MareFrame

"Let's make it work: Case study show-hows: ecosystem models and decision support tools in practice."

Francesco Colloca
CNR-Italy

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Brussels, Belgium

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 613571

Case Studies

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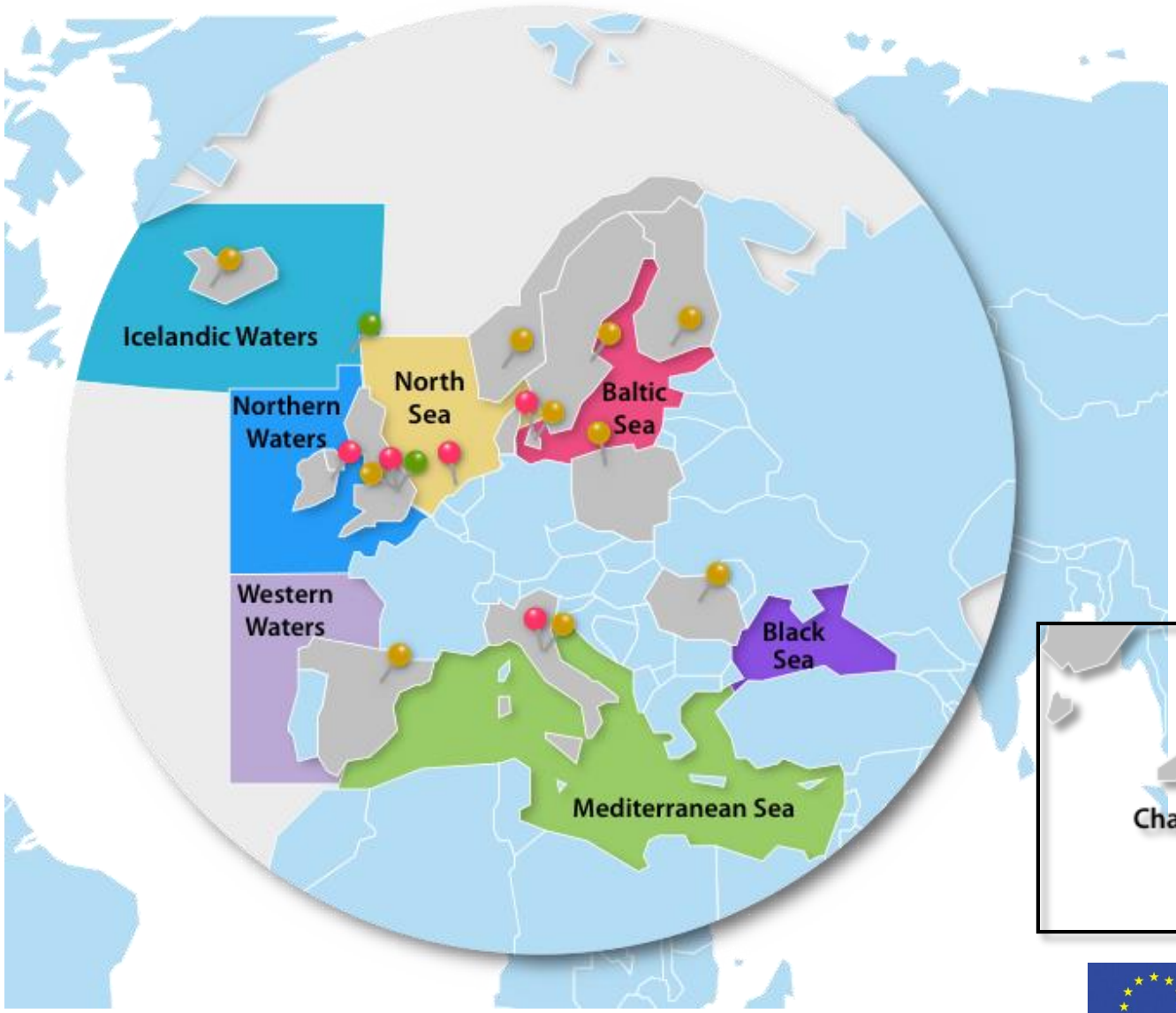
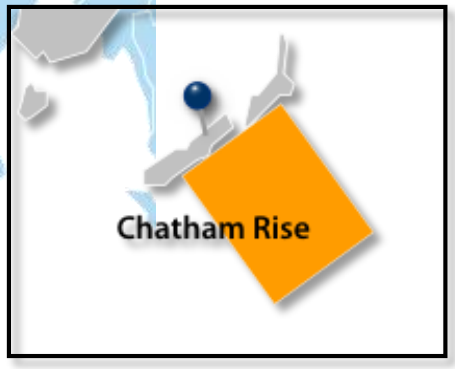


8 case studies



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The case study approach

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What to do?

