

# Assessing the Impact of Fisheries on Demersal Resources using Ecosystem-based Indicators.



Antonios Stamoulis<sup>1,2,3</sup>, Vassiliki Vassilopoulou<sup>3</sup>, Els Torrele<sup>1</sup> and Adriaan D Rijnsdorp<sup>2,4</sup>

<sup>1</sup>Institute for Agricultural and Fisheries Research (ILVO), Animal Sciences Unit – Fisheries  
Ankerstraat 1, 8400 Ostend, Belgium  
Email: antonios.stamoulis@ilvo.vlaanderen.be

<sup>2</sup>Aquaculture and Fisheries Group, Wageningen University, P.O. Box 338, 6700 AK Wageningen, The Netherlands

<sup>3</sup>Hellenic Centre for Marine Research, Agios Kosmas Helleniko, 16777, Athens, Greece

<sup>4</sup>Wageningen IMARES, Institute for Marine Resources and Ecosystem Studies, PO Box 68, 1970 AB IJmuiden, The Netherlands



## The problem(s)

- (Over)Fishing results to the reduction of target resources and generates discards due to high-grading (**ecosystem**).
- Major economic costs, loss of income and jobs (**society**).
- Fisheries mismanagement and the need to move from the conventional single species management to an ecosystem-based approach (**policy**).
- Fisheries policy is most effective when adaptive management processes are adopted, considering stakeholders' perspectives which ensures higher compliance (**governance**).

## Aim

To support fisheries management in EU waters by using ecosystem-based indicators.

**Study areas:** Two Marine ecosystems – Two Fishery systems:

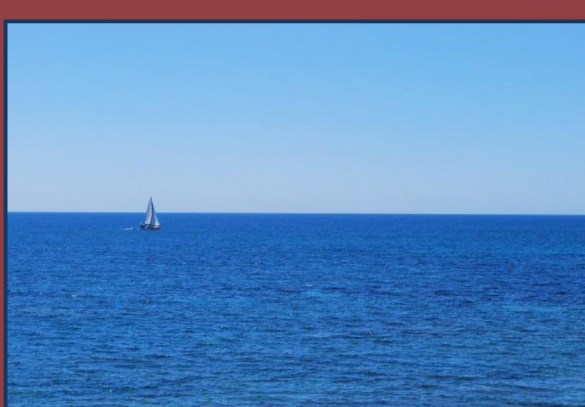
1. North Sea (ICES IVb & IVc)
2. Eastern Mediterranean/Aegean Sea (GFCM GSA 22)



