



DeFishGear

Targeted recovery of ghost nets – Implementation insights from a Croatian experience

**Tutman Pero, Bojanić Varezić Dubravka, Šiljić
Jasna, Pavičić Mišo**

Institute for Oceanography and Fisheries, Split
CROATIA

tutman@izor.hr



The Project is co-funded by the European Union,
Instrument for Pre-Accession Assistance (IPA)



ALDFG – what is it?



DeFishGear

- **A**bandoned, **L**ost or otherwise **D**iscarded **F**ishing **G**ear: is a significant and persistent form of marine litter.
- **ALDFG** poses threats to marine habitats and wildlife (e.g. entanglement and 'ghost' fishing, digestion, etc.), human safety (e.g. divers, boat crews, etc.) and property damage (e.g. damaging propellers).
- In most cases, the loss of gear is unwanted by the fisherman but in some cases fishing gear is intentionally discarded, mostly to avoid the waste management cycle and related cost or efforts.
- The issue of ALDFG has gained global recognition over the years.



**Removal actions of ghost nets decrease
their potential for ghost fishing**



Targeted recovery of ghost nets: detection of ALDFG



DeFishGear

- **Detecting accumulation areas of ALDFG at sea:**
 - ✓ Collecting data, through interviews and questionnaires, from fishermen, scuba-divers, etc. to identify the accumulation areas of ALDFG
 - ✓ Establishing a database with the identified locations and adding locations on a chart



Targeted recovery of ghost nets: Detection of ALDFG



DeFishGear

- **With ROV (remotely operated underwater vehicle) monitoring:**
 - ✓ Establish contact relevant local authorities regarding the recovery activities in order to have support on the ground
 - ✓ Check and record the presence of nets by ROV and GPS in selected areas.



Targeted recovery of ghost nets:

Recovery actions



DeFishGear

- **Recovery actions:**

- ✓ Establish a panel for action (team members),
- ✓ Deploy a good communication strategy,
- ✓ Get equipped vessel(s) and other equipment,
- ✓ Fulfil all precaution obligations required to obtain approval for the actions.



Targeted recovery of ghost nets: Management

- **Management and storage on the land:**
 - ✓ Identify a site on land as the preliminary storage area,
 - ✓ Assess the condition and quality of the recovered nets:
 - if recyclable - store separately
 - if not – store and appropriate handle



Targeted recovery of ghost nets: Management

- **Collection and transportation:**
 - ✓ Contact companies for management and disposal or recycling,
 - ✓ Follow all legal requirements regarding waste traceability in cooperation with the authorised companies.





DeFishGear

Ghost nets in Croatian waters

- to date, there is no information about the types, amounts or sources of ghost nets in Croatian waters,
- their direct impact on the marine biodiversity remains completely unknown

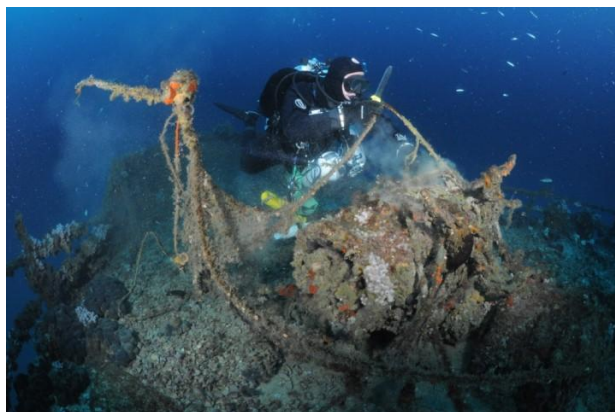


Targeted recovery actions



DeFishGear

- except from Healthy Seas actions (2013-2014) to date no targeted recovery activities were performed,
- during the DeFishGear project a first domestic attempt was made to establish a basis for removal,
- in 2014/2015 targeted pilot-actions were performed in the wider area of the middle Adriatic,
- all the actions followed the procedure developed by the DFG project



Ghost-nets in Croatian waters

Targeted recovery actions – preliminary DFG results



- gillnets, trammel-nets, trawl-nets, traps and small purse seine nets were found,
- more than 40 different ghost nets have been observed during this actions and about 1.1 T collected during the DeFishGear project.



Ghost net fishing in Croatian waters the DFG experience



DeFishGear

- 37% of ALDFG have been derelict for at least one year,
- other were much older and still pose a threat to marine organisms,
- fisheries that deploy unattended gear like gillnets or trammel-nets were the primary source of ghost-nets,
- these nets are used especially near the coasts in rocky habitats (underwater ridges) characterised by high biodiversity and continue to fish species of high economic value.
- however, lots of them are fairly fouling and lie on the seafloor (older ones) potentially posing less threat to biodiversity



