

Report on travel for Expeditions Committee

Funding was provided by the QMUL Expeditions Committee to assist with the fieldwork cost of the third year project, which has been renamed to: The temperature dependence of soil respiration and its implications on climate change. The project involves soil incubation experiments and required peat, as the medium from which the temperature dependence of soil could be observed.

There are very few undisturbed peatlands remaining in the U.K, and Borth Bog (Cors Fochno) is one of these few remaining ecosystems. It is a lowland raised peat bog (N52° 31' 0, W4° 1' 60) and is part of the Dyfi estuary reserve. It contains the Ynylas dune system and an extensive salt marsh. A substantial amount of the bog was taken for agricultural purposes yet the main dome remains the largest near natural peat bog in an estuarine context within the UK.

Prior to the fieldwork, permission was obtained from Mike Bailey, site manager of Cors Fochno. Mike Bailey gave the permission for me and Vesile to obtain the peat samples, but only from the outskirts of the main peat dome. Though I had hoped to collect the samples from the main dome which would have been of higher quality, I believe the samples obtained were adequate for this study.

The original plans for travel were changed due to difficulties in arranging appropriate accommodation and so the fieldwork was carried out between the 22nd to the 25th of June. The equipment required for the fieldwork was collected from the QMUL Geography laboratories and then the journey was made to Cors Fochno by train from Euston Station, the journey lasted five hours. Once we reached Cors Fochno, we made way to our new accommodation, the Glenmore Bed and Breakfast.

Once we settled into our accommodation, I contacted Mike Bailey to let him know of our arrival, who then suggested that we should go to the site and familiarize ourselves with the area. Mike Bailey picked us up from our accommodation and took us to the site, the journey to the site lasted 15-20 minutes by car.

The site was locked off by gates and required us to jump two gates to get onto the sampling area. Once we were at the sampling area, we realised the site was shared between docile ponies and cows, which I had not covered in the FRA but as these animals had a docile nature, they gave us no trouble. On the site, Mike Bailey, showed us the exact locations of where good samples could be obtained and introduced us to the various moss species which covered the region as mosses play an important role in peat ecosystems. The site was mostly dominated by *Sphagnum papillosum* and some other species were also present.

Once he completed his brief on the site, Mike Bailey also told us the history of the area, after this he drove us back to our accommodation. On the journey back to the B and B, he pointed out routes for our journey as the following day we were going to return to the site on foot. We then returned to our accommodation and rested for the night.

The following day began at 8.00 AM, we had our breakfast and while sharing a conversation with the B and B manager, he offered to take us to the site. This may be because he was concerned about how two young girls were going to carry the heavy equipment and trek down to the site. We were ecstatic for this offer and gratefully accepted.

Once he dropped us onto the site, he gave his mobile number, in case of emergencies and so we could call him when we're done with the fieldwork but as a geographer I had to decline to his once again generous offer, as real fieldwork requires physical hardship and we weren't going to deny this opportunity to ourselves.

We got onto the site with great difficulty this time round, as we had to not only get ourselves over the gates, but all of our equipment as well. This required good teamwork between me and Vesile and was challenging as well as fun.

I then decided that I will only collect samples of peat from patches which were dominated by *Sphagnum papillosum*, as I hoped that these patches will share similar geochemistry. The top 15 cm of the vegetation layer was initially removed using a shovel, and then a peat corer was pushed through the peat layer.

Here, however, we encountered a great problem, as when the peat corer was pushed down into the peat, no samples were being collected up the column of corer, but instead the samples were getting compressed. After many attempts at repeating this procedure with no success, we came to the conclusion that the diameter of the corer was too small and therefore we had to improvise our sampling technique.

We decided to no longer take peat cores, but instead take peat samples at five different locations within the sampling area. This improvised method involved once again removing the vegetation layer with a shovel and simply placing the peat samples into bags. These bags were then tightly sealed, retaining as little air as possible. This procedure was carried out at five different points within the sampling region which then concluded the fieldwork. I had expected the fieldwork to be carried out over two days, on the 23rd and the 24th but was surprised to have finished the work in one day.

We then secured our samples, peat cores and shovels into our backpacks and commenced on our return journey back to the B and B. Once again the most difficult part of this journey was probably jumping over the two fences with all of the equipment. The journey involved walking along the main roads, which had no pavement and so we had to carefully walk in a single file as many of the vehicles ignored the speed limits. The walk lasted just over an hour; we then reached our accommodation and rested for the evening.

As we had completed our fieldwork in one day, we now had a day to spare, and so decided to visit Aberystwyth. We went on a boat ride and explored the coastline, then went onto visit the Aberystwyth Cliff Railway, from which we had an amazing panoramic view of Aberystwyth and the surrounding West Wales landscape.

On 25th we returned to London and on the 26th the peat samples were put into the cold store, until it was needed for the laboratory incubations. Currently all laboratory work

has been completed and a second draft of the dissertation is currently underway, with the deadline fast approaching on the 11th of January. The data obtained from the laboratory incubations will be used to produce a numerical model of the decomposition of soil, and will be a significant proportion of the dissertation.

I am grateful to the Expeditions Committee for providing me with the funds to be able to carry out the fieldwork and complete my dissertation. Doing this third year project had made me realise that I wish to pursue further education in numerical modelling once I graduate from QMUL and the help from the Expeditions Committee has enlightened this opportunity to me.