Beach erosion: Threat and adaptation measures of communities in the Tun Mustapha Park (TMP), Sabah, Malaysia

ABSTRACT

Beach erosion is among the main phenomena affecting small islands in the Coral Triangle region, particularly in the Tun Mustapha Park (TMP), Malaysia. This study was done to investigate the level of beach erosion and to determine the adaptation measures for the coastal communities to beach erosion. Field trips were carried out in May and July 2017 at seven islands (Banggi, Tiga, Balambangan, Malawali, Molleangan, Tigabu and Mandidarah) of TMP. Semi-structured interviews were conducted with 50 respondents who were the coastal inhabitants of the islands, to gain local knowledge about island beach erosion. Results indicate that beach erosion occurred during the peak of monsoon seasons and extreme events. Wind-induced high waves during the end of the year (northeast monsoon) eroded beaches, damaged houses, fishing structures and uprooted trees. Six of the islands are affected by beach erosion, whereas Mandarah island is experiencing accretion. Karakit beach is the only study site protected by seawall and beach revetment. The identified coastal adaptations to beach erosion were traditional shoreline protection by piling dead corals, sand sacks and woods on the beaches, modification and improvement to damaged building structures. Some local communities opted to move further inland and relocate to other islands or mainland Sabah to avoid the impacts of erosion. This study emphasizes the value of local knowledge shared by the coastal communities which can be incorporated with scientific baseline data for improved sustainable coastal development, protection, and management of the marine protected area.