



# Ghosts beneath the waves

2nd Edition

Ghost gear's catastrophic impact on  
our oceans, and the urgent action  
needed from industry



We were known as **WSPA**  
(World Society for the  
Protection of Animals)

**Cover image:** Scalloped hammerhead in net. Malpelo Sanctuary, Colombia, Pacific Ocean.  
Pascal Kobeh / Nature Picture Library.

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## Notes

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# Foreword

Now more than ever the threat of plastic pollution in our oceans is dominating global headlines and the urgent need to address this problem is front and centre in discussions on the United Nations Sustainable Development Goals (SDGs).

Fishing gear is often made from durable plastic and can last in the ocean for up to 600 years. At least 800,000 tonnes of this abandoned, lost or otherwise discarded fishing gear (known as ghost gear) is lost or left in our oceans every year and is the most harmful form of marine debris for marine animals. New research estimates that 46 - 70% of surface debris in parts of the ocean is made up of fishing gear, amplifying the need for dedicated and ongoing action.

Never has addressing the issue of ghost gear been more urgent than it is today. That's why in 2015 we launched the Global Ghost Gear Initiative (GGGI) to spearhead a global solution and enhance industry engagement.

We are pleased to see governments, as well as the private sector and intergovernmental organisations, taking a leading role in reducing the impact of fishing operations with a particular emphasis on preventing, reducing and mitigating the effects of ghost gear.

This report highlights the efforts being made to identify and eradicate ghost gear in seafood supply chains and we commend the efforts of those businesses taking steps to acknowledge this issue. If we agree that ghost gear has a significant impact on global fish stock levels, the marine environment, our future health and all marine life, then we must also agree that coordinated and effective global action is necessary as part of the effort to make fisheries sustainable. Greater dialogue and cooperation among all stakeholders in the fisheries sector, including with governments, industry and civil society, is essential.

As the prospective 2025 deadline for the United Nations Sustainable Development Goal target 14.1 is rapidly approaching, I call on industry to establish appropriate targets for the prevention and reduction of ghost gear globally. I would encourage all stakeholders committed to addressing ghost gear to work together with the GGGI to take on this task, and the seafood industry is one of the most critical agents of change.

With the sense of urgency to tackle this problem increasing, the number of effective, innovative solutions has grown exponentially too, changing the narrative from raising awareness about the problem to highlighting how people can be part of the solution. Together we have accomplished a lot over the last year, but more is needed to ensure cleaner, healthier and safer oceans for all.

**Steve McIvor**  
CEO  
World Animal Protection

**Image:** A ghost net, entangling 17 deceased sea turtles, was discovered days after a storm off the coast of Bahia, Brazil.  
Projeto Tamar Brazil / Marine Photobank





## Part 1 – Ghost gear today

# Introduction

World Animal Protection began its Sea Change campaign in 2014 to tackle the huge suffering caused to marine animals by ghost gear (ALDFG) - abandoned, lost and discarded fishing gear - that claims the lives of millions of marine animals every year<sup>1</sup>. Although there have long been groups dedicated to releasing entangled wildlife and others working on beach clean-ups above and below the tide line, at the time World Animal Protection was one of only a handful of organisations concerned with finding a truly global solution to the problem of ghost gear. Our campaign started with the launch of the *Fishing's Phantom Menace*<sup>2</sup> report and aims to address one of the biggest threats to sea life by measurably reducing the amount of fishing gear being lost or abandoned in the oceans, removing existing derelict gear, promoting sustainable recycling and reuse solutions and by rescuing animals already entangled.

## A global problem

The problems of marine plastic pollution and the harm it causes to sea creatures and the marine environment received unprecedented attention from the scientific community and from global news media during 2018. It is thought that there are already over 150 million tonnes of plastic in the ocean.<sup>3</sup> It's accumulating currently at a rate of about 8 million tonnes each year<sup>4</sup> and this is likely to escalate as global plastic production increases. The Ellen MacArthur Foundation has calculated that if the accumulation of plastic continues on its current trajectory, by 2050 there will be more plastic in the oceans than there are fish.<sup>5</sup>

Most plastic enters the ocean as microplastic (pieces under 5mm diameter) from mainly terrestrial sources. Much of this material is in the form of tiny beads and granules from products like cosmetics and cleaning products<sup>6</sup>, and fibres from washing clothes.<sup>7</sup> The impact these microplastics may have is still not fully understood, but they are found inside animals at all levels of the marine food chain from plankton to polar bears.<sup>8</sup> Romeo et al. (2015) reported approximately 18% of large pelagic fishes such as tuna, albacore and swordfish in the Mediterranean had plastic debris in their stomachs. Along the coast of the North Sea, 30 sperm whales were found beached between January and February in 2016. Post-mortem investigation of 22 of

the animals found marine debris in nine of them, including netting, ropes and even parts of a car.<sup>9</sup>

Macroplastic (larger than 5mm) includes packaging materials, plastic strapping bands, plastic bags and bottles, as well as lost fishing gear.

Ghost gear accounts for at least 10% of the total plastic entering the ocean each year.<sup>10</sup> However, this figure from 2009 is likely to be much higher today. Lebreton et al. (2018) calculated that the Great Pacific Garbage Patch for example contains 79,000 tonnes of floating plastic, more than half of it fishing related.

Some gear types, such as traps and pots, can continue to fish for the intended target species with near perfect efficiency long after they have been lost. In her 2009 book, *The World Is Blue*<sup>11</sup>, veteran marine biologist Sylvia Earle describes discovering derelict crab pots containing piles of bones and shells, the remains of successive creatures lured in by the carcasses of previous victims. This cycle is known as 'ghost fishing'. Other gear types, such as gillnets, may drift along the ocean currents, suspended in the water column entangling target and non-target species, fouling shipping and eventually harming vulnerable coastal habitats and coral reefs. Even gear types that fall to the bottom continue to trap things, smother habitats and become a hazard to active gear.

Fishing gear is predominantly constructed from durable plastics. On land these materials are vulnerable to degradation by sunshine, but in the marine environment, protected from the sun's ultraviolet radiation, plastics can persist for up to 600 years.

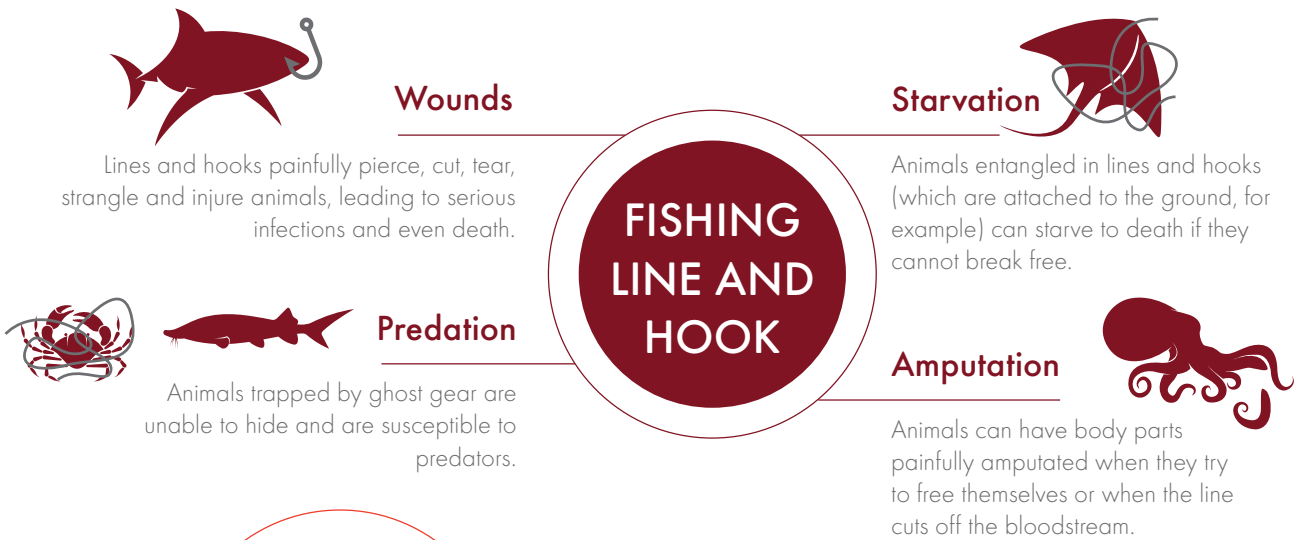
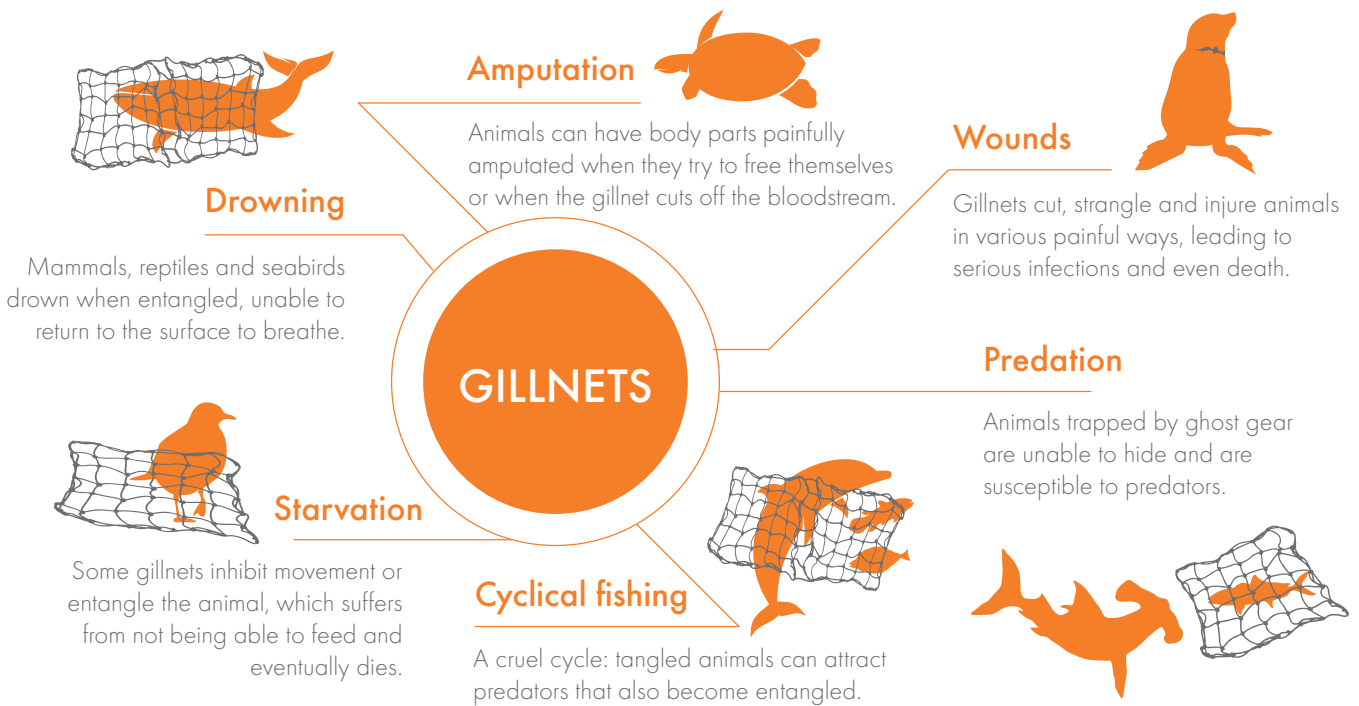
## A deadly threat to marine life

Designed specifically to trap and kill, lost fishing gear is thought to be the most harmful form of marine debris. Animals are four times more likely to be impacted by fishing gear through entanglement than all other forms of marine debris combined.<sup>12</sup>



# Ghost gear: a snapshot of suffering

Designed specifically to trap and kill, lost fishing gear is thought to be the most harmful form of marine debris.



Entanglement has been recorded for over 200 species of marine vertebrate animals<sup>13</sup>, but this is likely to be a considerable underestimate of the true picture as most entanglements go unwitnessed and unrecorded. It's estimated that 5,000 nets retrieved in Puget Sound, USA, alone were entangling 1,300 marine mammals, 25,000 birds, 100,000 fish and more than 3 million invertebrates.

Kühn et al. (2015) found in comparison to the comprehensive review by Laist (1997) the number of bird, turtle and mammal species with known entanglement reports increased from 89 (21%) to 161 (30%). Findings indicate that worldwide between 57,000 and 135,000 pinnipeds and baleen whales are entangled each year, in addition to the inestimable - but likely millions - of birds, turtles, fish and other species. Werner, et al. (2016) provide detailed information about recorded entanglements but note that it is likely that only a small proportion of entanglements are witnessed and reported.<sup>14 15</sup>

## New findings

In the 2018 *Ghosts Beneath the Waves* report<sup>16</sup>, we described in detail the origins, causes and effects of the problem of ghost gear and the steps which had been taken through the Global Ghost Gear Initiative (GGGI) to prevent, mitigate and resolve the problem. In the report we reported on a baseline study of how 15 of the world's largest seafood companies were dealing with the issue of ghost gear in their own operations.

In this report we provide an update on the ghost gear problem and activities in which World Animal Protection has participated either directly or through the GGGI to address it during 2018. In the second part, we report on the results of the second iteration of our analysis of companies' management of ghost gear. This time we have expanded the set of companies covered to 25.

Image: How IUU contributes to the ghost gear problem



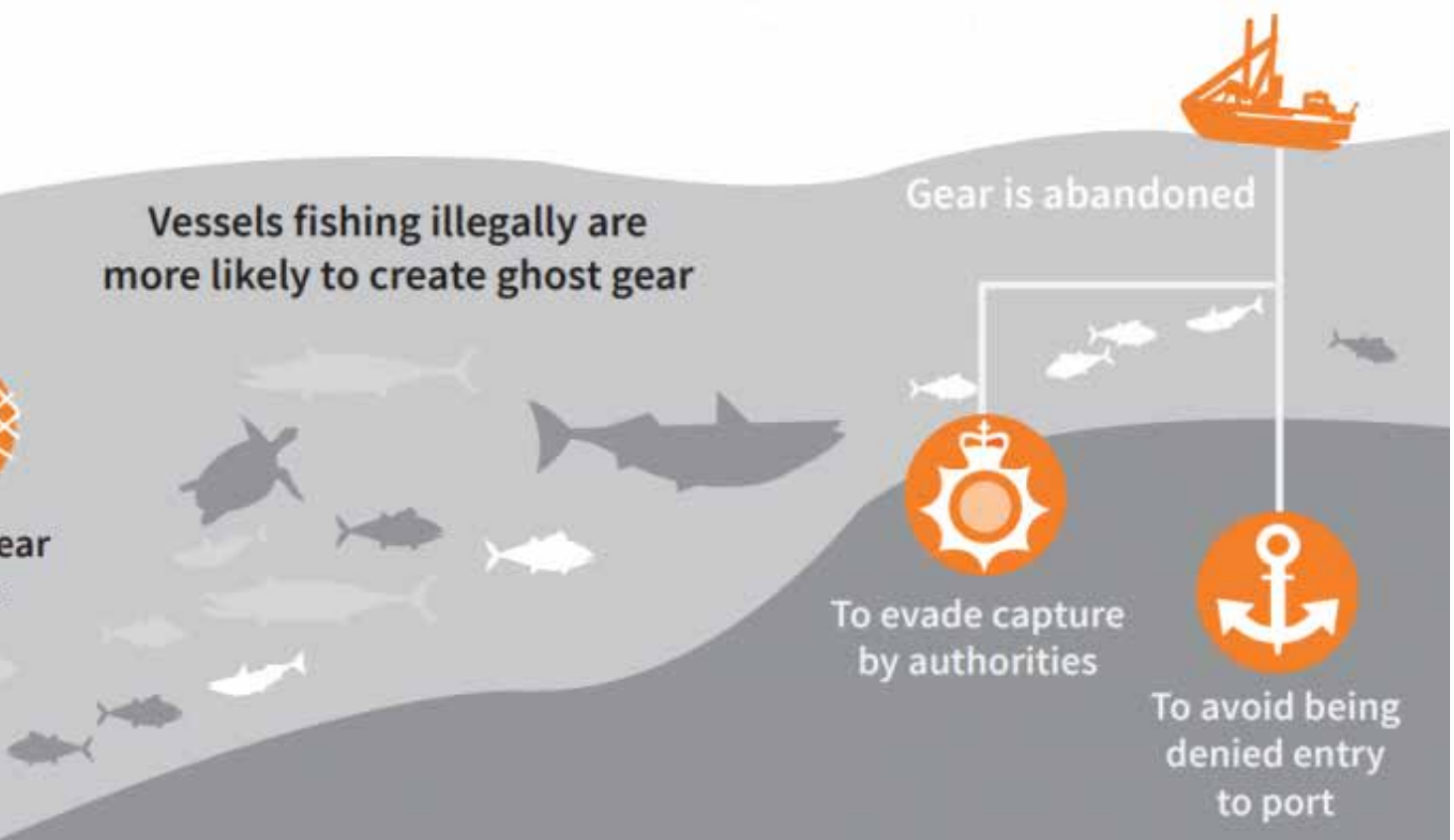
# The problem of ghost gear

Ghost gear is present in every ocean, sea and waterway where people fish for commercial and recreational purposes. From anglers' lost tackle to vast commercial nets, lost fishing gear continues to catch, trap, entangle and kill wild animals - both the intended target species and unintended victims as well. These animals are the inevitable collateral damage of the problem of ghost gear caused by the global fishing industry.

