

Health and reproductive ecology of *Bathymodiolus brevior* from hydrothermal vent communities of the Lau Basin

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The Lau Basin, part of the western Pacific back-arc spreading system, hosts hydrothermal vent communities that differ from other deep-sea vent sites. One of the three dominant mollusk species is the mussel *Bathymodiolus brevior*, to date found only at the North Fiji and Lau hydrothermal vents. Mussels of various sizes were collected from four of the major Lau vent sites to learn more about the reproductive ecology of this vent species. Mussels were visually sexed and staged, condition indices (CI=ash free dry weight/shell volume) were calculated as an indicator of mussel health, and histological analysis was used to confirm sex and reproductive stage, as well as determine any periodicity of development. Comparisons were made between sites to determine if there are any patterns in physiological or reproductive variability in mussels collected from different microhabitats within the Lau Basin. Preliminary analysis shows differences with health and reproductive characteristics decreasing from north to south along the Lau Basin. Variation between sites may be correlated to changes in temperature and chemistry; analysis of reproductive and physiological trends in relation to various microhabitat characteristics will improve our knowledge of the life history of invertebrates from deep-sea hydrothermal vents and provide valuable information regarding the natural variation within the Lau Basin vent community.

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