

# Understanding and Addressing Abandoned, Lost, or Otherwise Discarded Fishing Gear (ALDFG)

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In the vast expanses of the world's oceans, a growing and formidable menace is adversely affecting the delicate balance of marine ecosystems—Abandoned, Lost, or Otherwise Discarded Fishing Gear (ALDFG). This threat, encompassing nets, lines, traps, and other synthetic equipment left unintentionally or intentionally in the ocean, has emerged as a silent crisis echoing the unintended consequences of industrialized fishing practices and the proliferation of non-biodegradable materials.

As we stand at the crossroads of environmental awareness and the urgent need for sustainable practices, ALDFG stands out as a pervasive and overlooked crisis, compromising the health and sustainability of our oceans. Against the backdrop of perceived boundlessness and resilience, the persistent and escalating presence of ALDFG signals a critical environmental challenge, challenging the once-held perception of oceans as remote and inexhaustible.

This chapter embarks on a journey to unravel the complexities surrounding ALDFG, offering insights into its multifaceted dimensions and highlighting the pressing need for comprehensive solutions. As we delve into the terminologies and background of ALDFG, we aim to shed light on its historical context, ecological consequences, and the imperative for collaborative, international efforts to safeguard the health and resilience of marine ecosystems.

## ***Defining ALDFG: Unraveling the Terminology***

ALDFG encompasses discarded, lost, or deliberately abandoned fishing gear in the marine environment, including nets, lines, traps, and associated equipment. The distinction lies in its abandonment, irrespective of intent, contributing to a global challenge that demands immediate attention.

## ***Background: A Silent Crisis Unfolding in the Depths***

Marine ecosystems, celebrated for their biodiversity and intricate ecological interdependencies, face a growing peril from abandoned nets, lost traps, and discarded lines. The origins of ALDFG trace back to the evolution of fishing practices, which was marked by the transition from traditional, biodegradable materials to the prevalent use of synthetic and enduring materials in gear construction. This shift, driven by technological advancements, has inadvertently given rise to a crisis that extends beyond the visible entanglement of marine life.

The implications of ALDFG transcend its immediate impact on marine fauna, encompassing broader environmental degradation, compromised ecosystem services, and economic ramifications for coastal communities dependent on thriving fisheries. As we embark on this exploration, a comprehensive understanding of ALDFG's origins, its far-reaching impacts, and the imperative for collaborative, international efforts becomes paramount.

## ***ALDFG – What Is It?***

This section delves into the significant components of ALDFG, its impact on ecosystems and wildlife, and the various causes contributing to its prevalence. The absence of reliable global estimates underscores the urgency of addressing this issue comprehensively. Before seeking to understand how the law can be applied to address ALDFG, it is essential to dissect the term itself and explore the reasons behind the abandonment, loss, or discarding of valuable fishing gear.

## ***Ghost Nets and Ecological Impact: A Menace Unraveled***

### ***Perpetuating a Dangerous Cycle***

Within the realm of Abandoned, Lost, or Otherwise Discarded Fishing Gear (ALDFG), an ominous entity, often referred to as "Ghost nets," ensnares marine life, prolonging a hazardous cycle of fishing, trapping, and entanglement. These ghost nets act as silent

assassins, becoming magnets for other debris, thus degrading habitats and diminishing the functional values of crucial ecosystem services. The increasing reliance on synthetic materials in fishing gear production, coupled with the expansive reach of fishing activities, has led to the proliferation of these ghost nets, both haunting oceanic depths and encroaching upon coastal ecosystems.

### ***Habitat Degradation: A Gathering Menace***

Ghost nets, aptly named for their phantom-like ability to continue fishing, trapping, or entangling other fauna, act as insidious collectors of debris, further degrading habitats and reducing the functional values of ecosystem services. In regions like India, ghost nets occasionally wash ashore, emphasizing the urgent need for awareness among fishermen, navigators, and other users of marine ecosystems, including divers and tourists, about the detrimental effects of these ghost nets on marine fauna.

### ***Environmental Impact of ALDFG***

ALDFG, particularly in the form of ghost nets, accounts for approximately 10% of marine debris volume. This poses a substantial threat to habitats, endangers marine species, and has far-reaching implications for biodiversity. The phenomenon of ghost fishing, where abandoned gear continues its fishing activities, results in substantial unaccounted catch losses, affecting both target and non-target organisms.