## Causes of ghost gear

Gear loss is often attributed to bad weather and gear conflict, but recent research suggests that the picture may be more complex. Thousands of derelict nets have been recorded along the remote coastlines of Australia's Gulf of Carpentaria, up to 3 tonnes per kilometre of coastline in a given year, among the highest levels recorded globally. These ghost nets entangle marine animals from dugongs and crocodiles to fish and invertebrates. They damage fragile seabed environments and are hazards to navigation.

Richardson et al. (2018)<sup>17</sup> analysed the causes of gear loss from Southeast Asian vessels operating in the Arafura Sea, between Australia and Indonesia, from where the ghost gear found in the Gulf of Carpentaria is thought to originate. The fishers they interviewed identified snagging of nets (78%) and gear conflicts (19%) as the main causes of gear loss. However, these proximate causes lie at the end of a chain of events that lead eventually to fishing net loss. Fault tree analysis<sup>18</sup> points ultimately to over-allocation of legal fishing licenses and illegal, unreported and unregulated fishing (IUU) as the causes which initiate a chain of events that result in ghost gear. Overcrowding, often exacerbated by the presence of industrial and foreign vessels, can lead to gear conflict or it can drive vessels to riskier grounds where gear is more likely to snag. The authors conclude that reduction of ghost gear requires substantial improvements in fishing management measures.





## Illegal, unreported and unregulated fishing

The Food and Agriculture Organisation of the United Nations (UN FAO)<sup>19</sup> recognises that IUU fishing remains one of the greatest threats to marine ecosystems due to its potent ability to undermine national and regional efforts to conserve marine biodiversity and manage fisheries sustainably. Fish resources available to bona fide fishers are removed by IUU fishing, which can lead to the collapse of local fisheries, with small-scale fisheries in developing countries proving particularly vulnerable.

It has been suggested that when fishing activities are illegal, enforcement pressure leads fishers to sometimes abandon or discard their fishing gear, attempting to destroy evidence before they enter ports or specific areas. Furthermore, IUU fishers often work under difficult conditions, for instance during the night, this increases the risk of losing fishing gear.<sup>20</sup> Some organisations have acknowledged a link between ALDFG and IUU. For example, FAO states that:

*“There is a link between ALDFG and IUU fishing gear. The prevalence of IUU fishing in an area can greatly increase the amount of fishing gear that is abandoned at sea. Persons engaged in IUU fishing are more prone to discard fishing gear to evade capture or to be denied entry to port. Gear conflict, particularly between active and static gear, is a common cause of ALDFG” (FAO, 2015).*

Hotspot areas for IUU can lead to higher amounts of ghost gear as vessels fishing illegally are more likely to abandon or lose their gear due to the precarious nature of the environment and illicit activities. Drivers for gear loss in illegal fisheries include conflict between legal and illegal fishers and their gear, the loss of gear while fishing at night in no-go zones and the dumping of gear to evade capture or to ensure entry to a monitored port. These activities have an impact on fish stocks, wildlife and livelihoods.

Building on this work, World Animal Protection reported on its investigation into the links between ALDFG and illegal fishing in the Andaman Sea, Thailand, at the 11th International Forum on Illegal, Unreported and Unregulated Fishing at Chatham House, London in May 2018.

Our investigation looked at the potential for IUU fishing to contribute to the ghost gear problem in one area in Thailand, and it confirmed that illegal fishers are much more likely to lose or abandon their gear than those fishing legally.







Efforts to eliminate IUU fishing and its associated linkages with ALDFG require a multifaceted approach, including fisheries supervision and management; registration of vessels; catch documentation and monitoring; controls on transshipment; and gear marking. It requires the participation of governments and intergovernmental organisations. It requires the determination of buyers not to accept pirated fish in their supply and their implementation of incorruptible traceability back to vessel to ensure that they really do know exactly where their fish comes from.

## Gear loss according to gear type

The categories of ghost gear most likely to trap and entangle wildlife are discussed in the GGGI Best Practice Framework (BPF) which was launched in 2017.<sup>21</sup> The BPF identifies gillnets, traps and pots and fish aggregating devices (FADs) as the most harmful gear types both in terms of the potential of getting lost as well as the ability to continue to ghost fish once lost. Gillnets, pots and monofilament line are most commonly associated with entanglement of large cetaceans.<sup>22</sup> Gillnets also feature commonly in entanglement of small cetaceans.<sup>23</sup> The foraging behaviour of seals and sealions means that trawl nets are often associated with entanglement of these animals as well as other gear types.<sup>24</sup> Turtle entanglement in ghost gear, particularly gillnets, is found across all species, life stages and ocean basins, with suggestions of particular vulnerability in pelagic juvenile life stages.<sup>25</sup>

### Gillnets

Gillnets and similar trammel nets are designed to catch fish by entangling them. They make up an estimated 19% of the gear used in global marine fisheries.<sup>25</sup> FAO recognises that gillnets have high ghost fishing potential, and research shows that gillnets and other entangling nets can maintain high ghost fishing catch rates for long periods, up to years in some cases. Gilardi et al. (2010) calculated that each ghost gillnet entangled more than 4,000 Dungeness crabs over its lifetime and that the cost to the commercial fishery of the lost crab was almost 15 times the cost of recovering the derelict nets.<sup>27</sup> Although gillnets are now banned in many fisheries, they are cheap to replace and still remain a widely used gear type. Compared to other fishing gear, gillnets are relatively inexpensive and so there is little incentive to retrieve them when lost or damaged. The design and manufacturing of

**Image:** End of life fishing nets are stacked in Dutch Harbour, Alaska and will be recycled as part of a programme. Plastix Global.



gillnets dramatically impacts which marine animals are likely to become caught.

### FADs

Floating debris in the open ocean attracts fish. Fishers of species like tuna exploit this effect by releasing artificial FADs, which may either be tethered to the sea bed (anchored FAD or aFAD) or which float freely and drift with the currents (drifting FAD or dFAD). FADs are thought to be more effective if the under-surface is more complex, for example with addition of suspended ropes and pieces of net. But these trailing nets tangle and trap creatures such as marine turtles and silky sharks (*Carcharhinus falciformis*). The Pew Charitable Trust (2015) calculated that 121,000 FADs were deployed in 2013 in oceans where tuna is fished.<sup>28</sup> Industry sources estimate that the annual deployment is now likely to be 150,000.

Many fishing companies have responded by offering FAD-free tuna, often caught by one-by-one pole and line methods. Others have modified FAD design to make them non-entangling. Drifting FADs are tracked using satellite buoys, so they can be used repeatedly while within range of the fishing fleet, but eventually they will drift out of range in the vastness of the ocean and may end up thousands of kilometres from where they were originally released, still aggregating fish and potentially entangling marine creatures as they go. Ultimately, unless they're biodegradable, FADs either break

up and contribute to the general marine litter, or they wash ashore on reefs and coastlines, causing further damage to these sensitive environments.

In July 2018 Radio New Zealand reported that the Cook Islands environmental group, Te Ipukarea Society encountered large quantities of abandoned fishing equipment that had washed up on the isolated Suvarrow Atoll, especially discarded FADs.<sup>29</sup> We highlight in Part 2 of this report how some tuna companies are going beyond insisting on non-entangling FADs and driving the development of FAD recovery schemes and biodegradable construction materials to further mitigate their damaging effects.

### Traps and pots

Traps and pots can easily be lost when the marker that identifies their position on the surface becomes detached. This is often because of adverse weather conditions but may also arise from accidental gear conflict or from malicious human interventions. Unattached pots are still very effective. Mitigation measures include the incorporation of escape panels which fall open after a planned soak time and recovery floats which are released similarly. A study estimated over 85,000 lobster and crab ghost traps could be found within the Florida Keys National Marine Sanctuary.<sup>30</sup>

**Image:** Loggerhead turtle trapped in an abandoned drifting net in the Mediterranean sea.  
Jordi Chias / Naturepl.com





# A global approach

In 2015, World Animal Protection launched the GGGI, the world's first and largest cross-sectoral alliance committed to driving solutions to the problem of ghost gear worldwide. The number of participating organisations grew by 50% from 64 to 96 in 2018. Officially supported by 14 governments, the GGGI now brings together almost 100 fishing and seafood companies, retailers and other businesses, intergovernmental and non-governmental organisations and academic organisations. It aims to improve the health of marine ecosystems, to safeguard human health and livelihoods, and to protect marine animals from harm. It works globally and locally through three working groups to build evidence, to define best practice and inform policy, and to catalyse and replicate solutions.

## Building a baseline to address the problem

The GGGI has been monitoring the occurrence of ghost gear around the world through its data portal. Input ranges from official fisheries management data to observations submitted by individual fishers and members of the public through the Ghost Gear Reporter<sup>31</sup> smartphone app and online platform, launched in 2018. The app allows for data such as gear type and characteristics, as well as photographs and geo-locations of the gear to be uploaded. The data portal already has more than 300,000 separate records. This is helping us to establish a baseline of evidence on ghost gear and to analyse which fisheries use similar gear, where it is found and what creatures are caught in it.

It's hard to estimate how much fishing gear is in use around the world and even more difficult to estimate how much is lost or abandoned in the ocean. Previous reviews suggested that ghost gear is accumulating in the ocean at a rate of about 640,000 tonnes every year,<sup>32</sup> however this figure was postulated ten years ago. We now believe the true figure to be closer to 800,000 tonnes, or 10% of all the plastic that gets into the ocean. That's a tonne every 40 seconds.

A new study by Commonwealth Scientific Industrial Research Organisation (CSIRO) for the FAO is due to come out in 2019 with updated figures on global gear loss data across the five most commonly used gear types.

## Ghost gear hotspot areas

Much attention has been focussed on the five great rotating deep ocean currents, called gyres, in the North and South Atlantic Oceans, the North and South Pacific Oceans and the Indian Ocean. Driven by the Coriolis effect of earth's rotation, these gyres accumulate plastic waste and other debris, including floating ghost gear. The Great Pacific Garbage Patch is a major plastic accumulation zone the size of France, located in the Northern Pacific Ocean between Hawaii and California. Lebreton et al. (2018) calculated that it contains 79,000 tonnes of floating plastic, more than half of it fishing related. They also observed that 70% of marine debris eventually sinks to the sea floor, where it can adversely affect deep ocean habitats.

## Policy change to drive action on ghost gear

### Gear marking matters

At the 33rd session of the FAO Committee on Fisheries (COFI) in Rome, in February 2018, World Animal Protection successfully lobbied the UN to adopt the Guidelines for the Marking of Fishing Gear, which gives FAO a platform to ensure its member states take action on ghost gear.

Thanks to our efforts at COFI, and interventions from Kuwait, Fiji, Panama, Argentina and Canada, this essential component in the fight against ghost gear has been incorporated by FAO. However, FAO recognises that the Guidelines are just a first step and have committed to develop a global strategy to address ALDFG as well as an umbrella programme of work. This work includes supporting the implementation of best practices for addressing ghost gear, including recovery and recycling, biodegradable gear, and reducing ghost fishing. Furthermore, it acknowledges that the GGGI and similar organisations

should play an essential role in developing and delivering ghost gear work around the world.

### European Strategy for Plastics

In 2018, the European Commission tabled an important legal proposal to tackle marine litter.<sup>33</sup> By introducing new measures on single use plastics as well as derelict fishing gear, the proposal will contribute to Europe's transition towards a Circular Economy. Alongside other consumer items the proposal specifically focused on the problem of ALDFG and measures to tackle it across the European Union.

The European proposal estimates that in the EU, 20% of gear is lost at sea. The reasons for this loss vary, ranging from accidents, storms and entanglement to intentional abandonment. Unfortunately, only 1.5% of end of life fishing gear currently gets recycled in the EU.

Fishing gear (nets, lines, pots, traps...) accounts for 27% of all beach litter in Europe. With its proposal, the Commission will encourage all stakeholders involved in the fishing gear operational chain to implement systems to responsibly manage, dispose of and recycle fishing gear. In particular, producers of plastic fishing gear will be required to cover the costs of waste collection from port reception facilities and its transport and treatment in what is called an 'Extended Producer Responsibility', or EPR, scheme. This will also cover the costs of awareness-raising measures to prevent further loss and encourage responsible behaviour. The circular approach proposed by the Commission, alongside other measures such as gear marking, spatial management, lost gear reporting and recovery initiatives can form part of a holistic system for prevention and reduction of ALDFG.

The European Plastics Strategy has the potential to act as a benchmark for the world in establishing systems to responsibly manage fishing gear, introduce a circular economy for this equipment and prevent the risks to wildlife through gear loss and abandonment. World Animal Protection has been working closely with stakeholders in Europe to promote best practices for the management of fishing gear and provide insight through engagement with policy-makers, political representatives, companies, NGOs and trade associations.

**Image:** A shark caught in ghost gear off the coast of Brazil. Marcus Davis.

### Making a difference for whales

In the same year, World Animal Protection actively collaborated with the Brazilian Government in the process that led to the adoption of the Ghost Gear Resolution by the International Whaling Commission (IWC), during its meeting that was held in Brazil (IWC67). This new resolution will enable the IWC – and the countries that are members – to dedicate more efforts and resources for the responsible management of fishing gear to prevent whale entanglements.

### Collaborating at the highest level

World Animal Protection has also collaborated with the United Nations Environment (UNEP) to advance the Clean Seas campaign and World Animal Protection related campaign goals and initiatives as participants in the Global Partnership on Marine Litter. World Animal Protection supported the First National Seminar on Marine Litter, hosted by UNEP, the Brazilian Ministry of Environment and partners. This Seminar led to the creation of the National Commission on Marine Litter, coordinated by the Brazilian Government and with World Animal Protection and UN Environment having a seat on its advisory board. To formalise this collaboration, a MoU between World Animal Protection and UNEP, with a central focus on the GGGI, was signed in March 2019, at the UN Environment Assembly in Nairobi, Kenya.

Ghost gear is a global menace, but, because it's mostly out at sea or under the sea, to most people it is less obvious than the random polystyrene cups and plastic drinks bottles that wash up on any beach. The work of the GGGI has resulted in significant positive action, but governments, the fishing industry, seafood companies, consumers, and citizens around the world must act together to prevent a time when the last commercial fishery has been exhausted and the boat no longer comes in.



# Global solutions to address ghost gear

The GGGI has established itself as the world's leading global alliance dedicated to solving the problem of ALDFG worldwide. Since 2015, when it was launched by World Animal Protection, the GGGI has grown to 96 participant organisations spanning 5 continents and has the official support of 14 governments.

The GGGI's focus is to build evidence and understanding of the issue, promote best practice management of gear, and scale up and replicate proven solutions around the world. It has done this by drawing on the strengths of its participants and by putting tangible tools in place, by presenting real evidence, and by trialling and scaling up practical solutions. Through building its credibility with a wide range of key stakeholders - from large companies to local fishers in Indonesia - it has driven the momentum and established the GGGI as the leading platform to tackle ghost gear at a global scale.

In 2018, the GGGI officially launched eight projects with a number of others in development or continuation. The working groups also collaborated to plan and deliver workshops and capacity-building to encourage the uptake of best practices to prevent the risk of ALDFG. Through our advocacy, governments have recognised that ghost gear is an important problem and are putting ambitious targets in place to address the issue head on. The European Union adopted stronger policies on fishing gear with an ambitious target of collecting 50% of fishing nets and recycling 15% of fishing nets by 2025 - while countries such as the Netherlands and Indonesia are collaborating on implementing gear marking guidelines.

The GGGI has also worked to inform the practices of large seafood companies, among them Thai Union, Tri Marine and Grupo Nueva Pescanova, to tackle ghost gear in their operations and supply chains. Certifiers, such as the Marine Stewardship Council (MSC), are considering taking the recommendations of the BPF on board in the revision of their sustainability standards this year.

Much has been achieved, but there is so much more to be done to ensure cleaner, healthier and safer oceans for all.

2018 was the last year World Animal Protection was at the helm of the GGGI. In 2019, we welcome Ocean Conservancy as the new lead partner of the GGGI steering us into the future.

The following section provides an update on some of the projects implemented through the GGGI in this remarkable year.

## FAD Best Practice Management South Pacific

**The challenge:** Fishers in the Pacific Islands rely on nearshore anchored FADs, which are designed to attract and aggregate pelagic species close to shore. Pacific Island nations are investing in these aFADs as they strive to improve the supply of nutritious food for their citizens. While aFADs are designed to remain in place with anchors, it is not uncommon for them to break free of their anchors and drift, with the potential to cause similar negative impacts as dFADs.

**The project:** In 2017, a project funded by the Belgian government was developed to inform draft guidelines for marking fishing gear being developed by FAO. The project was also to assess current practices around the management of FADs in the Pacific.

The project consisted of two tracks. First, we partnered with a commercial tuna fishing company operating in the Pacific. This company agreed to work with the GGGI on this project to provide an industry perspective into the development of best practices for the management of FADs and as part of their commitment to fostering sustainable fisheries. Their policies and practices were assessed in line with the FAO Guidelines for the Marking of Fishing Gear and the GGGI BPF, with recommendations made for improvement where appropriate. During the project the company also partnered with us to collect data on decommissioned dFADs that were no longer being tracked. During the study the GGGI 'adopted' a small number of dFADs to ascertain any patterns in terms of accumulation and drift in order to inform any future projects focussed on retrieval or interception. The company adopted

a non-entangling FAD policy, and set a long-term goal to transition to biodegradable dFAD designs, which is being trialed in the Pacific as of 2018.

