

Evaluating alternative strategies to manage abandoned, lost and discarded fishing gear

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Strategies for managing abandoned, lost and discarded fishing gear

Summary: There has been increasing recognition of the need to address adverse effects of abandoned, lost and discarded fishing gear (ALDFG). This component of marine debris has been progressively problematic over recent decades with the rapid expansion of global fisheries' footprint and effort, and the transition to synthetic and more durable materials for gear components. Relevant ALDFG management approaches depend on the fishery-specific context. The presentation identifies criteria to evaluate alternative strategies to mitigate ALDFG production and adverse impacts. This includes fishery-specific: (1) drivers for ALDFG production and adverse impacts, and (2) ALDFG fate and impacts. The management strategy should also evaluate: (3) the tier of mitigation measures within a sequential mitigation hierarchy; and (4) tier within a sequential evidence hierarchy. It is also critical to account for the (5) resources required for effective compliance monitoring – what surveillance approaches are needed for a particular ALDFG mitigation method, considering whether efficacy is affected by crew behavior, and the likelihood of fisher compliance given an intervention's costs to commercial viability (economic viability, practicality and crew safety). Finally, the (6) fishery-specific enabling conditions permit identifying the subset of ALDFG interventions that are expected to be effective.

Potential breakout session discussion topics:

- Which legal instruments and intergovernmental organizations could catalyze the preparation and effective implementation of national and regional ALDFG action plans?
- Would a webtool that enables linking ALDFG causes with relevant management measures be useful? If yes, how can the CASS community collaborate to develop this?
- MSC assessment bodies currently audit whether fisheries mark gear to manage ghost fishing. Is this an appropriate 'low hanging fruit' management approach? Are there more appropriate minimum measures that are effective across small-scale to industrial fisheries?

Background materials

- Introduction to the special issue on abandoned, lost and discarded fishing gear: Causes, magnitude, impacts, mitigation methods and priorities for monitoring and management. *Marine Policy*: 105738, 2023. https://drive.google.com/file/d/1KsUMfAx_jkcJ7ttMGqoFPdVuiDesvVA5/view?usp=sharing
- *Guidelines for Developing Plans of Action on Managing Abandoned, Lost and Discarded Fishing Gear*. ISSF Technical Report 2-25-07. International Seafood Sustainability Foundation, Pittsburgh, 2025. <https://www.issf-foundation.org/downloads/40588/?tmstv=1785267004>

Ecological & socioeconomic impacts of ALDFG



Ghost Fishing

Derelict gear can continue to capture and kill targeted and vulnerable species, for extended periods.

Transfer of Invasive Species

Floating derelict gear can travel and spread non-native species to areas where they may harm the ecosystem, economy and human health.



Transfer of Toxins

Derelict gear can transport and transfer toxins and chemical pollutants into marine food webs.



Microplastics

Plastic components of derelict gear break down into microplastic pieces, polluting the ocean.

Habitat Damage

Derelict gear can damage sensitive habitats such as coral reefs, seagrass beds and salt marshes.



Obstruction of Navigation

Derelict gear can obstruct navigation as well as in-use fishing gear, creating safety risks and equipment damage at sea.



Reduced Use Value of Coastal Areas

Derelict gear can end up in nearshore habitats, reducing socioeconomic values of recreation, tourism, education and research, and negatively impacting residential and commercial uses.



Implementation of MARPOL Annex V

- Lack of incentives to report when gear becomes derelict
- Worn/damaged gear components perceived to be most convenient to discard at sea



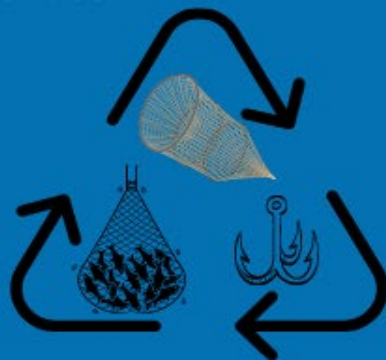
Technology to Detect Temporarily Lost Gear

- Impractical, including insufficient time and/or economically inefficient to locate and/or retrieve gear
- Theft
- Vandalism



Port Reception & Recycling Facilities

- Worn/damaged gear components perceived to be most convenient to abandon & discard at sea



Limit on the Amount of Gear Allowed Onboard

- Insufficient room onboard for all gear that was set to be retrieved
- Insufficient storage space onboard for worn/damaged gear components replaced during the trip



