

CHANGE DETECTION ANALYSIS OF SEAGRASS BENTHIC COVER IN AREAS OF ACCUMULATING *SARGASSUM* IN SOUTHWESTERN PUERTO RICO

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Seagrass ecosystems play a vital role in the Caribbean, supporting biodiversity and essential ecosystem services. This study investigates the effects of increasing *Sargassum* accumulations and associated brown tides on seagrass ecosystems along the southwestern coast of Puerto Rico. The accumulation of *Sargassum* disrupts these coastal environments, impacting water quality, light availability, and oxygen levels. Our research integrates field surveys with the analysis of satellite remote-sensing data. Remote sensing provides a comprehensive view of seagrass habitats, enabling change detection and coverage area analysis over time. To achieve this, we use high-resolution sensors such as Planet Scope (Super Dove) and Maxar Worldview 2-3. These sensors have very high spectral, spatial, and radiometric resolution that allows enhanced detection of seagrass and other benthic ecosystems. This approach improves the accuracy of our findings and provides a cost-effective and efficient means of monitoring these dynamic ecosystems. Preliminary results show that *Sargassum* accumulations and decomposition have a detrimental effect on seagrass ecosystems, resulting in reduced cover and alterations in community composition from 2010 (before the *Sargassum* arrived in the Caribbean Sea) to 2023. The use of remote sensing data can inform and guide sustainable coastal conservation efforts in the face of increasing environmental challenges, such as the yearly arrival and accumulation of *Sargassum* in coastal areas of the tropical western Atlantic.