

Project Update: June 2022

Objectives:

1. We will help communities answer the question of whether or not their conservation measures are effective – **partially achieved**
eDNA and BRUV field work has been conducted by a South African MSc student (Ms Jamila Janna) in 2021. Samples have been collected, results are being analysed and should be communicated by the end of the year. The student is in regular contact with the Inhambane Bay community and results will be communicated by her and Mozambican collaborators.
2. We will understand a community-based conservation method which I believe will contribute towards a more successful Southern African conservation model compared to current methods which often lead to community-conservation conflict - **partially achieved**
A Mozambican PhD student (Ms Juliana Come) is currently working on this as part of her research. She has conducted her first round of field work in 2021 and potentially will hold another round of workshops this year. Her results and insights are already informing the research and activities of South African initiatives.
3. We will contribute towards setting a standard for incorporating indigenous knowledge into research. This involves methods, acknowledgement, and co-authorship, and effective, respectful communication between stakeholders, particularly between scientists and community members – **fully achieved**
Two papers are already in the process of being finalised for submission. Both of these account for including Indigenous knowledge and community collaborators are co—authors on both of these. One more paper will be written up for publication at the end of 2022. Furthermore, this project has inspired a manuscript which is currently under review, highlighting the shortcomings of South African coastal conservation models. Co- authors include Ms Janna and Dr Peer.
4. We hope to achieve a few postgraduate degrees as there is potential (and interest) from several South African and Mozambican students to work on this project – **partially achieved**
Two Hons degrees have been awarded, one MSc is being written up and will be submitted in November 2022, one PhD is undergoing, and the aim is to have it submitted by November 2023. Unfortunately, two student funding initiatives were unsuccessful South Africa’s main postgraduate funding body (the NRF) is experiencing several budget cuts.
5. Skills development for postgrad researchers as they will be learning eDNA and Baited Remote Underwater Video field, lab and statistical methods. They will also be learning several social science methodologies which is important for research and conservation in developing countries.
Ms Janna has developed skills in the BRUV and eDNA fields, both in terms of field work, laboratory processing, data processing and statistical analyses. Both she and Ms Come have gained field experience in terms of social methods. Ms Janna's work will be presented at two regional conferences this

year. She plans to use these skills to continue in the field of science communication. With her technical and academic expertise along with her knowledge of Indigenous languages and communication skills as a filmmaker, she will have a wide reach in southern African countries (including Kenya, Tanzania, South Africa, and Mozambique). Ms Come has also gained experience in statistical analyses of social data.

Outcomes:

- Four postgraduate degrees – upskilling postgraduate students is perhaps the most important achievement. All students are South African or Mozambican and two students originate from some of the South African and Mozambican communities with whom we work. To have internationally and academically recognised professionals with both links to the community and expertise in the relevant fields is significant.
- Two peer-reviewed published papers in preparation – these will highlight the work we've done but also an alternative method for ecological fieldwork in Southern Africa. These papers detail an approach that we fully support. This approach is not only scientifically-sound, but also more inclusive of all necessary stakeholders.
- The ongoing relationship between researchers and community collaborators which is developing into at least two joint future projects.

Difficulties:

Lack of student funding remains a challenge. However, the work continued, and we were still able to reach four students in total.

Involvement with communities:

A representative and the president of the Community Council of Fishers in Inhambane is an important part of this project. He has helped to shape research questions, collect samples, guide us through field sites, and will have input on our research papers. Local community members also collaborate through Ocean Revolution, a Mozambican NGO that has changed management in the last couple of years. Under new local management, our community collaborators assist with sample

Continuation:

Yes! A funding proposal has already been presented to continue this work in a South African context based on the success of the Mozambican chapter. Collaborations with the community will continue in a science communication capacity. Ms Janna is planning to produce a film highlighting the conservation and traditional livelihoods of Indigenous communities in Inhambane. We have also connected community collaborators with a filmmaking company which hopes to facilitate dive labs for local Mozambican marine scientists. The community collaborators own and run a dive centre and they will benefit financially from this partnership. They will also benefit by having more of an opportunity to engage with local scientists. The eDNA

monitoring is ongoing with local partners, although we will no longer regularly conduct fieldwork, we continue to maintain contact and communication surrounding science and conservation issues in the bay.

