

Mapping marine species richness and endemism at global scales

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Understanding biodiversity at local and regional requires a global context. This talk presents the global pattern of marine species richness and endemism, including latitude and depth. We compare maps of marine species endemism across all taxa (65,000 species), and particular taxa (razor clams, amphipods, polychaetes, seagrass, jellyfish, bryozoans, fish), with a new map of marine ecosystems based on analysis of 20 environmental variables. We show how species richness increases with temperature but dips at the equator, and decreases with depth. Thirty biogeographic realms are distinguished based on species endemism, with more in coastal than offshore areas. Species richness and endemism are higher in benthic than pelagic taxa, and macro- than micro- and mega-fauna. However, we should expect individual taxa to vary from these overall patterns due to their evolutionary origins and competition with other taxa; and patterns within geographic regions to vary due to constancy of some environmental variables (e.g. temperature) and local scale habitat variation. Thus nesting of taxon and regional studies within this global context may indicate how ecological interactions have shaped the global evolution of marine biodiversity.