Lost gillnet entangled with murex shells: An evidence of ghost fishing

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Fishing gears are sometimes accidentally lost, forcibly abandoned by fishermen with no other choice or deliberately discarded, due to various reasons such as rough weather, interaction with other vessels including fishing vessels, obstruction at the sea floor, irresponsible way of gear operation etc. These gears are termed as ALDFG (Abandoned,Lost or otherwise Discarded Fishing Gear). Lost gears have many environmental impacts, including the continued capture of target and non-target species (ghost fishing), interaction with threatened/ endangered species, physical impact on the benthos, becoming a vector for invasive species, as well as the introduction of synthetic material into the marine food web (Macfadyen *et al.*, 2009). One of the most adverse impacts of ALDFG is that it leads to ghost fishing. Ghost fishing is the phenomenon by which lost gears continue its fishing activity even after the fishers lose control over the gear (Breen, 1990; Brown and Macfayden, 2007). The gear loss and consequent impacts studied worldwide revealed that passive fishing gears such as gill nets, trammel nets, and traps are the major gears contributing to ghost fishing as these gears when lost at sea may continue to fish with significant efficiency, at least for a short term (Kaiser *et al.*, 1996).

Specific measures to address the problem of ALDFG are either to prevent (avoiding the occurrence of ALDFG); mitigate (reducing the impact of ALDFG) or cure (removing/ retrieving ALDFG from the environment). ICAR-CIFT has done pioneering work in addressing the ALDFG problem in the country by locating and retrieving lost gears through scuba diving, grapnel devices/creepers and bottom trawling. Retrieval attempts through bottom trawling have been made from the CIFT department vessel FV Matsykumari-II along Cherai coast (0"9° 97N; 76° 27E) at a depth range of 25-35 m), Kochi, Kerala during June-August 2019. A total of nine trawling operations were made during the period and the retrieved gear and gear components were identified. Among the retrieved gears are gillnet panel (Polyamide multifilament 210 x 9 x 3, mesh size 105 mm) weighing 2.3 kg (Fig.1a). The retrieved netting panel was entangled with shells of mollusc *Murex trapa* showed clear evidence of ghost fishing (Fig. 1b). A total of 114 murex shells of size range from 20 to 80 mm were found entangled with the retrieved netting panel (Fig. 1c).

***Fig. 1a** Gillnet piece entangled with Murex (Murex trapa) shell*

Fig. 1b *Murex trapa shells from retrieved gillnets*

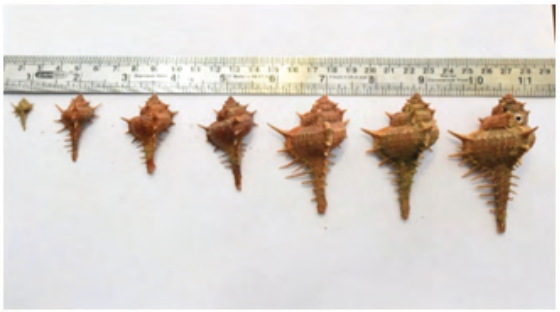

Fig. 1c *Size range of Murex trapa observed in retrieved gillnet panel*

All the organisms were dead and only empty shells remained on the net indicating that the net had been lost much earlier. Studies across the world have reported the negative impacts of ghost nets including injuries and mortalities to marine organisms including fishes, crustaceans and molluscs (Revill and Dunlin, 2003; Egekvist *et al.*, 2017). Retrieval attempts will be helpful to locate possible gear loss sites as well as to reduce further environmental impacts of lost gears.

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