Second, we partnered with the Vanuatu Fisheries Department (VFD) to research and test cost effective methods to track aFADs to provide support to fisheries managers and aid in location in the event they break free from their anchors. The project team tested vessel tracking devices made by Pelagic Data Systems (PDS), which are light, low cost and run on solar power. They had previously only been used to track vessels and not on fishing gear, so this component of the project was experimental. The results found that PDS devices provided accurate, real time position data. We also partnered with GGGI participant Satlink and used their buoys with echo sounders to validate PDS position tracking and to assist VFD in assessing aggregation effectiveness of selected aFADs.

### Bureo and WWF Expand Net + Positiva Program Peru

**The challenge:** Peru has the largest single species fishery in the world - the anchoveta fishery. This fishery uses purse seines, which have the best quality net for recycling into

**Image:** World Animal Protection and the Vanuatu Fisheries department deploy trackers on to artisanal FADs as part of a GGGI project.

World Animal Protection / Joan Drinkwin

plastic raw material. However, local fishers currently have no ecologically beneficial way of disposing of end of life nets.

**The project:** The focus of this project - a collaboration between GGGI participants Bureo and WWF - is to create a circular economy from ALDFG in Peru by building on the successful model already established by Bureo in Chile. The project will build a relationship with the fishing industry in Peru, helping to develop a path for innovative solutions that involve and benefit communities based on Bureo's Net+Positiva model, creating a circular economy while protecting marine life and sustaining the ocean's health.

The project will reduce the volume of ALDFG entering the Peruvian coastline; remove the existing ALDFG from Peru's ocean; provide the fishing industry an environmentally sound alternative to discarding their nets into the marine environment; and recycle the ALDFG that is collected into innovative products, creating sustainable business models for communities.

The project, which is being scoped in 2019 and implemented in 2020, will engage with three main anchovy fishing companies, asking them to donate their purse seine nets. Bureo is currently working to create new products made from end of life and recovered fishing nets. The goal of this project is to increase the capacity and collection to greater than 1000 tonnes of ghost gear annually. Sustainable business opportunities in recycling the nets into innovative projects could generate up to \$200,000 USD for local communities.





## Latin American Ghost Gear workshop Panama

**The challenge:** To build on successful efforts by the Panamanian government and create a cohesive network to address the problem of ghost fishing gear in the Caribbean and Latin America regions.

**The project:** World Animal Protection – alongside several partners, including NOAA, PADI and Conservation International - partnered to deliver a two-day workshop with representatives from eight countries, including Panama, Colombia, El Salvador, Virgin Islands, Bermuda, Puerto Rico, United States and Costa Rica.

The workshop successfully trained local divers in removal of ghost gear, safety protocols and garnered practical experience in removing ghost nets from the region. These skills will enable further removal of gear in the region proactively and safely. Local stakeholders and the Panamanian government were hugely supportive of this work helping to expand the network of people and organisations interested in tackling the problem of ghost gear in this region.

**Image:** Local fishers, Gulf of Maine Lobster Foundation and World Animal Protection remove derelict fishing gear in the Gulf of Maine.  
World Animal Protection / Harrison Kennedy

## Lobster pot recovery and recycling Gulf of Maine, USA

**The challenge:** To gather and analyse ghost gear related data in the Gulf of Maine, remove ghost gear, raise awareness as well as working with partners in the fishing industry and other stakeholders to create a long-term sustainable model to prevent ghost gear entering the marine environment and to aid its removal.

**The project:** This project was led by World Animal Protection, in collaboration with GGGI members Gulf of Maine Lobster Foundation (GOMLF) and the National Oceanic and Atmospheric Association (NOAA), and consisted of an at-sea gear removal in the Gulf of Maine as well as coordinated recovery and recycling in areas where heavy lobster fishing occurs.

Fishers volunteered their time, vessels and sternmen to grapple for lost traps. Recovered gear was brought to a central wharf for sorting and processing. Salvageable traps were returned to their owners while unusable traps were disposed of and the steel was recycled. Information about each recovered trap was recorded and given to scientists to assess the impact on marine habitat.

In the project, fishers can dispose of old, used or unwanted fishing gear without incurring the disposal costs often incurred at transfer stations. Wire or wood traps, buoys, warp, nets, or other equipment (no vessels) can be brought to designated collection sites. All gear collected is repurposed, recycled for metal scrap, or burned at a waste-to-energy facility.



Extending the trap clean-up to land, as some groups have done on a small scale, is a logical next step. More than just a beach clean-up, this is about engaging fishers and their local communities in taking ownership of their piece of the Maine coast. Leading the charge are the fishers; alongside are their families, students, youth groups, and businesses. The project will continue in 2019 under the management of Ocean Conservancy and funding of the 11th Hour Racing.

### Net recovery and recycling Alaska, USA

**The challenge:** Dutch Harbor, Alaska is the leading seafood port in the United States. In 2014 alone, the port brought in almost \$200 million worth of seafood. However, the port has no established means of disposal for end of life fishing gear, which combined with the high volume of fishing activity and the remote location and lack of established transport has produced a substantial backlog of end-of-life fishing nets around the island.

**The project:** This project, now in its third year of implementation (2019), collects and transports end of life fishing nets to Denmark where they are recycled by GGGI participant Plastix Global into basic plastic commodities. The cost for the recycling disposal option is similar to what would be charged if the fishermen had taken their end of life gear to the landfill, so there was no a barrier to participation when the concept was introduced.

No treatment of the materials is required, as the recycling facility in Denmark can handle all kinds of fishing related waste and manages all the treatment and separation

Over 100 tonnes of derelict fishing nets have been removed and made into new products since the start of this project. This total is expected to increase as fishers finish fishing and are able to take time to sort through their gear piles.

### Satlink Zero Impact Chile

**The challenge:** To expand opportunities to keep end of life fishing nets from the ocean by recycling and converting them into consumer products.

**The project:** In 2018, maritime technology company Satlink teamed up with fellow GGGI participants World Animal Protection and Bureo to expand Bureo's Net+Positiva program to additional areas in Chile, which will see 100 tonnes of end of life fishing nets recycled and turned into products such as skateboards, sunglasses, frisbees and more.

**Image:** End of life fishing nets are sorted before recycling as part of Bureo's Net+Positiva program in Chile. Bureo





Satlink is making a commitment to fund the strengthening and growth of Bureo's extremely successful Net+Positiva program, which provides infrastructure and training to fishing communities in Chile in order to sustainably retrieve and manage fishing gear at the end of its life cycle. The effort is part of an initiative from the company to offset their impact on the environment and gradually transition into more sustainable operations.

This GGGI project will expand Bureo's net collection program to four new artisanal fishing communities in Chile and efforts will be scaled to collect larger volumes of end of life and discarded nets from existing communities already engaged in the Net+Positiva program.

The expansion of this program will reduce the risk of new ghost gear from entering the marine environment, helping to protect the sustainability of fish stocks and a significant threat to marine wildlife and ecosystems. Additionally, by transforming this gear into higher value products, like skateboards and sunglasses, Bureo is able to provide fair wages to local workers in the communities while maintaining a monetary fund for the community by paying for each recovered kilogram of fishing gear. This project will also promote the benefits of fish net recycling from a ghost gear prevention perspective through project participants' own networks, in the media, industry events, etc. and facilitate scaling of this approach to new regions.

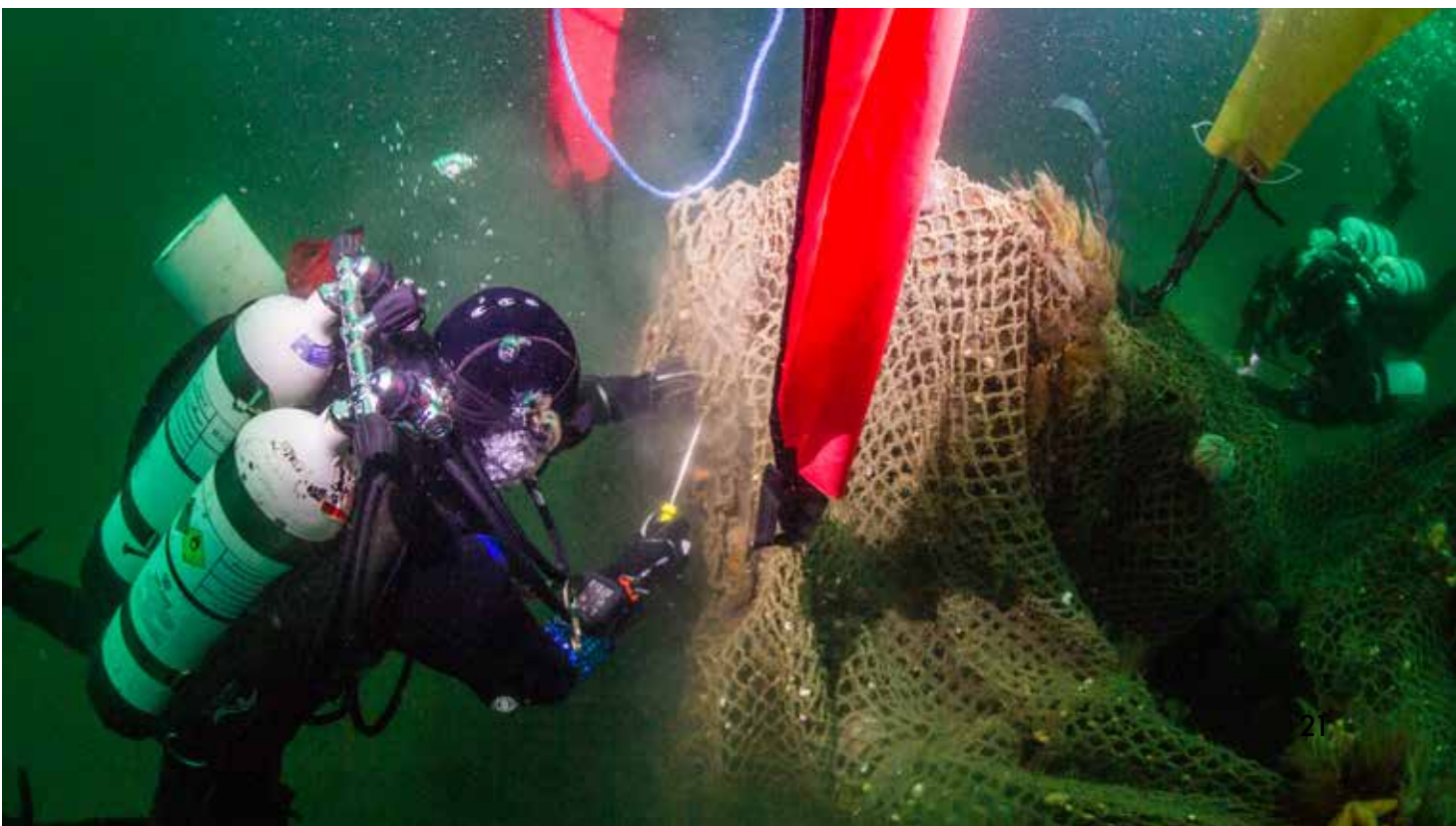
## Myanmar Ocean Project Myanmar

**The challenge:** The Myeik Archipelago is one of the most untouched island groups in the world. However, even though the islands of the archipelago are largely undisturbed by humans, ghost nets from artisanal fisheries have been found beneath the surface, threatening key species such as manta rays, and harming the marine ecosystem.

**The project:** To address the challenge of ghost fishing gear in Myanmar, the GGGI supported a ghost gear removal pilot effort - the first of its kind in Myanmar - coordinated by the Myanmar Ocean Project. The project, funded by the National Geographic Society and World Animal Protection and managed by Ocean Conservancy, will support the recovery of gear by SCUBA divers who use cutting instruments and float bags to lift retrieved gear to the ocean surface where it is winched on board for disposal or recycling.

In addition to recovering tonnes of ghost gear, the project will also conduct a preliminary quantitative assessment of the scope of the problem and conduct outreach to local fishing communities, SCUBA diving groups, tourism operators and media outlets to raise awareness about the project.

**Image:** Divers in the UK have been trained in a unique project at Scapa Flow.  
Christine Grosart / Ghost Fishing UK



## Ghost fishing UK

**The challenge:** Scapa Flow is a body of water located in the Orkney Islands, off the Northern coast of Scotland. The Orkneys have a long history of fishing and are predominantly known for their quality shellfish traditionally caught using pots. These pots are attached to ropes, spaced every 25m and the whole assembly known as a 'string'. Each string is in the region of 500m long and occasionally multiple strings are connected together. The strings are marked at the surface with a buoy at each end of the string. During storms, or due to inadvertent contact with a ship's propeller, the marker buoys can detach and make finding and recovering the strings very difficult. The lost pots and strings then pose a risk to the marine environment as they continue to catch fish in a cycle of 'ghost fishing' and remain a threat of entanglement.

**The project:** In 2018 Ghost Fishing UK completed its third annual dive removal operation in Scapa Flow, Orkney, recovering more than 30 pots and creels, 100kg of net and various other items of lost fishing gear from the site. The project has been funded by World Animal Protection and the FatFace Foundation, who, as part of the GGGI are working to address this issue.

Volunteers were invited from across the UK with the aim of creating units of trained divers across a variety of locations who can carry out underwater clean-up operations. Volunteers were trained to safely remove ghost gear, identify marine wildlife they find trapped in the gear, and document their work.

The teams were guided in their efforts by the Big Scapa Cleanup project. This project has a website that collects data from amateur divers visiting Scapa Flow on the location and nature of the ghost gear on the dive sites.

The haul of ghost gear collected by Ghost Fishing UK was shipped to Denmark where project partner Plastix will transform the nets and lines into high-density plastic that can be used as a raw material for many different products.

## Marking fishing gear in artisanal fisheries Indonesia

**The challenge:** During the COFI 32, the Committee instructed FAO of the United Nations to conduct a number of pilot projects to explore the feasibility of fishing gear marking, particularly in developing countries, and ghost gear retrieval. Indonesia was proposed as a country for a pilot project given the abundance of ALDFG and increasing threat of IUU fishing in Indonesian territorial waters coupled with a strong commitment by the Indonesian government to take steps towards addressing both issues. Gillnets were proposed as a primary focus of the project due to both their prevalence and impact as ALDFG.

**The project:** Two pilot sites were selected in Java, Indonesia, to test gear marking methods outlined in FAO's Draft Guidelines. In Pekalongan, low rates of gear loss were reported due to favourable weather conditions and a sandy,





muddy substrate which reduces the possibility of snagging. In the second pilot site in Sadeng, where the fishers operate in deeper waters in the Indian Ocean in less favourable weather conditions, higher rates of gear loss were reported, with one study estimating 35,000 pieces of gillnet being lost in the spiny lobster fishery each year.

This project builds on the work done in 2017 and early 2018 to test approaches for the marking of gillnets in small-scale Indonesian fisheries. In 2018 World Animal Protection, on behalf of GGGI, received further funds from the Government of the Netherlands to expand this work and look at the role of both blockchain technology and the recycling of fishing gear as part of sustainable approaches to tackling ALDFG.

In 2018 the project supported the expansion of a net collection recycling pilot underway in Merauke, West Papua, and also tested the efficacy of different marking approaches using both high tech and low-tech materials in two pilot sites in Indonesia. The marking study was aimed at determining whether gear marking can work in small-scale fisheries and what other management measures and systems need to be in place for successful implementation. The studies looked at marking with bamboo and other locally sourced materials in order to find an environmentally-neutral solution for gear marking, and also investigated whether marking with FibreCode during net manufacturing could provide a full traceability system.

The work will continue in 2019 exploring the scope for integrating gear tagging within a net collection and recycling system and assessing the business case for implementation.

**Image:** World Animal Protection and the GGGI work with the Indonesian government and local fishers on a gear marking project.



**Image:** Ghost gear retrieved as part of clean up efforts in Brazil. Noelly Castro.

## Other collaborations to address ghost gear

### Ghost gear removal project Brazil

**The challenge:** In Brazil, there are significant gaps in the national knowledge base about ghost gear in the local environment, including where gear is being lost or might be accumulating.

Working with local environment specialists and managers of state-protected marine areas, ghost gear hotspot areas were identified.

It was alarming to note that even protected areas of the country – and the marine life that inhabits them – are being impacted by ghost gear, especially gillnets.

**The project:** In 2018, World Animal Protection, through its office located in Brazil, funded and coordinated a dive removal operation – clean-up activity – in collaboration with Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio, the environmental authority at the federal level) in a marine protected area called Arvoredo, Santa Catarina state, when 56 kg of ghost nets were removed, saving the lives of an estimated 2,500 marine animals.

## Formulating ghost gear prevention strategies Vanuatu and the Solomon Islands

**The challenge:** Ghost gear is a global problem requiring coordinated global solutions. The Commonwealth Clean Ocean Alliance (CCOA) is a UK and Vanuatu-led Blue Charter action group encouraging member states to pledge ambitious actions to reduce plastic pollution in their countries. As part of this work, the UK government's Commonwealth Litter Programme (CLiP) will support five countries across the Commonwealth to develop national marine litter action plans. CLiP will work with Belize, Solomon Islands, South Africa, Sri Lanka and Vanuatu to share expertise and find solutions to the environmental and socio-economic problems caused by litter in the marine environment. CLiP is funded by the Department for Environment, Food and Rural Affairs (Defra) and led through the Centre for Environment, Fisheries and Aquaculture Science (Cefas) which helps drive the objectives CCOA. Cefas aims is to work with partners across the Commonwealth to share expertise and find solutions to the environmental and socio-economic problems caused by litter, including from ALDFG.

**The project:** In 2018 World Animal Protection, on behalf of the GGGI, received funding from CLiP to deliver a project in Vanuatu and the Solomon Islands aimed at addressing ALDFG.

