**Abandoned, Lost, Or Otherwise Discarded Fishing Gear**

  26th February 2020

Introduction

Abandoned, lost, & discarded fishing gear (ALDFG), or ghost gear, refers to a specific form of marine pollution resulting from fishing gear waste. There is a growing body of evidence as the impact, often labelled ghost fishing, has become more apparent in recent years.

A group of yellow balls on a beach

Description automatically generated*Marine litter. A lost? part of a trawl or seine net by*[*Bo Eide*](https://www.flickr.com/photos/snemann2/)*, Attribution-NonCommercial 2.0 Generic (CC BY-NC 2.0)*

Characteristics

*Type of gear*

In a study by Gilman et al., five types of gear were identified as the most ubiquitous ALDFG: set and fixed gillnet and trammel net, drift gillnet, tuna purse seine with FADs (Fish Aggregating Devices), bottom trawl, and pole-and-line with anchored FADs.[1](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-1-103) Other evidence substantiates this gear constituting much of ALDFG.[2](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-2-103) A WWF report, for examples, simplifies these most common forms of gear as: gillnets, pots & traps, FADs, and hooks and lines.[3](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-3-103)

At times, gear prohibited in certain areas is discovered – suggesting that it comes from Illegal, Unregulated, and Unreported (IUU) fishing. An example is trawl nets in Indonesia, which were banned in 2018.[4](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-4-103)

*Causes of ALDFG*

Gear can be abandoned, lost, or discarded for several reasons, and there is a growing body of evidence that assesses the most frequent.[5](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-5-103) Not all of these are illegal in nature, but there are some activities that have varying degrees of criminality.

ALDFG can occur as a result of environmental factors.[6](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-6-103) Bad weather and strong currents can cause gear loss, while the unavailability/inaccessibility of onshore disposal may lead to it being discarded at sea[7](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-7-103). Bad weather can also cause abandonment as it makes it unsafe to retrieve gear, and it may also be abandoned if retrieving it is too difficult because it is snagged on submerged features.[8](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-8-103) Richardson et al., for example, point to nets that fish along the bottom as being lost more commonly.[9](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-9-103)

There are also operational factors that cause ALDFG. Gear conflict can occur, for example, when passive gear is towed away or inadvertently cut by active gear and passing vessels, causing its loss.[10](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-10-103) Richardson et al. argue that over crowding also leads to more risk taking, which can make it easier to lose gear.[11](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-11-103) Gear can also be lost if markers are not sufficient or if it is set too deep, making retrieval difficult.[12](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-12-103)

ALDFG can be criminalized as it can result from negligence. Gear loss, for example, can occur through poor standards such as improper storage, poor maintenance, or improper use.[13](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-13-103) Illicit disposal can occurs when fishers choose to dispose at sea despite the availability of onshore disposal, primarily to avoid high costs but also because of convenience.[/efn\_note][FAO 2009](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CAQQw7AJahcKEwjQ5-eAgLP7AhUAAAAAHQAAAAAQAg&url=https%3A%2F%2Fwedocs.unep.org%2Frest%2Fbitstreams%2F13186%2Fretrieve&psig=AOvVaw28ezqBZTdhCHk66DzbBbwK&ust=1668287078853410); [Goodman et al. 2019](https://www.sciencedirect.com/science/article/pii/S0964569119303795); [Gilmann et al. 2022](https://www.sciencedirect.com/science/article/pii/S0308597X22001440); [WWF 2020](https://wwfint.awsassets.panda.org/downloads/wwfintl_ghost_gear_report_1.pdf); [Gilman 2015](https://www.sciencedirect.com/science/article/abs/pii/S0308597X1500175X?via%3Dihub)[/efn\_note] As Gilmann et al. note, there may be a lack of incentives to implement ALDFG mitigation methods or inadequate penalties resulting from enforcement actions for identified infractions, making illicit disposal more efficient.[14](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-14-103) However, Daniel & Thomas suggest disposal more often results from a lack of accessibility rather than convenience and cost.[15](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-15-103)

