea turtles can be seen in Mozambique waters. Encounters with loggerhead, hawksbill and green turtles are frequent, whilst the Olive Ridley is less common. Massive leatherbacks have been spotted in Zavora a number of times, particularly in November. From September to March is the nesting season and you might be lucky and see a turtle coming up from the water during a night patrol.

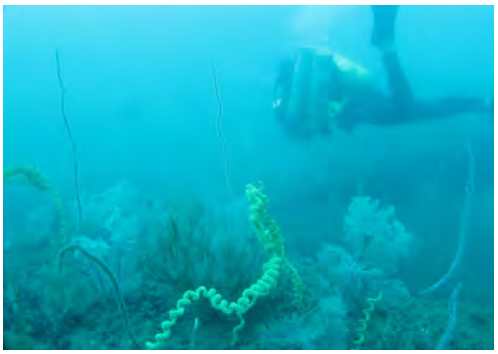


Macrolife

The macro life here is stunning! With over 120 species of Ophistobranch recorded, 7 of them yet undescribed, this is definitely 'Nudi heaven'. On our top Nudibranch inshore reef, scientific data shows an abundance of 1.2 Nudibranchs per 2 square metres. That equates to a lot of sightings in a single dive!

Manti shrimps, octopus, pipe fish, gobies and many other little creatures are also often seen on the reef tops or hiding in a hole.

Wreck



The wreck of the Klipfontein is a big draw for the technically minded diver. A 10500 ton, 160 metre long ship, lying in 53 metres of water, she is more than your average wreck. Brindlebass, mantas and large schools of fish are often seen here, and there is plenty of opportunity for penetration. At 6 km from our launch, she is on the doorstep, and as no one else dives her, exclusive.

Please note that diving the Klipfontein requires either previous certification in decompression diving, or as part of an IANTD Advanced Nitrox, or higher level course, conducted here in Zavora.

How can I get more information?

Further information is available on the Zavora Marine Lab. website: www.zavoralab.com, or by writing to info@zavoralab.com. You can also visit our Blog www.zavora.blogspot.com.

Join us on facebook, our username is Zavora Marine Lab.!