

SCAR fellowship report 2011/12

Granted Fellow

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Host

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Duration

November 2012-January 2013 (12 weeks stay for fieldwork at Dry Valleys, Antarctica)

Work conducted

Several microbial mats samples were collected during the Antarctic expedition, under the umbrella of MCM-LTER project. The priority was to collect benthic microbial mat samples from Lake Fryxell (Taylor Valley). Scuba divers from New Zealand who were working with the MCM-LTER carried out this task. Three different benthic samples were collected. The first one corresponded to the benthic fraction over the halocline; the second one was collected from below the halocline and the third one was collected deep below the euphotic zone. The main objective, corresponding to these samples, was to correlate the water-column conditions above every sample with the diversity of eukaryotic population living within the different microbial mats, as they were settled under different environmental conditions within the lake environment.

As the MCM-LTER project has been monitoring the physical-chemical conditions of Lake Fryxell for more than 25 years, we carried out analyses of 18S rRNA gene diversity by high throughput methodologies (454 Roche pyrosequencing) to determine the eukaryotic diversity along the benthic gradient described above. Also, Cryo-SEM pictures and image analysis, stable isotopic signatures, and natural abundances of N and C have been carried out on the benthic samples and along the water column and ice-bound sediments.

Moreover, some other samples were collected from different microbial mats along Taylor Valley, with different objectives that will be included in other works under a continental perspective about ecology of microbial mats in polar regions.

Financial Statement

Items	Cost
Travel and accommodation	1870
Analyses fees	4510
Laboratory expendable material	2830
Cost (€)	9210

Acknowledgments

I would like to thank the SCAR for awarding me in this unique opportunity. I owe many thanks to all the MCM-LTER personnel and collaborators, especially to Amy Chiuchiolo who made the fieldwork achievable. Also, special mention deserves the help provided by Tyler Mackey, Ian Hawes and Anne D. Jungblut in collecting the samples from the bottom of Lake Fryxell. Moreover, I would like to recognise the important role of technicians, contractors and operators who made feasible the research activities in deep-field camps of Antarctica season after season.