Detection and Removal ALDFG

- No program in place to retrieve gear reported as derelict



Area-Based Management Tools

- Bad weather, strong currents or sea ice damages or moves gear
- Static gear is set too deep
- Gear conflict (i.e. passive gear towed)
- Marine traffic disrupts/damages static gear
- New entrants/inexperienced fishers
- Snag on wrecks, other infrastructure/ debris



ALDFG Fate & Impacts

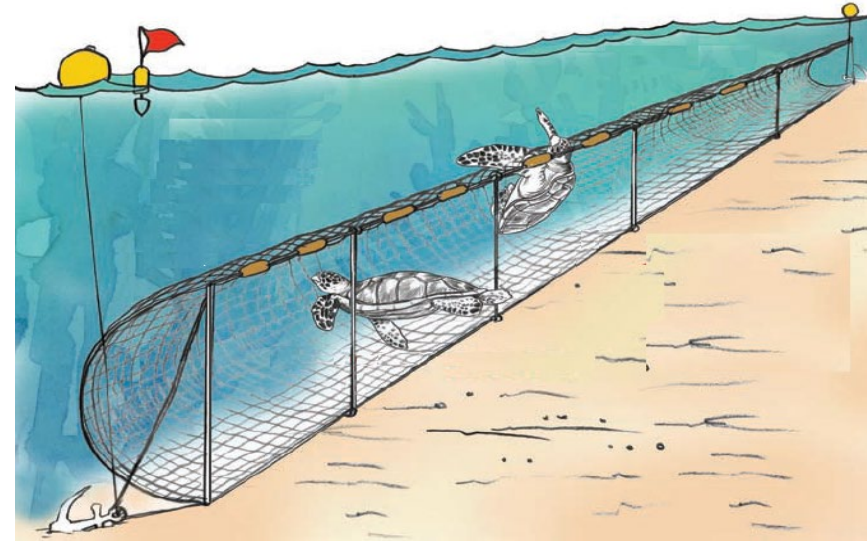
- Fate: Where does the ALDFG occur, how long does it persist
- Impact: What's the severity of each ecological and socioeconomic impact

Ambio 2019, 48:1023–1038

<https://doi.org/10.1007/s13280-019-01179-w>

Lead poisoning from ingestion of fishing gear: A review

Tiffany Grade, Pamela Campbell, Thomas Cooley, Michelle Kneeland, Elaine Leslie, Brooke MacDonald, Julie Melotti, Joseph Okoniewski, Elizabeth Jane Parmley, Cyndi Perry, Harry Vogel, Mark Pokras



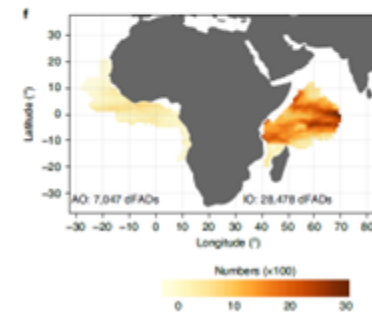
nature
sustainability

ARTICLES

<https://doi.org/10.1038/s41893-022-00883-y>

Recovery at sea of abandoned, lost or discarded drifting fish aggregating devices