Bottom Trawler

## Side - Tasks

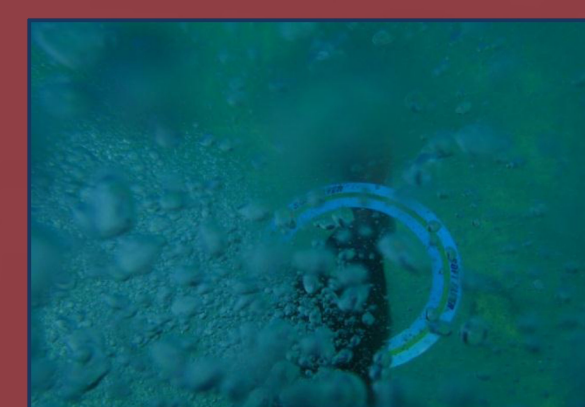
Description of ecosystems



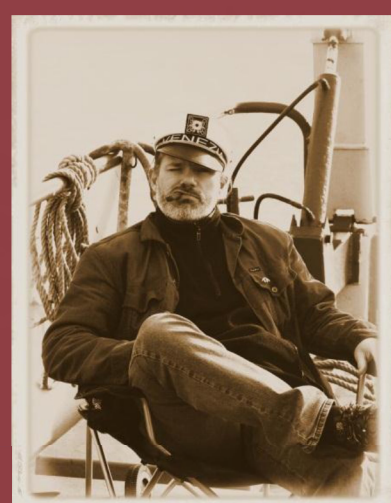
Description of fishery per ecosystem



Description of conservation aspects

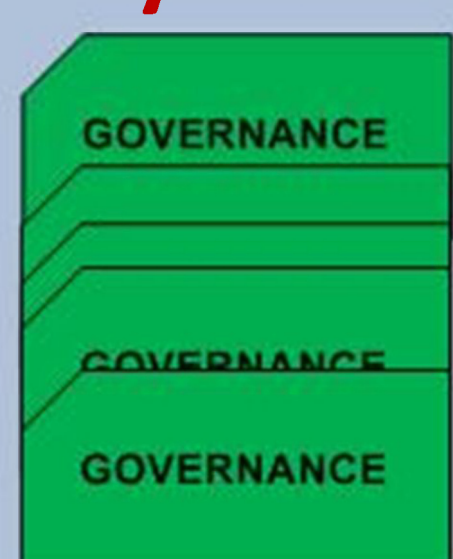
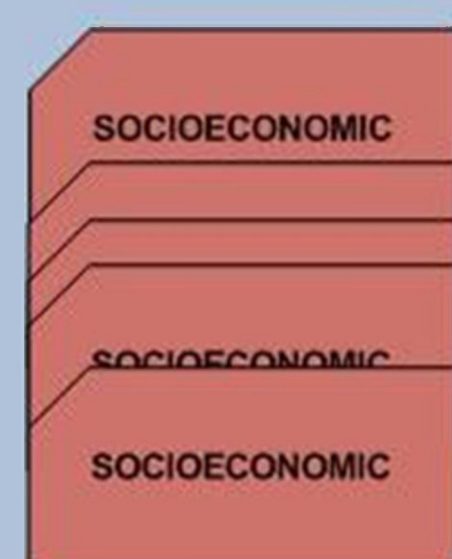
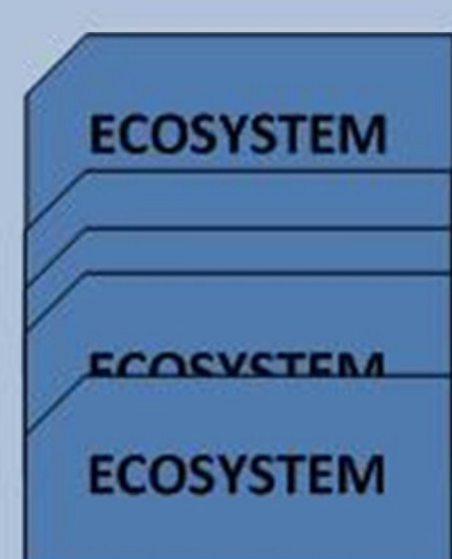


Identification of groups of fishery-related stakeholders



## Selection of Indicators

Using Pressure, State and Response Indicators to explore Ecosystem, Socio-Economic and Governance issues related to demersal fisheries in two study areas



