GHOST

TECHNIQUES TO REDUCE THE IMPACT OF GHOST FISHING GEARS AND TO IMPROVE BIODIVERSITY IN NORTH ADRIATIC COASTAL AREAS

The LIFE-GHOST Project

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LAGUNA PROJECT

THE PROJECT GHOST

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Techniques to reduce the impact of ghost fishing gears and to improve biodiversity in North Adriatic Coastal Areas

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What is ghost fishing?

The continued trapping and killing of marine life by a discarded fishing net floating at sea. The ALDFG (Abandoned, Lost or otherwise Discarded Fishing Gear), are a significant fraction of the marine litter which determine negative impacts on the marine environment and to human health.

General Objectives

- To assess the impacts of ALDFG on biodiversity
- To test the efficacy of the mapping and removal methods and its transferability
- To estimate the economic value of the ecosystem benefits resulting from ALDFG removal/reduction
- To propose a plan for proper disposal of both recovered and outdated gears and nets
- To develop an operative protocol for ALDFG management

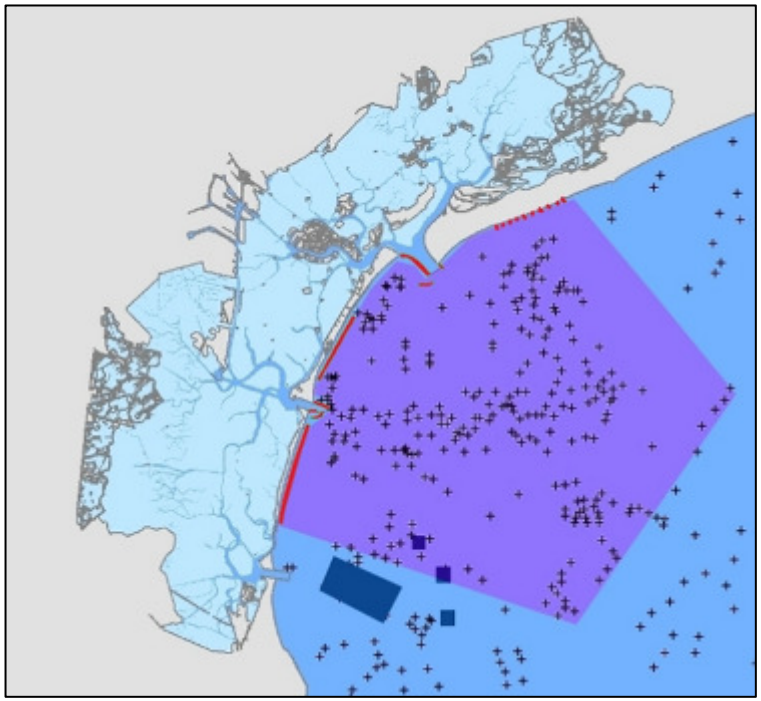
Pilot area

The *tegnùa* habitat is caracterized by a high biodiversity

740 species reported of which:
12 included in the protection lists
97 of commercial interest

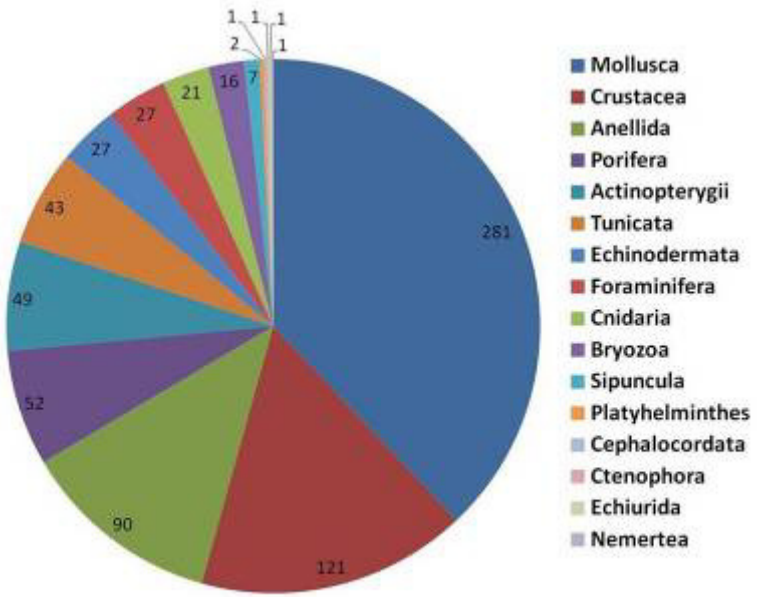
These are places of nursery for many commercial species