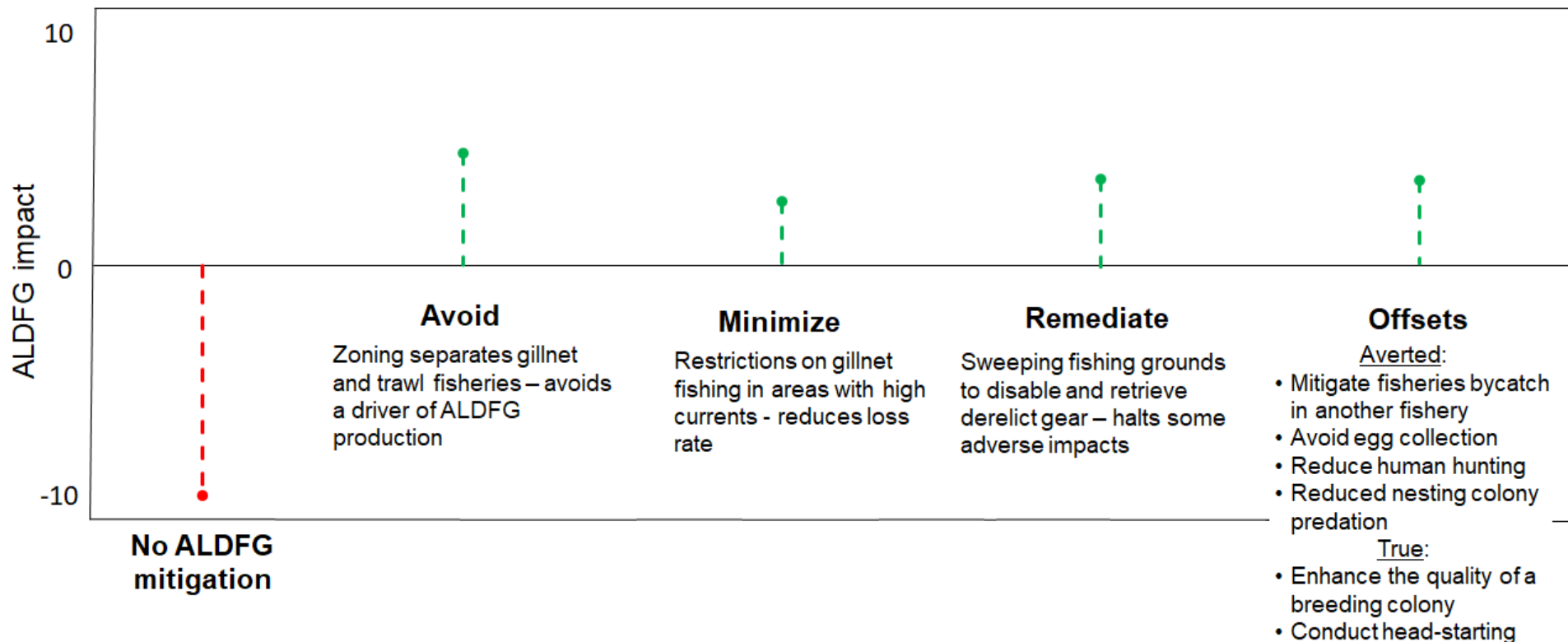
Taha Imzilen^{1,2,3}, Christophe Lett^{1,2}, Emmanuel Chassot^{4,5}, Alexandra Maufroy⁶, Michel Goujon⁶ and David M. Kaplan^{1,2} 



Thousands of abandoned drifting FADs exist Atlantic and Indian Ocean fishing grounds annually

Sequential ALDFG Mitigation Hierarchy

- **Avoidance** - completely prevent a cause of ALDFG production within scope of the intervention.
- **Minimization** - reduce rates of ALDFG production, fishing effort (which reduces the magnitude of derelict gear), or adverse effects.
- **Remediation** - halt one or more adverse effect.
- **Offsetting** – obtain an equivalent, or more-than-equivalent gain by offsetting ALDFG residual impacts that were not avoided, minimized and remediated.



Strength of Evidence

Tier	Method Category
1	Meta-analytic synthesis studies of RCTs
2	Meta-analytic synthesis studies that include quasi-experimental, comparative or observational studies
3	Individual RCTs
4	Individual quasi-experimental and comparative experimental studies
5	Individual observational studies applying statistical modelling approaches to standardize ALDFG production levels and fishing effort time series and applying quasi-experimental modelling approaches to infer causal impacts of interventions
6	Individual observational studies with nominal estimates
7	Mechanistic studies
8	Qualitative systematic synthesis
9	Qualitative unstructured synthesis
10	Structured expert elicitation studies
11	Non-structured expert judgement studies
12	Inconclusive and conflicting results Non-expert surveys/opinion Flawed studies No evidence

