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Faunal Diversity Assessment in the Newly Established Left Bank of Kalu River Mouth: Implications for Ecosystem Restoration

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Abstract

Rapid biodiversity assessments are essential to understanding species density within specific sites at any given time. As part of an ecosystem assessment for site restoration, an ecosystem diversity survey was conducted on the left side of the Kalu river mouth from October 8 to 10, 2023, spanning from 7:30 a.m. to 3:00 p.m. The surveyed stretch, approximately 1.5 km in length, represents a sand dune formation resulting from the diversion of excess floodwater from the Kalu River from May 2017 during the significant flooding event. This government-led river mouth changing initiative aiming rapid floodwater discharge significantly impacted beach dynamics, leading to change of the existed beach stretch that had persisted for three decades. A new sand reclamation process, initiated soon after the immediate monsoon, has autonomously evolved into a lagoon-like environment, showcasing natural regeneration and the colonization of pioneer species. Visual observation surveys, supported by photographs and field notes, identified a total of 75 faunal species, encompassing various taxa, such as snails (5), venerida (2), reptiles (5), decapods (1), spiders (10), orthoptera (5), hemiptera (4), coleoptera (5), hymenoptera (1), diptera (7), lepidoptera (10), birds (11), fish (7), and mammals (2). An intriguing discovery in the form of *Cerberus rynchops*, commonly known as the dog-faced water snake, underscores the potential diversity of the habitat. The newly established sandy area is predominantly covered by wild cowpea (*Vigna luteola*) and Beach Morning Glory (*Ipomoea pes-caprae*), providing a conducive habitat for invertebrates. However, invasive plant species, facilitated by bird droppings and river outflow, pose a threat to the area's ecological balance. Observations reveal a significant accumulation of non-biodegradable domestic waste, including plastics, glass bottles, and aluminium cans, along the beachfront, originating from river outflow. Additionally, abandoned ghost nets, carried by ocean currents, emphasize the urgency of addressing coastal and marine pollution prevention. The study suggests the introduction of regionally available non-invasive pioneer plant varieties as a restorative approach to enhance ecosystem health. Aims to mitigate environmental threats, enhance recreational capacity, and promote aesthetic and environmental qualities for the local community and surrounding biodiversity. Continuous observations throughout the year are recommended for a comprehensive understanding of the site's evolving biodiversity.

Keywords: Faunal diversity, Ecosystem, Kaluthara coastal area, Restoration, Conservation