Scope defined by meetings with stakeholders

Ecosystem models

Two or more ecosystem models in each CS. Management scenarios

Decision Support tools

Explore trade-offs, management alternatives

http://mareframe.mapix.com/

Communication of Results

Discuss and evaluate results, Re-define objectives, if needed

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Management Scenarios

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Management Scenarios	Baltic Sea	North Sea	Iceland Waters	West Scotland	Iberian Waters	Strait of Sicily	Black Sea	Chatam Rise
BAU/Status quo	x	x	x	x	x	x	x	x
F_{MSY}, F change	x	x	x	x	x	x		
Spatial F				x		x		
TAC, Yield target	x	x			x		x	
Change in fleet composition			x					
IUU							x	
Economic targets (e.g. profits, catch value, etc.)	x	x				x		
Multispecies targets (e.g. MSY/MEY etc.)	x	x	x					
Ecosystem targets	x		x			x		x

Climate

Marine mammals

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Case studies outputs used by ICES & GFCM – Today

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Roadmap for exploitation of MareFrame outputs within ICES

MareFrame on-going inputs for ICES

SINGLE SPECIES

WGBIE Working Group on Bay of Biscay and Iberian Waters Ecoregion
WGDEEP Working group on biology and assessment of deep-sea fisheries resources
WGHANSA Working Group on Southern Horse Mackerel, Anchovy and Sardine
WGMIXFISH Working Group on Mixed Fisheries Advice

West of Scotland Biomass-based indicators and Trophic level based indicators
Baltic Pressure descriptor
North Sea Pressure descriptor
South Western Waters Cetaceans in WGMME
South Western Waters Pressure descriptor Anchovy

GES DESCRIPTORS

MODEL ADVANCES

Gadget Working document: "A GADGET Multi-species models for cetacean and hake interactions in the Iberian Peninsula"
Atlantis, Ewe Icelandic continental shelf-area Multi-species presentation
EwE West of Scotland Multi-species key run
EwE Baltic Sea Multi-species key run
ToR d Investigate the performance of multi-model ensemble in comparison to single model approach for the Baltic Sea
Green Model Presentation: "Green Model for the North Sea"

WKDEICE Working Group on DEveloping Integrated AdviCE for Baltic Sea ecosystem-based fisheries management
WGMME Working Group on Marine Mammal Ecology

INTEGRATED ADVICE

GFCM RoadMap

SINGLE SPECIES

CoC
Working group on IUU fishing (WGIUU)

WGBS
Sixth meeting of the Working Group on the Black Sea (WGBS)

WGSAD
Working Group Stock Assessment Demersal Species (2017)

SAC
SubCommitte Central Mediterranean (2017-2018)

GES DESCRIPTORS

NW Black Sea
Biomass-based indicators and Trophic level based indicators

Mediterranean (Strait of Sicily)
Biomass-based indicators and Trophic level based indicators

MODEL ADVANCES

Gadget
Presentation of Gadget modeling results for BS and Med during planned GFCM events)

Atlantis
Presentation of Atlantis modeling results for Med during planned GFCM events

EwE
Presentation of EwE modeling results for BS and Med during planned GFCM events

INTEGRATED ADVICE

WGBS
Sixth meeting of the Working Group on the Black Sea (WGBS)

WGSAD & SUBCOMMITTEE SAC
Working Groups in stock assessment for demersal species & Sub-Com on Central Mediterranean

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The Baltic Sea Case Study

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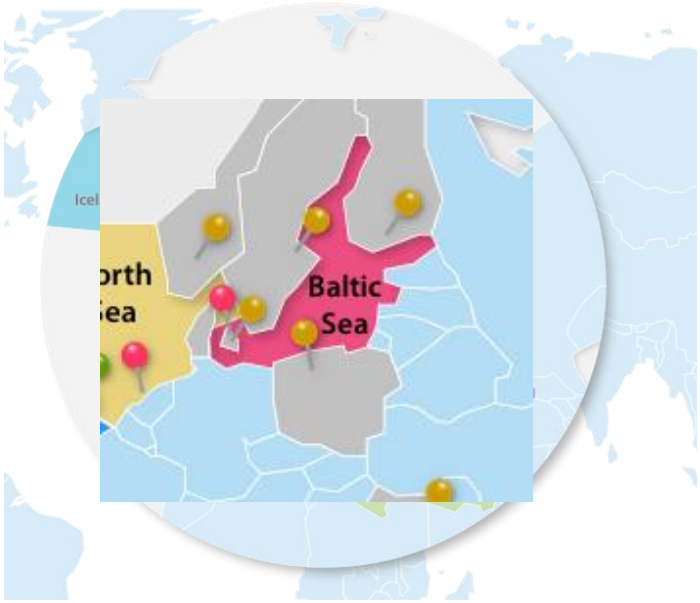