It is estimated the presence of over 3000 areas of *tegnùe* in the Venice Gulf



Pinna nobilis

Hommarus gammarus



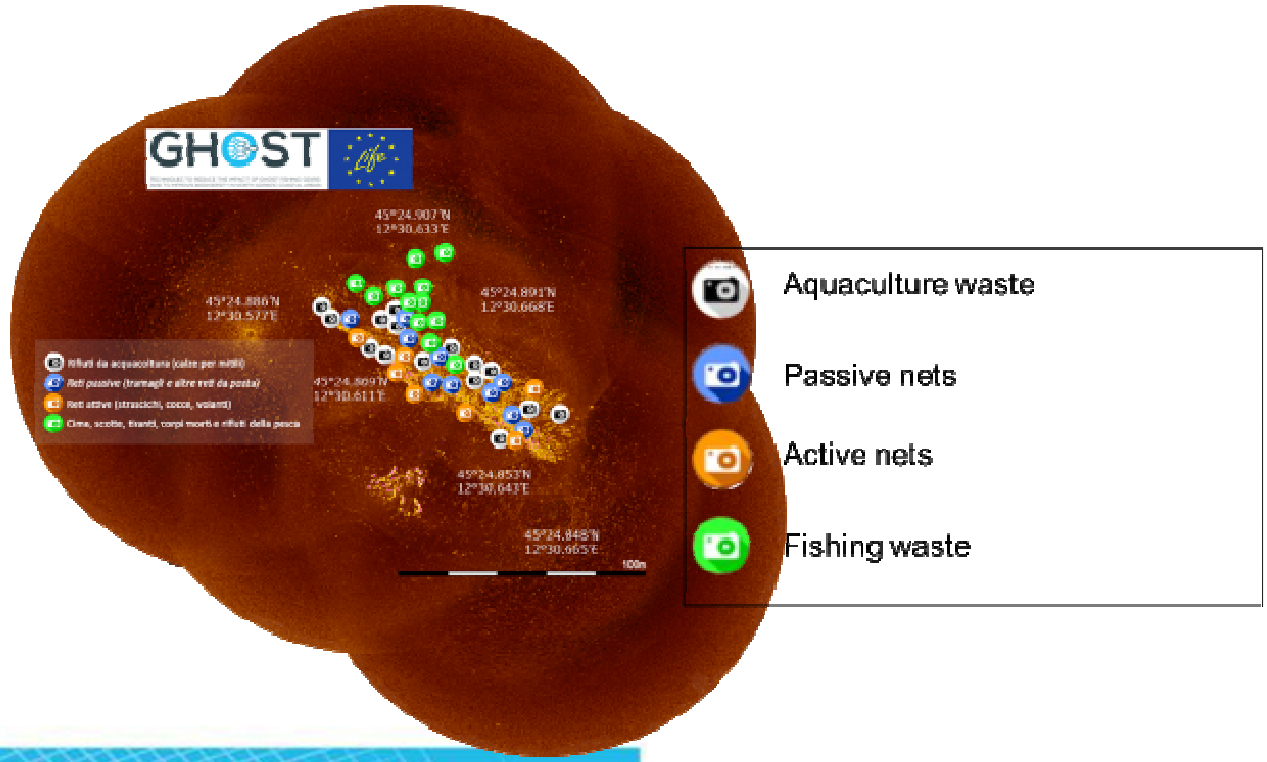
N° total species divided per taxa

The mapping

- Creation of the maps of rocky habitats within the areas probably interested by the presence of ALDFG
- 8 out of 15 mapped areas were affected by ALDFG presence.
- Used methods:

