JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

Expedition/Project/ Conference Title: Operation Wallacea Expedition to Mexico

Travel Dates: 13/06/2025 – 16/07/2025.

Location: Calakmul Biosphere Reserve | Akumal, Mexico

Group member(s): Anna Grieve

Aims:

1) Advance my knowledge of ecosystems and fauna in neotropical and marine environments
2) Gain experience in conducting a broad range of ecological surveying techniques
3) Enhance my career development by gaining an insight into ecological fieldwork and conservation.

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

☐ Yes
☒ No

OUTCOME (a minimum of 500 words):-

Between 16th June – 13th July, I undertook a 4-week expedition to Mexico as a Research Assistant with Operation Wallacea. The first half of my expedition was spent in the Calakmul Biosphere Reserve where I stayed in two different camps within the reserve.

In the first week I completed a jungle ecology course in which I participated in surveys collecting data on herpetofauna, large mammals, birds, bats, butterflies, and habitat plots. Through these surveys I learned a range of sampling techniques including mist netting, patch occupancy sampling, and visual encounter surveys along line transects. Working alongside experts in each survey provided me with not only practical training but also valuable opportunities to network with conservation scientists across different zoological specialisations and to receive advice on building a career in the field. As well as participating in surveys, I attended daily lectures that deepened my understanding of the impacts of climate change on the reserve and the science and objectives behind each survey. These covered topics such as the importance of the Ancient Maya and Aguadas (bodies of water) on the ecosystem, as well as the behaviour and ecology of the reserve's fauna and flora. These lectures highlighted the crucial role of biodiversity monitoring in influencing governments to implement conservation strategies, and gave me an appreciation for applied conservation management.

In the second week of my expedition, based at the Homiguero campsite, I was able to choose which surveys to join. Having developed a particular fascination with bats, I focussed on joining the bat mist netting surveys. I thoroughly enjoyed assisting with the processing of the bats, learning how to determine age, sex and species. By the end of the week I was even able to identify some species without the aid of an identification guide. I also continued to join other surveys, where I quickly recognised how substantially my scientific processing skills had developed in a short time. For example, I initially found the large mammal survey very challenging as it required full concentration and attention to detail to identify tracks. However, when I repeated the survey later, my observational skills had noticeably improved,

and I was able to detect tracks and other signs far more easily. Since returning to the UK, I have continued practicing these skills by spotting deer tracks during walks in local forests.

The second half of my expedition was spent at Operation Wallacea's marine site at Akumal Bay. In the first week, I completed my PADI Open Water Diver Qualification which involved open water dives in the coral reefs around the bay. Having never explored a coral reef before, I was amazed at the extraordinary diversity of both benthic and pelagic species that inhabit this ecosystem. I was particularly intrigued by the interactions between different groups of fish and their environment, such as the behaviour of schools of damselfish circling certain patches of coral. Evening lectures again provided further context, covering topics such as fish families found in the reefs, the relationship between turtles and seagrass, and the impact of the climate crisis on the Mesoamerican reef system.

After achieving my PADI qualification, I spent the final week of my expedition applying my diving skills to learn how to conduct surveys underwater. For example, I developed my buoyancy control while learning how to lay quadrats for benthic composition surveys without damaging fragile coral. I also contributed to a citizen science initiative, CoralWatch, by collecting data on coral health using standardised colour charts. This data was uploaded to the global database to help track coral bleaching. In addition, we partnered with CEA (Akumal Ecological Centre), a non-profit organisation that supports ecosystem management in Akumal and its surrounding areas, and took part in a coral cleaning dive. We visited one of CEA's coral nurseries and helped clean algae from coral fragments to maintain their health prior to being planted in the reef. This gave me a first-hand insight into coral reef restoration strategies and allowed me to directly support non-profit organisations with their vital conservation efforts.

This expedition has been an invaluable experience for both my personal and professional development. I gained a wide range of field skills in both terrestrial and marine ecosystems, developed my confidence in species identification, and learned new survey techniques that I can apply in future courses, internships, and career opportunities. The chance to work alongside conservation scientists and volunteers has been truly inspiring and has deepened my ambition to pursue a career in ecological monitoring and ecosystem management. I am very grateful for the financial support from the James Rennie Bequest, and for the opportunity to contribute to meaningful conservation projects run by Operation Wallacea.