JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

Expedition/Project/ Conference Title:	Coral reef restoration internship with Marine Conservation Society Seychelles (MCSS)
Travel Dates:	June 9th, 2024 – August 12th, 2024
Location:	Beau Vallon, Seychelles
Group member(s):	Carmen Law
Aims:	1) Gain work experience 2) Expand knowledge of coral reef restoration and marine conservation work

Photography consent form attached: *(please refer to your award letter)*

☒ Yes
☐ No

OUTCOME (a minimum of 500 words):-

The Marine Conservation Society Seychelles (MCSS) is a leading NGO focused on protecting marine life, specifically through coral reef restoration and seasonal whale shark and turtle monitoring programs. Over the course of my 2-month internship with MCSS, I gained hands-on experience in coral nursery maintenance and monitoring, which allowed me to develop crucial skills in problem-solving, teamwork, and communication. My internship was divided between two key projects: the Beau Vallon Coral Restoration and Stewardship (BVCRS) project and the UNDP-funded Coral Reef Restoration Project at St. Anne Marine National Park (MNP). Both projects aim to restore coral reefs, and my work involved nursery stocking and maintenance, guest engagement, and marine education at partnered resorts.

MCSS's coral restoration process follows three primary stages: fragmentation, propagation, and translocation. Coral fragments are collected from donor reefs, with colonies selected based on their resilience to past bleaching events and nearby human activity. We also collected Corals of Opportunity (COP), healthy coral fragments that had broken off due to human disturbances, storms, or wave action. This fragmentation stage is key, as fragmenting coral encourages faster growth. However, smaller fragments become more vulnerable to predators and macroalgae overgrowth therefore they require close monitoring. Once collected, the fragments are either plugged into marine cement and grown in onshore nurseries under controlled conditions or suspended from rope nurseries offshore. Onshore nurseries provide a stable environment for smaller coral fragments,

Figure 1: In-situ rope nursery at Hilton Seychelles Northolme Resort & Spa.

while offshore rope nurseries require regular cleaning to remove competing macroalgae that can impede coral growth. I assisted in cleaning these nurseries and used monthly monitoring protocols to assess the health and growth of coral fragments, noting important parameters such as the percentage of live tissue, and coral colour. We took photos of nurseries and translocated sites with scalebars and used ImageJ software to measure coral growth of each fragment. After fragments reach a certain size (10cm-15cm) in the nurseries, they are translocated to degraded reefs. We used steel rebars and spider frames to stabilize coral fragments on the reef, particularly in areas where reef structure was severely damaged. Spider frames also help enhance the reef's complexity, providing additional habitat for marine life. Post-translocation monitoring is critical, as coral colonies are still prone to the same risks of predation by Drupella snails and algae buildup.

Figure 2: Cleaning in-situ nursery, removing macroalgae on ropes, and coral fragments at Hilton Seychelles Northolme Resort & Spa.

Figure 3: Monitoring in-situ nursery coral fragments by scoring health condition and colour at STORY Seychelles Resort.

Figure 4: Attaching a buoy and setting up a new rope nursery.

Figure 5: Ex-situ (onshore) coral nursery at Fisherman's Cove Resort.

Figure 6: Leading a snorkel tour of nearby reef and coral nurseries for resort guests.

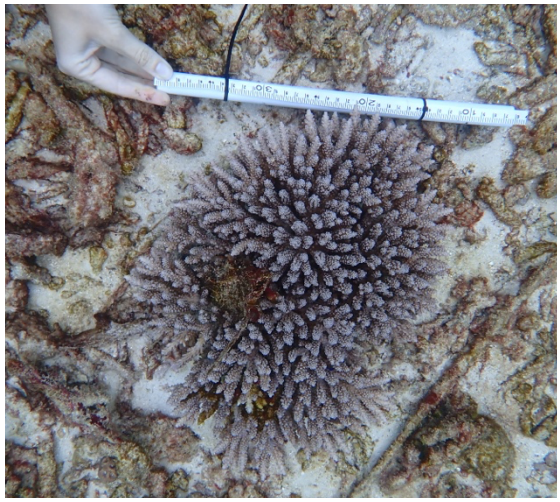

Figure 7: Photo taken of translocated coral colony with scalebar to monitor on ImageJ.

I was also involved in snorkel tours and assisting in educational outreach activities with local students. Engaging resort guests and the local community in these efforts is essential for raising awareness about the importance of coral reefs and marine conservation. During these tours, I discussed the different stages of coral restoration, answered questions, and encouraged safe snorkelling practices. Public education plays a vital role in fostering support for conservation efforts, especially in places like the Seychelles, where marine ecosystems are integral to local livelihoods.

Monitoring coral fragments during my internship provided valuable insights into the resilience of different coral species, particularly in during a global bleaching event. While some coral fragments showed signs of bleaching, most remained resilient or only exhibited slight paling. Coral fragments grown at the St. Anne MNP generally exhibited better resilience compared to those at Beau Vallon, suggesting that site conditions play a significant role. However, challenges such as macroalgae overgrowth and Drupella snail predation persisted, particularly in the rope nurseries and translocation sites. My experience also highlighted the challenges of managing coral nurseries and translocation sites, particularly at St. Anne MNP, where unauthorized boat anchoring can be an issue despite protocols for no reef-anchoring in the park. This issue was also prominent at other places like Baie Ternay Marine National Park. Boats can damage both nurseries and translocated reefs, further complicating coral restoration efforts. I also had the opportunity to speak with a marine biologist from Nature Seychelles working on Praslin Island, and an environmental consultant who previously worked for MCSS on the whale shark monitoring program. This expanded my network and allowed me to learn more about other coral restoration initiatives and key seasonal marine monitoring projects in Seychelles.

Overall, the internship significantly contributed to both my personal and professional development. I improved my problem-solving skills through working on coral nurseries with time constraints during scuba dives. Engaging with resort guests and the local community deepened my appreciation for marine education and improved my communication skills. The experience deepened my appreciation for coral reef ecosystems and my interests in marine conservation. While speaking to locals at a dive shop about their views on marine conservation, it has inspired me to explore the topic of conservation science and addressing issues on a social front. I extend my gratitude to the James Rennie Bequest and supervisor for making this internship possible.