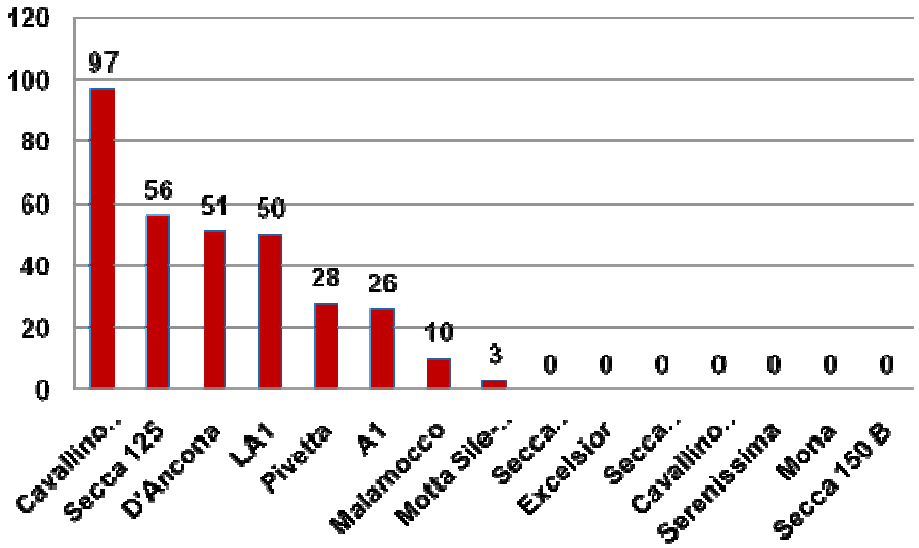
  Acoustic instrument at high resolution (High resolution scanning sonar MS-1000)

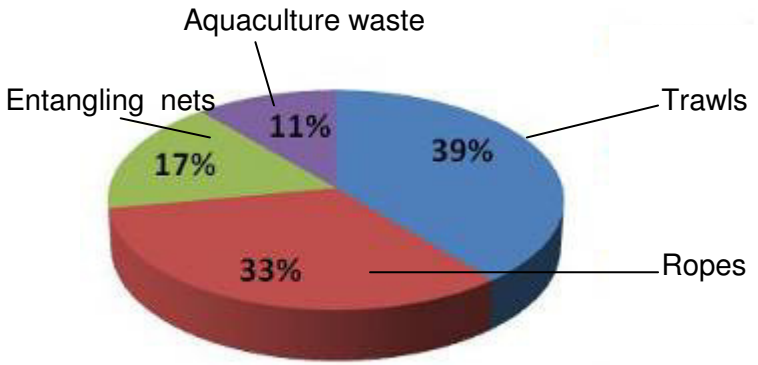
  Visual census



Results of mapping

Localization of the tegnùe with presence of ALDFG (red) and those without (green)