More criminalized is ALDFG that occurs as a result of IUU Fishing. The Food and Agriculture Organization (FAO), for example, refer to ‘enforcement pressures’ as a cause of ALDFG.[16](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-16-103) IUU fishers may abandon their gear when they are interrupted by enforcement vessels, deliberately dispose of gear to avoid it being used as evidence concerning their activities, or dispose of prohibited gear before going to port.[/efn\_note][Goodman et al. 2019](https://www.sciencedirect.com/science/article/pii/S0964569119303795); [Ghost Gear Initiative 2017](https://www.ghostgear.org/news/2017/5/31/iuu-and-ghost-gear-what-are-the-links); [FAO 2016](https://www.fao.org/3/i5051e/i5051e.pdf); [WWF 2020](https://wwfint.awsassets.panda.org/downloads/wwfintl_ghost_gear_report_1.pdf); [Gilmann et al. 2022](https://www.sciencedirect.com/science/article/pii/S0308597X22001440)[/efn\_note] One example is provided by the WWF, who worked with others to remove 5200m2 of illegal gillnets in Gulf of California.[17](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-17-103) Gear conflict can also be intentional, if rivals purposefully tow away others’ gear, steal components, or vandalize gear.[18](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-18-103) IUU vessels are often inadequately maintained, with fishers working in suboptimal conditions and environments.[19](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-19-103) They may also fish in more dangerous conditions to avoid detection, such as during the night.[20](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-20-103)

IUU fishing can exacerbate ALDFG in other ways, furthermore. An unwillingness to communicate with other fishers and follow rules may result in further gear conflicts, as can overcrowding of fisheries if many vessels are fishing without a license.[21](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-21-103) Richardson et al. argue this ‘increases market pressures on fishers to increase their own effort to produce the same amount of catch’, leading to more risk taking and greater ALDFG.[22](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-22-103)

Scope

Many studies address the scope of ALDFG. For the most part, however, data remains fragmented because studies focus on distinct areas, fisheries, species, and gear types.[23](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-23-103) While such data is useful for contextualised decision-making, it doesn’t allow for an assessment of the overall scope.

It is also difficult to aggregate data as studies use different means of measurement.[24](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-24-103) Some studies, for example, discuss the scope in terms of weight, despite the fact different gears have significantly different masses which can result in misleading figures.[25](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-25-103) Others look to present the scope as proportions of gear lost, numbers of gear lost, and lengths of gear lost.[26](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-26-103)

Some of the most cited numbers have generated debate, furthermore. Derived from Macfayden et al.’s estimate that 10 per cent of all marine waste is ALDFG, a common figure cited is 640,000 tons of ALDFG enter the oceans annually.[27](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-27-103) This is disputed, however, on the grounds that its origins are miscited and misunderstood.[/efn\_note][Richardson et al. 2021](https://www.sciencedirect.com/science/article/pii/S0308597X21001330); [Gilmann et al. 2021](https://www.nature.com/articles/s41598-021-86123-3); [Kuczenski et al. 2021](https://onlinelibrary.wiley.com/doi/10.1111/faf.12596)[/efn\_note] 10 per cent also seems conservative given evidence demonstrates 46 per cent of the ‘Great Pacific Garbage Patch’ is made up of ALDFG.[28](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-28-103)

Other methodologies have resulted in various estimates about the global scope.[29](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-29-103) Richardson et al. did a meta-analysis of studies to argue estimate that 5.7% of all fishing nets, 8.6% of all traps, and 29% of all lines are lost around the world each year.[30](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-30-103). In another study based on interviews with fishers in different regions, Richardson et al. take a proportion approach to estimate that “nearly 2% of all fishing gear, comprising 2963 km2 of gillnets, 75,049 km2 of purse seine nets, 218 km2 of trawl nets, 739,583 km of longline mainlines, and more than 25 million pots and traps are lost to the ocean annually”.[31](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-31-103) Kuczenski et al. instead analysed the amount of fishing effort and how much gear is in operation to argue 48.4 kt of industrial trawl, purse-seine and pelagic longline was lost in 2018.[32](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-32-103)