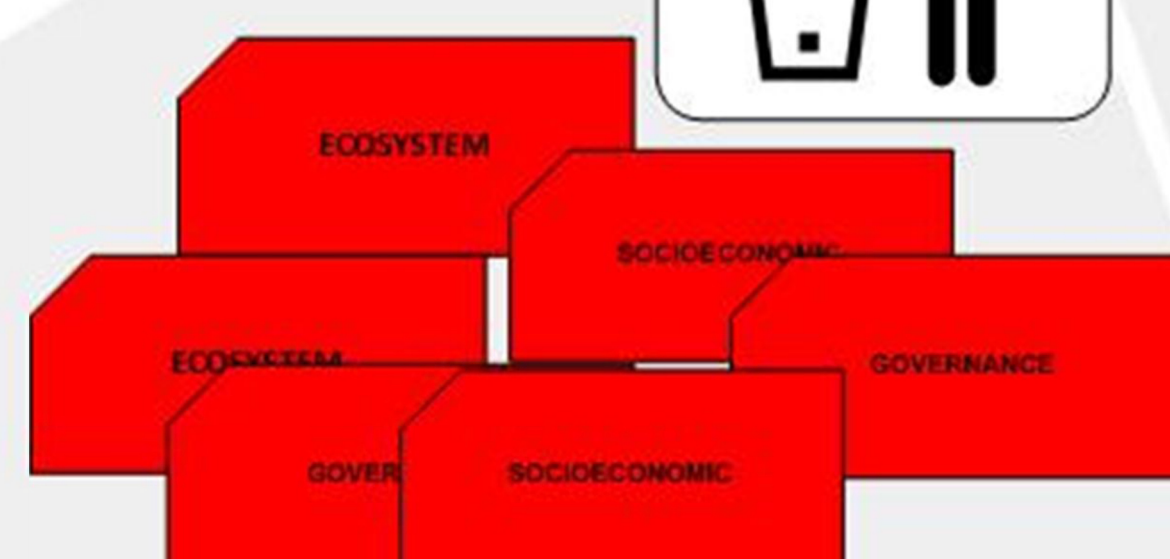
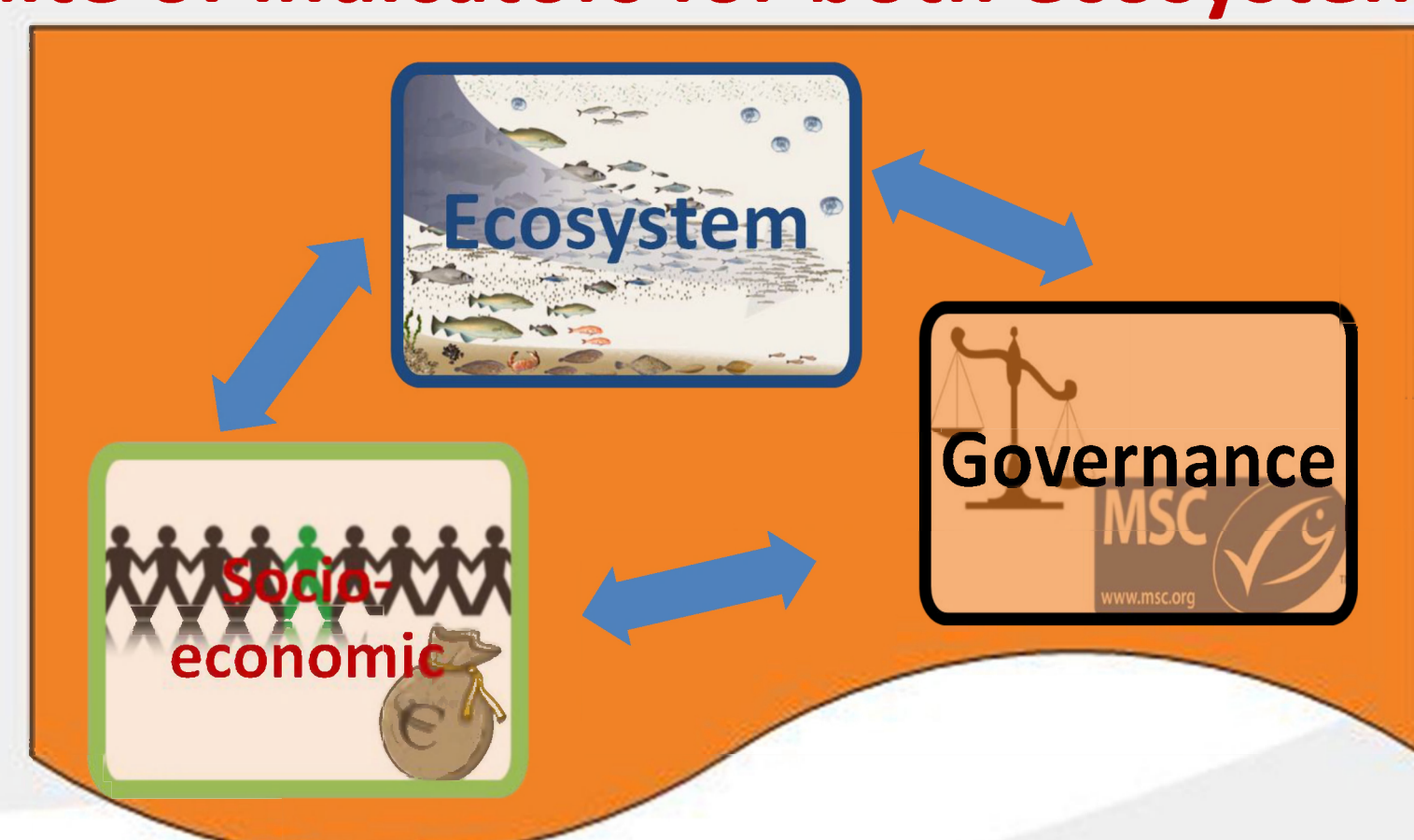
Criteria