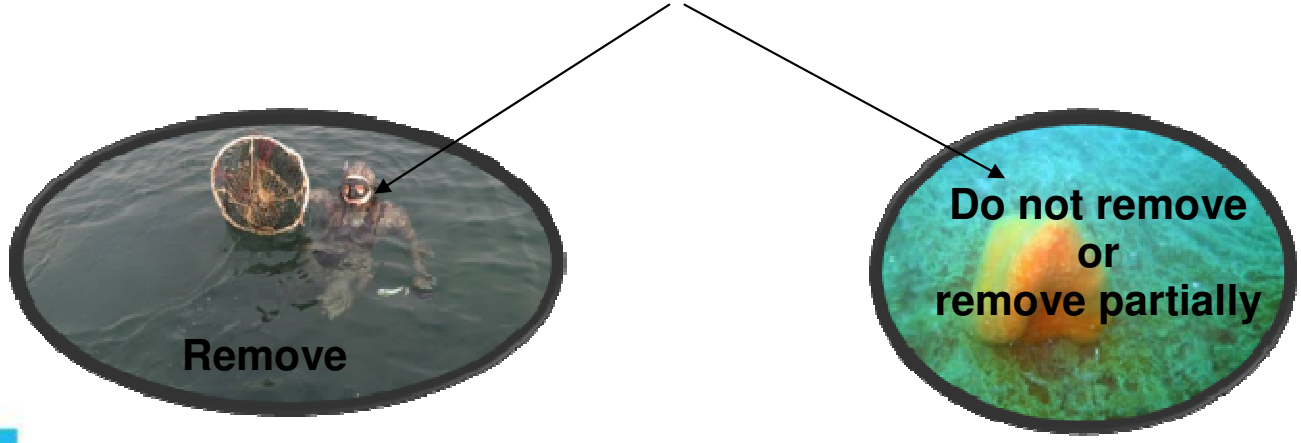


Percentages of 4 types of ALDFG found in the depths of the study areas

Removal of the ALDFG

The goal is to remove ghost nets from rocky habitats taking into account the presence and degree of fouling coverage of organisms and the consequences/actual benefits that will follow their removal …

- Identification of the ALDFG type (type of net, materials present, size, dimensions, degree of stranding
- Assessment of the degree of fouling / cohesion with the seabed and hazardous residual (ghost fishing, abrasion of the seabed, releasing pollutants)
- Evaluation of the presence of fouling organisms, in particular those belonging to species present in the protection lists
- Evaluation and planning of safe and economic removal