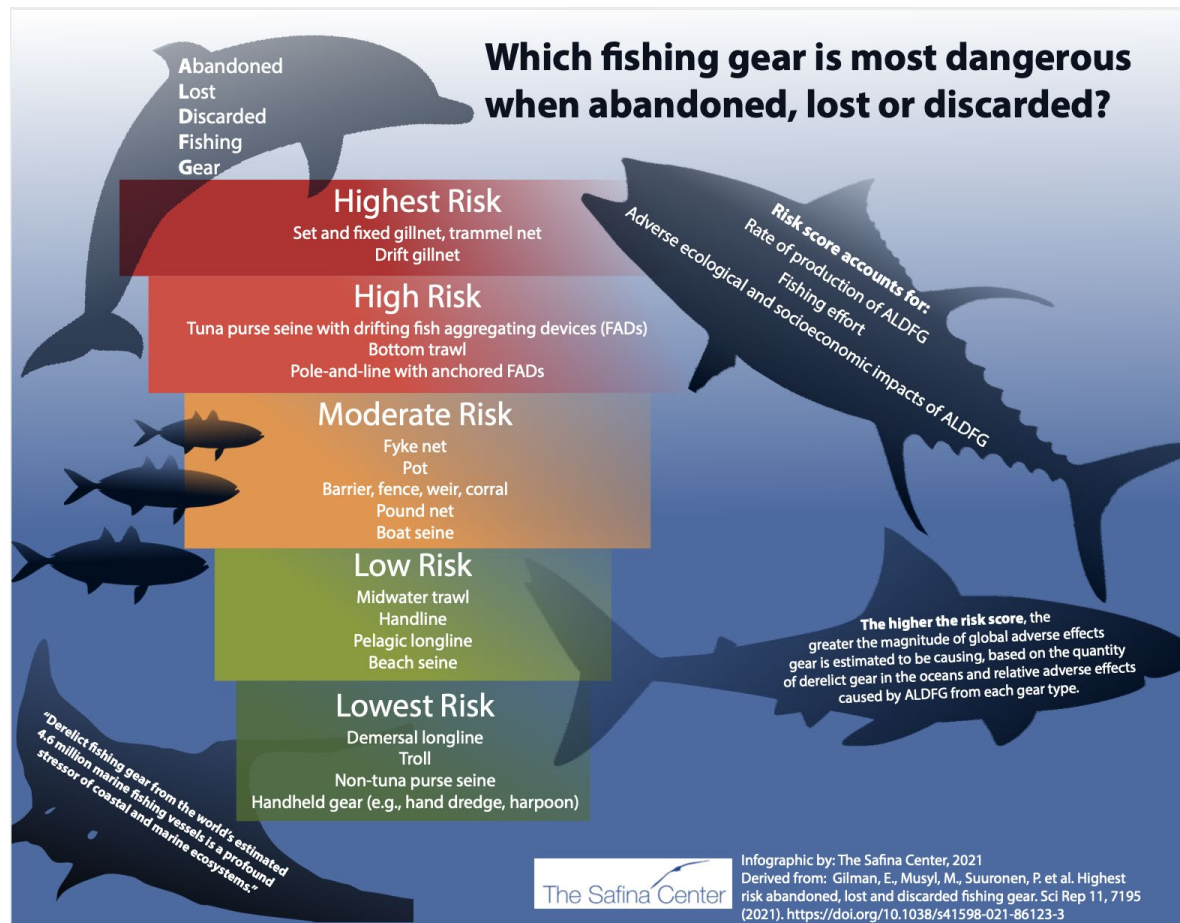
Compliance likelihood

- Does crew behavior affect performance?
- Is voluntary compliance expected – what are commercial viability costs and the catch sector's buy-in and group norm for the method?
- What methods enable compliance monitoring – dockside inspections, at-sea observers/EM, VMS/AIS?
- How robust is the management framework (MCS, enforcement, outcomes of enforcement actions)?



The efficacy of alternative ALDFG management strategies depends on the fishery-specific context.

Accounting for the local drivers and consequences of ALDFG and the enabling environment enables identification of the most effective management approaches.



Breakout discussion topics

- Which legal instruments (e.g., MARPOL, Plastics Treaty, BBNJ Treaty) & intergovernmental orgs (e.g., IMO, FAO, UNEP, RFMOs) could catalyze effective national ALDFG action plans?
- Would a webtool that enables linking ALDFG causes with relevant mgmt. measures be useful?
- MSC assessors audit whether fisheries mark gear to manage ghost fishing. Is this an appropriate 'low hanging fruit' mgmt. strategy?

GUIDELINES FOR DEVELOPING PLANS OF ACTION ON MANAGING ABANDONED, LOST AND DISCARDED FISHING GEAR



E. Gilman, G. Moreno, H. Murua, & M. Chaloupka / June 2025

Gilman, E., Moreno, G., Murua, H., and Chaloupka, M. (2025) Guidelines for Developing Plans of Action on Managing Abandoned, Lost and Discarded Fishing Gear. ISSF Technical Report 2025-07. International Seafood Sustainability Foundation, Pittsburgh, PA, USA

Topic Categories: Marine fisheries; abandoned, lost and discarded fishing gear; ghost fishing