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Functional trait diversity in zooplankton as a means of detecting changes in community structure and function

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Functional-trait diversity can be used as a tool to explain variation in the function and structure of communities which can then be related to ecosystem processes. Crustacean zooplankton, as marine primary consumers, occupy a central position in marine food webs, modulating the quality and quantity of energy transferred up the food chain. Environmental variation that drives changes in zooplankton structure has the potential for more widespread effects throughout the food web. Because zooplankton exhibit a wide array of functional traits, along several functional axes, it is possible to use functional-trait diversity to study the regulation of community structure and variation in function. Functional traits for all species composing the crustacean zooplankton communities in the sub-Arctic Pacific were assembled from a literature survey and applied to a 10 year time series of zooplankton samples collected on the Line-P in the North East Pacific. A subset of traits, related to body-size and other size-linked traits, ontogeny, habitat and feeding behaviours, and calculated various functional diversity indices including Functional group Richness (FRic), Functional Evenness (FEve), Functional Divergence (FDiv) and Functional Dispersion (FDis) were selected. Preliminary results of the functional diversity of the zooplankton communities on Line P and on how those traits vary between species assemblages and through time will be presented. Annual and inter-annual changes in functional diversity and their correlation with variation in oceanographic processes are also assessed.

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