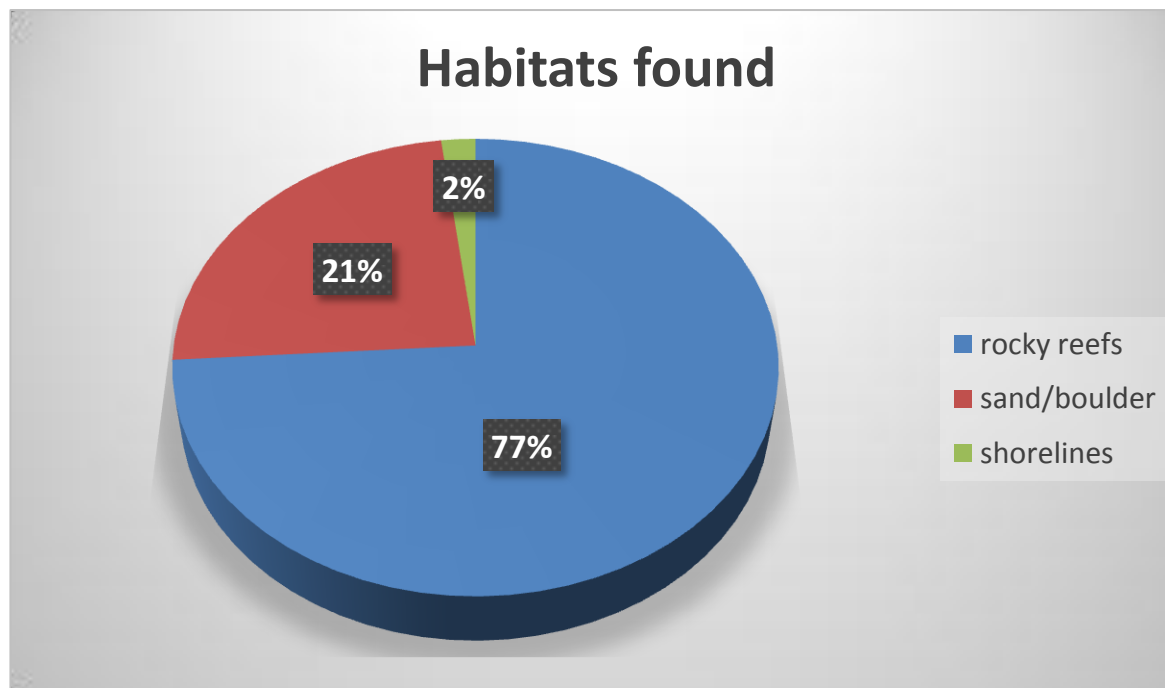
Ghost-net fishing in Croatian waters

– the DFG experience



DeFishGear

- most derelict gillnets found were located in high-relief rocky reefs and boulder habitats relatively small in size ($\leq 100 \text{ m}^2$ in area), of relatively recent manufacture and in good condition, recovered from depths above 30 m.



Ghost net fishing in Croatian waters – the DFG experience



DeFishGear

- the result of inclement weather conditions and accidental stuck,
- also of poor fishing practices and lack of convenient gear disposal infrastructure,
- lost fishing gear continue to trap fish 'unintentionally' also of particularly endangered and protected species,
- fish and crustaceans such as red scorpionfish and lobsters are endangered by lost fishing gear - an additional risk for several crustacean and fish species of conservation concern like *Palinurus elephas* and *Scorpaena scrofa*, respectively.



Some relevant indicators for the Croatian fisheries sector and its infrastructure



DeFishGear

- about 7,000 employees in the fisheries sector,
- over 4,000 fishing boats, but more than 80% shorter than 12 m,
- indicative number of active gears gillnets: 1500, 250 purse seiners, 500 trawlers,
- the catch varies from 50.000 T (2008 and 2010) to 70.000 T (in 2011), of which over 85% of the catches of purse seiners (mainly sardines and anchovies), below 10% of the trawlers, 1-2% gillnets,
- fishermen catch landed in over 250 ports, but over 95% in the 20-30 major ports,



Some relevant indicators for the Croatian fisheries sector and its infrastructure



DeFishGear

Based on surveys and interviews with fishermen, on average, per year lost on the sea:

- gillnets: 1-1.5 kg nets and ropes/year, which for 1500 means an annual amount of approximately 2 T;
- purse-seiners about 30 kg – 8 T/year for 250 of them,
- trawlers, some 30 kg - approximately 15 T for 500 of them yearly,
- the fisheries sector in Croatian marine waters generates over **25 T** every year of marine litter in the form of **ALDFG**, most of them "lost" at one of the group of 200 known sites,
- a conservative estimate based only on fishing tools – real numbers unknown.



Ghost-nets in Croatian marine waters challenges, difficulties...

- quantitative assessment of direct impact on marine resources has not been conducted in Croatia,
- lack of mitigation measures in national legislation (law in progress),
- no data - weak governmental and public support,
- remoteness of Croatian coastline difficult for nets disposal - cca 6200 km,
- clean up programs do incur costs, but no calculations were made.



Ghost nets in Croatian marine waters

– difficulties, lessons learned...



- fishermen tried to recover nets by themselves – to reduce loss,
- operational challenges of locating, recovering and disposing of removed nets,
- since the serious damage caused by ghost nets to the fisheries sector has not been assessed, the difficulty lies in convincing target groups to take an action for net removal.
- lesson learned – removal action has to be closely linked with local fishermen and authorities.





Thank you for Your attention

Image: for Eco Vitae, Boštjan Mljač

Dr.sc. Pero Tutman
Institute for Oceanography and Fisheries,
Split,
CROATIA
tutman@izor.hr