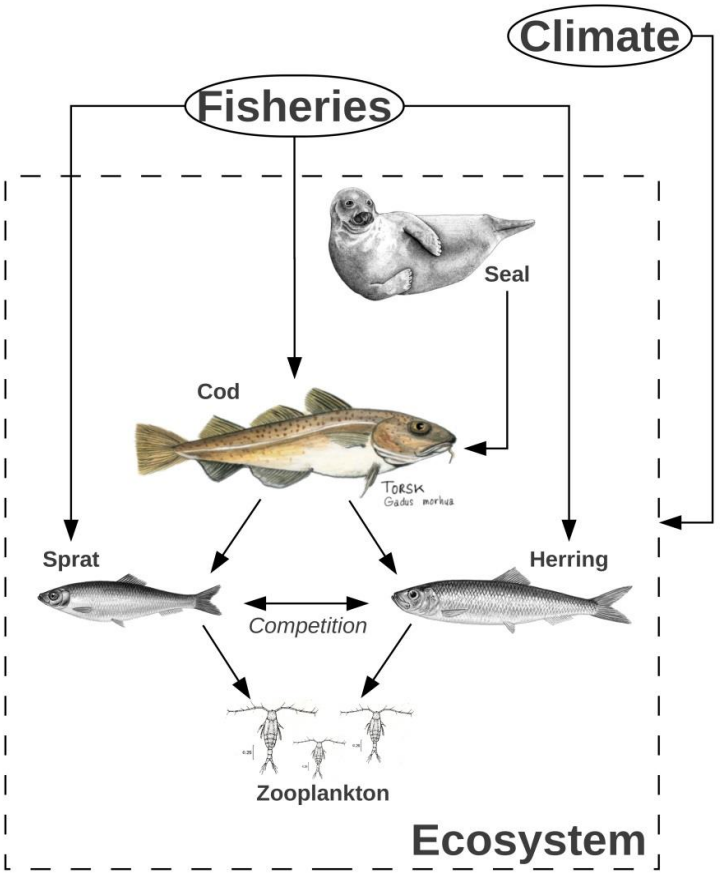

Management of **cod, herring, and sprat** fisheries should consider trophic interactions and socio-economic benefits under environmental uncertainty

Strategy to integrate multi-model approach into DSF

CS leader: *Valerio Bartolino*

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The North Sea Case Study

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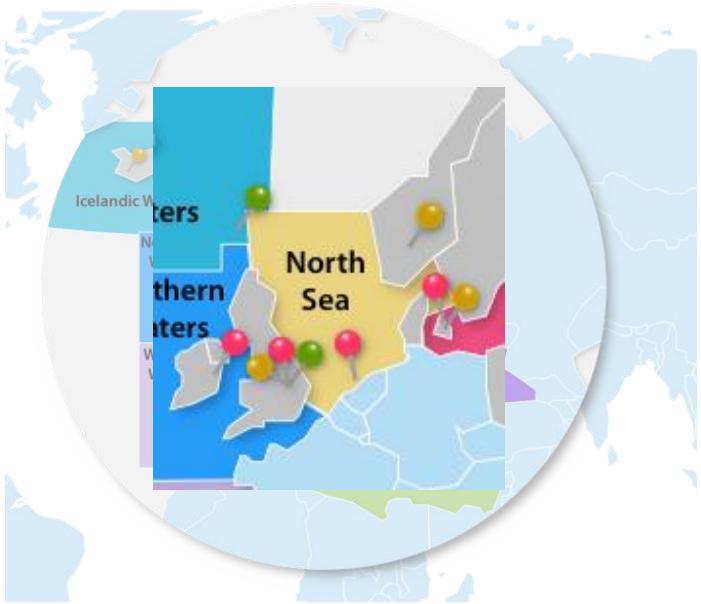