### ***Diverse Impacts on Marine Ecosystems: A Multifaceted Threat***

1. The ecological impact of ALDFG, especially ghost nets, spans a range of environmental consequences:
2. Continued Catch of Target and Non-target Species: The transformation of gear from initial loss of control to eventual demise determines its catching efficiency, affecting both target and non-target species.
3. Interactions with Threatened/Endangered Species: Ghost nets pose a threat to marine life, particularly species already vulnerable, leading to unintended interactions and potential harm.
4. Physical Impacts on the Benthos: ALDFG, especially fishing nets, can exert physical impacts on the benthic environment through smothering, abrasion, plucking of organisms, and translocation of sea-bed features during retrieval, potentially harming fragile organisms like sponges and corals.
5. Role as a Vector for Invasive Species: Ghost nets, acting as drifting entities, can

carry invasive species to new areas, disrupting local ecosystems.

6. Introduction of Synthetic Material into the Marine Food Web: The persistence of synthetic materials in ghost nets introduces them into the marine food web, posing potential threats to marine life at various trophic levels.

### ***Impact on Marine Users: Beyond Environmental Consequences***

ALDFG, particularly in the form of marine litter and ghost nets, extends its repercussions to marine users:

1. Navigational Hazards: Abandoned, lost, or discarded fishing gear becomes a significant navigational hazard, posing risks to vessels and endangering the safety of maritime activities.
2. Loss of Amenity and Disruption to Coastal Areas: The presence of ghost nets and marine litter disrupts the enjoyment of beaches and coastal areas, impacting tourism and local amenities.
3. Safety Concerns: Beyond environmental and ecological concerns, the safety of navigation takes precedence, given instances of injury and loss of human life caused by ALDFG.
4. Additional Costs: Marine litter and ghost nets result in additional costs for vessel owners and operators due to fouling of vessels and other gear.

### ***The Specifics of Ghost Fishing: Gear Type, Conditions, and Environmental Factors***

The capacity of ALDFG, particularly ghost nets, for ghost fishing is highly specific, dependent on gear type, conditions under which it was abandoned, lost, or discarded, and the nature of the local environment. Gears like gillnets and traps/pots exhibit the ability to continue fishing even after abandonment, with the duration of this cycle varying widely based on local environmental conditions. Understanding these specifics is crucial for devising targeted strategies to mitigate the impact of ghost nets on marine ecosystems.

In the unravelling narrative of ghost nets and their ecological impact, it becomes evident that this multifaceted threat demands comprehensive solutions and heightened awareness to preserve the health and resilience of our oceans.

### ***Legal Framework and International Recognition***

The menace of Abandoned, Lost, or Otherwise Discarded Fishing Gear (ALDFG) and plastic-based marine debris stands as a critical challenge for marine environments, casting shadows on long-term sustainability and biodiversity conservation. International efforts, articulated through instruments such as MARPOL Annex V and the FAO Code of Conduct for Responsible Fisheries, underscore the need to address these issues comprehensively. However, the absence of reliable global estimates of ALDFG poses a significant obstacle to formulating targeted solutions.

### ***Marine Debris: A Global Predicament***

Marine debris, often referred to as marine litter, has emerged as one of the most pressing problems of the 21st century. The United Nations Environment Programme (UNEP) defines marine debris as any persistent, manufactured, or processed solid material disposed of or abandoned in the marine and coastal environment. The "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972," commonly known as the "London Convention," serves as one of the pioneering global conventions addressing marine pollution. With 89 countries as parties to the Convention, it prohibits all dumping except for possibly acceptable wastes, aligning with the principle that the polluter pays for environmental harm.

### ***Polluter Pays Principle and Plastic Problem in the Indian Ocean***

The polluter pays principle, a foundational tenet of environmental policy, asserts that individuals responsible for environmental harm must bear the costs associated with rectifying and mitigating that harm. Applying this principle involves imposing severe penalties on violations and implementing pay-as-you-throw schemes to discourage littering and illegal dumping. The plastic problem, particularly pronounced in the Indian Ocean nations, prompts a comprehensive response. Asia's leading contribution to mismanaged plastic waste underscores the urgency for effective regulations.

India, with a trajectory spanning three decades, has instituted various regulations to manage solid waste. Since 2018, India has been an active participant in the UNEP Clean Seas campaign, aiming for a pristine coastline. In July 2022, India's environment ministry took a significant step by banning several single-use plastic items. Despite central and state-level legislation for plastic waste management, challenges persist due to poor implementation and inadequate infrastructure for land-based plastics.

### ***International Instruments Recognizing the Need to Address ALDFG and Mark Fishing Gear***

Several international instruments recognize the need to address ALDFG and emphasize the importance of marking fishing gear. Key instruments include:

1. MARPOL Annex V (73/78): Focused on preventing the disposal of garbage from ships.
2. FAO Code of Conduct for Responsible Fisheries (1995): Advocates the marking of fishing gear to address ALDFG.
3. International Guidelines on Bycatch Management and Reduction of Discards (FAO 2011): Aims at reducing the impact of lost fishing gear.
4. Agreement of Port State Measures to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (2009).
5. UNGA Resolution A/RES/70/1 on Sustainable Development Goals (2015): SDG 14.1 targets the prevention and reduction of marine pollution, including ALDFG.