Sharing results:

Conference presentations – Ms Janna is attending the South African Marine Science Symposium (June 2022). Ms Janna and Ms Come will attend the Western Indian

Ocean Marine Science Symposium (October 2022). Dr Peer and Ms Come plan to attend the Mangrove and Macrobenthos Meeting (July 2023).

Peer-reviewed publications - three peer-reviewed papers are being prepared for submission. These papers will detail our methodology as well as the results outlining answers to objectives 1,2, and 3.

A documentary – Ms Janna is submitting a proposal to produce a short documentary including conservation initiatives and traditional livelihoods of three coastal communities in South Africa, Mozambique and Kenya. This project will form a significant part of this documentary as she highlights the potential for community-based management drawing on successful examples.

Next Steps:

- To bring the lessons learnt into marine science and management in South Africa. Coastal communities are largely neglected in South African marine science and conservation and a few insights from the Inhambane chapter will be useful to help bridge that gap. We have co-authored a manuscript highlighting the gap and potential for change. It is currently under review.
- To support students as they move into related but new fields. Although Ms Janna is still writing up, she is already planning to take a huge next step using her scientific and filmmaking skills. She will do this alongside the Inhambane Bay communities and link them with collaborators in Kenya. This is exactly what we hoped to achieve and to see her take charge of this next step is particularly encouraging! Ms Come is still busy with her research and will be supported as she completes her postgrad journey. She is already taking lead authorship on manuscripts that are currently being prepared.
- To maintain research and advisory links with the Inhambane Bay collaborators. There is already a new collaboration underway (as mentioned above).

Promotional Materials:

We have just printed a conference poster for the South African Marine Science Symposium (20-24 June 2022). It includes the Rufford logo and funders will be thanked verbally during oral presentations. Rufford will also be acknowledged in published papers and the relevant student theses.

Team:

Dr Nasreen Peer (South African researcher - Stellenbosch University) – coordinated and led this project, co-designed the project, conducted fieldwork, conducted data analyses, supervised postgraduate students, written and revised manuscripts.

Dr Nelson Miranda (South African Researcher - Stellenbosch University) - co-designed the project, co-supervised Hons students, conducted fieldwork, conducted data analyses, written and revised manuscripts.

Ms Juliana Come (Mozambican researcher - Nelson Mandela University) – provided translation skills, assisted with social research study design, conducted fieldwork, conducted data analyses, written and revised manuscripts, currently working towards her PhD.

Mr Luciano Nhamussua (Mozambican community leader - CCP Inhambane) – Co-designed the study, coordinated meetings, events and conservation patrols, conducted fieldwork, acted as a guide, translator, and collaborator for the overall Inhambane Bay mangrove Study and maintained permission from communities to continue work in the area. He has input on manuscripts.

Mr Antonio Sacramento de Cabral (Mozambican conservation collaborator – Ocean Revolution). Mr Cabral took over leadership of Ocean Revolution in 2020 and under his leadership it has become a completely locally run operation. He has had input into research design, assists with field work logistics and data collection, and has provided input to manuscripts.

Mr Horacio Madivadua (Mozambican conservation collaborator – Ocean Revolution) – assisted with study design, conducted fieldwork, provides input to manuscripts.

Mr Jonas Chambo (Mozambican researcher – Ocean Revolution) – Mr Chambo was one of the potential Mozambican postgrads. He is from the Inhambane Bay community and was hoping to pursue an MSc. However, funding was not available. Nevertheless, he has since joined Ocean Revolution and assisted with this project by conducting fieldwork. He will also be invited to contribute to and co-author the 3rd manuscript.

Dr Daniel Zacarias (Mozambican Researcher - University Eduardo Mondlane) – Maintained permits to work in the area from the relevant government institution, provided insight and translators for interviews, provided academic input and input to manuscripts.

Dr Bernadette Snow (South African researcher - Nelson Mandela University) – provided input to the social research study design, co-supervised Ms Come.

Dr Celia Macamo (Mozambican researcher - University Eduardo Mondlane) – conducted fieldwork, revised manuscripts.

Prof. Sophie von der Heyden (South African researcher – Stellenbosch University) – assisted with eDNA project design, assisted with data analyses, co-supervised Ms

Janna.

Other:

We are extremely grateful for the funding. This has been an insightful project and is being carried forward in many different directions. As you will see from the budget, we did not have the usual team of four. For this reason, we used some of the funds to get Ms Janna to a local conference which takes place between 20-24 June 2022 (South African Marine Science Symposium).