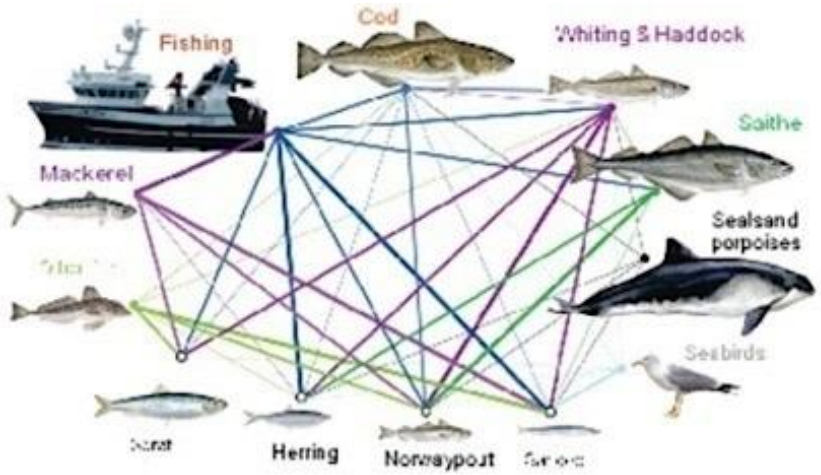

Multispecies, Multi-gear fisheries

MSY and Trade-offs easily visualized in the T-ONS model and stakeholders opinions indicated by N-dimensional potato

First time collaboration between the North Sea & Pelagic Advisory Councils

CS leader: *John Pope*

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The West of Scotland

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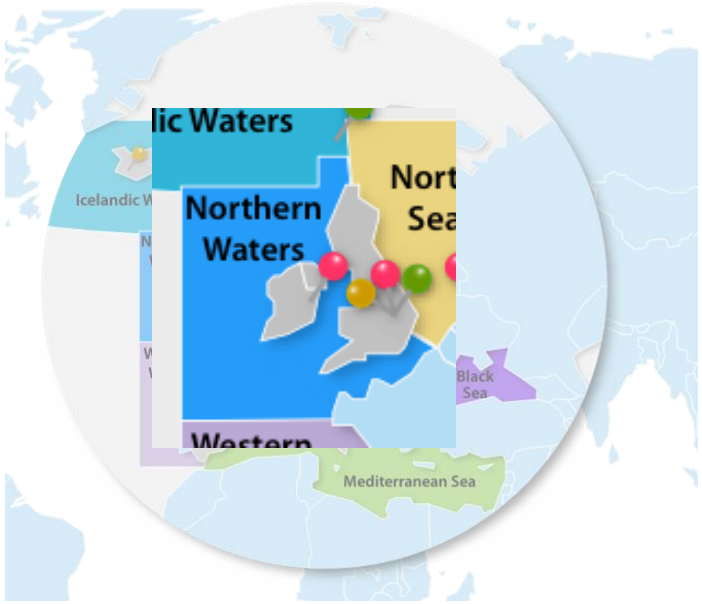

