

## MARELITT Toolkit Impacts of DFG

Impacts	Description
<b>Environmental</b>	
Hazardous materials in the marine environment	<ul style="list-style-type: none"> <li>▪ Synthetic DFG is a potential source of hazardous and toxic materials (lead, plastic) in the marine environment.</li> <li>▪ Some parts of fishing gear are made of hazardous materials. As such, the foot rope of set nets may be weighted by leadline (zinc may also be used).Plastics last up to hundreds of years in the marine environment, depending upon water conditions, ultraviolet light penetration and the level of physical abrasion</li> <li>▪ Plastic never biodegrades, but with the sunlight, it splits into ever and ever smaller pieces. Ultimately all non-retrieved DFG, ends up as micro-plastics, which is a potential source of toxic chemicals.</li> <li>▪ The impact of micro-plastics is widely accepted to be significant, but not yet fully known.</li> </ul>
Toxic air emissions	Inappropriate disposal of some of the retrieved DFG or non-operational gear, such as open air burning, results in toxic air emissions.
Ghost fishing	<ul style="list-style-type: none"> <li>▪ The continued catching of species by DFG is often referred to as “ghost fishing” and has detrimental impacts on fish stocks.</li> <li>▪ The ability of DFG to “ghost fish” depends on a number of factors:               <ul style="list-style-type: none"> <li>• The gear type: ‘Ghost fishing’ is largely confined to ‘passive gears’ (static net fisheries) such as gillnets, trammel nets, wreck nets, and traps; while “active gears”, such as trawl nets and longlines, are more likely to cause entanglement of marine organisms, especially on shipwrecks.</li> <li>• The rigidity or permanence of the supporting mechanism(s) (for gillnets). For example:                   <ul style="list-style-type: none"> <li>- Pelagic drift gillnets typically hang between a cork line and a lead line and are set more or less in a line without fixed endpoints. Thus, they are subject to significant deformation by waves and currents. These nets have been shown to collapse over periods of days, greatly reducing their long-term ghost fishing potential.</li> <li>- Set gillnets, by virtue of their fixed, anchored framing, may remain fully deployed and fishing long after they are lost or abandoned</li> </ul> </li> <li>• The state of the gear at the point of loss:                   <ul style="list-style-type: none"> <li>- Gear abandoned or lost as a set gear maximized for fishing may operate at maximum fishing efficiency and will thus have a high catching efficiency and, if well anchored, be slow to collapse.</li> <li>- Some abandoned or lost gears may collapse immediately and have lower initial fishing efficiencies, unless they become snagged on rock, coral or wrecks where they are held in a fixed fishing position.</li> <li>- Discarded unwanted gear or parts thereof would also have a low fishing efficiency.</li> </ul> </li> <li>• The nature of the local environment (especially in terms of currents, depth and location): catching efficiency declines rapidly</li> </ul> </li> </ul>

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	<p>once FG has been lost, because many static-net fisheries take place in shallow water, where storm and tide action can quickly roll up the nets and where the rate of bio-fouling is relatively high. Bio-fouling also reduces the catching efficiency.</p> <ul style="list-style-type: none"> <li>• The time passed after loss: fishing capacity of lost nets compared to commercial nets decreases quickly in the first three months after loss. It is therefore important to reduce the impact of ghost fishing by retrieving the DFG as soon as possible after their loss or abandonment.</li> <li>▪ Fish caught in nets may also attract scavengers that are then caught themselves, thereby perpetuating the cycle of destruction.</li> </ul>
Ingestion	Marine fauna can ingest gear-related litter.
Entanglement	<ul style="list-style-type: none"> <li>▪ Marine wildlife, often endangered such as sea turtles, marine mammals and sea birds, can get entangled in DFG.</li> <li>▪ Active fishing gears such as trawl nets and longlines are most likely to entangle both marine animals and habitats, especially in complex inshore habitats such as reef structures.</li> <li>▪ DFG can be found at beaches and is entangling birds.</li> <li>▪ Entanglement is generally considered far more likely a cause of mortality than ingestion.</li> </ul>
Alterations to the benthic environment	<ul style="list-style-type: none"> <li>▪ DFG can have a physical impact of on the benthic environment.</li> <li>▪ Gillnets for example, may have little impact on the benthic fauna and the bottom substrate. However, they may be dragged along the bottom by strong currents and wind during retrieval, potentially harming plant life, fragile organisms like sponges and corals, and substrate habitats. In deep water areas where the current is strong and heavy weights (&gt;100 kg) are required to anchor nets, there may be localized impacts.</li> <li>▪ The potential physical impacts of derelict traps depend upon the type of habitat and the occurrence of these habitats relative to the distribution of traps. In general, sand and mud-bottom habitats are less affected by crab and lobster traps than sensitive bottom habitats such as sea grass beds or areas where emergent fauna such as corals and sponges occur.</li> </ul>
Introduction of alien species	DFG is a pathway to bring harmful species to a new habitat. Invasive species transported by DFG may wipe out native species.
<b>Health</b>	
Food chain contamination	Synthetic DFG degrades into smaller particles, and ultimately in micro-plastics, which are a source of toxic chemicals. As such, DFG may result in the introduction of synthetic material and toxic chemicals into the (marine) food chain.
Degrading bathing water quality	Pollution from DFG degrades bathing water quality.
<b>Safety</b>	
Entanglement	Swimmers and divers can become entangled in DFG
	DFG can lead to navigational hazard for mariners, through entanglement of propellers.
<b>Economic</b>	
Fishing sector	<ul style="list-style-type: none"> <li>▪ High cost of fishing gear: a fisherman cannot afford to lose nets.</li> </ul>

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	<ul style="list-style-type: none"> <li>▪ Lost operating time: due to propellers entangled in DFG.</li> <li>▪ Stock reduction: resulting from contamination of catches and “ghost fishing”.</li> <li>▪ Physical damage: to fishing vessels and to nets.</li> <li>▪ Negative reputation: of the fishing sector and consumer concern.</li> </ul>
Local authorities	Local authorities incur a significant cost to clean-up shores.
Port authorities	Port authorities incur a significant cost to clean-up harbours.
Tourism sector	<ul style="list-style-type: none"> <li>▪ Aesthetic impact of DFG-related litter on beaches reduce visits and related revenue.</li> <li>▪ DFG impedes the recreational fishing business, if recreational fishing gear gets lost when entangled or hooked.</li> <li>▪ Heavily littered underwater sites are avoided by divers.</li> </ul>

Main Source: *Abandoned, lost or otherwise discarded fishing gear*, Graeme Macfadyen; Tim Huntington; Rod Cappell, UNEP-FAO, Rome, 2009.