Under this project, World Animal Protection, TieraMar, NRC Consultants, WWF and VESS developed a removal and prevention programme for ghost gear in the Pacific region (specifically Vanuatu and Solomon Islands). The programme is comprised of the following elements:

- Desktop study complemented with data gathering and ground-truthing in situ, which informed the location of ghost gear hotspot areas
- Removing a gillnet in Vanuatu harbour located in the water column as a demonstration project to train local divers in a decision making removal framework as well as provide technical training to remove lost and abandoned gear safely. We evaluated options to identify lost fishing gear and its impacts to allocate clean-up costs as described above, participated in two national policy conferences to help translate our findings in policy recommendations and led a regional workshop to consider options to prevent and reduce the amount of abandoned and lost fishing gear as described in the GGGI BPF and better understand the causes of gear loss.

## Promoting Best Practice of fishing gear management Kenya and around the world

**The challenge:** In 2018 World Animal Protection was approached by Defra to provide support in their efforts to assist Commonwealth countries in raising awareness and driving action to address ALDFG in a variety of fisheries and contexts. With the BPF for the Management of Fishing Gear viewed as a vital tool for providing guidance for stakeholders throughout the supply chain in approaches for managing fishing gear responsibly, World Animal Protection was tasked with developing a training format to disseminate information and support uptake of solutions in regions around the world.

**The project:** In 2018 World Animal Protection delivered the first regional workshop to support the development of local action plans to address ALDFG in Nairobi, Kenya, in collaboration with Ocean Outcomes, a GGGI participant based in Portland, Oregon. The workshop, funded by Defra, brought together stakeholders from the Caribbean, various African nations and intergovernmental organisations to delve

World Animal Protection, Tierra Mar and Natural Resource consultants coordinated the project with support from local partners WWF and VESS to undertake a number of activities including the hosting of a workshop aimed at identifying and developing approaches to tackle ALDFG, a demonstration net removal and training of local divers in recovery techniques, and a large data collection exercise intended to support the development of a baseline and hotspots for gear loss.

into the GGGI BPF and explore the relevant approaches for different fishery and policy contexts. The participants were tasked with drafting action plans specific to their work area and then supported their colleagues via critical evaluation and discussion.

Building on the community created at the workshop, the participants will be supported in 2019 via a series of webinars where they can report progress and access support in implementing their action plans. The plans range from a network of African nations collaborating across borders on a strategy for addressing ghost gear, attempts to establish a baseline for gear loss in Kenya and a new circular economy model in Kenya for dealing with old gear.

In 2019 World Animal Protection received funding from the Waterloo Foundation to further support uptake of best practice approaches to the management of fishing gear for both companies and governments around the world.

The support will enable World Animal Protection to evolve the learnings from the Defra project and develop a training

and education package targeted at companies and national governments which provides practical support for implementing the Best Practice Framework. The course will include an online training and assessment module, a 'how to' guide aimed at simplifying the steps for implementing the BPF and a number of workshops delivered to key stakeholders throughout 2019.

The ultimate goal of the project is the integration of best practices into policy, national action plans and sourcing guidelines. We will continue to forge the alliance of governments, industries, intergovernmental and non-governmental organisation, with a shared commitment to understanding and tackling the problem of ghost fishing gear.

**Image:** Participants discuss the GGGI Best Practice Framework in a workshop on fishing gear management in Nairobi, Kenya in 2018.



**Image:** Fishing vessels moored in a harbour.  
Valerie Craig / Marine Photobank





## Part 2 – Company assessment findings

# Introduction

World Animal Protection has reviewed how 25 of the world's leading seafood suppliers manage and report on ghost gear in their operations and supply chains. It builds on a baseline study of 15 seafood suppliers published by World Animal Protection in March 2018. This research provides the first indications of the seafood industry's response to GGGI and the threats presented by ALDFG to our fisheries.

# Methodology

## Scope

The seafood companies covered in this review (see Table 1) were the 15 companies included in the baseline assessment as well as an additional 10 companies selected on the basis of their size and relevance to the seafood market.

**Table 1: Companies covered**

Companies covered in the 2017 baseline assessment	New companies in 2018
<ul style="list-style-type: none"><li>• Beaver Street Fisheries</li><li>• Bumble Bee Foods</li><li>• Clearwater Seafoods</li><li>• Cooke Aquaculture</li><li>• Dongwon Industries</li><li>• East Coast Seafood Group</li><li>• Grupo Nueva Pescanova</li><li>• High Liner Foods</li><li>• Maruha Nichiro Corporation</li><li>• Nippon Suisan (Nissui)</li><li>• Pacific Seafood Group</li><li>• Samherji</li><li>• Thai Union</li><li>• Tri Marine</li><li>• Young's Seafood</li></ul>	<ul style="list-style-type: none"><li>• American Seafoods</li><li>• Andrew Marr International</li><li>• Austevoll</li><li>• Bolton Group</li><li>• Camil</li><li>• Cargill Aqua Nutrition</li><li>• Frinsa</li><li>• Grupo Calvo</li><li>• Nutreco</li><li>• Princes</li></ul>

## Assessment approach

Companies were evaluated against a series of objectively measurable criteria in three areas:

- Policy and Commitment, including engagement with GGGI and adoption of the Best Practice Framework (BPF).
- Implementation: Systems and Processes, including traceability as well as ALDFG objectives and targets.
- Performance Reporting and Impact, including involvement in high impact fishing techniques, the use of mitigation measures, and partnerships for fisheries conservation and protection.

Each section was marked out of 50, giving equal weight to performance in the three core areas. The assessment criteria and their interpretation are described in Appendix 1: Methodology Report.

Companies were assessed based on information published on their websites, information presented on other relevant websites (e.g. the GGGI's list of signatories, the participants in various Fishery Improvement Projects, the database of the Marine Stewardship Council), and information provided by the companies themselves. All companies were given the opportunity to review their draft assessments for factual accuracy and completeness. The assessments were finalised in late December 2018.

## Scoring framework

Companies' scores were assessed as indicated in Table 2.

**Table 2: Overall scoring framework**

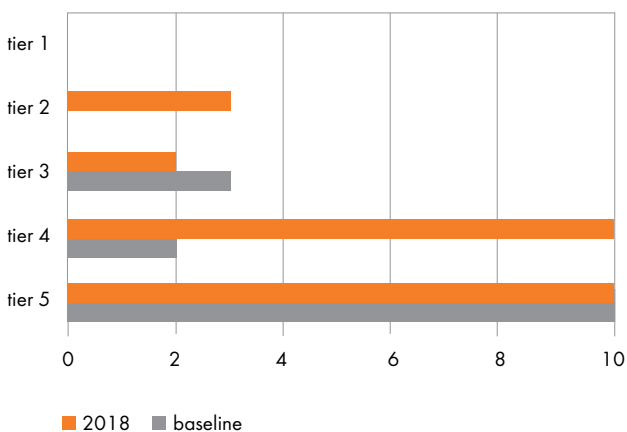
Tier	% score	Description
1	81-100	Leader: setting best practice on ALDFG
2	61-80	Achiever: ALDFG integral to business strategy
3	41-60	Improver: established, but work to be done on approach to ALDFG
4	21-40	Engaged: on the agenda, but limited evidence of implementation on ALDFG
5	0-20	Not engaged: no evidence that ALDFG is on the business agenda

# Overall results

The average score across the 25 companies assessed is 28% (placing the average company in the middle of Tier 4), suggesting that most companies provide limited evidence that ALDFG is on their business agenda or that they are taking much action to address the issue. This is confirmed when we look at the distribution of the companies below; of the 25 companies assessed, 10 are in Tier 5 (the lowest tier), and 10 are in Tier 4.

There are, nonetheless, clear signs of progress even in the short period since the baseline assessment was published in March 2018. The average score for the 15 companies covered in the baseline assessment has increased from 23% to 30%, a tangible sign of progress even if from a low starting point. Furthermore, six – Bumble Bee Foods, High Liner, Nippon Suisan (Nissui), Pacific Seafood Group, Tri Marine and Thai Union – have increased their ranking by one tier. Grupo Nueva Pescanova has improved by two tiers. Only one company, Young’s Seafood dropped a tier relative to the baseline assessment.

Number of companies in each tier



In the results, we see that many of the elements needed for an effective sector-wide response are in place. First of all, three companies – Bolton Group, Thai Union and Tri Marine – can demonstrate tangible action and provide a model for others to follow. All three have clear commitments to action on ghost gear, have taken concrete steps to reduce their contribution to ghost gear, have worked with others to encourage action on this issue across the seafood industry as a whole, and have achieved best practice in some areas.

Second, as we discuss later in this report, many companies have firm commitments to marine protection and are acting on specific issues such as marine litter and bycatch mitigation and have established management systems and processes to deliver on these commitments. In many cases, these companies should find it relatively straightforward to integrate ALDFG into these commitments, systems and processes.

Third, many of the companies are active in collaborative initiatives such as the Marine Stewardship Council, the Monterey Bay Seafood Watch scheme, and International Seafood Sustainability Foundation. These and other initiatives are supporting research and development (e.g. on non-entangling FADs), encouraging industry good practices (e.g. through requiring the traceability of harvested fish back to catching vessels) and by enabling different stakeholders to work together in specific fisheries.

**Table 3: Overall results**

<p><b>Tier 1</b> <b>Leader:</b> setting best practice on ALDFG</p>	<p><b>Tier 2</b> <b>Achiever:</b> ALDFG integral to business strategy</p>	<p><b>Tier 3</b> <b>Improver:</b> established, but work to be done on approach to ALDFG</p>	<p><b>Tier 4</b> <b>Engaged:</b> on the agenda, but limited evidence of implementation on ALDFG</p>	<p><b>Tier 5</b> <b>Not engaged:</b> no evidence that ALDFG is on the business agenda</p>
<p>None of the assessed</p>	<ul style="list-style-type: none"> <li>• Bolton Group</li> <li>• Thai Union</li> <li>• Tri Marine</li> </ul>	<ul style="list-style-type: none"> <li>• Bumble Bee Foods</li> <li>• Grupo Nueva Pescanova</li> </ul>	<ul style="list-style-type: none"> <li>• American Seafoods</li> <li>• Cargill Aqua Nutrition</li> <li>• Dongwon Industries</li> <li>• Grupo Calvo</li> <li>• High Liner Foods</li> <li>• Nippon Suisan (Nissui)</li> <li>• Nutreco</li> <li>• Pacific Seafood Group</li> <li>• Princes</li> <li>• Young's Seafood</li> </ul>	<ul style="list-style-type: none"> <li>• Andrew Marr International</li> <li>• Austevoll</li> <li>• Beaver Street Fisheries</li> <li>• Camil</li> <li>• Clearwater Seafoods</li> <li>• Cooke Seafood</li> <li>• East Coast Seafood Group</li> <li>• Frinsa</li> <li>• Maruha Nichiro Corporation</li> <li>• Samherji</li> </ul>

Within each performance tier, companies are listed alphabetically.

## Section 1 - Policy and Commitment

This section aims to address two distinct questions:

- Do the companies in question acknowledge ghost gear as an issue, and have they made commitments to act on ghost gear?
- Looking at corporate sustainability more generally, have the companies made commitments to marine sustainability, and are they acting to implement these commitments? (The delivery and implementation of these wider commitments may provide companies with the organisational structures to also adopt and implement commitments on ghost gear.)

The overall results for this section are presented in Table 4; the average score is 28% with most companies placing in Tiers 4 and 5.

The main reason for these low scores is that only nine of the 25 companies currently acknowledge ALDFG as an issue for them. Of these, only two – Bolton Group and Thai Union – provide information on how they are addressing ghost gear, and only four – Bumble Bee Foods, Thai Union, Tri Marine and Young’s Seafood – have so far joined the GGGI. There has been some engagement with the GGGI BPF, but only Thai Union and Bolton Group appear to have explicitly incorporated it into its policy framework and action plan.

A much more encouraging picture emerges, however, when we look at companies’ policies, commitments and actions on other marine sustainability issues. Of the 25 companies, 14 have comprehensive policies and implementation programmes on a range of marine sustainability issues. While the specific policies and commitments depend on the focus of each company’s activities, addressing marine litter, marine pollution, bycatch management, entanglement and sustainable sourcing were common themes. All but one company has policies in at least one of these areas.

Global standards play an important role in defining the roles

and responsibilities of different actors for the sustainability of the natural environment. Two are of particular importance to marine sustainability: the SDGs and the FAO Code of Conduct for Fisheries. The SDGs are the United Nations’ universal call to action to end poverty, protect the planet, ensure that all people enjoy peace and prosperity, and cover issues such as poverty alleviation, climate change, economic inequality, and sustainable consumption, among other priorities. Of particular relevance to the fish and seafood industry is SDG 14: “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”, and the related target 14.1: “By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution. Several of the assessed companies reference SDG 14 and have aimed to structure their sustainability work in alignment with the SDGs.

The FAO Code of Conduct for Fisheries “sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity.” Relatively few seafood companies explicitly reference the FAO Code, although the principles are implicit in the body of work being carried out by the industry.



**Table 4: Policy and Commitment**

<p><b>Tier 1</b> <b>Leader:</b> setting best practice on ALDFG</p>	<p><b>Tier 2</b> <b>Achiever:</b> ALDFG integral to business strategy</p>	<p><b>Tier 3</b> <b>Improver:</b> established, but work to be done on approach to ALDFG</p>	<p><b>Tier 4</b> <b>Engaged:</b> on the agenda, but limited evidence of implementation on ALDFG</p>	<p><b>Tier 5</b> <b>Not engaged:</b> no evidence that ALDFG is on the business agenda</p>
<ul style="list-style-type: none"> <li>• Thai Union</li> </ul>	<ul style="list-style-type: none"> <li>• Bolton Group</li> <li>• Bumble Bee Foods</li> <li>• Tri Marine</li> <li>• Young’s Seafood</li> </ul>	<ul style="list-style-type: none"> <li>• Grupo Nueva Pescanova</li> </ul>	<ul style="list-style-type: none"> <li>• Dongwon Industries</li> <li>• High Liner Foods</li> <li>• Pacific Seafood Group</li> </ul>	<ul style="list-style-type: none"> <li>• American Seafoods</li> <li>• Andrew Marr International</li> <li>• Austevoll</li> <li>• Beaver Street Fisheries</li> <li>• Camil</li> <li>• Cargill Aqua Nutrition</li> <li>• Clearwater Seafoods</li> <li>• Cooke Seafood</li> <li>• East Coast Seafood Group</li> <li>• Frinsa</li> <li>• Maruha Nichiro Corporation</li> <li>• Nippon Suisan (Nissui)</li> <li>• Nutreco</li> <li>• Princes</li> <li>• Samherji</li> </ul>

## Box 1: Best practices in action: The Thai Union Ghost Gear Work Plan 2018-2020

Since joining the Global Ghost Gear Initiative (GGGI) in March 2018, Thai Union has worked with GGGI to identify suitable projects that will support efforts to address ALDFG. Based on these discussions, Thai Union has established four work streams:

### Work Stream 1: Promote and raise global awareness of ALDFG.

- Thai Union is actively seeking opportunities to engage with businesses, NGOs and the general public to raise awareness of the impact of ALDFG.

### Work Stream 2: Support Fishery Improvement Projects (FIPs) for purse seine tuna in the eastern Atlantic and Indian Oceans to ensure that these are in line with the GGGI Best Practice Framework and the FAO Voluntary Guidelines on the Marking of Fishing Gear.

- The activities in the FIP action plans include improved management of fish aggregation devices (FADs), the use of non-entangling FADs and understanding the impact of FADs on the ecosystem. From April 2018, members of the International Seafood Sustainability Foundation (ISSF) – of which Thai Union is a founding member – have committed to a resolution to only do business with vessels that are deploying non-entangling FADs. The vessels that are involved in both of the FIPs are subject to this resolution. It is envisaged that by the end of 2019, these fleets will only be using non-entangling FADs. A third-party consultant has evaluated the FIP action plans against the BPF and FAO voluntary guidelines. The resulting assessment outlined whether they meet the BPF mitigation and prevention advice. Where there were no actions to cover particular points, recommendations were made as to what actions could be taken to support them. This will now be used to create an advisory document to inform the work in the FIPs.

### Work Stream 3: Increase the number of vessels involved in the FAD Watch program in the Indian Ocean and increase their capacity to remove lost FADs.

- The FAD Watch program in the Indian Ocean aims to remove lost FADs and to stop devices from drifting into sensitive areas and beaching. Given the success of the programme to date, there is interest in increasing the number of vessels involved. Thai Union will promote the initiative to all of the purse seine vessels involved in the Indian Ocean FIP.

### Work Stream 4: Improve management practices for ALDFG in Thailand to reduce and prevent pollution into the marine environment

- Thailand is in the top 10 of country sources of plastic pollution entering the ocean, and among the largest countries for the amount of annual metric tonnes of plastic waste it generates. Thailand is also the world's largest exporter of seafood and has a large fishing industry. This work stream aims to improve understanding and the management of ALDFG at identified sites in the Gulf of Thailand. The goal is to develop and implement targeted approaches to manage fishing gear responsibly and reduce the risks of ALDFG in line with the BPF. This work will identify the best partners and define improvement projects, with possible topics including improving the use and design of FADs by the Thai fleet, collection points for end of life and recovered fishing gear at ports, and designing a circular economy approach for fishing gear in Thailand so that the collection and recycling of gear can become another source of income for fishers.

