GLOBAL GHOST GEAR INITIATIVE

GEAR MARKING IN INDONESIAN SMALL-SCALE FISHERIES:

A Pilot Project Case Study

Background

Abandoned, lost or otherwise discarded fishing gear (ALDFG), also known as 'ghost gear' accounts for approximately 10% of marine debris and has serious impacts on marine wildlife, habitats and fish stocks. ALDFG may result in reduced profits when it continues to fish ('ghost fishing') and increased operational costs for vessel owners/ operators and authorities through the replacement of lost gear and retrieval efforts. ALDFG also represents a navigational and safety at sea issue.

As a global community, we all depend on our oceans and the health of the marine life within them. Oceans drive our climate, supply us with food, provide livelihoods, and play a critical social, environmental and economic role for us. But they are increasingly inundated with marine debris, restricting their ability to perform these crucial functions.

During COFI 32 the Committee instructed FAO to conduct a number of pilot projects to explore the feasibility of gear marking, particularly in developing countries, and ghost gear retrieval.

Pilot project in Indonesia

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. Gillnets, designed to catch fish by entangling them around their gills, along with trammel nets, are among the most prevalent gear types globally, and, if not managed properly are among the most damaging gear types if lost or abandoned. Gillnets and other entangling nets are able to maintain high ghost fishing catch rates for long periods, years in some cases.

Map showing the location of the pilot sites in Java, Indonesia

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

Key Aims:

- To assess the practical and economic feasibility of various gillnet gear marking options for small-scale and artisanal fisheries in Indonesia and comparable locations and fisheries;
- To prove that gear marking could form part of a comprehensive fisheries management system to help reduce ALDFG and IUU in a developing country; and
- To underpin and strengthen the provisional recommendations of the draft FAO Guidelines on the Marking of Fishing Gear;
- To scope viability of a net recovery and / or recycling project

Project Partners

The project was led by the Indonesian Ministry of Marine Affairs and Fisheries together with World Animal Protection, and supported by FAO. The work was undertaken in the country by a team led by Dr Fayakun Satria from the Indonesian Ministry of Marine Affairs and Fisheries.

Above: Net with fibrecode tag
Below : A gillnet fisherman in Sadeng, Indonesia

The full results from the project are available in COFI33 Session Background Document 18[1].

Project outcomes

The project team tested the marking of gillnets using low-cost tags made of readily available materials. Six different types of marker were tested in the trials: plastic, wood, coconut, bamboo, metal and a tag utilizing Septillion FibreCode technology, similar to a barcode that provides user-level identification upon scanning with a mobile phone device.

The tags were tested according to the following criteria:

- **Pollution risk**
- **Safety for fishermen when operating marked gear**
- **Cost**
- **Ease of installation**
- **Lifespan / durability**
- **Ease of monitoring**
- **Material availability**

Recommendations

Implementation of a Gear Marking System

- Need for capacity building, consensus and education to build understanding and acceptance of the objectives for marking fishing gear and the process for enforcement;
- Marking methods must be appropriate to small-scale fisheries and consider all elements of the criteria outlined during this trial;
- Important to understand what level of identification is required, e.g to individual or fisheries management level;
- Gear marking needs to be combined with other fisheries management approaches to effectively combat ALDFG e.g using degradable materials for the fishing gear, safe retrieval methods, reporting of lost gear, as well as preventative measures that address the specific challenges reported in high-risk areas;

Control and Monitoring

- Gear marking may need to be incentivized to ensure uptake;
- Co-management with fishing communities (e.g. through cooperatives / fisher groups) needed to effectively implement gear marking systems;

1. http://www.fao.org/fileadmin/user_upload/COFI/COFI33Documents/MX136_COFI_2018_Inf30en.pdf

Reporting of Lost Gear

- Need for standardized system for reporting lost gear with clear lines of responsibility and protocols for retrieval;

Location, Recovery and Retrieval

- Protocols for safe retrieval need to be established along with requirements for appropriate equipment on board to aid recovery;
- Need for targeted retrieval efforts in hotspot areas of gear loss;

Above: A typical method used to retrieve lost or snagged gear in Indonesia
Right : A gillnet fishermen in Sadeng, Indonesia

Further Research and Development

- Further work on the use of FibreCode tags to explore benefits for traceability and user-level identification, with emphasis on testing of non-plastic tags;
- Data collection to establish robust baselines on gear loss, including mapping of hotspots;
- Scoping into other preventative measures including end of life net recycling, education and awareness raising;
- Support and collaboration with multi-stakeholder platforms with expertise in developing ALDFG solutions such as the Global Ghost Gear Initiative

In collaboration with

WORLD ANIMAL PROTECTION

KEMENTERIAN KELAUTAN DAN PERIKANAN

Conclusions

In general, the small-scale fishers that participated in the pilot were cooperative and supportive of the gear marking activities. However, a need exists to build greater understanding of the benefits of gear marking and further work should be done on related issues, particularly the ability to retrieve the gear when lost and the need for environmentally-friendly tags.

Due to the low value of gillnets and a government subsidy programme providing nets to fishers there is limited incentive to retrieve lost nets in either project site, although repair and reuse of damaged nets is commonly reported. In the two pilot sites, and in similar small-scale fisheries in Indonesia, fishermen are already using flashlights and flags for visibility of fishing gear to enable location by the fishers themselves and to avoid conflict with other fishing vessels, but it was agreed more could be done to aid identification.

There may be some challenges to applying certain types of technology in the context of both small-scale fisheries in general, and gillnet fisheries in particular, due to the cost of more technical marking options and the comparative low value of the gear itself. Marking at manufacture and adding value to end-of-life gear are recommended approaches to address these issues.