

Oil and grease pollution in the West Coast of Sabah and water quality index for the Conservation of Marine Biota

ABSTRACT

Oil and grease (O&G) concentrations were determined on the West Coast of Sabah to identify pollution hotspots and to understand the extent of the issue. Triplicate seawater samples were collected at twenty-five stations during the northeast (November 2020 to February 2021) and southwest (July 2021 to September 2021) monsoons. QGIS software was used to create a map model, and water quality indexes were used to provide information on the status of the marine ecosystem and marine biota preservation. O&G concentrations were significantly higher ($p < 0.05$) in certain areas of the West Coast of Sabah, ranging from 0.05 ± 0.03 mg/L to 39.34 ± 1.01 mg/L. According to the Malaysian Marine Water Quality Standards, O&G concentrations in the study area were categorized into Class 3, which is directly exposed to the discharge of effluent from anthropogenic activities. Hence, ecosystems in these areas were susceptible to some degree of deterioration. This suggests a potential source of pollution that requires further investigation and remediation efforts. However, the Water Quality Index revealed that the study areas were classified into moderate, acceptable, and medium status, which were still within the acceptable limit for the conservation of marine biota. The findings underscore the need for continued research and proactive measures to minimize O&G pollution and protect ecosystems in the study area. With increased awareness of oil spills, this favorable trend is projected to endure through effective management methods and effective actions to prevent O&G pollution along the West Coast of Sabah. Oil and grease pollution have the potential to endure in the environment for extended periods, ranging from years to even decades, resulting in enduring ecological harm, and hindering the restoration of ecological systems