
Highlighting global management priorities for deep-sea diversity

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Abstract

Deep-sea benthic environments are one of the largest ecosystems on earth. They harbour huge diversity, yet no detailed plans exist to effectively undertake direct conservation management within this immense realm. We urgently need to consider priority regions for conservation in the face of increased anthropogenic activity and exploration into deep-sea environments. A fifteen-year effort in assembling databases on brittle-star and squat-lobster biodiversity in the deep-ocean has allowed us for the first time to examine the global distribution of abyssal biodiversity. It shows a pattern remarkably different from any other already discovered, whether on land or in the shallow oceans. But what are the conservation implications? Are deep-sea biodiversity hotspots adequately covered by existing marine protected areas? Are there areas of congruent shallow-water and deep-sea biodiversity? Here we present analyses to address these questions, provide a resource to assist with efforts to protect biodiversity, and reflect on the implications for large-scale conservation planning in the deep ocean. With the ongoing work to develop a legally-binding instrument on the conservation of biodiversity in areas beyond national jurisdiction, the incorporation of deep-sea benthic ecosystems into the discussion is critical.

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