Data Gap: Characterizing the biological communities on shipwrecks and hard-bottom reefs in the mesophotic zone

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Abstract

Very little is known about biological communities in the mesophotic zone. Because of methodological and access challenges, depths between 40 and 150 m deep are traditionally neglected by studies using SCUBA and ROVs alike. Nevertheless, these depths contain mesophotic corals, important fisheries, and underwater cultural heritage. Understanding mesophotic communities will better inform management of habitats and resources in this zone. In June 2022, the collaborative Data Gap team undertook an investigation in the mesophotic Gulf of Mexico. I report on the biological communities on four shipwrecks and three nearby natural hard-bottom sites. The most common invertebrates included the branching coral *Oculina tenella*, the invasive cup coral *Tubastraea coccinea*, and octocorals. Common fishes included greater amber jack, red snapper, and small reef fish species. Initial observations indicate a strong similarity in species composition between shipwrecks and natural hard-bottom sites. Rather than being dispersal-driven, species distributions in the mesophotic zone may be environmentally controlled, with species that can survive in the low-light, turbid, cold conditions being favored. Complex shipwreck structures provide habitats for species that would otherwise be rare, including the invasive cup coral. This study promises to reveal complex dynamics on mesophotic shipwrecks and contribute to the interdisciplinary field of Maritime Heritage Ecology.