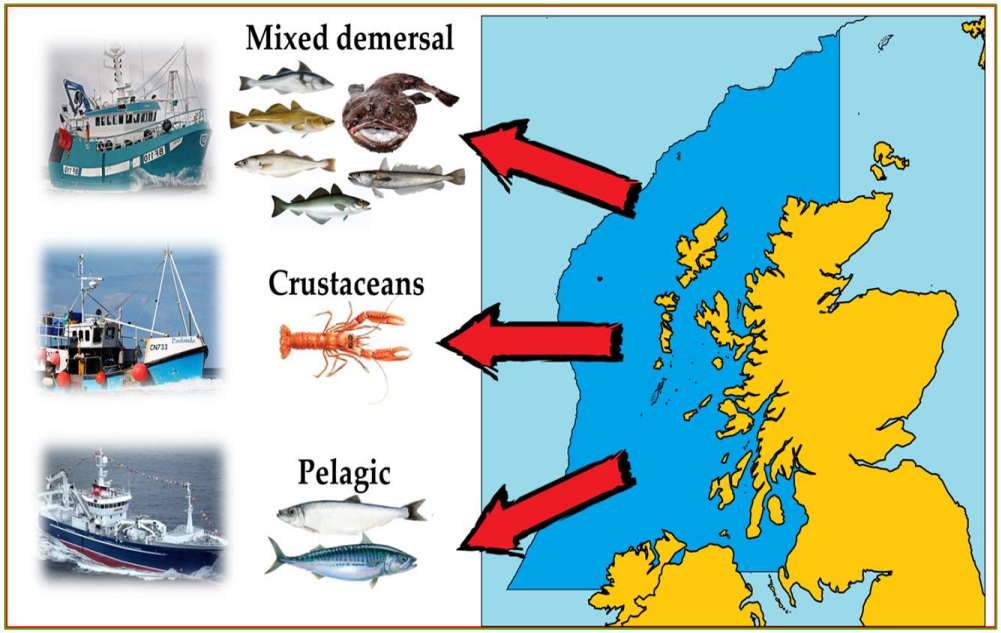

3 management issues

Stocks of cod and whiting depleted

Whiting juveniles bycatch by Nephrops fleet

Increasing seal predation

One main Outcome

Recovery of stocks possible except for whiting

CS leader: *Paul Fernandes*

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The Icelandic Case Study

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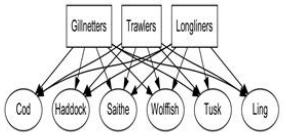
Target species

Gadus morhua

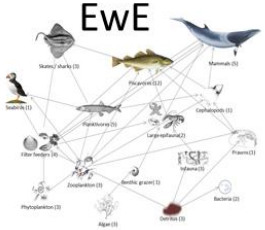
Ecosystem models implemented

Gadget



Atlantis

EwE



Management challenge

- How a strong cod fishery can be ensured.
- Socioeconomic impacts of different arrangements for distributing the cod resource.

Management alternatives

- Is worthwhile to increase the fishing effort to Fmsy for cod
- Investigate the effects of changes in fleet effort and composition on key species

CS leader: *Bjarki Elvarsson*

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The Iberian waters – Gulf of Cadíz

Engraulis encrasicolus

Sardina pilchardus

Small pelagics

Management Challenges

- Wild (environmentally driven) fluctuations in recruitment are managed with a fixed TAC
- A management strategy prone to biological and socio-economic vulnerabilities

CS leader: *Javier Ruiz*

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The Mediterranean Sea – Strait of Sicily

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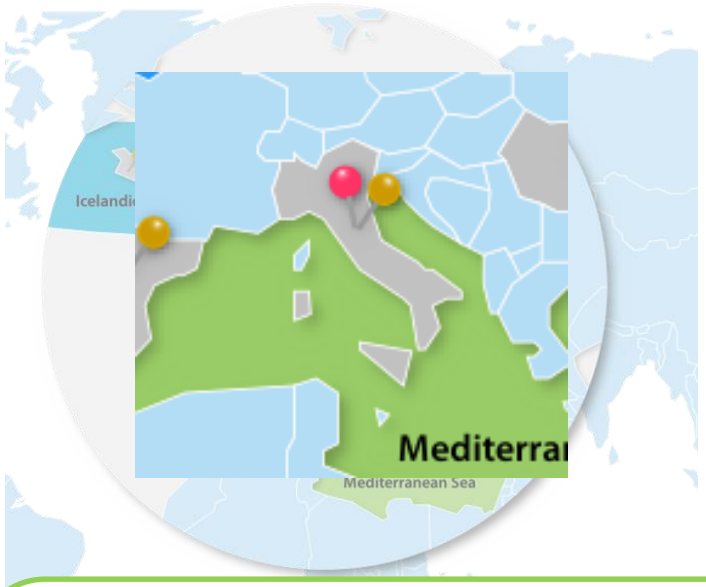
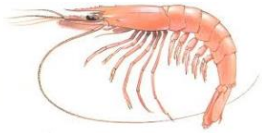


- Internationally shared fisheries (Italy-Malta-Tunisia-Egypt-Libya).
- Overexploitation of main stocks
- Management plan (GFCM) for bottom trawl fisheries exploiting the two stocks

Management Challenge

Long-term biological and socio-economic sustainability of trawl fisheries considering trophic interactions among the stocks and good ecosystem status

