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Ghost Fishing in Coral Reef Ecosystems

Discarded fishing gear can become entangled on coral colonies causing tissue damage and smothering benthic organisms.

SOURCE: Marine Pollution Bulletin

By *Katherine E. Meurer*

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Derelict fishing gear has become an increasing problem in marine environments. Species that are heavily impacted by this type of debris are typically large marine organisms, such as sea lions, sharks, and turtles. These marine animals can easily be entangled and trapped in nets and ropes, which can be fatal if they are not found quickly. However, it still is not clear what happens to the benthic organisms when this discarded fishing gear settles onto coral reefs.

“Ghost fishing” is a term used to describe fishing gear that has been abandoned or lost at sea and drifts in the water column continuing to disrupt marine life. Common types of ghost fishing gear include ropes, nets, traps, and nylon filaments that could have traveled from a remote location or originated in the local area. Fishing nets can cause the greatest harm to marine life and their environments, largely due to their ability to engulf marine organisms and immense size capable of covering large sections of the sea floor.

Stony corals are major reef builders, creating critical calcium carbonate habitat for a range of marine species. Shallow reefs and corals are susceptible to damage when fishing gear gets tangled on the reef. In the presences of discarded fishing gear, stony coral can suffer from tissue damage, breakage of coral fragments, and introduction of potential parasites and pathogens when gear acts as sediment traps. Researchers in the Gulf of Thailand conducted an inventory of ghost fishing gear on the reefs to quantify the impact on coral reef ecosystems around the island of Koh Tao.

Ballesteros et al. located 143 pieces of fishing gear from various parts of the island to determine the composition of the gear and the degree of damage to the surrounding coral. Researchers discovered that over 95% of relict fishing gear was made from a synthetic non-biodegradable material and predominately smaller than a square meter. Corals that grew in a branching formation had a greater chance of being tangled in the fishing gear. Entanglements were present either directly on the fragment or on the surrounding area attached to the substrate. The corals observed in the study were found to have the greatest amount of tissue damage when they were located underneath discarded fishing debris.

The restricted mobility of these benthic species limits their ability to free themselves of fishing gear causing a decline in overall coral health. There were only a few cases where corals were able to establish on top of settled artificial substrate and overgrow the derelict gear. The health of all corals in this study worsened in the presence of gear, indicating that ghost fishing gear should be removed from reef ecosystems when possible. However, removal should be done with caution as previously settled gear could cause further damage to surviving coral when removing debris.

This study demonstrates that derelict fishing gear is not only an issue for large marine species, but has a negative impact on the benthic environment as well. The study by Ballesteros et al. is an important first step in understanding the damage caused to coral species when discarded gear settles on reef ecosystems. Further research on ghost fishing gear and other forms of marine debris is needed to determine the long-term effects on benthic organisms.

Source Citation: Ballesteros, LV, JL Matthews, BW Hoeksema. (2018). Pollution and coral damage caused by derelict fishing gear on coral reefs around Koh Tao, Gulf of Thailand. Elsevier. *Marine Pollution Bulletin*, **135**: 1107-1116. <https://doi.org/10.1016/j.marpolbul.2018.08.033>