On top of these different figures, significant knowledge gaps remain around artisanal fisheries and IUU fisheries, as well as different regions, which create further difficulties in assessing the true scope.[33](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-33-103) The Ghost Gear Initiative has implemented a global ALDFG database to address this concern, but it remains limited to self-reporting and not necessarily indicative of the whole scope.[/efn\_note][Richardson et al. 2019b](https://www.sciencedirect.com/science/article/pii/S0025326X18308087)[/efn\_note]

Two things that are clear is that the scope is increasing, and ALDFG is ubiquitous across all regions.[34](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-34-103) This has been underscored not only by an expansion of fishing effort, but also the transition to longer-lasting and more buoyant synthetic fishing gear.[35](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-35-103)

Impact

The different impacts of ADLFG are mostly well-known and well-evidenced, though there are still some limitations surrounding knowledge of the socio-economic impacts.

*Ghost fishing*

The primary impact of ADLFG is ghost fishing, which refers to the gear continuing to catch fish even after being lost.[36](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-36-103) This can impact both target and non-target species, who then die when caught in the gear.[37](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-37-103) This has led to studies assessing the different factors that affect the ability, efficiency and duration of derelict gear to ghost fish.[38](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-38-103) These include factors like the type of gear, how it was lost, the location of the gear, and the potential for it to be snagged on local features.[39](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-39-103) For example, ‘studies have observed that when gillnet and entangling nets are deployed on a flat substrate in relatively shallow water, their ghost fishing catching efficiency and longevity declines rapidly over the initial few days of release, and declines to within about 5 percent of initial catching efficiency within weeks to months’.[40](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-40-103) Contrary to this, gillnets entangled on features in deep water can be effective for several months to several years, and passive gear continues to fish.[41](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-41-103) In one study, gillnets continued catching for 30 days before losing efficiency,[42](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-42-103), and another saw them catching fish for 224 days.[43](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-43-103) One dynamic that exacerbates catch is ‘self-baiting’, where organisms caught attract scavengers, who themselves also get caught.[44](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-44-103)

*Other environmental concerns*

Similar to other plastic marine pollution, the transfer of microplastics and toxins into food webs, spread of invasive alien species and harmful microalgae, and habitat degradation have all been evidenced as impacts of ADLFG.[45](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-45-103) Animals may die because they become entangled in the gear, or because they ingest it.[46](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-46-103) Entanglement can “lead to drowning,inflict severe lacerations, increase drag while swimming and foraging, prevent diving and feeding, and increase exposure to predators”.[48](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-48-103)

*Socio-economic*

Evidence points to ADLFG as having a negative impact on coastal socio-economics.[49](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-49-103) This can result from a loss of catch, because “ghost fishing mortalities are also a source of wastage, and reduce the sustainable production of fishery resources and economic opportunities for the marine capture sector”[50](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-50-103). Scheld et al. positions this as competition between ghost gear and active gear, using the economic inefficiencies found for Chesapeake Bay blue crab as an indicative example.[51](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-51-103) After retrieving derelict pots, there was an additional 13,504 MT in harvest valued at US $21.3 million—a 27% increase.[52](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-52-103) Economic losses can also come from damaged tourism, given it may disrupt peoples’ ability to enjoy coastal areas.[53](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-53-103)

*Navigational Hazard*

ADLFG can pose a significant navigational hazard, by getting entangled in a vessel’s propeller or blocking intakes.[54](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-54-103) Cho, for example, observes a “large number of maritime accidents have occurred along Korean coast because of marine debris, such as fishing nets, ropes, and plastics” – one accident resulting in 292 fatalities.[55](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-55-103) Hong et al., furthermore, point to 398 cases per year of entanglement for Korean naval vessels.[56](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-56-103) To disentangle propellers, 3 divers were needed on average per case.

