

## Expedition Fund – Orkney Islands, September 2014

For my Independent Geographical Study (IGS) I am investigating the past environmental conditions of the Orkney Islands using Ostracod and Foraminifera fossils. In order to study the past environments of the islands I was given a core taken from the Bay of Firth, just off Mainland Orkney. In this core I analysed the Ostracod and Foraminifera fossils found in the core samples with the analysis of these different types of microorganisms used to determine and calculate environmental changes over periods of time. They helped to picture when warmer and colder climates existed in Orkney during the Holocene Period (around the last 11,500 years). This investigation was done within the Micromorphology centre at Queen Mary but in order to get a feel of the environment in Orkney first hand it was believed it would be significant to visit the islands to see the geomorphology of the land and the geological features that exist today. While in Orkney it was also deemed beneficial to visit some of the archaeological sites there to gain a better understanding of the context of the project overall and collect present-day microorganisms in the Bay of Firth to provide contrast and further analysis to the investigation.

In September 2014 I visited Orkney for 5 days staying in the small village of Holm on the south of the Mainland. On the first day in Orkney a short car journey was taken to Hoxa, 10 miles away on the island of South Ronaldsay. During this journey, the natural and historic wonders of these parts of the islands could be taken in – including the Blockships of Scapa Flow and the Churchill Barriers from World War II. After arriving in Hoxa, freshwater samples were taken from the lochs in the area, where ostracods and foraminifera were collected for future analysis.



Fig.1: Blockship in Scapa Flow



Fig.2: Freshwater Loch, Hoxa

On the second day the archaeological sites of Skara Brae and the Standing Stones of Stenness were visited. These sites are collectively known as the Neolithic Heart of Orkney (along with Maeshowe and the Ring of Brodgar which were visited later on in the trip) due to their importance to the Neolithic history of Britain and their status as a UNESCO World Heritage Site. These visits helped to picture the past environment through human activity on the islands. Skara Brae is known for having the best preserved Neolithic settlements in Northern Europe with these Neolithic houses aged between 2500-3180 BC while the Standing Stones of Stenness is a henge thought to be the oldest in Britain.



After these archaeological excursions, a trip to Grimbister was taken in order to collect modern day samples of Ostracod and Foraminifera from the Bay of Firth. A sufficient amount of samples were taken from the Bay of Firth for analysis, which would help show contrast between the microorganisms that lived in this Bay from the past and present. The evening of the second day was spent in Kirkwall, known as the capital of Orkney. The evening consisted of exploring this town, which was the busiest on the islands, visiting the harbour and local attractions.

On the third day, further Ostracod and Foraminifera samples were taken, this time from the Loch of Stenness and Loch of Harray on the west of the Mainland. These lochs were freshwater and brackish water lochs, which would show a contrast to the microorganisms found in Orkney. Once a sufficient amount of samples were collected, a trip was taken to Waulkmill Bay to take in the natural beauty of the area. Here at the tidal bay on the southwest of Mainland, I was able to do some seal watching which was fascinating to observe. A short trip was then taken to the Ring of Brodgar within the Neolithic Heart of Orkney. The Ring of Brodgar is the largest henge within the islands and the third largest in all of Britain of Neolithic age, which along with the other archaeological monuments has helped to piece the timeline of human activity on the islands.



Fig.4: Waulkmill Bay

With enough samples taken over the first three days of the trip, an excursion into Kirkwall was taken during the morning of the fourth day, to explore the town and

visit the local attractions. These attractions included the cathedral of St. Magnus in the centre of the town, and the main street full of shops and local cafes. It was interesting to see such a small town that was also the hub for the rest of the islands.