Procedures for ALDFG characterization

ALDFG Split in different tipological group

Weighing

Identification of different components

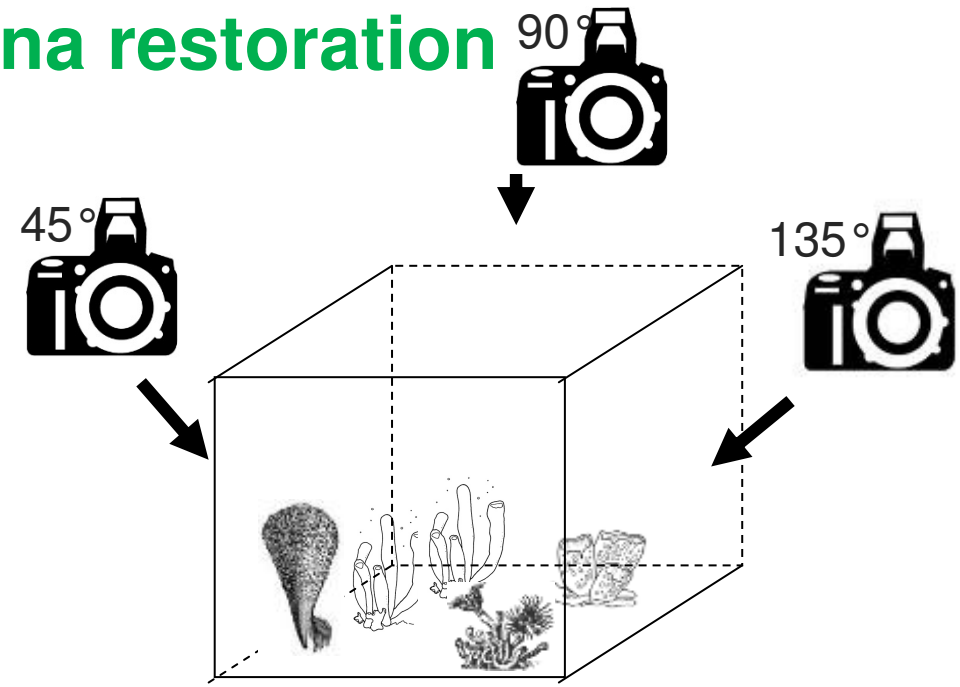
Sampling for analysis

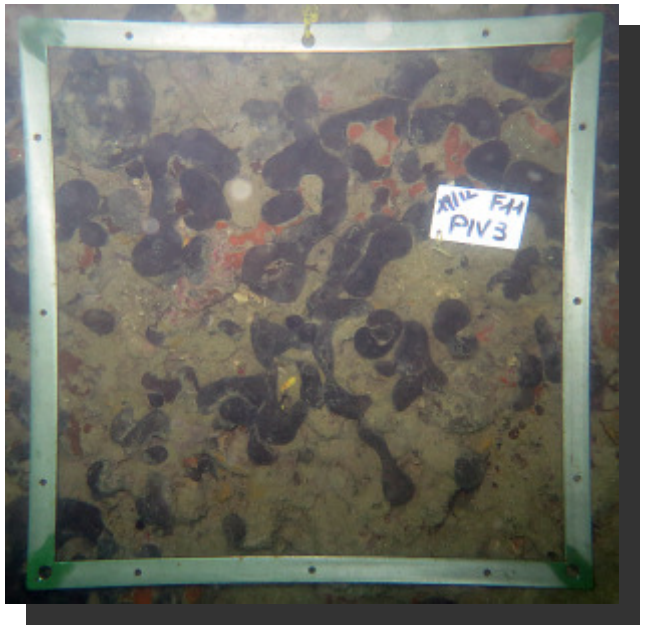
GHOST Benthic macrofauna restoration

The evolution of the macro-zoobenthic community and fish will be monitored in 5 areas, for a period of 15 months, to test the effects of the removal of ghost nets

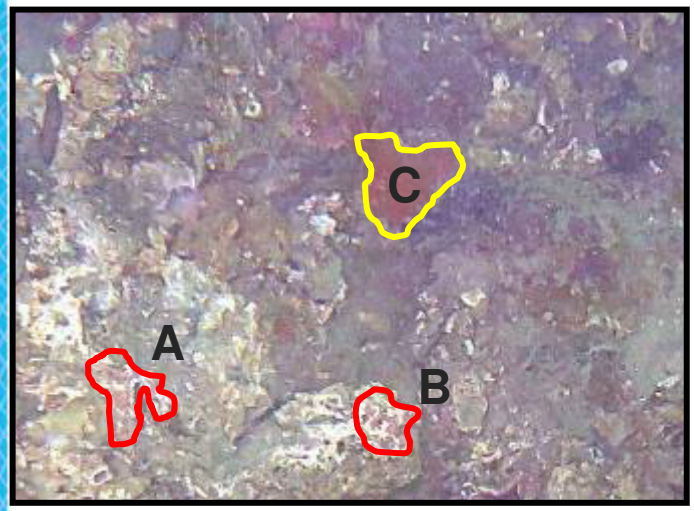
For the analysis has been used a steel frame specially made to allow the acquisition of high-definition images from different angles (45°, 90° e 135°) of a portion of sea bottom of 2500 cm2 (50X50)

The images taken every 3 months from the net removal provide information on the biodiversity increment and biota restauration.

