

## **Understanding the energy flow of hydrothermal vent ecosystem in North Fiji Basin using stable isotope ratios and lipid biomarkers**

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To understand the energy flow and source of the hydrothermal vent fauna in North Fiji Basin, most of vent fauna, including bacterial mats, were collected from an active vent field using 'ROPOS' ROV from November to December 2016. Specimens were analyzed for stable isotopes (carbon, nitrogen, and sulfur) and lipid biomarkers. In this vent field, symbiont-bearing invertebrates (primarily vent mussel, *Bathymodiolus* sp., vent snail, *Ifremeria* sp., and vent shrimp, *Nautilocaris* sp.) were accounted for a vast majority of the biomass of the vent fauna. Vent crabs (*Austinograea* sp., etc) and fish (*Actinopterygii* sp.), considering as a top consumer, were also appeared. As we expected, all vent fauna contain sulfur-oxidizing bacteria origin-fatty acids (16:1 $\omega$ 7 & 18:1 $\omega$ 7), which could be originated from endogenic and/or exogenic bacteria. Stable isotope ratios of vent fauna were discriminated by their spatial niche, mobility, and diet type within a vent site. The result suggested that the mobility of fauna make them to access more diverse food sources. Therefore, the conjoint approaches (stable isotope ratios and lipid biomarkers) could provide more comprehensive information on the energy flow and source in the hydrothermal vent ecosystem in North Fiji Basin.