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## Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Marine habitat mapping in MPA and tackle ghost fishing

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**Template:** DCC Template

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### Project abstract:

The life cycle of fishing gear starts in the industries that manufacture these products from synthetic polymers, in addition to lead, and are persistent in the environment. World trade distributes these materials all over the planet and is introduced into the sea by the fish production chain, which is dependent on plastic, to capture fishing resources. When abandoned, lost or discarded (ALDFG), they generate environmental and economic impacts, such as ghost fishing, which causes the death of marine animals, loss of habitats and biodiversity, in addition to being sources of microplastics. The objectives of this study are: to map and classify marine habitats by acoustic and digital images; detect, identify and remove ghost gear for sustainable recycling; to assess the impacts on the marine environment in MPA off the coast of the state of São Paulo, Brazil

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# Marine habitat mapping in MPA and tackle ghost fishing

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## Data Collection

### What data will you collect or create?

- Datasets gathers results of the reverse engineering of 122 gillnets recovered from the sea, where the weights are in kilograms for the total weight of the gillnets, weight of each type of synthetic polymer, lead, mesh and hanging coefficient
- Datasets of the tracks taken by the GHost\_v3 submersible unit with location data (UTM), depth (m), magnetic course, temperature (C) and luminosity (lux) on submerged rocky outcrops in MPA off the coast of the State of São Paulo.
- Particle data found in the upcycle of reprocessed ghost gillnets for application in image classification using deep learning
- All files will be available with a txt or csv extension, to easily run in R or Python programming language.

### How will the data be collected or created?

Data acquisition:

Characterization and direct and indirect measurement of fishing gear (ALDFG);

Quantification for each type of synthetic polymer and lead obtained by the reverse engineering of ghost fishing nets;

Standards and methodologies from literature available in the fishing technology literature (FAO, 1990) for characterizing and measuring fishing gear.

Temperature and light sensors, high resolution cameras, lasers installed in a submersible unit;

Images obtained by digital microscopy of upcycling cuts from reprocessed fishing gear and particle analysis (ImageJ and CNN)

Files names will be Gillnet\_yyyy-mm-dd; GHost\_v3\_DataSensor\_yyyy-mm-dd; Particles\_Gillnet.

Handle versioning identification will be by renaming the file by the last update date

Data consistency and quality:

calibration and crossing of redundant data obtained by sonar, sensors and cameras for detection of submerged ghost gear and ground truth in habitat mapping;

For measurement of fishing gear will be registration of data standardized and validation of the data input;

The particle data will be by repetition of image samples from the same upcycling, this ensures sufficient statistical consistency for data analysis

## Documentation and Metadata

## **What documentation and metadata will accompany the data?**

### Documentation and Metadata

Os metadata is collected through videos, recordings and standardized spreadsheets during collections at sea and laboratory:

Characteristics of ghost fishing gear, such as, total length, mesh size, weight, fouling, exhaustion and types of synthetic polymers linked to the place of origin of the ghost fishing gear, type of fishing: subsistence, recreational, artisanal or industrial, interaction of marine animals

Mapping of marine habitats sonar data and images are integrated with other fisheries statistics data, observational or reported by partners / collaborators, such as MPA managers, inspection, fishermen and divers

All metadata is reviewed by peers and by the personnel involved in collecting and recording the data.

## **Ethics and Legal Compliance**

### **How will you manage any ethical issues?**

The storage of the data will be on cloud hosting sites like Mendeley Data or Dryad Digital Repository. The research team understands that after the submission of the corresponding scientific articles resulting from this research, the data will be shared.

Publications in recognized open access scientific journals are planned the files with the data can be stored in txt, csv, xls, or even in other formats, if necessary modifications in their formats for adaptation.

### **How will you manage copyright and Intellectual Property Rights (IPR) issues?**

The data management is under the responsibility of the research project and the data may be made and sharing (CC BY 4.0) to other researchers, after publication.

## **Storage and Backup**

### **How will the data be stored and backed up during the research?**

SSD

HD

Cloud

### **How will you manage access and security?**

The data reviewed in the database and stored on physical media or the cloud are confidential and guaranteed for restricted access until the results are published.

## **Selection and Preservation**

### **Which data are of long-term value and should be retained, shared, and/or preserved?**

Samples will be preserved for further analyses at the Instituto de Pesca and Fundação Florestal. All the data will be retained and published in websites such as Mendeley Data or Dryad Digital Repository.

### **What is the long-term preservation plan for the dataset?**

The data reviewed in the compacted database and stored on physical media (SSD/HD) and in the free cloud.

## **Data Sharing**

### **How will you share the data?**

The storage and sharing (CC BY 4.0) of the data will be on cloud hosting sites like Mendeley Data or Dryad Digital Repository. Researchers interested in the data may have open access after publishing the results on web platforms specialized in storing and sharing research data.

### **Are any restrictions on data sharing required?**

Datasets are confidential and guaranteed for restricted access until the results are published.

## **Responsibilities and Resources**

### **Who will be responsible for data management?**

Luiz Miguel Casarini, PhD, researcher at Instituto de Pesca/Fisheries Institute is the responsible for gathering data and implementing the DMP.

**What resources will you require to deliver your plan?**

Resources for carrying out DMP are funded by the São Paulo State Research Support Foundation - FAPESP.