

Stable isotope analysis of surf clam (*Pseudocardium sachalinense*) in Hamanaka Town, Hokkaido, and the connection between Kiritappu Wetland and coastal waters

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The suspension-feeding benthos surf clam *Pseudocardium sachalinense*, living on phytoplankton, benthic microalgae and detritus, is one of the most important marine products in Hamanaka Town, Hokkaido. We measured stable carbon and nitrogen isotope ratios ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) and carbon-nitrogen (C/N) ratios of surf clam (adductor muscle and stomach contents), oceanic particulate organic matters (POM), oceanic sediments, riverine POM and soil as well as physical and chemical parameters such as temperature and salinity, chlorophyll-a and nutrients in April through September, 2015 in coastal areas in Hamanaka Town, Hokkaido. We also examined the food sources that support surf clam, the possible connection between wetland and coastal waters, and also spatial and seasonal variation. Additionally, taste comparing and free amino acid analysis were conducted for further investigating taste differences of surf clam in different fishing areas. The results show that taste of surf clam was different among fishing areas, which might be caused by the difference in free amino acid content. Our results also show that the isotope and C/N values of surf clam and oceanic organic matters were significantly different from those of riverine organic matters, and that there was no significant difference among the fishing areas. This means that land-derived organic matter is not direct food source of surf clam and land-derived organic matter does not affect the coastal environment. Also, benthic microalgae and epiphytes are considered to be the major food sources of surf clam in all sampling seasons since they have close isotope and C/N values to surf clam. The overall results imply that excess inflow of land-derived organic matter may harm surf clam and the coastal environment, suggesting the importance of the importance of the role of the wetland and the conservation.

Keywords: surf clam, carbon, nitrogen, isotope, organic matter, wetland