For the James Rennie committee

Report on a base-line survey of the insect fauna on the island of Danjugan in the Philippines, July 1998

By Erica Dholoo, January 1999

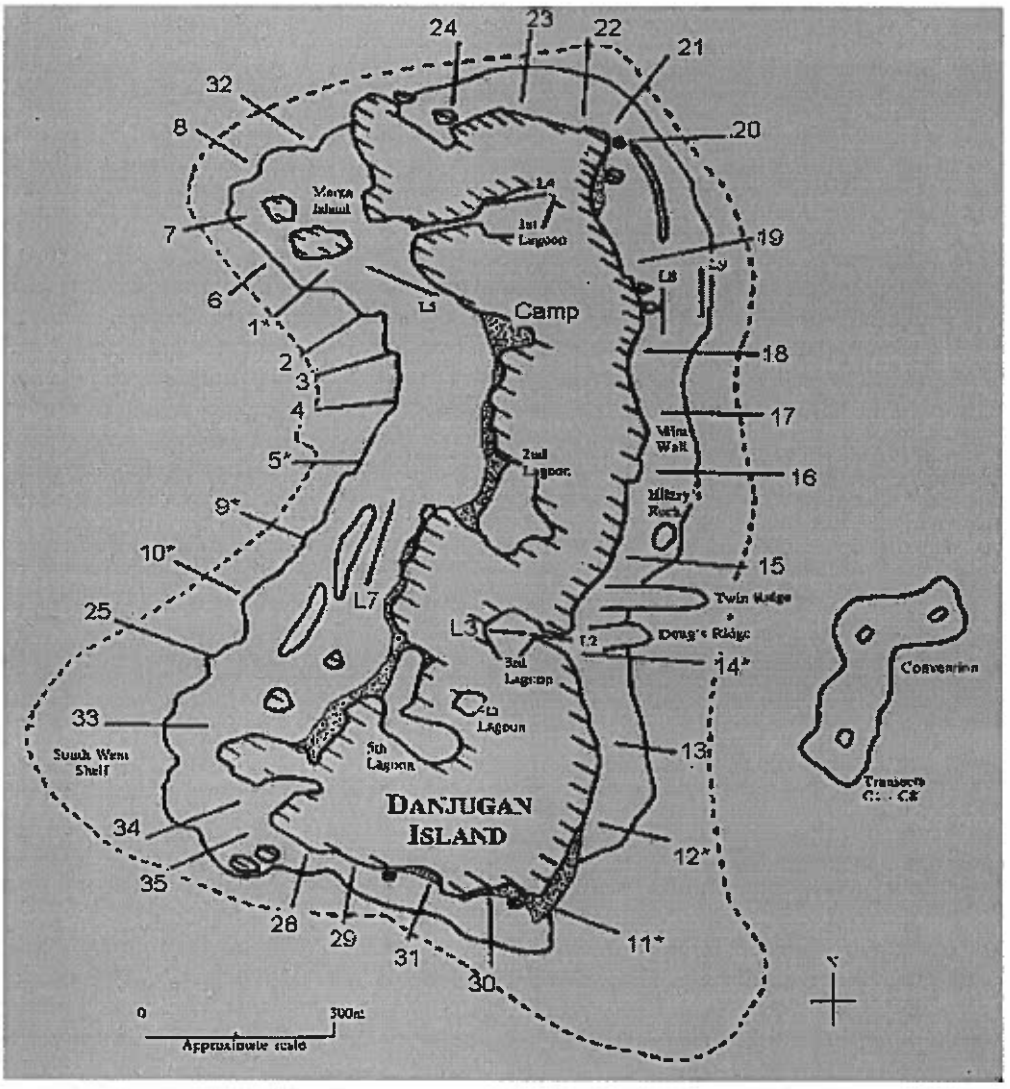
Introduction

In July 1998 I went to the Philippines to carry out a baseline survey of the insect fauna on the island of Danjugan over four weeks. I joined a Coral Cay Conservation expedition to do this, for practical reasons such as safety, food and accommodation, and because Coral Cay are working in collaboration with the Gerry Ledesma, the owner of Danjugan and founder of Philippine Reef and Rainforest Foundation. In this way I would be able to stay on Danjugan and carry out my project in the spare time I had from Coral Cay work. This work involved being trained to Advanced Level of SCUBA diving in the first week. In the second week we received intense training in the identification of a large number of fish, corals and other invertebrates. Throughout this time we were to dive twice a day to practise identifying and, after qualifying, to survey the various reefs in the area.

