

Mac Robertson Postgraduate Travel Scholarship Report

About me

My name is Jennifer Keeping and I am from Bournemouth, UK. I am currently in my 2nd year of PhD study within the School of Biodiversity, One Health, and Veterinary Medicine at the University of Glasgow. My doctoral research is concerned with the threats and habitat use of stingrays in southern Mozambique. This is a continuation of my MSc thesis which was also conducted at the University of Glasgow. I am an avid SCUBA diver obsessed with the ocean, and my particular interest lies in the elusive and most endangered aquatic species and the habitats they occupy. I was awarded the MacRobertson Travel Scholarship in 2022 for a 12-week research visit to the James Cook University in Queensland, Australia. I went on this trip in May to July of 2023.

Why did I apply for the Travel Scholarship?

I applied for the travel scholarship to enhance the collaboration between myself and my supervisory team with the Fish and Fisheries Laboratory (F&F) at James Cook University and the SCUBA diving network of QLD. The F&F is world renowned for marine biological research, and James Cook University is frequently voted as one of the top universities in the world to study Marine Biology. The lab head, Dr. Andrew Chin, and I have been in contact for several years through a mutual friend (Dr. Simon Pierce, also a renowned marine biologist). An extremely rare, elusive and likely very ecologically important stingray species, the smalleye stingray (*Megatrygon microps*), is known to occur in only 2 diving spots in the world. These are in Tofo, Mozambique (where I am based for my doctoral research) and on only a few diving locations in Queensland Australia. Dr. Andrew Chin has always shown great interest in advancing our knowledge of this particular species and being aware of my work already on this species in Mozambique, Dr. Chin was extremely keen to be a part of my QLD networking plan. Both my supervisory team and the F&F lab were extremely keen to enforce collaboration between our research team in the University of Glasgow and James Cook University in the common interest of this rare and elusive stingray species.

Details of the visit

I arrived in Australia in May 2023 and spent the first week in Sydney. Being my first ever trip to the country, I felt obligated to see the sights of the city (**Figure 1**).



Figure 1. Sydney opera house and Sydney Harbour Bridge from a cruise boat during the Vivid Sydney Light Festival.

After this I took a flight up to Townsville, the homeplace of James Cook University F&F lab. I was welcomed by Dr. Andrew Chin and his laboratory team and was given a study space for the duration of my visit in Townsville. I met with the Masters, PhD and post-Doc students in the team in weekly meetings to discuss our current research, challenges, opportunities and any other topical news from the world of marine research. Dr. Andrew Chin helped in arranging meetings with managers at the Great Barrier Reef Marine Park Authority, who were extremely interested to help in not only starting the research for the smalleye stingray in Queensland, but employing the research techniques (e.g., remote camera traps, stable isotope analysis, movement telemetry, fisheries overlap etc.) that I have been using in Mozambique to further their understanding of the vast sand and reef ecosystem of the Great Barrier Reef (GBR). The managers agreed to help in the 'call to action' among their ranger and fisher communities to try and gain more insight in to the locations the smalleye stingray had been seen.

During this time, I of course also went to dive on the shipwreck, the SS Yongala, which is accessible by way of the 'Yongala Divers' dive shop located only 1hr30 south from Townsville (**Figure 2 & Figure 3**). Being the first person in the world to write a thesis reporting on the smalleye stingray for my MSc, I knew how unlikely it was to see a smalleye stingray for myself during my visit. I have been in contact with this particular dive centre since 2016, when I began my work on the species. I met the dive operators that see this ginormous and captivating stingray during their routine commercial dive trips. I managed to express my gratitude for their contribution of footage so far, and leave behind marketing and promotional materials for staff and future customers of the wreck to send my any more footage they may get into the future. After all these years of knowing of this other smalleye stingray haven, finally, I was able to see the wreck for myself. And, I am absolutely astonished to report, a huge mature female smalleye stingray came to the wreck during my very first trip to it (**Figure 4**).



Figure 2. The SS Yongala Drive at sunset, the road that leads to the beach, where 20km offshore, lays the shipwreck known for small eye stingray sightings.