### ***Potential International Actions: The Role of IMO and MARPOL Annex V***

International Maritime Organization (IMO): While MARPOL has effectively addressed various aspects of marine pollution, additional measures are needed to specifically tackle marine debris and ALDFG. Recommendations for the IMO include:

- Expanding action plans on adequacy of port reception facilities.
- Investigating and reporting on the adequacy of port reception facilities for fisheries waste, including ALD gear.

MARPOL Annex V: Acknowledged as a key mechanism in addressing marine pollution from shipping, MARPOL Annex V can play a crucial role in addressing ALDFG. Recommendations for MARPOL Annex V include:

- Reducing the 400 GT minimum tonnage for vessels under Annex V.
- Developing an addendum with detailed guidance on measures to address ALDFG.
- Providing qualitative and quantitative standards for port reception facilities.

These recommendations underscore the need for concerted international efforts to amend and enhance existing frameworks, ensuring effective measures to combat the escalating threat of ALDFG on a global scale.

## Strategies for Mitigation:

Addressing the persistent risk of Abandoned, Lost, or Otherwise Discarded Fishing Gear (ALDFG) necessitates a comprehensive, multi-pronged approach that involves research, awareness, removal, and recycling. This chapter explores both preventive and curative measures to combat the intricate challenges posed by ALDFG.

### 1. Preventive Measures: Marking of Fishing Gear

Gear marking plays a pivotal role in preventing ALDFG and promoting responsible fisheries. The Code of Conduct for Responsible Fisheries (FAO 1995) advocates for the marking of fishing gear, emphasizing the importance of identifying gear owners. Internationally recognizable gear marking systems should be incorporated into marking requirements.

The potential benefits of marking fishing gear include:

- Assisting in preventing gear loss and ghost fishing, leading to less marine litter.
- Reducing the time spent trying to recover lost gear.
- Facilitating the recovery of lost gear.
- Enhancing the ability to apply fisheries regulatory measures, including those for controlling fishing capacity and preventing Illegal, Unreported, and Unregulated (IUU) fishing.

The life cycle of fishing gear, from manufacture to disposal, must be addressed comprehensively. This includes considerations for gear material manufacture, design, fabrication, storage, use, recycling, and disposal. Recognizing ALDFG within the context of the Sustainable Development Goals (SDGs), particularly in relation to sustainable fisheries, biodiversity, and food security, is crucial. The forthcoming FAO Guidelines on the Marking of Fishing Gear should be widely promoted by Regional Seas Programs, Regional Fisheries Management Organizations (RFMOs), and Regional Fisheries Bodies (RFBs).

### 2. Onshore Collection/Reception and/or Payment for Old/Retrieved Gear

The provision of onshore collection facilities, along with incentives such as payment for old or retrieved gear, serves as a preventative measure. This reduces the likelihood of fishers discarding unwanted gear at sea and encourages responsible disposal practices.

### 3. Reduced Fishing Effort

Implementing measures to reduce overall fishing effort, such as limiting fishing time or the amount of gear per vessel, is a fisheries management strategy that can impact ALDFG rates. By controlling the intensity of fishing activities, the potential for gear loss and abandonment can be curtailed.

### 4. Better Reporting of Gear Loss

Improved reporting mechanisms for gear loss, originating from fishers or other operators encountering ALDFG, are essential. While direct reporting from gear operators provides accurate location and identification information, such reporting is currently rare and needs to be encouraged and facilitated.

### 5. Disposal and Recycling

Proper disposal and recycling of fishing gear are imperative for mitigating ALDFG. Encouraging responsible practices in the management of gear at the end of its life cycle contributes to reducing the environmental impact.

### 6. Awareness Rising

Raising awareness about the ALDFG problem is a cross-cutting measure that supports the development and implementation of mitigation strategies. Targeting fishers, port operators, marine users, and the general public through local, national, regional, or international campaigns is crucial. It is essential to strike a balance in using graphic images of entangled marine species to raise awareness without inadvertently discouraging fishers from reporting ALDFG incidents.

By integrating these preventive and curative strategies, a concerted effort can be made to mitigate the multifaceted challenges posed by ALDFG, fostering responsible and sustainable practices in the world's oceans.

## Conclusion

This chapter provides an in-depth exploration of the complexities surrounding ALDFG, offering a comprehensive overview of its causes, consequences, and global efforts for mitigation. By weaving together scientific insights, legal considerations, and practical solutions, it serves as a valuable resource for specialists, researchers, and graduate students seeking a thorough understanding of the challenges posed by abandoned fishing gear in marine environments.