Danjugan is a small island, 1.5km by 0.5km, just off the west coast of Negros in the Sulu Sea. On a terrestrial level, Gerry Ledesma has had the flora and reptile and mammal (particularly bats) fauna surveyed but no entomological surveying has yet been carried out. Therefore it was logical that any entomological project would have to be a base-line survey, to get a preliminary idea of what's there. Based on information about the island, I proposed to conduct a base-line insect survey, of the different vegetation and topographical regions on the island. These included coastal, forested and lagoon/mangrove regions.

Map of Danjugan

Numbers refer to Coral Cay transect sites.



Methods

Dr Derek Cosens helped me devise a methodology plan that would be feasible to carry out by myself and with basic equipment. I planned to have about five study sites, each one representing the distinct vegetation or topographical regions on the island.
The study sites were as follows:

A: Dense rainforest on incline on west side of island. Hard clay, jagged limestone rocks and leaf litter on ground.
B: Lagoon (3rd) on east side of island, with mangrove vegetation. Clay, limestone rock and leaf litter on ground.
C: Clearing in forest where path runs across island. Shrub layer vegetation – grass, small trees, bushes. Mud and gravel from path on ground.
D: Coastal vegetation. Narrow beach coming out from vertical limestone rocks. Trees on beach, overhanging trees and shrub vegetation. Sand and dead coral on ground.

At each study site I proposed to use six sampling methods:

1. Pitfall traps to catch nocturnal, motile insects.
2. Direct ground sampling from quadrats.
3. Beating insects out of the shrub layer and catching them on a beating tray.
4. Direct sampling from tree trunks.
5. Shaking insects out of the canopy layer and catching them on a beating tray.
6. Direct sampling from any detritus.

Samples were to be placed in 70% alcohol and rough numbers to be recorded. Once I got out into the field and started collecting I found that the methodology was difficult to stick to and I had to modify my methods slightly. Pitfall traps did not prove to be much of a success, firstly because of equipment limitations and secondly because they were very hard to lay at certain sites due to the jagged rocky ground. The traps that I did lay did not give me any results. In the dense forest sites very few insects were collected from the shrub beating and canopy shaking and I found that direct pootering from accessible vegetation was a better way of collecting insects from the shrub layer. This proved to be the case for all of the sites.

Results

Unfortunately I encountered difficulties with bringing the insects out of the country as, although Coral Cay had said they would sort out permission, Gerry Ledesma had not been informed about my project prior to my arrival. When he found out he was concerned that I might be found out and stopped under a law designed to prevent bioprospecting and that this might be problematic for the Foundation. As far as I know, Mr. Ledesma still has the insects. He mentioned that he would pass them on to the Philippine National Museum for identification but I have heard no more of this. However, a relative of his kindly took photographs with a macro lens of nearly every insect. I have the photographs and identification is possible to some degree and this is still under way.

At this stage I can make a very brief general summary from my observations.
I usually only found ants and crickets on the ground and only ants on tree trunks. Many different insects, particularly hemipterans and beetles, were found on shrub layer vegetation, especially at sites C and D. A more detailed account of results will be available in the future.