Deep water rose shrimp



Hake

CS leader: *Francesco Colloca*

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The Black Sea Case Study

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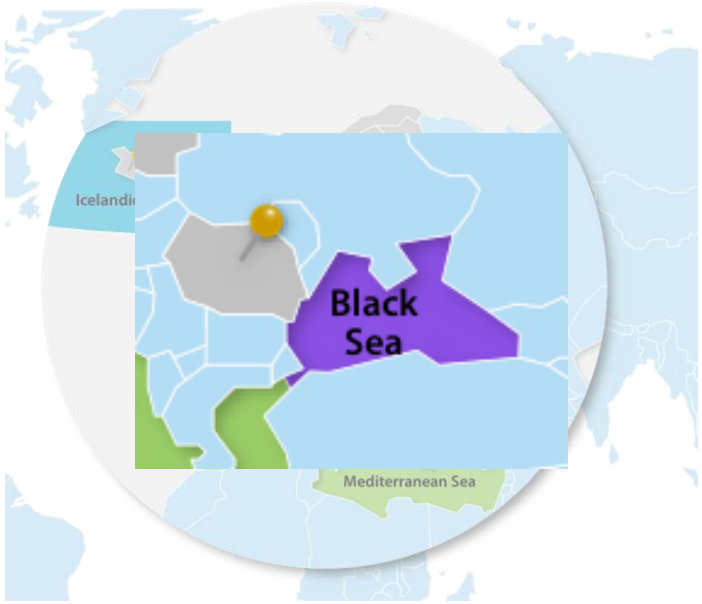


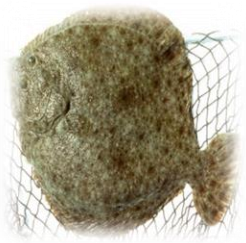
Management Challenge

- A strategy to rebuild turbot stock considering IUU and data limitation
- Two ecosystem models (GADGET & EWE)
- User-friendly visualization tool and Bayesian belief networks as a DST

The problem:

- Data poor
- main gaps in catch data
- Unknown rates of discards and IUU catch.

Turbot



CS leader: *Magda Nenciu*

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The New Zealand – Chatham Rise

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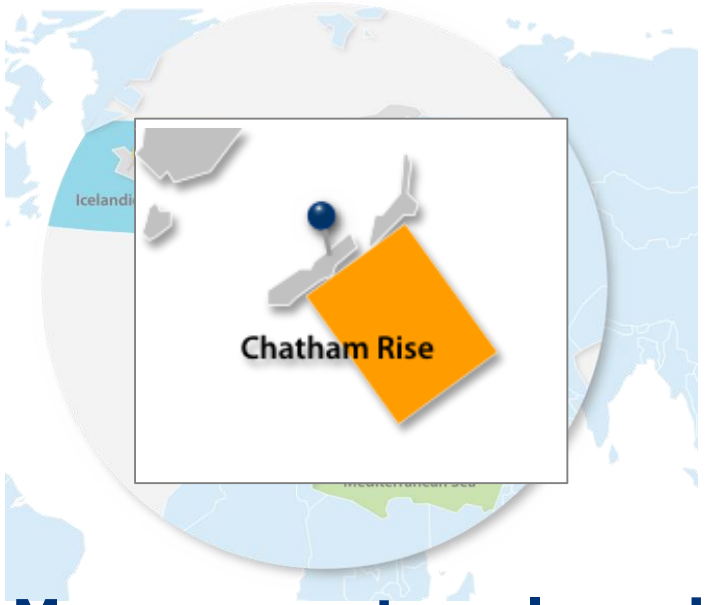
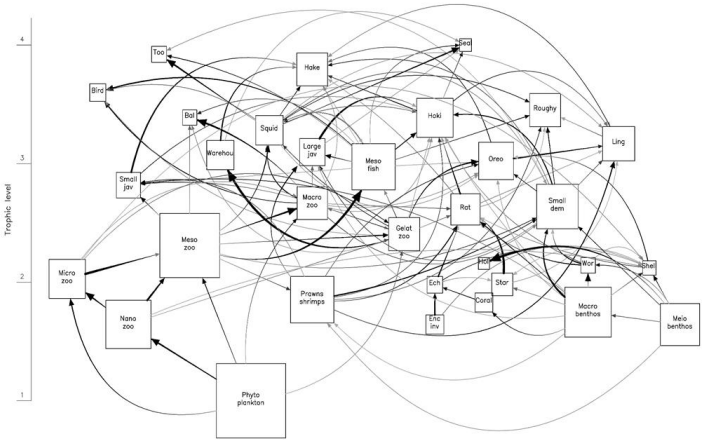


Models

- Balanced foodweb
- Atlantis ecosystem model
- MICE



Management goals and objectives

- Protection of seabed habitats
- Protected species
- Maintenance of important fisheries
- **Seabed mining**

CS leader: *Ian Tuck*

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Giuseppe Arcimboldo
Milano: 1526 –1593

Thank you!

Enjoy your Case Study Tour!

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