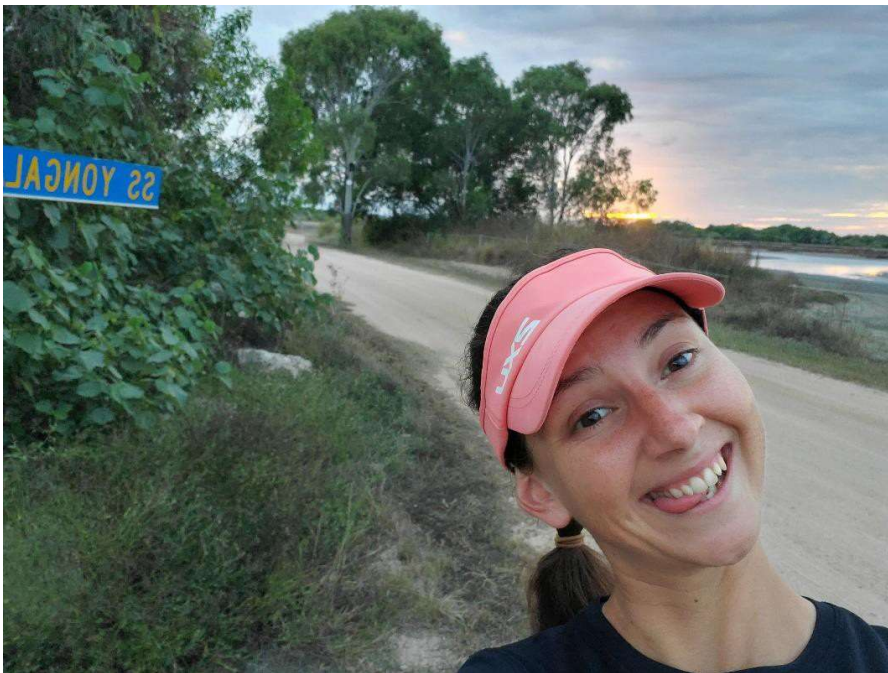


Figure 3. On the way to dive on the SS Yongala Drive in the small beach town, Alva, 1hr30 south from Townsville.



Figure 4. The 2.4m disc width female smalleye stingray at the SS Yongala shipwreck. 'Piggybacking' are 5 pink whiprays (*Pateobatis fai*) and overhead, also following the smalleye stingray, are over 100 cobia fish (*Rachycentron canadum*).

After 4 incredible weeks having meetings, SCUBA diving and exploring in Townsville (**Figure 5**), I flew to Brisbane. Here I spent three days diving on the absolutely mind-blowing Wolf Rock just 4km offshore from Rainbow Beach (a popular backpacker and snorkelling destination). This diving rock however, just a 4km from the snorkelling reefs, lies a year-round aggregation of the ragged-tooth sharks. As incredible (and endangered) as this species are, I was there for only one species. The smalleye stingray had also been seen on this one rock earlier in 2023 (**Figure 6**). Wolf Rock is located over 900km south of the SS Yongala, and with a sighting this far south from their 'usual' sighting spot, I was keen to meet the owners and dive guides of this dive centre (Wolf Rock Divers) and leave them with marketing materials for any future sightings of the smalleye stingray that they may have.

After an incredible trip networking with the crew at Wolf Rock Divers, it was time for the final phase of the trip – Cairns. I supplemented with my own funds a trip on a 4-day liveaboard diving trip to the outer reefs, far north and seamounts of the northern GBR. I was able to meet the dive guides and tour operators that had a combined experience of over 5 decades of diving in the outer GBR. I asked them if they had ever seen a smalleye stingray. They had not. However, I was informed of an interesting aboriginal story, which describes how a stingray played an instrumental part in how the GBR Ribbon Reef structures were formed (**Figure 7**)

'The story starts with Gunyah going out to sea. And he saw a glitter in the water, which he thought was a fish. And when he speared it, he actually speared our sacred fish, the stingray. So, the fish got angry and it started to rise up. And with its wings, it made the sea rough, and it caused the sea to rise, revealing the reef.'

Gudju Gudju (Seith) Fourmile, 2015

Impact of the Scholarship

Since 2016 I have been trying to establish connections with the research, management, diving and ranger communities in Queensland to try to understand simply where the small eye stingray has been spotted, so to be able to make comparative research of this Data Deficient huge stingray between Mozambique and QLD. Without the MacRobertson Travel scholarship, I would not have been able to get to Australia to strengthen these collaborations, whilst also be able to meet and engage additional tour operators, rangers and GBR park managers in research for the small eye stingray. Not only networking, but with the footage I gained from the trip (both from my own photos and additional people I met along the way that had seen a small eye stingray) I am now able to, in collaboration with the F&F lab, write the first official publication to put this highly ecologically important and charismatic stingray on the map for Queensland Australia.

Personally, I have grown as a marine biologist. Marine biology as a field of research is absolutely a demonstration of the Aristotle adage 'the more you know, the more you realise you don't know'. As such, marine biologists are required to wear many hats to complete their work; public communicator, innovator, writer, researcher, statistician, technician, presenter, engineer, networker and explorer to name a few. I feel that I have certainly levelled up in many and more of these skills during this 12-week trip and I cannot thank MacRobertson Travel Scholarship enough for providing this opportunity to me, and all future students lucky enough to receive the grant.



Figure 5. As an avid runner, I ran up all 3 mountains of Townsville and complete the Cairns Marathon during my visit. This is taken from the highest peak, Castle Hill, which overlooks the main promenade of Townsville (“The Strand”) and Magnetic Island.



Figure 6. The 2.5m disc width female smalleye stingray with large shark bite from Wolf Rock, Rainbow Beach, QLD



Figure 7. The monument on Cairns waterfront depicting the aboriginal story of how a stingray created the Great Barrier Reef.