Conclusion

This project was a valuable learning experience for me. I had not expected the number of difficulties I would encounter and as a result I do not feel that it went very well. The most serious problem I had was due to Coral Cay. When I booked the four week expedition it was understood that the whole of this time would be spent on Danjugan. Nearer the time of my departure I found out that they had set up a new expedition site on mainland Negros, about five miles south of Danjugan. It was less than a week before leaving, when I went to the office in person, that I found out I would be obliged to be at this new camp for my dive and science training, i.e. the first 2½ weeks. Once I was there I tried talking to people in various positions but in the end was confronted with hostility and false accusations.

It was fairly chaotic at the new camp and due to this set-up, the area and the time constraints imposed by the intense training, it was not really possible to carry out any useful work at this camp. In retrospect, on Danjugan it would still have been quite difficult to find time to start surveying properly in the first couple of weeks, due to the intensity of the training. However this time could have been well spent modifying my proposed methodology and becoming acclimatised to and familiar with the island. I paid an extra £325 to extend my expedition for a week and so in the end had 2½ weeks on Danjugan. It was very difficult to perform my proposed project properly in this time as there were other complications that I had not anticipated, such as climate and other restrictions.

The daily routine was quite busy, starting from breakfast at 6:30am. There are 12 hours of daylight, from about 6am to 6pm. So I had less free time than I had expected to go ahead with my project work. Also, it was a Coral Cay policy that to venture from camp there must be at least two people present. So although I sometimes sat out dives to have time to go collecting, I would often be restricted by not being able to find someone who had the time or inclination to come with me and wait while I sampled. I had most difficulty sampling in the forest (Site A) as it was quite a challenge to get very far and collect easily on the steep rocky terrain, and I was surprised by the low number of insects that I found there. It would seem that I was not adequately equipped to deal with this region in particular.

I also found that the more stifling climate on the island took some getting used to and somewhat hindered my sampling techniques. Another climatic factor that presented an unexpected problem was the rain. At that time of year it is rainy season in the Philippines and after the rain I found that there are hardly any insects to be found. So it would sometimes be a bit of a race against the rain clouds. Needless to say, it wasn't easy to collect at the same times each day and overall the constancy of my sampling left something to be desired, mainly due to the time limitation. I also did not entirely stick to my proposed methodology, as mentioned above, and ended up collecting however and whatever I could.

Other minor problems included loss of specimens during transfer between containers, by disintegration in alcohol and by occasional interference from rats chewing through sample tubes. A few specimens were too small and mangled to photograph. I was surprised by how small most things I caught were. I was told of some huge 'monsters' that had been spotted at the dining table, attracted by the light and human activity. I did collect some insects from camp but this site could have been concentrated on a lot more. An attractant UV light would have obviously greatly improved collection. I observed a very simple way of collecting bugs from the top of coconut trees. The locals at Campomanes climb to the top of the trees and string containers made from bamboo around the coconut fruit, which they slash thus allowing the sap to drip into the bamboo container, which is then used to make coconut wine. A great many insects, especially wasps, end up drowning in this sweet sap. I had a couple of these containers made but never managed to get them to the top of the trees.

So it would seem that the major hindrance to my project was the lack of time. For the project to have been a greater success more time was needed to refine my methods and allow for the unforeseen complications. More collecting apparatus would have also been useful, particularly for reaching niches out of my immediate access.

Overall, I don't think that mixing this project with a Coral Cay expedition worked particularly well. I learnt a great deal from the work with Coral Cay and it was a brilliant experience but I feel that the impending project prevented me from getting as much out of it as I would have otherwise and vice versa. The contact I had with the locals on the community-linked project at Campomanes led me to realise that I might be better suited to people-linked work. Needless to say, I did learn a great deal from the whole experience and am very grateful for having had this opportunity.

Acknowledgements

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I am also very grateful to Dr Derek Cosens for his assistance and guidance in planning the project, for supplying me with equipment and for his encouragement when I felt things had gone wrong.

I would like to thank Alasdair Harris for his assistance with collecting and Mr Edgardo Lizares for taking the time to photograph all of my insects.

N.B. I shall be giving a presentation for the Geological Society on 22nd February.