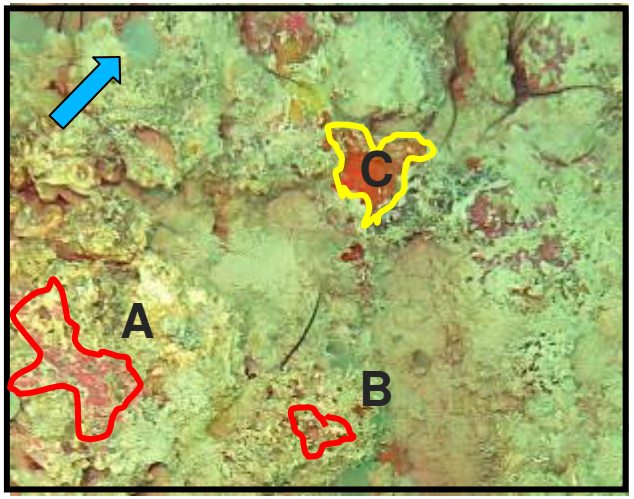




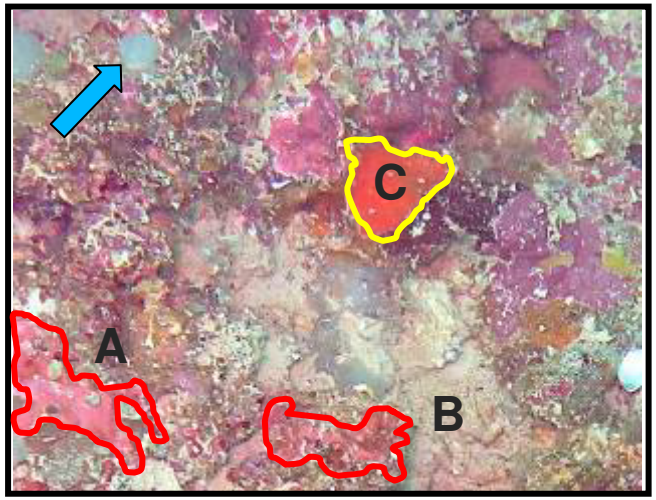
Tegnùa D'Ancona – Impacted site



T0 – Sea floor after the removal operation



T1 – Sea floor after 3 months

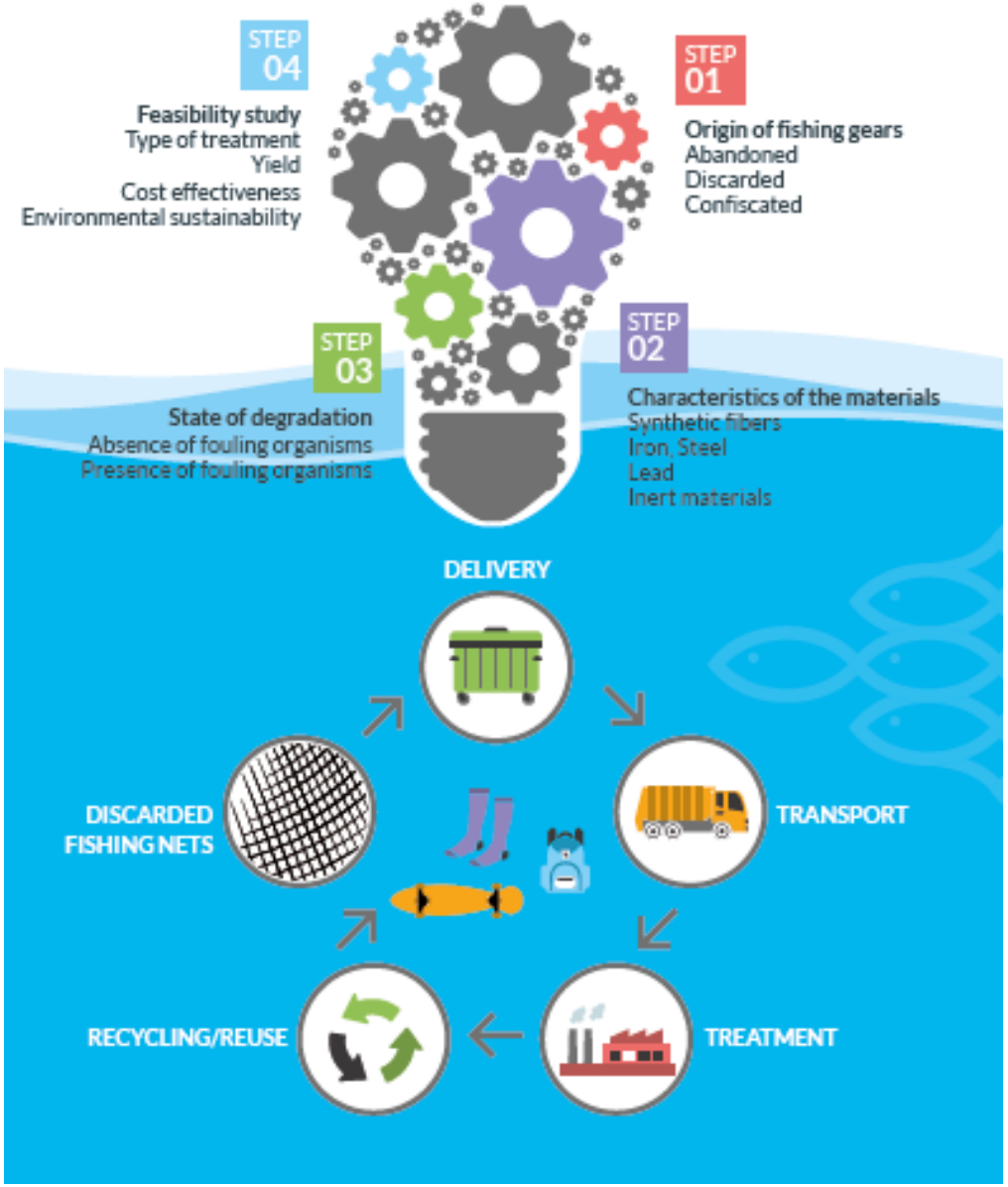


T2 – After 6 months

- The coralline algae (A and B) has undergone a continuos coverage (about 400% of the initial surface)
- The bryozoans (C) encountered a reduction during winter period (T1) and a new increase. Its surface was almost equal at T2
- The Polycitor colony appear at T1 (blue arrow). Its surface was almost equal at T2

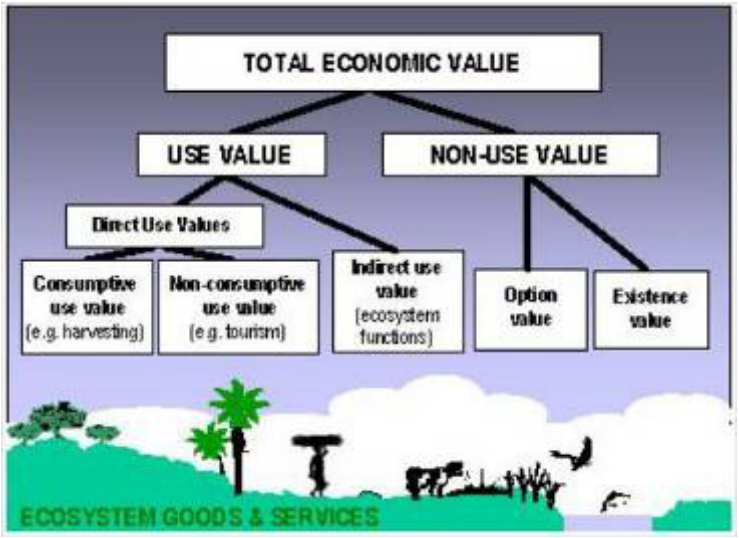
Development of a management strategy

The development of innovative technology solutions for the recovery of abandoned fishing gear is part of a virtuous cycle intended to maximize the reuse and recycling of different materials in accordance with the requirements of Directive 2008/98 / EC on waste.



The economic evaluation

The objective of the project is to quantify the economic value of the benefits derived from the improvement of the tegnùe ecosystem, obtained thanks to the removal of ALDFG.



- Identifying the main assets and ecosystem services related to the tegnùe habitat
- Organizing focus groups for testing and investigate the know-how of the collectivity on the tegnùe
- Analyzing the relation cost-benefits in order to evaluate the economic opportunity of an eventual removal intervention of the ghost gears
- Applying the contingent analysis

The Contingent Analysis is the tool used to determine the monetary value of an asset which in itself has no market value

GHOST Project Results

- Enhancement of local biodiversity by restoring natural habitat functions after removing all the ALDGF detected in selected areas
- Assessment of the economic value of the ecosystem services provided by the *Tegnùe* habitat aimed at identifying and quantifying the main impacts of ALDFG removal
- Elaboration of a technical protocol focused on the management of ALDFG in coastal areas
- Elaboration of a regulation proposal as first step towards the adoption of a specific legislative tool at regional level
- Raising awareness among stakeholders about ALDFG impacts on the marine environment
- Development of a strategy for reuse / recycling of ALDFG , shared with key stakeholders ;
- Exchange of information and data with other international on-going projects
- Inclusion of rules aimed to prevent or mitigate ALDFG impacts in the “Plan for the management of fishery resources of the lagoons” issued by the Province of Venice

GHOST ⟷ netcet

The removal of ALDFG avoid the entanglement of cetacean and turtles

The restoration of the biodiversity increases the quality of the environment for the marine organisms

The increased awareness of the fishermen will result in an appropriate behavior

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Thank you for your attention

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