MSc Degree in Environmental Science

ASSESSING PLASTIC POLLUTION AND ALDFG FROM FISHERIES IN MATARA DISTRICT, SRI LANKA

A dissertation submitted

by

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ABSTRACT

Marine plastic pollution, particularly abandoned, lost, or otherwise discarded fishing gear (ALDFG) - fishing equipment that has been abandoned by fishers, accidentally lost during fishing operations, or deliberately discarded at sea - represents an escalating environmental threat with limited global data collection. This study presents a comprehensive assessment of macroplastic pollution and ALDFG along the coastal areas of the Matara District, Sri Lanka, through integrated field surveys and stakeholder consultation methods.

Marine debris accumulation was investigated at five selected beaches (Weligama, Kotuwegoda, Pathegama, Thalalla, and Dikwella) using standardized belt transect methodology. At each location, samples were collected from two sites across High, Mid, and Low Tide Zones, covering 40 m^2 areas. Collected debris was systematically categorized by source (household, fisheries, medical, and industrial waste) and material type (various plastics). Additionally, a questionnaire survey was conducted during February and March 2025 involving 200 fishing vessels, categorized by vessel type and gear configuration, to quantify the scale of ALDFG problems and identify contributory factors.

Results revealed significant spatial variation in marine debris distribution, with Weligama recording the highest contamination levels (44 items per 40 m^2) and Dikwella showing the lowest (4.5 items per 40 m^2). The questionnaire survey identified key drivers of ALDFG including inadequate waste collection facilities, limited environmental awareness among fishers, adverse weather conditions, gear conflicts between different fishing methods, and impacts from international shipping activities.

The findings demonstrate severe marine environment contamination attributable to fishery-related activities in the Matara District. This study emphasizes the urgent need for targeted mitigation strategies, enhanced stakeholder awareness programs, and comprehensive regulatory frameworks to protect this valuable marine ecosystem. The research contributes essential baseline data for evidence-based policy development and sustainable fisheries management in Sri Lankan coastal waters.