**Source:** <http://www.thaiunion.com/files/download/sustainability/policy/Thai-Union-and-the-Global-Ghost-Gear-Initiative-Work-Plan-2018-2020-Overview.pdf>

## Box 2: Best practices in action: Commitment to implementing the GGGI Best Practice Framework

In 2016, the GGGI best practice working group developed guidance on the management of fishing gear to prevent, mitigate and cure the problem of ALDFG. The guidance provides information to various actors in the seafood supply chain on effective approaches to reducing gear loss/abandonment and ways to lessen the impacts of ALDFG once gear is gone. The BPF includes an analysis of the most common fishing gears used on a global scale by catch volume and fishing effort, as well as a risk assessment for each gear's propensity to become ALDFG with its associated impacts - ghost fishing; harm to the marine environment; and entanglement of marine animals.

**Grupo Nueva Pescanova** is involved with multiple initiatives related to the conservation of aquatic ecosystems and its commitment to the marine environment. The company has recently intensified its efforts in marine sustainability by deciding to implement the GGGI BPF. Grupo Nueva Pescanova intends to become more involved and structured in the management of fishing gear, working with gear designers and manufacturers as well as directly with the fishers in their supply. For gear designers and manufacturers, efforts will mostly be focused on gear-marking, traceability procedures and record keeping, and for fishers, efforts will be focused on gear management procedures, reporting and end-of-life management. The company states that it "invests in technologies and processes to minimize the environmental impact of its factories and ships."

At the end of 2017, Grupo Nueva Pescanova also reached an agreement with the Sustainable Fisheries Partnership, further formalizing its commitment to sustainable fishing.

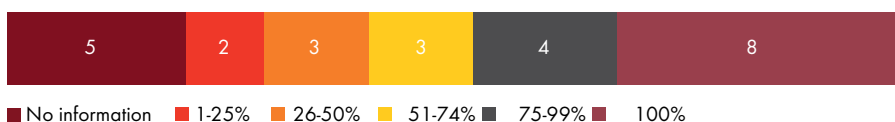
**Source:** <https://www.sustainablefish.org/News/SFP-welcomes-new-partner-Nueva-Pescanova-Group>  
<http://www.nuevapescanova.com/en/2017/10/30/pescanova-se-asocia-a-sustainable-fisheries-partnership-para-mejorar-la-sostenibilidad-de-su-actividad-pesquera-y-acuicola/>  
[https://static1.squarespace.com/static/5b987b8689c172e29293593f/t/5bb64c6a24a6943e76ab4ebb/1538673772230/may26\\_fads\\_best\\_practice\\_summary\\_formatted.pdf](https://static1.squarespace.com/static/5b987b8689c172e29293593f/t/5bb64c6a24a6943e76ab4ebb/1538673772230/may26_fads_best_practice_summary_formatted.pdf)

## Section 2 - Implementation: Systems and Processes

This section aims to assess how action on ghost gear is incorporated into companies' management practices and systems. The average score for this section is 24%, with most companies scoring in Tiers 4 and 5 (see Table 5). To date, seven companies appear to have formally assigned management responsibility for ALDFG to a specific role or function within the organisation; two have set objectives and targets (or defined ambitions) for their work on ALDFG; and five have provided information on how they implement their ALDFG commitments in their supply chain. These results are unsurprising. When taking action on a new issue such as ALDFG, companies tend to start by developing their position and policies on the issue. They then move to establish appropriate management systems and processes (e.g. defining responsibilities, setting objectives and targets, monitoring and reviewing performance), and then to report on their performance.

There are, however, two very encouraging insights from our analysis of companies' management systems and processes. There has been significant progress on traceability back to the catching vessel, as indicated in Figure 2. 8 of the 25 companies – American Seafoods, Bolton Group, Pacific Seafood Group, Princes, Samherji, Grupo Nueva Pescanova, Tri Marine and Young's Seafood – claim to have 100% traceability, with a further seven companies indicating that over half their catch is traceable back to the catching vessel.

Percentage of catch traceable to catching vessel  
(number of companies)



Percentage of fish covered by certification schemes  
(number of companies)



The second is that, as indicated by Figure 2, 24 of the 25 companies are involved with one or more certification schemes. These include MSC (24 of the 25 companies involved). The Monterey Bay Aquarium Seafood Watch (seven of the 25 companies are involved), the Sustainable Fisheries Partnership (five companies) and Friend of the Sea (five companies). Other certification schemes mentioned by the companies include Ocean Wise, the Sea Fish Responsible Fishing Scheme, the Alaska Responsible Fisheries Management Scheme and the Aenor Certification for Responsible Tuna Fishing. The companies have different levels of involvement with these schemes.

In some cases, they or their suppliers have obtained certification for one or more fisheries. In others, the involvement is much more interconnected. Examples include Thai Union and Monterey Bay Aquarium's 2018 agreement to a combined seven-year commitment of \$73 million to advance new sustainability initiatives and improvements throughout the supply chain, Young's Seafood's representation on the Oversight Board of the Seafish Responsible Fishing Scheme and Bolton playing a leading role within ISSF with Luciano Pirovano, International Marketing and CSR Director at Bolton Alimentari currently Chairing the ISSF Board.



While ghost gear is not yet fully integrated into many of the fisheries certification requirements, it is certainly receiving greater attention. For example, in the MSC Fisheries Standard, if a fishery is considered to be meeting best practices, it should have acknowledged of the scale of fishing gear loss and the impact of this lost gear on habitats, ecosystems or species of concern. Several MSC certified fisheries have taken action on ghost gear. For example, when the Alaska Pacific cod fisheries became

MSC certified, they were required to monitor gear loss to maintain their certification; in the MSC certified Normandy and Jersey lobster fisheries, all pots are tagged with boat registration and year; in a Louisiana blue crab fishery with MSC certification, the Louisiana Department of Wildlife and Fisheries, volunteers and local organizations have successfully removed and disposed of over 37,000 abandoned and derelict crab traps.

**Table 5: Implementation – Systems and Processes**

<b>Tier 1</b> <b>Leader:</b> setting best practice on ALDFG	<b>Tier 2</b> <b>Achiever:</b> ALDFG integral to business strategy	<b>Tier 3</b> <b>Improver:</b> established, but work to be done on approach to ALDFG	<b>Tier 4</b> <b>Engaged:</b> on the agenda, but limited evidence of implementation on ALDFG	<b>Tier 5</b> <b>Not engaged:</b> no evidence that ALDFG is on the business agenda
None of the assessed	<ul style="list-style-type: none"> <li>• Bolton Group</li> <li>• Thai Union</li> </ul>	<ul style="list-style-type: none"> <li>• Grupo Nueva Pescanova</li> </ul>	<ul style="list-style-type: none"> <li>• American Seafoods</li> <li>• Bumble Bee Foods</li> <li>• Dongwon Industries</li> <li>• High Liner Foods</li> <li>• Nutreco</li> <li>• Pacific Seafood Group</li> <li>• Princes</li> <li>• Samherji</li> <li>• Tri Marine</li> <li>• Young’s Seafood</li> </ul>	<ul style="list-style-type: none"> <li>• Andrew Marr International</li> <li>• Austevoll</li> <li>• Beaver Street Fisheries</li> <li>• Camil</li> <li>• Cargill Aqua Nutrition</li> <li>• Clearwater Seafoods</li> <li>• Cooke Seafood</li> <li>• East Coast Seafood Group</li> <li>• Frinsa</li> <li>• Grupo Calvo</li> <li>• Maruha Nichiro Corporation</li> <li>• Nippon Suisan (Nissui)</li> </ul>

### Box 3: Best practices in action: Traceability in the supply chain

Several companies make efforts to ensure transparency and traceability throughout their supply chains. This is important as it reduces the likelihood of unsustainable fishing practices and signals to consumers that companies are taking responsibility for adhering to sustainable sourcing and fishing methods. One way that companies are demonstrating traceability is through search functions on their websites where consumers can find out more about the bought fish/seafood product by using a code on the product packaging.

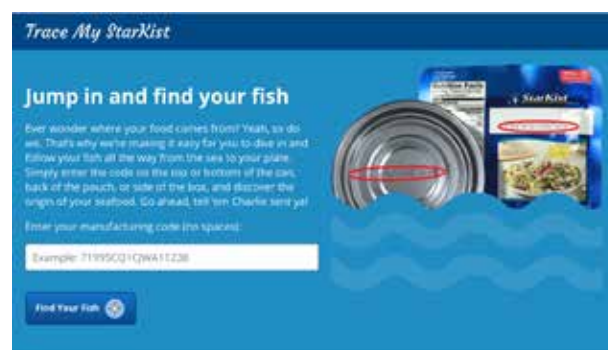
**Bumble Bee Foods** has one of the most comprehensive search functions in place, with the option to search for information of origin for its tuna, sardine and salmon products. After entering the can or package code, it takes the user to a site with specific information about the species, fishery location, fishing method, vessel information, processing and about the cannery. There is also information provided about the ISSF and Bumble Bee’s membership: “Bumble Bee Seafoods is a proud founder of the International Seafood Sustainability Foundation (ISSF)...Since 2009 ISSF has been actively working and committed to the long-term sustainability of global tuna stocks.”

**Grupo Calvo** has a similar function in place on its website titled “The traceability of our value chain – From the sea to the plate.” It appears to apply to tuna products only. Here customers are asked to choose the type of product and fill in information about the product and the company will provide information about what type of tuna the can contains, where it was caught, by what boat, when and with what fishing gear.



StarKist is a subsidiary of **Dongwon** Industries and provides a similar function to trace the product bought by entering the code on the product packaging to look up the origin of the fish. It shows less detailed information, however, and the search function shows only the species and where it was fished. There is also a link to the StarKist Corporate Responsibility website.

Dongwon works in other ways to enhance traceability, for example through ISSF's ProActive Vessel Register (PVR). The PVR enables tuna vessel owners to identify themselves as active participants in sustainability efforts such as the implementation of specific best practices. To make informed decisions, tuna purchasers and other stakeholders can consult the PVR for information on hundreds of vessels worldwide. Dongwon states on its website that all purseiners controlled by Dongwon are listed on the PVR list. The subsidiary StarKist further states that it is committed to increasing the amount of fish that it sources from vessels that are part of the PVR: "In 2015, StarKist Co. purchased 86% of our tuna from ISSF's PVR listed vessels." Dongwon states that it "is proud to contribute to the transparency of the tuna industry management."



**Source:** <http://www.bumblebee.com/tracemycatch/>  
<https://calvo.es/formulario-trazabilidad/#>  
<http://starkist.com/about-starkist/corporate-responsibility/trace-my-starkist>  
<http://www.dwml.co.kr/eng/contents/sustainable/policyofdongwon>  
<http://starkist.com/about-starkist/corporate-responsibility/natural-resources-policies>  
<https://iss-foundation.org/knowledge-tools/databases/proactive-vessel-register/>

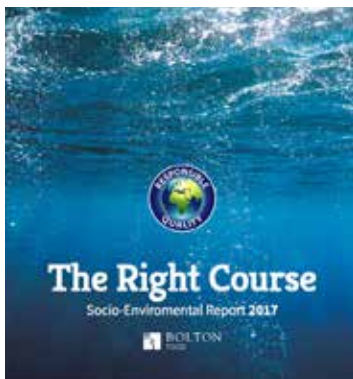
## Box 4: Best practices in action: Setting targets to combat ghost gear

**Bolton Group** is one of the few companies in the assessment that has set targets and objectives for the management of ghost gear. The company has published objectives and targets, together with information on the actions to be taken to achieve these, the resources allocated and the schedule for the delivery of these objectives. Key activities include awareness-raising and training, and objectives which include specifics relating to the use of non-entangling FADs, to the financing of projects to combat ocean pollution (recovery of fishing gear, FADs or plastic), to traceability and to certification. In October 2018, the company committed that 50% of its tuna will be caught by selective fishing methods by 2020.

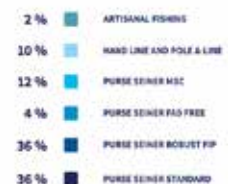
Bolton has set several interesting targets related to sustainable fishing methods and supporting marine

ecosystems, some of which are relevant also to ghost gear. For example, they state they will “support the funding of protected marine areas” and “finance projects to combat ocean pollution (recovery of fishing gear, FADs or plastic)”. The new policy amounts to a 22% increase on current levels of tuna sourced by Bolton using selective fishing methods, which include pole and line, handline and purse seiners without FADs.

The company states that “progress (on all of the above commitments) will be externally audited by an independent third-party certification body/auditor on an annual basis. Furthermore, we are committed to fully involve our suppliers in this improvement process through specific requests in our buyers’ agreement and monitoring progresses.”



OUR FISHING METHODS 2017 (%)



**Source:** [http://qualitaresponsabile.it/sites/riomarequire/files/socio-enviromental\\_report\\_2017.pdf](http://qualitaresponsabile.it/sites/riomarequire/files/socio-enviromental_report_2017.pdf)

<http://www.boltongroupwecare.it/en>

<https://www.undercurrentnews.com/2018/10/26/tuna-giant-bolton-commits-to-sustainable-sourcing-goal-by-2020/>



## Box 5: Best practices in action: The importance of certification

High Liner Fisheries is involved in several certification schemes and states on its website:

“To meet our rigorous policies, any High Liner Foods product must meet the following criteria:

When it comes to wild-caught:

- Is MSC certified or, is in Full MSC Assessment (sourced from 20+ MSC certified fisheries in 2016);
- or, is certified to a scheme recognized by the Global Sustainable Seafood Initiative (GSSI) such as the Alaska Responsible Fisheries Management (RFM), Iceland Responsible Fisheries Management (IRFM), GAA’s Best Aquaculture Practices and GLOBALG.A.P. Aquaculture Certification System;
- or, is in a credible and publicly documented fishery improvement project;
- or, is OceanWise Recommended;
- or, is Seafood Watch rated Best Choice or Good Alternative.

The company also provides detailed information on its existing fishery certifications in its *Responsibly Sourced* guide:

PRODUCT DESCRIPTION	SPICES	PRODUCT CODE	SUSTAINABILITY STATUS	COUNTRY OF ORIGIN	SEASIDE FISH	SEAFOOD WATER BANKING
<b>Wild Caught Seafoods</b>						
4-8 oz Redfish Fillet Breasted/Portion Pack	Halibut	70940	MSC Certified	Norway or Russia	Bottom trawl or long line	Yes
1-oz Breaded Wild-Caught Fish Strips, 20	Halibut	0000028	MSC Certified Fishery	Iceland	Bottom trawl or long line	Yes
2-oz Breaded Wild-Caught Red Snapper, 20	Halibut	1210010	MSC Certified Fishery	Norway or Russia	Bottom trawl or long line	Yes
2-oz Crunchy Breaded Halibut Strips, 20	Halibut	0002940	MSC Certified Fishery	Norway or Russia	Bottom trawl or long line	Yes
4-oz Crunchy Breaded Halibut Portions	Halibut	0005010	MSC Certified Fishery	Norway or Russia	Bottom trawl or long line	Yes
5-oz Supreme™ Battered Halibut Tenders	Halibut	0008200	Responsible Sourced	Norway or Russia	Bottom trawl or long line	Yes
2-oz Brewer’s Choice® Battered Halibut Portions	Halibut	0001618	MSC Certified Fishery	New Zealand	Bottom trawl or long line	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes
1-oz Wild Caught Alaska Pollock Fillets, 20	Pollock	0099000	MSC Certified	USA	Trawl	Yes



Several existing certification schemes mention and include measures related to the prevention and management of ghost gear. Certification schemes fill several important functions, and it is positive that more and more fish and seafood companies adhere to one or more of them in order to improve their sustainability and traceability practices. There is more to be done, however, to ensure certification schemes have auditable measures on ghost gear and to ensure that companies adopt clear strategies for ghost gear and related issues.

Source: <https://highlinerfs.com/sourcing-sustainability/certifications>  
<http://www.highlinerfoods.com/en/home/sustainability/sustainability-overview/efforts-and-performance.aspx>  
[https://highlinerfs.com/media/1246/hlf-sustainability\\_guide\\_2018.pdf](https://highlinerfs.com/media/1246/hlf-sustainability_guide_2018.pdf)

## Section 3 - Performance Reporting and Impact

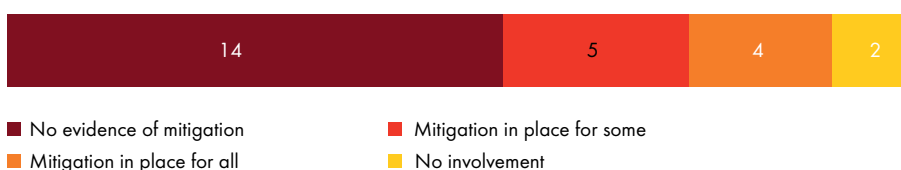
The average score for this section (29%) suggests that companies have made relatively little progress on reporting on their impacts on ghost gear. Only one company - Bolton Group - reports on performance against its objectives and targets, and only two - Thai Union and Tri Marine - report to their customers and/or consumers. Again, these findings are not surprising; reporting is usually something that companies only focus on once they have established policies, management systems and processes, and have a proper understanding of their business performance and impacts.

There are, nonetheless, encouraging signs in this area. For example, 17 of the 25 are involved in FIPs (even though only three are involved with FIPs with an explicit focus on ALDFG); if these FIPs were broadened to include ALDFG, more companies would then be involved in taking action and finding solutions. Nine companies of the 23 companies that are involved in high impact fishing techniques report that they have validated BPF mitigation measures in place for at least some of these. Again, while this signals that there is work to be done to ensure the wider adoption of BPF mitigation measures, the picture is that there is expertise in the fishing industry with these techniques and support for their use.

