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Recolonization of disturbed marine benthic communities in the Mangrove ecosystem

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Statement of the Problem: Mangroves ecosystems provide benefits and offer products and services. These benefits and services include Products of Direct Economic value and Products of Natural System (intangible) unrecognized services. Mangroves are well known for their high biological productivity and their consequent importance to the nutrient budget of adjacent coastal waters. Degradation of mangrove would destabilize the economic potential and the livelihood of communities' which include services and benefits offered by the mangrove ecosystem. Loss of Mangroves in the Indus Delta may threaten the survival of the natural resources and thereby the livelihood of a large number of fishermen. A Marine Ecological Assessment and audit was undertaken by IoBM and EMC experts on a jetty development project site at PQA. The objective was to assess and audit the growth of mangroves, epipelagic fauna and benthic marine invertebrates (MBI) at the completed construction site of a recently constructed trestle at Port Qasim (PQA), where civil works were undertaken on 25 hectares.

Findings: The predominant Mangroves *Avicenna marina* was removed from the site for developmental activities. Approximately 500 mangroves saplings of *Avicenna marina* and *Rhizophora mucronata* were replanted at the two locations. The growth of mangroves, Recolonization of epipelagic fauna and benthic marine invertebrates were monitored for 12 months. The results of the study shows the mean growth height of mangroves sapling *Avicenna marina* was 119.28 cm and *Rhizophora mucronata* was 88.98 cm. *Rhizophora mucronata* shows a slower growth compared to *Avicenna marina*. Statistical T-test performed on the data collected shows that the growth of *Avicenna marina* and *Rhizophora mucronata* have a significant difference in growth ($p < 0.05$) level. The abundance of epipelagic community that comprises of crabs, mudskippers, worms, gastropods, and the interstitial fauna do not differ significantly. T-Test: Two-Sample Assuming Unequal Variances shows $p < 0.05$.

Conclusion & Significance: The Marine Benthic Invertebrates (MBI) are generally sensitive to changes in the mangrove ecosystem. The statistical analysis tool used for abundance evaluation of the disturbed mangrove ecosystem shows a significant difference. The p values calculated were lower than $p > 0.05$. The abundance and biodiversity of MBI's are good indicators to monitor the health of the coastal mangrove ecosystem.

Biography

Shahid Amjad Heads the Department of Environment and Energy Management at the Institute of Business Management (IoBM) Karachi. Dr Amjad obtained his PhD from the University of Wales (UK) in Ocean Biology. He also studied Benthic Ecosystems from the University of Oslo, Norway. Dr Amjad Served as Director General with the National Institute of Oceanography Pakistan and was an elected member of the UN International Seabed Authority Jamaica for 5 years. He has served as a visiting faculty with the University of Karachi and the NED University. He was a member of the WWF Scientific Committee, and a recipient of the Gold Medal from the Zoological Society of Pakistan. Dr Amjad imparts training programs and lectures extensively on Marine Environmental issues. He has undertaken several EIA on projects being set up coastal and offshore projects. Dr Amjad represented Pakistan in international conferences. He has over 30 research publications to his credit.

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