Responses

There are no specific conventions responding to ADLFG, though it is regulated under international law through MARPOL.[57](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-57-103) The United Nations General Assembly has also issued resolutions to try to reduce ALDFG, while the FAO has a Code of Conduct for Responsible Fisheries and FAO’s Voluntary Guidelines for the Marking of Fishing Gear that covers ALDFG.[58](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-58-103)

Even within regional settings like RFMOs, responses to ADLFG are limited. Gilman undertook an assessment of data collection protocols and management measures to prevent and remediate ALDFG and ghost fishing by 19 organisations.[59](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-59-103) He found only four organizations were explicitly mandated by their convention or agreement text to monitor and control ALDFG and ghost fishing.[60](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-60-103) In a follow up study of 68 managed fisheries, 47 lack any observer coverage, half do not collect monitoring data on ALDFG, and surveillance and enforcement systems are rudimentary or nonexistent in many.[61](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-61-103)

While interventions are recognised as needing to be context specific,[62](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-62-103) there are a number of practices recognised in the literature as promising responses. Gilman et al. refer to avoidance, minimization, remediation and offsets, but argue that the preventative avoidance and minimization are less costly and more effective.[63](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-63-103)

Avoidance and minimization are efforts to reduce ALDFG from occurring in the first place.[64](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-64-103) Responses they point to include ‘having bottom trawlers avoid features that could snag the net such as by using high-resolution seabed maps, tracking the real-time position of unattended fishing gears using various electronic technologies, and using gear marking to identify the owner to disincentivize abandonment and increase the visibility of passive gears’.[65](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-65-103) Better spatial awareness among users of the sea could therefore reduce gear conflict.[67](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-67-103), ensuring fishers know about the dangerous impacts of ALDFG to incentivise proper dispoal,[68](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-68-103) and ensuring there is proper access to disposal facilities.[69](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-69-103) Enforcement, though usually a low priority, has also been shown to work. There is evidence that ‘frequent enforcement actions, the application of costly fines and material and vessel seizures by the responsible environmental agencies’ has had a deterrence effect in Brazil, for example.[70](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-70-103)

Remediation, also sometimes referred to as mitigation,[71](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-71-103) try to reduce adverse effects of ALDFG after it occurs. It often includes removing gear from the coastline and the ocean, seen as the only ‘absolute solution’.[72](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-72-103) Scheld et al. found that removal could be cost effective because it led to greater harvests, but this was context dependent and unlikely to be the same in deepwater fisheries.[73](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-73-103) Indeed, many of these interventions are small-scale and voluntary, occurring along coast lines. However, different studies point to the possibility of incentivising different stakeholders to help in gear collection. Imilzen et al., for example, demonstrates ports could be key stakeholders,[74](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-74-103) while Cho suggests fishers could serve a similar function.[75](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-75-103)

A promising intervention is that of the Global Ghost Gear Initiative (GGGI) – a ‘multi-stakeholder alliance of fishing industry, private sector, multinational corporations, non-government organizations, academics and governments’.[76](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-76-103) They have released GGGI Best Practice Framework for the Management of Fishing Gear to guide fishers and stakeholders.[77](https://www.safeseas.net/evidence/2020/02/26/abandoned-lost-or-otherwise-discarded-fishing-gear/#easy-footnote-bottom-77-103)

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2. [Daniel & Thomas 2022](https://link.springer.com/article/10.1007/s12601-022-00074-y); [Link et al. 2019](https://www.sciencedirect.com/science/article/pii/S2530064418301081)
3. [WWF 2020](https://wwfint.awsassets.panda.org/downloads/wwfintl_ghost_gear_report_1.pdf)
4. [Richardson et al. 2018](https://www.sciencedirect.com/science/article/pii/S0308597X17307406); [Hardesty et al. 2021](https://www.sciencedirect.com/science/article/pii/S0025326X21009930)
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