Many of the companies are actively involved in industry initiatives, partnerships and research relating to marine sustainability. It is in these collaborations that much of the work on finding solutions to ALDFG is taking place. 18 of the 25 companies report that they are involved in one or more of the key international marine sustainability initiatives (e.g. the ISSF, the Global Sustainable Seafood Initiative, the Sustainable Seafood Coalition). For example, 7 of the assessed companies are engaged with the ISSF, 7 are engaged with the Seafood Task Force, six with the Global Sustainable Seafood Initiative and 6 with the Seafood Business for Ocean Stewardship (SeaBOS). Other international initiatives and collaborations highlighted by the assessed companies include the Sustainable Seafood Coalition, the Sustainable Indian Ocean Tuna Initiative, the Food Marketing Institute Sustainable Seafood Working Group, International Pole and Line Foundation (IPNLF) and the Asian Seafood Improvement Collaborative.

17 of the 25 companies have partnerships on other ocean related issues with relevant NGOs or academic institutions. These partnerships are with a variety of organisations including WWF (which has collaborative, marine sustainability-related partnerships with 8 of the 25 companies), Ocean Trust, Greenpeace, Fishing for Litter, the Nature Conservancy, National Fisheries Institute and NOAA Fisheries Science Centers.

### Involvement in high impact fisheries (number of companies)



**Table 6: Performance Reporting and Impact**

<p><b>Tier 1</b>  <b>Leader:</b> setting best practice on ALDFG</p>	<p><b>Tier 2</b>  <b>Achiever:</b> ALDFG integral to business strategy</p>	<p><b>Tier 3</b>  <b>Improver:</b> established, but work to be done on approach to ALDFG</p>	<p><b>Tier 4</b>  <b>Engaged:</b> on the agenda, but limited evidence of implementation on ALDFG</p>	<p><b>Tier 5</b>  <b>Not engaged:</b> no evidence that ALDFG is on the business agenda</p>
<p>None of the assessed</p>	<ul style="list-style-type: none"> <li>• Bolton Group</li> <li>• Thai Union</li> <li>• Tri Marine</li> </ul>	<ul style="list-style-type: none"> <li>• American Seafoods</li> <li>• Grupo Calvo</li> <li>• Grupo Nueva Pescanova</li> </ul>	<ul style="list-style-type: none"> <li>• Beaver Street Fisheries</li> <li>• Bumble Bee Foods</li> <li>• Cargill Aqua Nutrition</li> <li>• Dongwon Industries</li> <li>• High Liner Foods</li> <li>• Maruha Nichiro Corporation</li> <li>• Nippon Suisan (Nissui)</li> <li>• Nutreco</li> <li>• Pacific Seafood Group</li> <li>• Princes</li> </ul>	<ul style="list-style-type: none"> <li>• Andrew Marr International</li> <li>• Austevoll</li> <li>• Camil</li> <li>• Clearwater Seafoods</li> <li>• Cooke Seafood</li> <li>• East Coast Seafood Group</li> <li>• Frinsa</li> <li>• Samherji</li> <li>• Young's Seafood</li> </ul>

## Box 6: Best practices in action: Solution projects, ghost gear mitigation and innovation

**Pacific Seafood Group** is working actively on the removal of ghost gear as well as avoidance of entanglement and bycatch. In its Corporate Responsibility Report 2017, the company states that “in order to have abundant stocks, it’s imperative that we keep our oceans, and the marine life who reside there, healthy. Through our involvement with the West Coast Seafood Processors Association, we work with the Oregon Whale Entanglement Group to establish best practices on removal of ghost gear. We also work with the Dungeness Crab Fishing Working Group in California which provides guidance and recommendations to the California Dungeness crab fishing industry about how to avoid/minimize whale entanglements and identify measures or experiments that can be developed or implemented by the fishing community to address the entanglement issue. We ensure that this information is shared with and executed by our fleets.”

**Bolton Group** sources fish caught using FADs but requires boats using FADs to only use non-entangling FADs. One of the main problems linked to the use of FADs the bycatch of other species, which can be entangled in the FADs. To reduce this phenomenon, the ISSF has conducted numerous studies over the past few years to optimize their design, improving handling and use and limiting environmental impact through the use of biodegradable

materials (biodegradable FADs). “Non-entangling FADs are aggregating devices that are constructed with no netting material to minimize ‘ghost fishing’, i.e. when fauna, primarily sharks and turtles, despite not being the target species of the fishing expedition become entangled and trapped...Bolton collaborates with Tri Marine on various projects regarding social issues and sustainability, including the Global Ghost Gear Initiative aimed at the recovery of fishing gear and abandoned FADs.” We note that Bolton’s work with ISSF on FADs may lead to the development of new technologies and approaches (e.g. non-entangling FADs, use of biodegradable materials) that it may seek to integrate into future objectives and targets on ALDFG.

In relation to the monitoring elements (monitoring, registers, tacking and tracking), Bolton also has an extensive monitoring and traceability programme in place. For example, it uses an IT system known as the “Suppliers’ Workplace” to collate information on the name of the fishing vessel, registration in the PVR (Proactive Vessel Register) register for Purse Seiner vessels, IMO Number, ocean of origin, FAO areas, additional information about fishing areas, i.e. whether it is an MSC certified area, FIPs or standard, fishing period, fishing method and port of landing. These are systems that could easily also be used to capture information on gear/equipment.

**Source:** <https://app.box.com/s/6k4ktg7hmgaywgt7vdqdz8mw448fsjba>  
<http://www.dwml.co.kr/eng/contents/sustainable/policyofdongwon>  
[http://qualitaresponsabile.it/sites/riomarequre/files/socio-enviromental\\_report\\_2017.pdf](http://qualitaresponsabile.it/sites/riomarequre/files/socio-enviromental_report_2017.pdf)



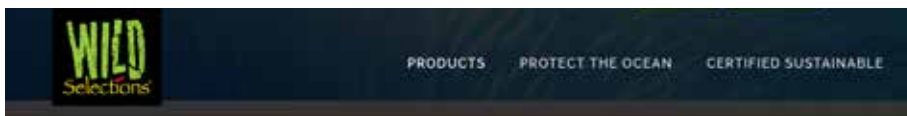
## Box 7: Best practices in action: Partnerships for improved marine sustainability

Since 2009, **Bumble Bee Foods** and WWF have worked together to increase sustainable tuna fisheries through the ISSF. ISSF is an independent organization that brings together scientists, industry leaders, and environmental champions to undertake science-based initiatives for the long-term conservation of tuna stocks.

This commitment to collaboration on seafood sustainability ultimately led to Bumble Bee Foods' development and launch of 'Wild Selections', a line of canned seafood products that are certified to the Marine Stewardship Council (MSC) standard for sustainable, well-managed

fisheries. The project was launched by Bumble Bee Foods to effect meaningful change in marine conservation and fisheries management and to expand awareness about sustainable seafood.

Wild Selections uses only Marine Stewardship Council (MSC) certified sustainable seafood and with each can purchased, a donation of 13 cents goes to World Wildlife Fund (WWF) to benefit their sustainable fisheries programs and marine conservation efforts. Bumble Bee has committed to support these efforts with a minimum donation of \$1 million to these programs by the end of 2018.



Wild Caught,  
Sustainable Canned  
Tuna Products



Wild Caught,  
Sustainable Salmon  
Products



Wild Caught,  
Sustainable Sardine  
Products

**Source:** <https://www.worldwildlife.org/projects/bumble-bee-foods-wild-selections>

<http://www.bumblebee.com/bumble-bee-foods-highlights-collaborative-process-behind-new-msc-certified-wild-selections-products-and-support-of-wwf/>

<http://wildselections.com/faq>

<https://www.worldwildlife.org/projects/bumble-bee-foods-wild-selections>

# Recommendations

The central conclusion from this review is that almost all of the companies assessed are active on marine conservation and fisheries sustainability, and many already have elements of the management systems and processes they need to effectively manage the issue of ALDFG. For example, a number have already assigned management responsibilities for ALDFG, several have high levels of traceability back to the catching vessel and many are active participants on one or more certification schemes.

What is also clear is that ALDFG is not yet receiving the explicit attention that it needs for seafood companies to fully address their part in the issues associated with ALDFG. Our analysis and discussions with companies suggest that this reflects a lack of awareness, a lack of clarity on the actions that might be taken by seafood companies, the lack of obvious practical ways that they can take action or contribute, and the lack of external pressure to address ghost gear. Our view is that if we can address these three barriers, we will create the conditions for seafood companies to be more fully engaged in the issue of ALDFG.

## **We have identified the following as practical actions that can be taken by key stakeholders on this issue:**

1. Seafood companies should:
  - a. Join the Global Ghost Gear Initiative: This will send a clear signal to suppliers and to other stakeholders that ALDFG is an important issue for the company. Being a member of GGGI will also provide opportunities to participate in specific projects and to share experience and learn from other seafood companies.
  - b. Adopt formal policies on ALDFG: In a similar manner to joining GGGI, this will send a clear signal to suppliers and other stakeholders that ALDFG is an important issue to the company. The adoption of a formal policy on ALDFG is normally the first step in integrating ALDFG into a company's management systems and processes (e.g. its purchasing policies).
  - c. Share their experience and lessons learned. ALDFG is a relatively new issue for companies to grapple with and we, therefore, encourage those that we have identified as leaders (overall and in the specific elements of our assessment framework) to share their knowledge as this will help accelerate improvements across the seafood industry as a whole. We are of the view that ALDFG is a collective issue for the industry as a whole, and an issue that requires a collective response.
2. Certification bodies should:
  - a. Explicitly identify ALDFG as a core element of the certification process. This will ensure that ALDFG issues are explicitly considered when awarding certifications and in developing action plans and fisheries improvement plans.

3. Industry initiatives (e.g. ISSF, Global Sustainable Seafood Initiative, Sustainable Seafood Coalition, Global Dialogue on Seafood Traceability) should:

- a. Explicitly identify ALDFG as important and include ALDFG considerations in their programmes and activities. This will facilitate company action on ALDFG and will provide a forum for companies to share knowledge and experiences.

4. Retailers and end customers should:

- a. Explicitly identify ALDFG as a consideration when choosing seafood suppliers and when purchasing seafood and seafood derived products, thereby providing a clear commercial incentive for action. They could, for example, preferentially source from companies that are members of GGGI, that have adopted the Best Practice Framework, and/or that have taken action on ALDFG.

5. Investors should:

- a. Encourage seafood companies to take action on ALDFG, raise the issue of ALDFG in company meetings and take account of ALDFG when assessing how well companies are managing the environmental issues associated with their business. ALDFG is arguably the most damaging form of marine plastic pollution and yet one that is frequently overlooked. Our experience has been that investor interest and investor questions are key to motivating senior management at companies to pay attention to important sustainability issues such as ALDFG

## Conclusion

Almost all of the companies assessed are active on marine conservation and fisheries sustainability, and many already have elements of the management systems and processes they need to effectively manage the issue of ghost gear.

However, ghost gear as a major global problem is not yet adequately addressed by seafood companies. While three of the world's leading seafood companies have taken action on ghost gear and have now made ghost gear best practice integral to their business strategy compared to last year, no companies achieved Tier 1 status.

If we agree that ghost gear has a significant impact on global fish stock levels, the marine environment, our future health and all marine life, then we must also agree that coordinated and effective global action is necessary as part of the effort to make fisheries sustainable.

Industry, as a key actor of change, can play an important role in this and by raising more awareness and by offering clear guidance on the actions that can be taken, as well as highlighting innovative case studies and solutions already underway; we can create a clear pathway for seafood companies to be more fully engaged in addressing the issue of ghost gear and shape a better future for our oceans and the life within them.

**Image:** Seal caught in a fishing net in the Shetland Islands, UK.  
John Moncrieff





# Appendices

## World Animal Protection

World Animal Protection (formerly known as the World Society for the Protection of Animals) has moved the world to protect animals for the last 50 years by working to give animals a better life. Its activities include working with companies to ensure high standards of welfare for the animals in their care, working with governments and other stakeholders to prevent wild animals being cruelly traded, trapped or killed, and saving the lives of animals and the livelihoods of the people who depend on them in disaster situations. World Animal Protection influences decision makers to put animals on the global agenda, and it inspires people to protect animals and to change animals' lives for the better.

More information on World Animal Protection can be found at [www.worldanimalprotection.org](http://www.worldanimalprotection.org)

## Chronos

Chronos Sustainability works with many of the world's leading companies, investors and NGOs on managing the risks and opportunities related to environmental sustainability and related issues. Across our established networks, we bring expert guidance and specialist knowledge and skills to developing robust and credible management frameworks and data analyses that are widely respected by corporate, NGO and investor organisations. Amongst other projects, we currently provide the secretariat for the Global Coalition on Animal Welfare, act as Chief Technical Advisor to the Transition Pathway Initiative, and provide the secretariat for the Business Benchmark on Farm Animal Welfare.

# Appendix 1: Methodology report

## Introduction

The 2018 *Ghosts Beneath the Waves* report,<sup>34</sup> published in March 2019, provides an independent assessment of 25 of the world's leading seafood companies, in relation to their policies, practices and performance on the management of ghost gear, both in their operations and in their supply chains. The assessment aims to drive higher standards through:

- Providing guidance to companies interested in improving their management and reporting on marine sustainability issues, particularly those related to abandoned, discarded or lost fishing gear ('ALDFG', also referred to as 'ghost gear').
- Engaging all parts of the supply chain on this important issue, from fishing companies through to processors and end consumers.
- Harnessing the influence of public benchmarks to encourage year-on-year improvements in companies, by showcasing leaders and highlighting laggards.
- Providing key stakeholders – retailers, governments, investors and NGOs – with an independent, impartial and reliable assessment of individual company practices and performance.

This Methodology Report describes the framework used to evaluate companies, explains how the data that underpinned the assessments was collected and analysed, and provides a detailed – question by question – description of the assessment framework.

## The company assessment framework and scoring

### Assessment framework

The assessment framework considers company practice and performance in three areas:

1. **Policy and Commitment**, including engagement with Global Ghost Gear Initiative (GGGI) and adoption of the Best Practice Framework (BPF).
2. **Implementation: Systems and Processes**, including traceability as well as the setting of ALDFG objectives and targets.
3. **Performance Reporting and Impact**, including involvement in high impact fishing techniques, the use of mitigation measures, and partnerships for fisheries conservation and protection.

Fifty (50) points are assigned to each of the three areas, and companies are assessed against a series of objectively assessable criteria. An overview of the assessment framework is provided in the table below and the detailed assessment tool, which includes additional guidance in how to interpret the extent to which each company should be scored in relation to each criterion, is provided in Appendix 1.

**Table 7: Benchmark elements**

Area	Key criteria	No. of points
Policy and Commitment	<ul style="list-style-type: none"> <li>• Does the company have a clear position on Abandoned, Lost or Discarded Fishing Gear (ALDFG), including a plan to address it?</li> <li>• Is the company a signatory to the Global Ghost Gear Initiative (GGGI)?</li> <li>• Has the company expressed support for or commitment to implement the Best Practice Framework for the Management of Fishing Gear (BPF)<sup>35</sup> developed by GGGI?</li> <li>• Does the company have Corporate Social Responsibility (CSR) policies or sustainability programmes on key marine sustainability issues such as marine litter, marine pollution, bycatch management, entanglement or sustainable sourcing?</li> <li>• Has the company expressed support for Sustainable Development Goal (SDG) 14<sup>36</sup> (to conserve and sustainably use the oceans, seas and marine resources for sustainable development) and/or SDG Target 14 (by 2025, to prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution)?</li> <li>• Has the company committed to complying with the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries<sup>37</sup>?</li> <li>• Does the company describe how its marine sustainability policies and commitments are implemented?</li> <li>• Do the core values of the company demonstrate its commitment to sustainability, innovation &amp; stewardship?</li> </ul>	50



Area	Key criteria	No. of points
Implementation: Systems and Processes	<ul style="list-style-type: none"> <li>• Does the company have a high level of verifiable traceability (i.e. back to the fishing vessel) of its products?</li> <li>• Does the company have oversight of its supply chains?</li> <li>• Has the company assigned management responsibility for ALDFG to a specific individual, a specific function or a specified committee?</li> <li>• Has the company set objectives and targets specifically for the management of ALDFG?</li> <li>• Does the company describe how it implements its ALDFG policy internally and through its supply chain? For example, has it sought to raise awareness of the issue, provide training, establish monitoring systems, prepare registers of gear and equipment, or tag gear and equipment?</li> <li>• Does the company participate in any certification schemes (examples include schemes run by the Marine Stewardship Council (MSC), Monterey Bay Seafood Watch, Friends of the Sea, and the Seafish Responsible Fishing Scheme) which include mention of ALDFG?</li> </ul>	50

Area	Key criteria	No. of points
Performance Reporting and Impact	<ul style="list-style-type: none"> <li>• Does the company report publicly on its performance against its ALDFG objectives?</li> <li>• Does the company describe the actions taken and discuss the factors that have affected performance?</li> <li>• Is the company involved in solution projects such as Fishery Improvement Projects related to ALDFG?</li> <li>• Is the company involved in (e.g. as a funder, as a purchaser, or as a manufacturer) the development or deployment of fishing gear or other technology that could be applied in tackling ALDFG?</li> <li>• Is the company involved in high impact fishing techniques (e.g. gillnets, traps and pots, fish aggregating devices)? If yes, has the company adopted measures to mitigate the potential negative effects of these fishing techniques?</li> <li>• Does the company communicate about ALDFG to its customers?</li> <li>• Is the company engaged with international marine sustainability initiatives such as the ISSF, the Global Sustainable Seafood initiative, or the Sustainable Seafood Coalition?</li> <li>• Does the company have partnerships on marine sustainability with NGOs or academic institutions?</li> </ul>	50

## Scoring framework

Companies' total scores - both overall and by area - are assessed as indicated in Table 7. Where companies' percentage scores fall between the limits in Table 2, the score is rounded up or down to the nearest whole percentage.

