
Abandoned, Lost or Otherwise Discarded Fishing Gears (ALDFG): Hidden Killers in the Sea

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ABSTRACT

Abandoned, lost or otherwise discarded fishing gears are fishing gears/parts which are lost into water due to various reasons. These lost gears are a global concern to the marine ecosystem as they continue to capturing fishes and other aquatic organisms leading to their mortality known as *Ghost fishing*. Ghost fishing mostly occurs due to passive gears such as gillnets, trammel nets, lines and traps. As most of the fishing nets are made of synthetic, non- biodegradable materials, nets can remain active in water for several years and continue fishing even when they are lost into seas. From Indian waters also investigation were carried out by ICAR-CIFT regarding fishing gear losses and ALDFG. Those studies points towards the importance of the issue in the country as well as the need for developing mitigation measures to address the harmful impacts of ALDFG.

INTRODUCTION

Abandoned, lost or otherwise discarded fishing gear (ALDFG) are fishing gears/parts which are lost into the seas due to unfavorable weather, damages in the gear, entanglement with bottom obstacles or dragged by other fishing gears or vessels. Sometimes, fishermen may also discard damaged gears intentionally into the sea due to lack of port collection facilities for damaged nets. These ALDFG continues to capture fish even though fishers no longer have control over

those gears. About 10% of all fishing gears operated globally are lost into the sea annually (Macfaden *et al.*, 2009). ALDFG became a severe problem of concern to the ecosystem as they continue capturing fishes and non-targeted species leading to their mortality known as *Ghost fishing* (Ayaz *et al.*, 2006; Kim *et al.*, 2014). Worldwide, researchers have assessed the negative impacts of ALDFG such as injury, entanglement and mortality to marine organisms (Revill and Dunlin, 2003; Gilardi *et al.*, 2010; Reeves, 2013; Stelfox *et al.*, 2016).

Fishing gears such as gillnets, trammel nets, lines and traps mainly causes ghost fishing because once they are lost, they continue capturing fishes and marine mammals, turtles, etc. Gillnets especially made from thin nylon (polyamide) monofilament materials had greater chances to break away and are almost invisible/hidden in water and readily entangle/catch various types of organisms. About fifty years ago, fishing nets were mostly made from natural fibres such as cotton. With the introduction of synthetic, non- biodegradable material like polyamide/polyethylene for net fabrication, net will remain active in water for several years and continue fishing till the net losses it's catching efficiency and entangles/kills fishes and other aquatic organisms. The rise in fishing capacity and increasing quantity of nets taken for operation also gives more chances for gear loss. Due to the above mentioned reasons, quantum of ALDFG and associated impacts also increased substantially.



Figure 1. Retrieval of lost trap at Enayam, Tamil Nadu

ALDFG and associated ghost fishing were first brought to the notice of the world during 1970's by Pecci *et al.* (1978). Later, the problem became more serious which gained much global attention. Researches are being carried in different parts of the world on the various aspects such as removal of the lost gear from the sea, tracing the lost gear through under water survey by scuba diving or using side scan sonars, estimating gear loss through fishers perception, assessing and modelling the fishing capacity of lost nets through simulation studies and development of mitigation strategies (Humborstad *et al.*, 2003; Bilkovic *et al.*, 2014; Grimaldo, 2019; Thomas *et al.*, 2023). The pioneering study by ICAR-Central Institute of Fisheries Technology on ALDFG during 2017-18 from selected locations in India estimated an annual loss of 24.8 percent of the total weight of net used per vessel from gillnet and trammel net fisheries

(Thomas *et al.*, 2020). Focused research on ghost fishing was conducted for first time in the country during 2019 (ICAR-CIFT, 2019) and as part of this research, underwater investigations were carried with the help of scuba divers out at Enayam, Tamil Nadu and Vizhinjam, Kerala (depth range 16-32m). About 45 kg of ALDFG comprising mainly monofilament (nylon) gillnet panels followed by parts of trawl codends, pieces of long lines, ropes, damaged fish and lobster traps, and squid jigs were retrieved (Figure 1). The condition of the recovered gears showed that those gears had been lost into the sea more than a year based on observations such as attachment of algae, mussels and other sedentary organisms on the surface of the netting and traps.

CONCLUSION

ALDFG causes various adverse impacts to the aquatic habitats and also causes social and economic losses to fishers. ALDFG has been a serious concern globally and may become problematic in Indian waters also in the near future. Focused researches are required for developing mitigation measures for reducing their harmful impacts to various species and habitats and also to develop best management practices to prevent future gear losses of fishermen.

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