

Report: Antarctic Science Bursary 2010 to Chester Sands:

Integration of morphological and molecular techniques to facilitate accurate identification of Southern Ocean brittlestars

The funding sort for from Antarctic Science was to develop techniques to streamline identification and provide more information that can be used for identification, systematics and biogeography. Taxonomist Rafael Martin – Ledo (Spain) visited in August 2010 and identified over 1000 individual brittlestars over a two week period. During this time he highlighted a number of systematic issues that were not able to be addressed with morphotaxonomy alone. A further 2000+ individuals were shipped to Rafael for identification in December and identifications were completed in April. During this time individual brittlestars were photographed using a Leica M65 dissecting microscope, and two tissue samples were taken, one which was used for “DNA Barcoding”, and a second to be used for more future genomic work. A genomic DNA library was constructed and sequenced using pyrosequencing (454, ROCHE) yielding 60,000 sequences. We are currently analysing this dataset to determine the usefulness of these techniques (see below).

The outcomes of this project so far: we have used the initial success of the project to secure support from CAML and Barcode of Life Database which has significantly increased the amount of sequence data we could afford. This in turn provided us with a strong case for securing further funding, demonstrated with a successful bid for a SynTax grant, which will assist us in further developing fast and cost effective techniques for species identification, systematics and population genetics. Finally the amount of data we have accumulated interested those managing SCAR-MarBIN and we have received financial support from them to database our raw data in a form to submit to them.

We are now preparing a manuscript to submit to Antarctic Science later this year describing the Ophiuroid fauna of the Scotia Arc, the West Antarctic Peninsula and the Amundsen Sea, as collected by three British Antarctic Survey cruises, and compared to other information we have been able to gather from the literature.