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TITLE: Toward a Coordinated Global Observing System for Seagrasses and Marine Macroalgae

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ABSTRACT:

In coastal areas around the world, the dominant primary producers are benthic macrophytes, including seagrasses and macroalgae, that provide habitat structure and food for diverse and abundant populations and communities, and drive ecosystem processes. Seagrass meadows and macroalgal forests are economically central to coastal human communities, particularly in the developing world, contributing to fisheries yield, storm protection, blue carbon storage, and important cultural values. These services are threatened worldwide by human activities, with substantial areas of seagrass and kelp forests lost over the last half-century. Tracking status and trends in marine macrophyte cover and quality is an emerging priority for ocean and coastal management, but doing so has been challenged by limited coordination across the numerous efforts to monitor macrophytes, which vary widely in goals, methodologies, scales, capacity, governance approaches, and data availability. Here, we present a consensus assessment and recommendations on the current state of and opportunities for advancing global marine macrophyte observations, integrating contributions from a community of researchers with broad geographic and disciplinary expertise. The time is ripe to harmonize marine macrophyte observations by building on existing networks and identifying a core set of common metrics and approaches in sampling design, field measurements, taxonomy, governance, capacity building, and data management. A global macrophyte observation community would then be facilitated by ensuring rigorous documentation, archiving and open-access sharing of protocols and resources at all stages of workflow, from field surveys to data management, and provision of open-access data. Realizing these recommendations will produce more effective, efficient, and responsive observing, a more accurate global picture of change in macrophyte systems, and stronger international capacity for sustaining observations.

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