Carbon and nitrogen isotope ratios and diets of *Corbicula japonica* and *Corbicula leana* in the Harai River (a branch river of the Kushida River, Mie Prefecture, central Japan) with rich riparian forests

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In order to eventually reveal factors controlling distribution and abundance of the bivalve *Unionidae* group in the Harai River, a branch of the Kushida River, Mie Prefecture, central Japan, the bivalve *Corbicula* as alternatives were analyzed for carbon and nitrogen isotope ratios. The Harai River is withdrawn from a dam constructed at the Kushida River, and has rich riparian forests. Samples collection was performed 4 times in 2016 and 2017, at 4 localities; *C. leana* from the two upstream and midstream sites (Sites 1 and 11) and *C. japonica* from the two estuary sites (Sites 15 and 16). Particulate organic matter (POM) in river water was also collected from 5 sites including those for *Corbicula* collections. We obtained 54 and 58 isotopic data for *C. leana* and for *C. japonica*, respectively, and 20 for POM. While carbon and nitrogen isotope ratios of *Corbicula* range widely from -26.3 to -22.2 per mil and from 5.6 to 10.8 per mil, respectively, samples from each site cluster closely (Figure). Seasonal variation is negligible, except for the *C. leana* of Site 11, compared differences between sites. Two populations of *C. leana* and one population of *C. japonica* comprise an array of negative correlation between carbon and nitrogen isotope ratios, which is parallel to the distribution of POM. Carbon and isotopic ratios of these three *Corbicula* populations are likely constrained by averaged available food sources (POM) at each site. Population of *C. japonica* from the lowermost site shows a positive correlation between carbon and nitrogen isotope ratios, implying their utilization of two end-members of POMs with distinct carbon and nitrogen isotopic ratios. *C. japonica* samples in this study was significantly lower in carbon and nitrogen isotope ratios than those reported by Kasai and Nakata (2005) (Fish. Sci. 71, 151-158), who demonstrated that terrestrial organic matter was significantly important even for *C. japonica* diet. The distinct result of this study may be explained by richness of riparian forests at Harai River, which have made *C. japonica* there further depend on terrestrial food sources. On the other hand, *C. leana* population from the uppermost site of the Harai River has heaviest carbon isotopic ratios, which could be attributed to an increase in utilization of planktons flourished in the dam.

Reference


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