Fig.5: Kirkwall Harbour

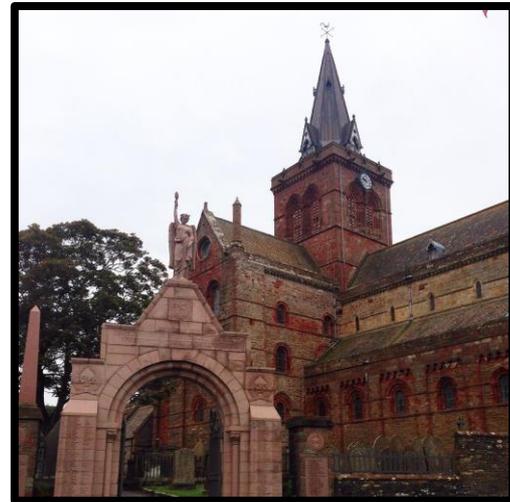


Fig.6: St. Magnus Cathedral, Kirkwall

Maeshowe was the final archaeological site to visit that was part of the Neolithic Heart of Orkney. A visit to this chambered cairn helped understand how Neolithic people lived on the Orkneys, but what added interest to this site was the fact it had been broken into during the 12<sup>th</sup> Century by Vikings which could be seen from inscriptions inside the burial site. Yesnaby, on the far west of the Mainland was also visited on the fourth day. A visit here was deemed of geographic interest thanks to the red sandstone cliffs and 115 ft. high sea stack, which has survived the rough waves of the Atlantic Ocean. This sea stack, known as Yesnaby Castle, isn't the largest within the islands, which is the Old Man of Hoy. However, this famous site within the Orkneys was on the island of Hoy, which wasn't reachable without a ferry ride.



Fig.7: Maeshowe



Fig.8: Yesnaby Castle

On the final day, a trip to the northwestern tip of the island was taken to visit the Brough of Birsay, an uninhabited tidal island. Only available on foot during low tide, the trip to the Brough of Birsay was planned in advance in order to see the Pictish and Norse settlements that existed there. It was interesting to see an archaeological site on the islands that wasn't of Neolithic age - Pictish settlements here didn't come about until the 7<sup>th</sup> century. On this island a Norse church could be seen overlying a Pictish graveyard which was a nice contrast to the Neolithic settlements already observed on the island.



Fig.9: The Norse Church, Birsay

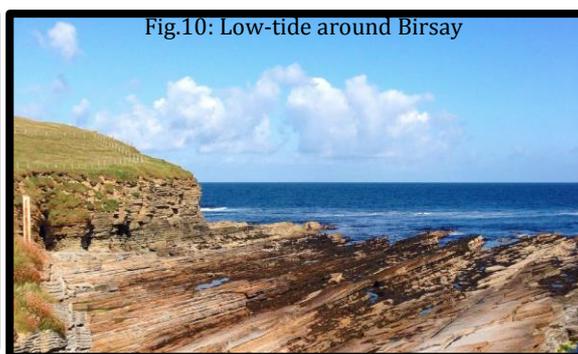


Fig.10: Low-tide around Birsay

Following this visit, a final excursion was taken to Stromness. Stromness is the second main town within the Orkney islands, also on Mainland. It contrasted with Kirkwall as the town was more antiquated and picturesque, due to its sparser population and quaint houses. The village town was also a seaport so it was interesting to see huge ships docked on the harbour.



Fig.11: Stromness

Overall I thoroughly enjoyed my trip to the Orkney Islands. It is a part of Britain I don't think I would ever have thought to visit due to its remote location. However, the excursions around the island and first hand collection of microorganisms went much better than expected. Enough samples were collected within the first three days that could be examined for future analysis. Each day after exploring the islands, the samples collected were examined under a microscope and the Ostracods and Foraminifera within these samples were extracted for later analysis. It was fascinating to see living versions of the specimens I have been analysing the fossilised forms of under a microscope at Queen Mary. I am grateful for receiving

the Expedition Fuding as I believe the trip has contributed massively to my academic progress. The first hand experience I have gained from visiting Orkney and collecting samples has given me an insight into the kind of work that I am interested in as well as providing a wider background to my dissertation studies.

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