Sustainability Index for Sea Urchin (*Paracentrotus lividus*) Fishery

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Introduction

The **sea urchin** (*Paracentrotus lividus*) fishery in Galicia has a **significant socio-economic interest** with a growing demand for this resource in recent years.

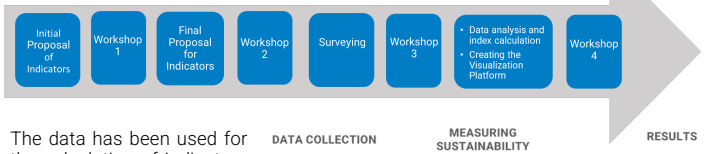
Sea urchins **are highly sensitive** to the effects of **climate change**, highlighting the importance of achieving **sustainable practices and avoiding overexploitation.**

SOST-Erizo project aims to promote the long-term sustainability of the resource following environmental, economic, social, and governance criteria. This project has involved 3 partners, Future Oceans Lab-CIM of the University of Vigo, Mareira Bizi, and Centro de Investigacións Mariña (CIMA) from Consellería do Mar-Xunta de Galicia.

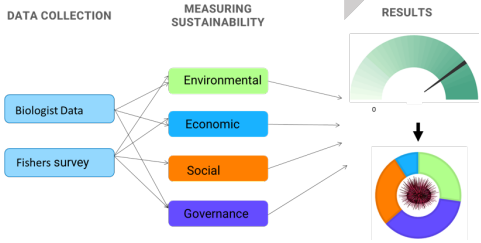
The **main objective** is to generate a **sustainability index** that allows **to improve** the **internal management** of the sea urchin fishery from a multidisciplinary perspective based on the obtaining and operationalization of empirical data.

Material and methods

The pilot project has been carried out in the *cofradias* of Lira and Baiona. There, four **participative workshops** have been conducted **with sea urchin fishers**. In collaboration with them, a **sustainability index** has been developed for **4 dimensions: environmental, economic, social and governance.** The data used for this index have been obtained from surveys of fishers and data from the Biologist of the *cofradias*.



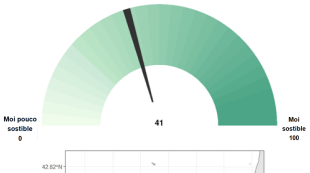
The data has been used for the calculation of indicators for each dimension, and finally, the sustainability index. Environmental data have been differentiated by area, specifically 3 areas have been delimited for each *cofradia*. The results have been visualized using a Shiny app.

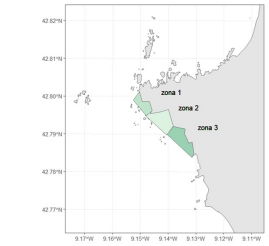


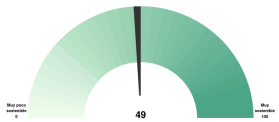
Therefore, a sustainability index has been obtained for each *cofradía*, which is composed of 4 dimensions and these in turn are made up of different indicators.

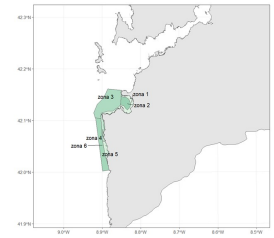
Results

In both *cofradias*, average values of sustainability have been obtained, being little similar between communities. The model showed sustainability values of 41 and 49, respectively. However, in one of the *cofradias* the dimension that has contributed the most to the sustainability index was the economic dimension (33%) while in the other cofradia the dimension that has contributed the most has been the governance dimension (31%). For each *cofradia*, the environmental dimension has presented similar values in the 3 zones in which the study has been carried out. Finally, for each *cofradia*, indicators which contribute positively and negatively to sustainability have been identified. In both cases, indicators identified to contribute negatively to the sustainability of sea urchin fishing were pollution, poaching, equity, CPUE, decrease of algae and dependence.



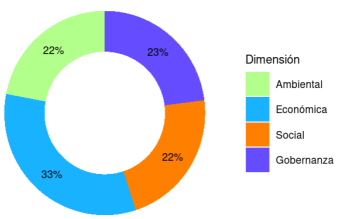


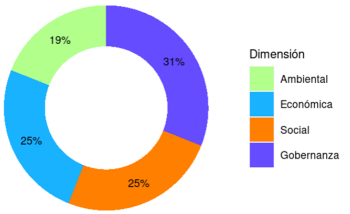


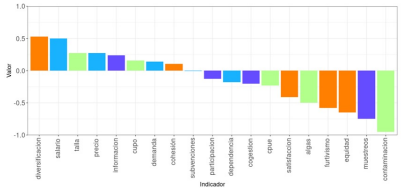


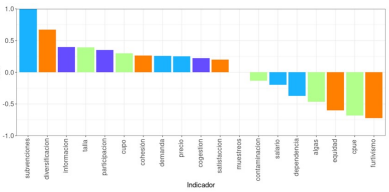
Conclusions

- A collaborative sustainability index based on four dimensions: environmental, economic, social, and governance was developed for the *cofradías* participating in the study.
- The index allows identify and quantify the indicators affecting negatively the sustainability of sea urchin fisheries. Then, being able to propose measures to improve the internal management.
- The methodology performed can be replicated and improved in the future.
- The sector showed a positive disposition and active participation during the project. Great work in the participative workshops in the *cofradias* with real interest in the index.









Acknowledgements

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