

Expedition in Loch Leven, Scotland, UK

The expedition to Loch Leven I was part of looked into two questions about the lake. It was focused on confirming the presence and distribution of an ostracod – a microscopic crustacean – named *Cytherissa lacustris*. This ostracod is well distributed throughout North America and parts of Europe, but to date it was known to occur in only two sites in the UK - Loch Assynt in north-west Scotland, and Semerwater in north England. Study of 19th century ostracod collections by Professor Horne, the expedition leader, suggested that *C. lacustris* might be found at Loch Leven near Kinross in central Scotland. Additionally, the expedition assisted the dissertation work by Rene Lee, the other undergraduate member of the expedition. His work focused on exploring the ostracod assemblage at Loch Leven – showing exactly what species live there, and where within the lake they can be found.



Figure 1: Location of Loch Leven in central Scotland

The expedition started when myself and Rene met for the ~7h train ride to Kinross, where Professor Horne would meet us to take us to our chosen accommodation – a modest, shared room at the local Travelodge. It might have been basic, but it suited our needs well. It was close to the lake, it had just enough desk space for two microscopes, and it was quiet. It would do for the fourday duration of our stay.

Each day started much the same. We woke up early, not long after dawn. We started by some reconnaissance of the area around the lake, finding suitable wading locations. Then, we collected samples. On the first time this was from a boat, dredging as we went, and stopping by an isolated island in the middle of the lake to take some wading samples – essentially just dragging our hand nets through the sediment at the bottom of the lake, while standing up to our waists in water. On the following days, we did not have the boat, but instead we accessed the lake from the shore in a few different locations.

After collecting these ostracod samples, we did some preliminary analysis back at our hotel room, using microscopes borrowed from the university. We picked samples from the material we collected and looked through them, attempting to identify ostracod species as we went – particularly trying to

find any *Cytherissa lacustris* present. We made note of all the species we found, fixed the sample in ethanol for future use – then moved on to the next one. After three hours or so of this per day it was time to call it. Much more than that and the microscope tends to really tire out your eyes. Upon our return Rene would go through the material in detail as he worked on his dissertation, but for our purposes right there, a quick overview of the ostracod fauna in the lake was enough to make some early conclusions.



Figure 2: Rene (left) and myself (right) wading in to collect ostracod samples

The results were promising pretty much straight away. Not only did the lake show a rich diversity of ostracod fauna, we have indeed found *C. lacustris* amongst the ostracods there. Just like that, the number of confirmed locations for that species in the UK increased from 2 to 3. Not only that, we found this ostracod not only in deep, cold waters where it's normally thought to be living, but also in relatively shallow waters – Loch Leven is largely quite shallow, maybe 4 meters in depth, with a deep indentation in the very centre of it. Not only have we confirmed the presence of this species at Loch Leven, we seem to have learned something about its ecology that was not obvious before.

Overall, I feel the expedition was a success and a fantastic learning opportunity. Not only did I get to be involved in real science, producing real results with some significance to the study of ostracods, being involved in that process was tremendously helpful in developing my skills as a scientist. Working as part of this small group, I had to quickly learn how to sample ostracods from a lake environment, and I had to rapidly improve my middling microscope and ostracod identification skills. I learned something about the way ecological sampling is done – the sheer workload involved, its limitations, and the way it informs further scholarship. Even the process of getting to Loch Leven was informative, as having to write a funding application was a glimpse into the kind of process that academics go through routinely.



Figure 3: On the boat, usually used for transporting sheep, with the Loch Leven National Reserve contacts who kindly took us out on the lake

The funds received, £250, were pretty much exactly what I needed, and allowed me to immerse myself in this learning experience without having to be concerned about its cost, which might have been prohibitive otherwise, especially as I had to miss work to take part. I am deeply thankful for having the rare opportunity to enjoy the view of science in progress from a front seat.