<b>% score</b>	<b>Description</b>
81-100	Leader: setting best practice on ALDFG
61-80	Achiever: ALDFG integral to business strategy
41-60	Improver: established, but work to be done on approach to ALDFG
21-40	Engaged: on the agenda, but limited evidence of implementation on ALDFG
0-20	Not engaged: no evidence that ALDFG is on the business agenda

# The assessment approach

## Initial assessment

We started the research process by writing in November 2018 to 25 of the world's leading seafood companies notifying them of our intention to conduct the company assessments and encouraging them to provide any information that might be relevant to the process. A number of companies responded, providing links to relevant sections of their websites or providing draft final or unpublished versions of policies and other relevant documents.

The initial assessment of each company was based on the information that was publicly available at the time of its assessment (company assessments were conducted in November/December 2018). We started by reviewing each company's published materials, including formal reports (e.g. annual reports, corporate responsibility reports), information on the company's corporate and consumer websites, and the information provided in documents such as press releases and frequently asked questions. We conducted similarly thorough reviews of the websites of company subsidiaries and brands, and, where relevant, postings on social media.

We also reviewed the information published on other websites. For example, we cross-checked each company against the GGGI's list of signatories, we reviewed the participants in the projects and programmes listed on the GGGI's website, we reviewed the participants in various FIPs and we checked each company against the list of organisations certified to standards such as those from the MSC.

The information we had was supplemented by information from World Animal Protection about each company, and by the information provided directly by the companies themselves.

Encouraging companies to publish more information is one of the wider goals of the company assessment process. However, we also recognised that reporting on ghost gear/ALDFG is in its infancy, and as a result we decided to include in our assessments any information about actions already taken even if it was unpublished. In the company assessments, we flagged those areas where the assessment was made based on unpublished information or third-party data and encouraged these companies to publish this information on their websites. We also noted that, in future assessments, the information provided by the company would need to be wholly in the public domain in order for points to be awarded.

## Quality assurance and review

The initial assessments were first reviewed by Chronos Sustainability and then by World Animal Protection to check the factual accuracy of the content and to ensure consistency of the assessment methodology.

The companies were then sent the results of their initial assessment in December 2018 for review and comment. Companies were provided with the opportunity to ask questions about the assessment methodology, to clarify areas where they disagreed with the assessment, and to provide supplementary information where appropriate. In total, seven companies engaged with us during the review process, and we amended the assessments for five of these companies based on additional information provided.

Following the company review process, we conducted a final review of the assessments, including a final check on the calculations and scoring.



# Company coverage

The companies included in the assessment - which include a mix of companies involved in fishing and/or processing - were selected on the basis of seafood market relevance (size, market share, produce type), using sales figures obtained either from company websites or from reputable third-party sources where necessary. Note: The selection includes some companies that are already signatories to GGGI, and others that are not.

The 25 companies covered by the 2018 assessment are:

- American Seafoods
- Andrew Marr International
- Austevoll
- Beaver Street Fisheries
- Bolton Group
- Bumble Bee Foods
- Camil
- Cargill Aqua Nutrition
- Clearwater Seafoods
- Cooke Aquaculture
- Dongwon Industries
- East Coast Seafood Group
- Frinsa
- Grupo Calvo
- Grupo Nueva Pescanova
- High Liner Foods
- Maruha Nichiro Corporation
- Nippon Suisan (Nissui)
- Nutreco
- Pacific Seafood Group
- Princes
- Samherji
- Thai Union
- Tri Marine
- Young's Seafood



Image: A fish market in the UK. Joey Brookhart / Marine Photobank

## Appendix 2: Assessment criteria – question by question

## Policy and Commitment

1.1	Does the company have a clear position on Abandoned, Lost or Discarded Fishing Gear (ALDFG), including a plan to address it?	
	Yes, publicly acknowledges the issue of ALDFG and has a published plan of action	10
	Acknowledges issue, but no published plan of action	5
	No acknowledgement of the issue of ALDFG	0
	<b>Maximum Score</b>	<b>10 points</b>
	<b>Interpretation and Guidance</b>	
	<ul style="list-style-type: none"> <li>• This question is looking for a clear and publicly available statement/position acknowledging the issues associated with Abandoned, Lost or Discarded Fishing Gear (ALDFG) (which may also be referred to as 'ghost gear' or 'end of life gear').</li> <li>• For maximum points to be awarded, the company needs to have a clear action plan in place, explaining how it intends to address/manage the issue of ALDFG. This could, for example, be the GGGI Best Practice Framework.</li> <li>• Signatories to the GGGI are awarded 5 points, even if they do not acknowledge GGGI or ALDFG on their websites or in other company communications.</li> <li>• Companies that play an active role in GGGI working groups but are not signatories to GGGI are awarded 5 points for this question. World Animal Protection and GGGI identify those companies that are active in GGGI working groups but are not GGGI signatories.</li> </ul>	
1.2	Is the company a signatory to the Global Ghost Gear Initiative (GGGI)?	
	Yes, is a signatory/member of GGGI	20
	Is in the process of becoming a signatory to or engaged with the GGGI	5
	Not a signatory/member of GGGI and not in the process of becoming a signatory to or engaged with the GGGI	0
	<b>Maximum Score</b>	<b>10 points</b>
	<b>Interpretation and Guidance</b>	
	<ul style="list-style-type: none"> <li>• This question is looking for evidence that the company is a signatory/member of the Global Ghost Gear Initiative (<a href="https://www.ghostgear.org/">https://www.ghostgear.org/</a>) or in the process of becoming a signatory to GGGI.</li> <li>• World Animal Protection and GGGI identify those companies that are in the process of becoming signatories to GGGI.</li> </ul>	
1.3	Has the company expressed support for or commitment to implement the BPF or elements of the BPF?	
	Yes, publicly expressed support for the BPF	10
	Company has engaged with GGGI on the BPF, either through participating in the consultation or by undertaking to implement it.	5
	No engagement on the BPF	0

<b>Maximum Score</b>		<b>10 points</b>	
<b>Interpretation and Guidance</b>			
<ul style="list-style-type: none"> <li>• This question is looking for evidence that the company supports the Best Practice Framework, developed by the GGGI (see <a href="https://www.ghostgear.org/best-practice-framework">https://www.ghostgear.org/best-practice-framework</a>).</li> <li>• For maximum points to be awarded, this support needs to be publicly stated.</li> <li>• Signatories to the GGGI are automatically awarded five points for this question, as being a GGGI member implicitly commits companies to work towards the BPF and implies support for the BPF. However, this is not the same as publicly and explicitly expressing support for BPF, and so 10 points are not awarded just because the company is a signatory to the GGGI.</li> <li>• Non-signatories to the GGGI can also receive points for this question: they are awarded 10 points if they formally support the BPF, and they are awarded five points if they are involved in projects whose objectives are to implement the BPF (e.g. in a specific fishery).</li> </ul>			
<b>1.4</b>	<b>Does the company have CSR policies or sustainability programmes on key marine sustainability issues?</b>		
	Policy or programme in place? (Yes/No)	Explanation of how the policy or programme is implemented?  (Yes/No)	
	Marine litter		
	Marine pollution		
	Bycatch/Entanglement		
	Sustainable sourcing		
	SDGs - 14.1		
	Compliance with FAO Code of Conduct of Fisheries		
	Other environmental areas		
	Other relevant policies or programmes (please specify):		
<b>Maximum Score</b>		<b>10 points</b>	
<b>Interpretation and Guidance</b>			
<ul style="list-style-type: none"> <li>• This question is looking for evidence that the company has policies or programmes that are relevant to marine sustainability.</li> <li>• For each of the listed subject areas, one point is awarded for having a policy commitment (or an equivalent statement), and another point is awarded for providing information on how the policy is implemented.</li> <li>• Companies can achieve a maximum of two points for each policy area, up to five areas. Ten points are thus awarded for the question as a whole if the company has policies in at least five marine sustainability-relevant areas and provides information on how each of these policies is to be implemented.</li> </ul>			



- The distinction between marine litter and marine pollution is blurred but as a rule of thumb 'marine litter' refers to lost or discarded solid materials (e.g. plastic cups, pieces of polystyrene) and marine pollution refers to liquid or dissolved waste (e.g. oil, sewage, chemicals).
- For Sustainable Development Goal (SDG) 14, companies must explicitly reference this SDG or SDG Target 14.1 for points to be awarded. General references to the SDGs (or to SDGs other than SDG 14 will not lead to points being awarded for this question.
- Examples of other environmental policies could include water or waste management policies. For points to be awarded, these policies should relate specifically to the marine environment, although they do not necessarily need to relate to fishing (e.g. a prohibition on marine discharges from the company's facilities).
- Other relevant policies could include commitments on issues such as traceability and illegal fishing.

**1.5 Do the core values of the company demonstrate sustainability, innovation & stewardship?**

**Maximum Score**

**0 points**

**Interpretation and Guidance**

- This question is looking for information regarding the company's values and general views on sustainability issues and on its initiatives to improve its practices.
- Points are not awarded for this question.

## Implementation: Systems and Processes

**2.1 Does the company have a high level of verifiable traceability of their products and oversight of supply chains?**

Company has 100% verifiable traceability to catching vessel

10

76-99% of fish/seafood is traceable to catching vessel

7

51-75% of fish/seafood is traceable to catching vessel

5

26-50% of fish/seafood is traceable to catching vessel

3

1-25% of fish/seafood is traceable to catching vessel

1

0% traceability or no demonstrable information

0

**Maximum Score**

**10 points**

**Interpretation and Guidance**

- This question is looking for evidence that the company can verify the source of some/all of its catch/products back to the catching vessel.
- This could be through formal chain of custody certification systems such as MSC or through clear evidence of an effectively implemented internal system where there are clear links back to the catching vessels, for example, blockchain.
- Specific guidance:
  - All fish caught by vessels on the ISSF's Proactive Vessel Register (PVR) can be considered traceable to the catching vessel.
  - All fish from MSC or Friend of the Sea certified fisheries can be considered traceable to the catching vessel.
  - All tuna caught by ISSF members can be considered traceable to the catching vessel. Note that ISSF only covers tuna and so does not cover any other species the company may trade.

- Any fish caught under any certification that conforms to the FAO guidelines for the ecolabelling of fish and fishery products from marine capture fisheries (Revision 1) (<http://www.fao.org/docrep/012/i1119t/i1119t.pdf>) can be considered traceable.
- In practice, most companies do not provide sufficient data to enable the percentage of fish traceable to catching vessels to be calculated. Often, they provide this data for specific species (e.g. tuna) or specific product lines. Therefore, the approach to assessing this question is that of 'reasonable estimates' where the assessor establishes (a) the proportion of different fish species caught/processed by the company, (b) the proportion of these that are considered to be traceable, (c) provides the company with an explanation of how the calculation was made and the assumptions underpinning the calculation.
- While it is difficult to offer hard and fast rules, some general rules that guide the assessment are:
  - Assessors do not award any points to companies where there is no information on traceability, on relevant schemes or certifications.
  - Assessors only award 10 points if the company states that all of its fish is traceable to catching vessel (or an equivalent commitment, such as all fish being from MSC certified fisheries)
  - Assessors are aware that most companies will handle multiple species, and should consider that commitments - on traceability, on certification - may not apply to all species.
- Companies need to do more than make a statement of support for initiatives such as MSC for points to be awarded. There must be some evidence that they actually catch or process fish that are certified to these schemes.

**2.2 Do the core values of the company demonstrate sustainability, innovation & stewardship?**

Published details of responsibility for ALDFG within the company	10
Responsibility for the management of ALDFG has been assigned, but this is not fully disclosed	5
No clearly defined management responsibility	0

<b>Maximum Score</b>	<b>10 points</b>
<b>Interpretation and Guidance</b>	

- This question is looking for evidence that responsibility has been assigned to a specific individual, to a specific function or a specific committee for issues relating to ALDFG.
- For maximum points, the specific individual, function or committee needs to be made publicly available.
- World Animal Protection and GGGI may identify specific individuals at specific companies with responsibility for ALDFG. In these situations, and where this information is not publicly available, companies will be awarded five points.
- Points will not be awarded for this question if the company scored 0 points on Question 1.1 (i.e. if it has not acknowledged ADLFG as an issue for its business).

**2.3 Has the company set objectives and targets for the management of ALDFG?**

Published objectives and targets, together with information on the actions to be taken to	10
Objectives and targets set, but with no published information on how these are to be achieved.	5
No published objectives and targets	0
<b>Maximum Score</b>	<b>10 points</b>

<b>Interpretation and Guidance</b>		
<ul style="list-style-type: none"> <li>This question is looking for evidence that companies have set targets for the management of ALDFG.</li> <li>In order to achieve maximum points, companies need to specify how these targets are to be achieved (i.e. through describing the major actions to be taken, through explaining the resources allocated, through explaining who it is working with to deliver on the objectives on targets).</li> </ul>		
<b>2.4</b>	<b>Does the company describe how it implements its ALDFG policy internally and through its supply chain?</b>	
	Measure identified? (Yes/No)	Description of how the measure is implemented?  (Yes/No)
	Awareness-raising	
	Training	
	Monitoring systems	
	Registers of gear/equipment	
	Tracking/tagging of gear equipment	
	Other (please specify):	
<b>Maximum Score</b>		<b>10 points</b>
<b>Interpretation and Guidance</b>		
<ul style="list-style-type: none"> <li>This question is looking for evidence that the company has adopted measures to ensure that its ALDFG policy is effectively implemented.</li> <li>For each of the measures listed, one point is awarded for stating the measure has been adopted and another point is awarded for providing a more detailed description.</li> <li>Companies can achieve a maximum of two points for each measure, up to a maximum of 10 points for the question as a whole. 10 points are awarded if the company has measures in five ALDFG-relevant areas and provides information on how each of these measures is to be implemented.</li> <li>Points are not awarded for this question if the company scored 0 points on Question 1.1 (i.e. if it has not acknowledged ADLFG as an issue for its business).</li> </ul>		
<b>2.5</b>	<b>Does the company participate in any certification schemes, which include mention of ALDFG?</b>	
	All fish/product is covered by a relevant certification scheme	10
	67-99% of fish fish/product is covered by a relevant certification scheme	8
	34-66% of fish/product is covered by a relevant certification scheme	6
	1-33% of fish/product is covered by a relevant certification scheme	4

Yes, but the percentage of fish/product covered by a relevant certification scheme is not specified	2
No	0
<b>Maximum Score</b>	<b>10 points</b>
<b>Interpretation and Guidance</b>	

- This question aims to understand whether the company participates in a certification scheme which includes mention of/provisions for ALDFG (e.g. MSC, Monterey Bay Seafood Watch, Friend of the Sea, Seafish Responsible Fishing Scheme) and the proportion of its catch/product that is covered by such schemes.
- The assessor needs to check the details of the specific certification schemes cited by companies. There are thought to be over 100 seafood certification schemes in existence, but not all mention ALDFG.
- In practice, most companies do not provide sufficient data to enable the percentage of fish traceable to enable the percentage of the catch from certified sources to be calculated. Often, they provide this data for specific species (e.g. tuna) or specific product lines. Therefore, the approach to assessing this question is that of 'reasonable estimates' where the assessor establishes (a) the proportion of different fish species caught/processed by the company, (b) the proportion of these that are considered to be traceable, (c) provides the company with an explanation of how the calculation was made and the assumptions underpinning the calculation. Some examples from the 2018 assessment are provided below.
- While it is difficult to offer hard and fast rules, some general rules that guide the assessment are:
  - Assessors do not award any points to companies where there is no information on certifications.
  - Assessors check the MSC Supplier directory to see whether a company offers certified products.
  - Assessors only award 10 points if the company explicitly states that all of its fish is from relevant certification schemes.
  - Assessors are aware that most companies will handle multiple **species**, and consider that commitments on certification may not apply to all species.
- Companies need to do more than make a statement of support for initiatives such as MSC for points to be awarded. There must be some evidence that they actually catch or process fish that are certified to these schemes.

