

In-situ habitat characterization of Maryland offshore wind power sites: developing a standardized technique for sampling image data sets

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Offshore wind farms are a crucial component for the improvement of renewable energy in the United States. The Bureau of Ocean Energy Management (BOEM) designated 170 km² for wind energy development in Maryland, USA. This area are located about 20 km from Ocean City, Maryland. In order to mitigate possible environmental impacts of wind turbine installation, we conducted habitat characterization of seafloor habitats and epibenthic communities in the northern Outer Continental Shelf (OCS) blocks of the Maryland wind energy area. Seven transects of 5 km length were surveyed using a towed underwater sled with downward-facing digital camera that captured 5 frames/sec, with additional small-mesh beam trawling at selected locations. We compared sampling designs using from 4 to 20% of total frames sampled either randomly or systematically at various intervals. For both methods, estimates of community diversity (Hill's N₂) stabilized with sample sizes of 150-160 frames. The results of this research have allowed us to define distinct epibenthic communities that are associated with offshore wind energy sites and to develop a sampling technique for digital images that can be applied to other research programs.