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Large scale ocean connectivity and body size

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In order to better understand the role of dispersal in structuring marine small pelagic communities globally, we analyzed connectivity patterns of a broad taxonomic coverage (from bacteria to macro-zooplankton and micro-nekton), including small mesopelagic fishes (myctophids) as a function of body size and at different depths (from surface to deep ocean, 4000 m), based upon β-diversity metrics. We combined two unique data-sets: biological data on the abundance of different groups globally distributed across the oceans sampled in the same conditions during Malaspina circumnavigation expedition; and the timescales of global surface ocean connectivity. β-diversity was significantly correlated with the timescales of ocean connectivity, and in general, more strongly than with environmental distance. These results allow us to estimate the dispersal scale of each biological group and revealed that large-bodied plankton and micronekton showed shorter dispersal scales and stronger spatial patterning compared to small-bodied plankton. These findings suggest that the pelagic organism's body size is linked to its realized dispersal, and determine what species are where in the global ocean.

Keywords: Malaspina, body-size, connectivity, global, β-diversity, oceanic, pelagic

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