

Into the Deep

Summer 2015 Student Intern Rafaela Mendes

Some of my work this summer has been in the Royal BC Museum Invertebrate Collection to catalogue, database, and organize a new collection of specimens donated by Dr Verena Tunnicliffe, of the University of Victoria. The donation included 47 different species of animals. That represents 108 new lots of specimens added to the Royal BC Museum Invertebrate Collection. All animals were collected at the *Endeavour Hydrothermal Vents*, located 400 kilometres southwest of Vancouver Island and 2200 metres deep into the Pacific Ocean. The specimens are rather unique in that they are animals that live under extreme environmental conditions.

Hydrothermal (hot water) vents are areas located at mid-ocean ridges and are filled with life. These mid-ocean ridges are formed at areas of active volcanic activity, where the tectonic plates are moving away from each other. At these spreading areas, the magma upwells and heats the cold seawater up to 400° Celsius.

These temperatures generate chemical reactions that result in *minerals precipitation*. Minerals precipitation is when an overload of minerals is released from water and settles at the bottom of the ocean. The minerals are used by chemosynthetic bacteria. These are bacteria that use minerals as sources of energy. The bacteria form the base of a complex local food chain. Hydrothermal vents are therefore deep sea biological hotspots supported by bacteria.

I used the Museum database to add all the new information about these previously donated specimens. I also put the animal samples into new, appropriate jars and vials filled with ethanol, so the collection can be preserved for many years. Maintaining such a collection is very important to science. People from all over the world now have access to this collection and can use it for different studies and research purposes.

“This project was exciting as it allowed me to be in touch with unique undersea creatures that are new to science and to my own knowledge. I was very happy and thankful to have had the opportunity to work with such ocean creatures that are so different from the ones I have the opportunity to study in Brazil.”



Rafaela Mendes with some of the specimens she worked on at the Royal BC Museum for the Brazilian scholarship program *Science without Borders*. Credit: RBCM