

JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

**Expedition/Project/
Conference Title:** Operation Wallacea Mexico Trip

Travel Dates: 11/06/2022-25/07/2022

Location: Xpujil and Akumal, Mexico

Group member(s): Eva Dowding

Aims: To experience a variety of biodiversity survey techniques, explore a new ecosystem, meet new people and scientists and experience a new culture.

Photography consent form attached: Yes
(please refer to your award letter) No

OUTCOME (a minimum of 500 words):-

The first half of my trip was spent in the Selva Maya, in the South-East of Mexico. The project was designed to investigate the effect of the changing climate and increasingly unpredictable rainy season on the forest's inhabitants. We camped in the jungle, and I was a research assistant on a variety of terrestrial biodiversity surveys, and also helped with some data processing and completed a lecture series on the ecosystem. The second half was on the coast, where I snorkelled and helped on turtle behaviour transects and seagrass quadrats, of which there are hundreds in the bay. The aim of this was to establish how tourism is affecting the turtles after restrictions were put in place to reduce harm, and to establish how this related to seagrass grazing in the bay. I completed a coral reef ecology course.

Terrestrial

The south of the Yucatan peninsula has a porous limestone bedrock which makes surface water very rare, and the water table is so low that the only water bodies are aguadas: fragile ponds that rely on an impermeable layer of rotting organic matter to trap water, and are only maintained by regular and heavy rains. Recently the rainy season has come late or never, and many of the aguadas have dried up. This has an impact on the life within the jungle, and many appear to migrate south to wetter climes. The project mapped the habitat over transects through the jungle and related that information to how far it was from an aguada and the animals that live in it. I also helped on a smaller project to establish an easy, quick and low-cost method that could be repeated across national parks in the Selva Maya, which spans many countries, to see how animals migrate as a response to the changing conditions.

I experienced and helped with a variety of terrestrial survey techniques during my 3 weeks in the Selva Maya. Mist netting for bats was a particular highlight. I learnt about how to select the best sites for nets, diagonally along avenues for insectivorous bats to hunt freely, and how to set them up best to avoid harming bats. While research assistants didn't handle the bats, we did watch and learn about how to safely untangle them from the nets, and how to identify and measure different species. The level of biodiversity even within that group

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was extraordinary, and my enthusiasm for bats was developed a lot, particularly when the bat team found a Great False Vampire Bat, *Vampyrum spectrum*, which hadn't been found by their team before.

I took part in early morning bird mist netting, as well as opportunistic birdwatching and audio surveys, which developed my interest in birds significantly. I set up nets and identified species, though again I only handled birds with assistance while releasing them. I particularly enjoyed recording bird calls of species we had spotted in order to build up a collection of Yucatan calls. I found this experience incredibly valuable, and the opportunity to discuss getting more experience in ornithology with scientists will help me further my career.

Other surveys I had experience of involved spotting mammal tracks on transects, herpetofauna transects, habitat surveys, butterfly trapping and primate surveys. Primate surveys were a unique opportunity to record monkey behaviour in the largest spider monkey population in Mexico.

I also completed a lecture series on the Selva Maya ecosystem. Particularly interesting to me was the lingering effect of Maya agroforestry on today's jungle. Still, fruit producing trees are concentrated near ruin sites, of which there are hundreds, and they feed populations of monkeys. Poisonous trees such as *Metopium brownie*, the Chechen tree, are found further from ruins but are still kept for their high-quality honey production. This farming enriched the environment, and people in the area still produce honey using that knowledge.

Marine

Akumal Bay is a Caribbean coral reef and seagrass ecosystem that hosts a marvellous diversity of species. My time in Akumal Bay consisted of a week of a Coral Reef Ecology course, which upon completion enabled me to help collect data on turtle reaction to tourists, seagrass variation across the bay, reef fish surveys and benthic surveys. I mainly helped with turtle and seagrass surveys, and although my attempts to learn to Scuba dive were not successful, I felt I gained valuable experience and was useful snorkelling as I was able to survey the high reefs.

The reef ecology course consisted of a week of lectures, along with daily snorkelling trips to learn to identify fish and invertebrates as well as to learn survey techniques in the high reefs. I learned to identify most of the fish species I encountered, and to discern male, female and juvenile individuals.

Seagrass surveys were a good opportunity not just to learn benthic survey techniques and seagrass species, but to understand the volume of data required on such large studies. The 1 m² quadrat was placed hundreds of times across the bay to get a detailed picture of turtle grazing. Similarly, the many turtle transects were taken at multiple times of the day to see how different times affect both tourist numbers and turtle numbers.

This trip was a good opportunity to see how surveys are conducted across a broad selection of different animals and habitats, to learn new techniques, and to experience surveys such as spider monkey and turtle surveys which were very interesting. I learnt a lot about Yucatan ecosystems, both marine and terrestrial, and gained insight into study design. Meeting new people both local and from across the world was fantastic, and Mexico was an incredible country to visit.