

## Propagation of suspended matter from aquacultures as traced by stable C and N isotope ratios of bivalves

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Recently there is growing concern about the impact of densely-deployed aquacultures on coastal marine ecosystems in the Philippines. As suspension-feeding bivalves are expected to reflect local food sources, their effectiveness as an environmental indicator were examined by analyzing stable carbon and nitrogen isotope ratios of bivalves living in aquaculture and neighboring seagrass areas. As a whole, the  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  of bivalves collected in the seagrass areas ranged from -13.1 to -11.0 and from +4.0 to +6.6, respectively, but in seagrass area where water mass from aquaculture area passed through typically lower values (-18.9 ~ -16.1 and +2.7 ~ +5.2, respectively) were observed, and they were the lowest in the aquaculture area (-24.4 ~ -19.8 and +3.4 ~ +4.3, respectively). It suggests that bivalves mainly fed on sinking particles, and presumably also seagrass-derived particles in seagrass areas. Higher C/N ratio was observed at sites where impact of aquaculture was larger. Although the interspecies differences and food selectivity etc. may affect the variability of the bivalve  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  to some extent, these results demonstrated that stable isotope ratios of bivalves could be used as an effective indicator to evaluate propagation areas and actual effects of suspended matter resulting from anthropogenic source on ecosystems.

Keywords: suspension-feeding bivalve, seagrass, aquaculture, stable carbon and nitrogen isotope ratios