- Data availability
- Relevancy, robustness
- Sensitivity, responsiveness

YES

NO

Final Product:  
a suite of indicators for both ecosystems



## What about Indicators?

- Indicators are tools that assist management.
- They can be single numerical metrics or combination of metrics, based on data collected and processed for a clearly defined analytical or policy purpose.
- Suites of selected indicators will be applied to the two areas.
- Power analysis will help identifying indicators needing shorter time series to respond.

- A formal analysis framework will test which indicators catch real tradeoffs between ecological, socioeconomic and governance issues.
- Selected groups of stakeholders will score giving a higher weight to those considered as more relevant and meaningful according to their needs.

## Indicators & management scenarios' evaluation

MANAGEMENT SCENARIOS

PUT INTO

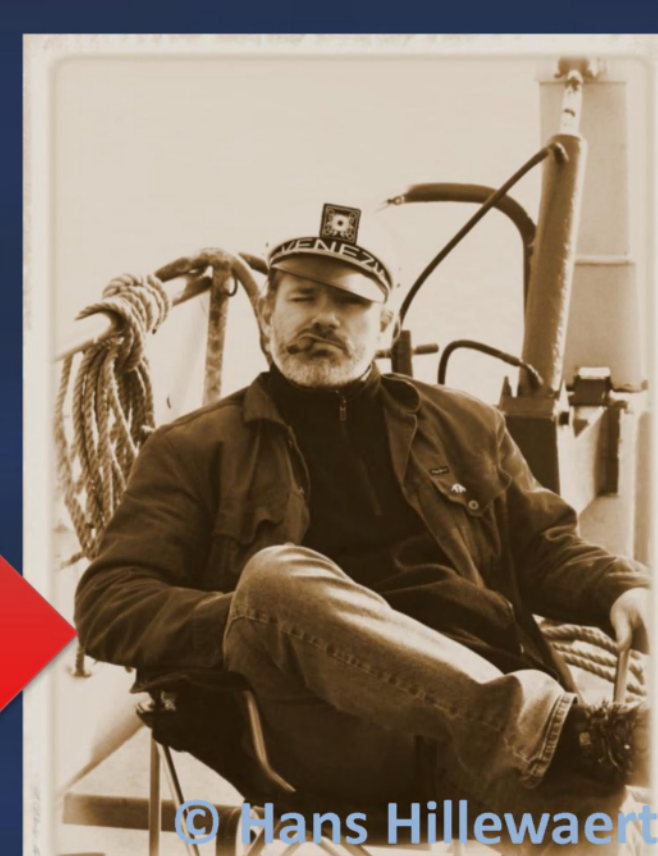
OPERATIONAL MODELS

CONSULT

RESULT

UPDATED MANAGEMENT SCENARIOS

Suite of indicators



<sup>1</sup> Institute for Agricultural and Fisheries Research, Animal Sciences Fisheries (ILVO),  
Ankerstraat 1, B-8400 Ostend, Belgium

More information: ☎ +32(0)59/569834 ✉ Antonios.Stamoulis@ilvo.vlaanderen.be