## Performance Reporting and Impact

<b>3.1</b>	<b>Does the company report publicly on its performance against its ALDFG objectives?</b>	
	Reports performance against all ALDFG-related objectives and targets, including discussion of the actions taken and the factors that have affected performance.	10
	Reports performance against all ALDFG-related objectives and targets but provides limited or no information on the actions taken or the factors that affected performance.	6
	Reports performance on some but not all ALDFG-related objectives and targets.	4
	Does not report on performance against objectives and targets, or has not set objective and targets.	0
	<b>Maximum Score</b>	<b>10 points</b>

<b>Interpretation and Guidance</b>	
<ul style="list-style-type: none"> <li>• This question is looking for companies to report on how they have performed against their ALDFG-related objectives and targets.</li> <li>• Points can only be awarded for this question if a company scored five or 10 points for Question 2.3.</li> </ul>	
<b>3.2</b>	<b>Is the company involved in solution projects such as Fishery Improvement Projects related to ALDFG or ALDFG elements?</b>
Involved in projects/FIPs specifically related to ALDFG	10
Involved in projects/FIPs generally but not focusing specifically on ALDFG	5
Not involved	0
<b>Maximum Score</b>	<b>10 points</b>
<b>Interpretation and Guidance</b>	
<ul style="list-style-type: none"> <li>• A fishery improvement project, or FIP, is a multi-stakeholder effort to improve the sustainability of a fishery, normally with the aim of meeting the requirements of a certification standard.</li> <li>• This question is looking for evidence of company involvement in such or similar projects (e.g. net recovery schemes, shoreside recycling facilities), particularly those related to Abandoned, Lost or Discarded Fishing Gear. For maximum points, the involvement needs to be publicly communicated.</li> <li>• FIPs may not focus on ALDFG. This must be checked/confirmed before awarding 10 points.</li> </ul>	
<b>3.3</b>	<b>Is the company an innovator or manufacturer of fishing gear or other technology that could be applied in tackling ALDFG?</b>
<b>Maximum Score</b>	<b>10 points</b>
<b>Interpretation and Guidance</b>	
<ul style="list-style-type: none"> <li>• This question is looking for company involvement or investment in technical projects with the aim of tackling ADLFG.</li> <li>• Points are not awarded for this question.</li> </ul>	
<b>3.4</b>	<b>Is the company involved in high impact fishing techniques (e.g. gillnets, traps &amp; pots, FADs)?</b>
No involvement in high impact fishing techniques	10
Involved in high impact fishing techniques with validated (BPF) mitigation measures in place for all of these	5
Involved in high impact fishing techniques with validated (BPF) mitigation measures in place for at least some of these	2
Involved in high impact fishing techniques with no published evidence of mitigation procedures	0
<b>Maximum Score</b>	<b>10 points</b>
<b>Interpretation and Guidance</b>	



- This question is looking for information on whether the company is involved in particularly sensitive/high-risk fishing methods, and whether there are measures in place to mitigate the potential negative effects of these methods/practices.
- High impact fisheries are defined in the Best Practice Framework as those in which gillnets, traps& pots or FADs are used.
- An absence of disclosure on whether or not the company is involved in high impact fishing techniques and/or using fish or seafood obtained using these techniques, should not be interpreted as meaning the company has no involvement. The onus is on the company to state whether or not it is involved in or supports high impact fishing techniques. If companies are fishing for species for which the problematic gear types listed above are likely to be used, it will be assumed that - in the absence of information to the contrary - that high impact fishing techniques are being used.
- Fish sourced from fisheries certified to the standards specified in Q. 2.5 cannot be assumed to have been caught using lower-impact fishing techniques not can it be assumed that validated BPF measures have been applied unless evidence is available to support this. For example, MSC certification does not cover the necessary mitigation measures for lobster and rock crab traps and pots.
- Section 3 of Part 2 of the BPF (<https://tinyurl.com/y4o5x6bv>) describes in detail measures to prevent, mitigate and cure ALDFG. See, in particular, Sections 3.1 (for Gear Manufacturers) and 3.2 (for Fishers).
- Note: For future assessments, this question is likely to be modified in two ways: (1) To increase the points for partial action (e.g. the scores may be 10, 7, 5 and 0), (2) To recognise and award specific points to companies with very little involvement in high impact fishing techniques.

**3.5 Does the company communicate about ALDFG to its customers through education and/or awareness-raising activities?**

Company actively communicates about its engagement with the GGGI as well as about	10
Company communicates to its customers about ALDFG publicly	5
No evidence of communication to customers about GGGI or ALDFG	0
<b>Maximum Score</b>	<b>10 points</b>

**Interpretation and Guidance**

- Companies can only be awarded 10 points if they are members of GGGI.

**3.6 Is the company engaged in one or more international marine sustainability initiatives?**

Yes	5
No	0
<b>Maximum Score</b>	<b>5 points</b>

**Interpretation and Guidance**

- This question is looking for evidence that the company participates in one or more marine sustainability initiatives.
- Engagement means that the company is a signatory/member and expected to implement the requirements of the initiative.
- Some of the initiatives that meet the intent of this question (and for which five points can be awarded) are:
  - ISSF
  - The Global Sustainable Seafood Initiative
  - The Sustainable Seafood Coalition

- The assessor needs to check the details of the specific certification schemes cited by companies. There are thought to be over 100 seafood certification schemes in existence, but not all mention ALDFG.
- Other initiatives may be considered in this question but- as with those listed above - they must be recognised as leadership initiatives and must require concrete actions of their members on marine sustainability-related issues.

**3.7 Does the company have partnerships on marine sustainability with NGOs or academic institutions?**

Yes (please specify):

5

No

0

**Maximum Score**

**10 points**

**Interpretation and Guidance**

- This question is looking for evidence that the company is involved in partnerships other than the GGFI.
- The scope of the question and of answers that lead to the award of 5 points are broad. Companies could be awarded five points if:
  - They fund or support academic or applied research.
  - They work with environmental NGOs such as WWF on specific projects.
  - They are members of MSC.
- The key is that the partnership(s) must be focused on marine sustainability. General environmental projects (e.g. on energy efficiency) do not meet the requirements for points to be awarded for this question.

# Appendix 3: Glossary

## Best Practice Framework (BPF)

The Best Practice Framework for Fisheries Management, developed by the GGGI, is a tool that offers recommendations and practical guidance on fisheries management, aiming to mitigate the threat of ghost fishing. See <https://www.ghostgear.org/best-practice-framework>

## Fishery improvement project

A fishery improvement project, or FIP, is a multi-stakeholder effort to improve the sustainability of a fishery and that must meet a number of requirements pertaining to participation, funding, transparency, and scientific rigour. Usually, these are directed towards enabling the fishery to meet the requirements of a certification standard.

## Ghost fishing

Ghost fishing is a process by which abandoned, lost or otherwise discarded fishing gear (ALDFG) continues to catch fish and other animals.

## Ghost gear

The term 'ghost gear' refers to any fishing gear that has been abandoned, lost or otherwise discarded (for example nets, line, rope, traps, pots, and floats). Other common terms include 'ALDFG' (abandoned, lost or otherwise discarded fishing gear) and derelict fishing gear or 'DFG'.

## Gillnets

Gillnets are designed to catch fish by entangling them around their gills. They may be small enough to throw by hand or up to about three km long (in the 1990s 60 km gillnets were common) and up to about 15m deep. They are considered to be the most damaging type of fishing gear. Research shows that gillnets and other entangling nets can maintain high ghost fishing catch rates for long periods, up to years in some cases. The design and manufacturing of gillnets dramatically impacts which marine animals are likely to become caught. Sea turtles, for example, are more likely to be caught in nets with larger mesh sizes, such as pelagic drift nets.

## Fish aggregating devices (FADs)

A FAD is a man-made device, often consisting of buoys or floats used to attract fish such as tuna, which aggregate around them. They are used by commercial as well as recreational fisheries and can be drifting (dFADs) or anchored (aFADs). dFADs play a key role in tuna fishing, with the majority of tuna worldwide being caught using this practice. aFADs are used by small-scale fishers around the world to maximize fishing effort in nearshore areas (up to 10km offshore).

## Longlines

Longlines are long backing lines with a series of baited hook lines attached to them.

## Global Ghost Gear Initiative (GGGI)

GGGI is a multi-stakeholder alliance committed to driving and developing solutions to the global problem of ghost fishing gear. Launched in 2015, GGGI aims to protect marine animals from harm, improve the health of our marine ecosystems, and safeguard the health and livelihoods of those who depend on these ecosystems.

# Appendix 4: Acronyms

aFAD	anchored fish aggregation device	PDS	Pelagic Data Systems
ALDFG	abandoned, lost or otherwise discarded fishing gear	PVR	Proactive Vessel Register
BPF	Best Practice Framework for the Management of Fishing Gear	SDGs	Sustainable Development Goals
CCOA	Commonwealth Clean Ocean Alliance	UNEP	United Nations Environment Programme
Cefas	Centre for Environment, Fisheries and Aquaculture Science		
CLiP	Commonwealth Litter Programme		
COFI	Committee on Fisheries		
CSIRO	Commonwealth Scientific Industrial Research Organisation		
Defra	Department for Environment, Food and Rural Affairs (UK)		
dFAD	drifting fish aggregating device		
DFG	derelict fishing gear		
FADs	fish aggregating devices		
FAO	Food and Agriculture Organization of the United Nations		
FIP	Fishery Improvement Project		
GGGI	Global Ghost Gear Initiative		
GOMLF	Gulf of Maine Lobster Foundation		
	ISSF International Seafood Sustainability Foundation		
IUU	illegal, unregulated and unreported fishing		
MSC	Marine Stewardship Council		
NOAA	National Oceanic and Atmospheric Association		

# Appendix 5: References

1. Werner, S., Budziak, A., van Franeker, J., Galgani, F., Hanke, G., Maes, T., Matiddi, M., Nilsson, P., Oosterbaan, L., Priestland, E., Thompson, R., Veiga, J., & Vlachogianni, T. (2016) *Harm caused by marine litter* JRC Technical Reports European Union ISBN 978-92-79-64535-8
2. World Animal Protection (2014) *Fishing's Phantom Menace*, Accessed 1 March 2019, [https://www.worldanimalprotection.org/sites/default/files/int\\_files/sea-change-campaign-tackling-ghost-fishing-gear\\_0.pdf](https://www.worldanimalprotection.org/sites/default/files/int_files/sea-change-campaign-tackling-ghost-fishing-gear_0.pdf)
3. Ocean Conservancy and McKinsey Center for Business and Environment (2015) *Stemming the Tide: Land-based strategies for a plastic-free ocean*
4. UNEP (2017) , Accessed 1 March 2019, <http://web.unep.org/environmentassembly/estimated-8-million-tons-plastic-waste-enter-world%E2%80%99s-oceans-each-year-0>
5. World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016) *The New Plastics Economy: Rethinking the future of plastics*
6. Cole, M., Lindeque, P., Halsband, C., & Galloway, T.S. (2011) Microplastics as contaminants in the marine environment; a review *Marine Pollution Bulletin* 62 2588-2597
7. Napper, I.E., & Thompson, R.C., (2016) Release of synthetic microplastic fibres from domestic washing machines: effects of fabric type and washing conditions *Marine Pollution Bulletin* 112 39-45
8. Sharma, S., & Chatterjee, S. (2017) Microplastic pollution, a threat to marine ecosystem and human health: a short review *Environmental Science and Pollution Research* 24 21530-21547
9. Unger, B., Bravo Rebolledo, E.L., Deaville, R., Gröne, A., Ijsseldijk, L. L., Leopold, M., Siebert, U., Spitz, J., Wohlsein, P; Herr, H. (2016). Large amounts of marine debris found in sperm whales stranded in the North Sea coast in early 2016. *Marine Pollution Bulletin* 112 134-141.
10. Macfadyen, G., Huntington, T., & Cappell, R. (2009) *Abandoned, lost or otherwise discarded fishing gear* UNEP Regional Seas Reports and Studies, No. 185; FAO Fisheries and Aquaculture Technical Paper, No. 523. Rome: UNEP/FAO.
11. Earle, S.A. (2009) *The World Is Blue: How Our Fate and the Ocean's Are One* National Geographic Books
12. Wilcox, C., Mallos, N.J., Leonard, G.H., & Hardesty, B.D. (2016) Using expert elicitation to estimate the impacts of plastic pollution on marine wildlife *Marine Policy* 65 107-114
13. CBD - Secretariat of the Convention on Biological Diversity. (2016). *Marine Debris: Understanding, Preventing and Mitigating the Significant Adverse Impacts on Marine and Coastal Biodiversity*, Montreal, Technical Series No. 83.
14. Werner, S., Budziak, A., van Franeker, J., Galgani, F., Hanke, G., Maes, T., Matiddi, M., Nilsson, P., Oosterbaan, L., Priestland, E., Thompson, R., Veiga, J., & Vlachogianni, T. (2016) *Harm caused by marine litter* JRC Technical Reports European Union ISBN 978-92-79-64535-8
15. Butterworth, A., Clegg, I., & Bass, C. (2012), *Untangled, Marine debris: a global picture of the impact on animal welfare and of animal-focused solutions*, WSPA International
16. World Animal Protection (2018) *Ghosts Beneath The Waves*, Accessed 1 March 2019, [https://d31j74p4lpxrfrp.cloudfront.net/sites/default/files/ca\\_-\\_en\\_files/ghosts\\_beneath\\_the\\_waves\\_2018\\_web\\_singles.pdf](https://d31j74p4lpxrfrp.cloudfront.net/sites/default/files/ca_-_en_files/ghosts_beneath_the_waves_2018_web_singles.pdf)



17. Richardson, K., Gunn, R., Wilcox, C., & Hardesty, B.D. (2018) Understanding causes of gear loss provides a sound basis for fisheries management *Marine Policy* 96 278-284
18. Coker, A.K. (2007) Process safety and pressure-relieving devices In: *Ludwig's Applied Process Design for Chemical and Petrochemical Plants (Fourth Edition), Volume 1* 575-770
19. FAO (2019), *Illegal, Unreported and Unregulated (IUU) Fishing* Accessed 1 March 2019, <http://www.fao.org/iuu-fishing/en/>
20. Macfadyen, G., Huntington, T., & Cappell, R. (2009) *Abandoned, lost or otherwise discarded fishing gear* UNEP Regional Seas Reports and Studies, No. 185; FAO Fisheries and Aquaculture Technical Paper, No. 523. Rome: UNEP/FAO.
21. Huntington, T. (2017) *Development of a best practice framework for the management of fishing gear* Global Ghost Gear Initiative
22. Johnson, A., Salvador, G., Kennedy, J., Robbins, J., Kraus, K., Landry, S. & Clapham, P. (2006) Fishing gear involved in entanglements of right and humpback whales *Marine Mammal Science* 21(4) <https://doi.org/10.1111/j.1748-7692.2005.tb01256.x>; Stelfox, M., Hudgins, J., & Sweet, M. (2016) A review of ghost gear entanglement amongst marine mammals, reptiles and elasmobranchs, *Marine Pollution Bulletin* 111 6-17
23. Peltier, H., Authier, M., Deaville, R., Dabin, W., Jepson, P., van Canneyt, O., Daniel, P., & Ridoux, V. (2016) Small cetacean bycatch as estimated from stranding schemes: the common dolphin case in the northeast Atlantic *Environmental Science & Policy* 63 7-18
24. Pemberton, D., Brothers, N.P., & Kirkwood, R. (1992) Entanglement of Australian fur seals in man-made debris in Tasmanian waters. *Wildlife Research* CSIRO; Boren, L., Morrissey, M., Muller, C.G., & Gemmill, N.J. (2006) Entanglement of New Zealand fur seals in man-made debris at Kaikoura, New Zealand *Marine Pollution Bulletin* 52 442-446
25. Duncan, E.M., Botterell, Z.L.R., Broderick, A.C., Galloway, T.S., Lindeque, P.K., Nuno, A., & Godley, B.J. (2017) A global review of marine turtle entanglement in anthropogenic debris: a baseline for further action *Endangered Species Research* 34 431-448
26. Gilman, E.L., Chopin, F., Suuronen, P., & Kuemlangan, B. (2016) Abandoned, lost and discarded gillnets and trammel nets. Methods to estimate ghost fishing mortality, and status of regional monitoring and management FAO Fisheries and Aquaculture Technical Paper No. 600 <http://www.fao.org/3/a-i5051e.pdf>
27. Gilardi, K.V.K, Carlson-Bremner, D., June, J.A., Antonelis, K., Broadhurst, G., & Cowan, T. (2010) Marine species mortality in derelict fishing nets in Puget Sound, WA and the cost/benefits of derelict net removal *Marine Pollution Bulletin* 60 376-382
28. Gershman, D., Nickson, A., & O'Toole, M. (2015) *Estimating the use of FADs around the world: an updated analysis of the number of fish aggregating devices deployed in the ocean*, The Pew Charitable Trusts
29. Radio NZ (2018), *Fishing rubbish found washed up on remote Cook Islands' Suvarrow Atoll*, <https://www.radionz.co.nz/news/pacific/360851/fishing-rubbish-found-washed-up-on-remote-cook-islands-suvarrow-atoll>
30. Uhrin, A.V., Matthews, T.R., & Lewis, C. (2014) Lobster trap debris in the Florida Keys National Marine Sanctuary: distribution, abundance, density, and patterns of accumulation. *Marine and Coastal Fisheries*, 6:1, 20-32

31. Global Ghost Gear Initiative (2018) , Accessed 1 March 2019, <https://www.ghostgear.org/news/2018/7/6/gggi-ghost-gear-reporter-app>
32. Macfadyen, G., Huntington, T., & Cappell, R. (2009) *Abandoned, lost or otherwise discarded fishing gear* UNEP Regional Seas Reports and Studies, No. 185; FAO Fisheries and Aquaculture Technical Paper, No. 523. Rome: UNEP/FAO.
33. European Commission (2018) *Proposal for a Directive of The European Parliament and of The Council on the reduction of the impact of certain plastic products on the environment* 2018/0172 [http://ec.europa.eu/environment/waste/plastic\\_waste.htm](http://ec.europa.eu/environment/waste/plastic_waste.htm)
34. World Animal Protection (2018) *Ghosts Beneath the Waves* Accessed 1 March 2019, [https://d31j74p4lpxrfrp.cloudfront.net/sites/default/files/ca\\_-\\_en\\_files/ghosts\\_beneath\\_the\\_waves\\_2018\\_web\\_singles.pdf](https://d31j74p4lpxrfrp.cloudfront.net/sites/default/files/ca_-_en_files/ghosts_beneath_the_waves_2018_web_singles.pdf)
35. Huntington, T. (2017) *Development of a best practice framework for the management of fishing gear* Global Ghost Gear Initiative
36. United Nations (2018), *Sustainable Development Goals Report 2018* Accessed 1 March 2019, <https://sustainabledevelopment.un.org/sdg14>
37. FAO (1995) Code of conduct for responsible fisheries, Accessed 1 March 2019, <http://www.fao.org/3/a-v9878e.htm>

**Image overleaf:** Ghost gear washed ashore after a hurricane in Hawaii. World Animal Protection / Rachel Ceretto







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