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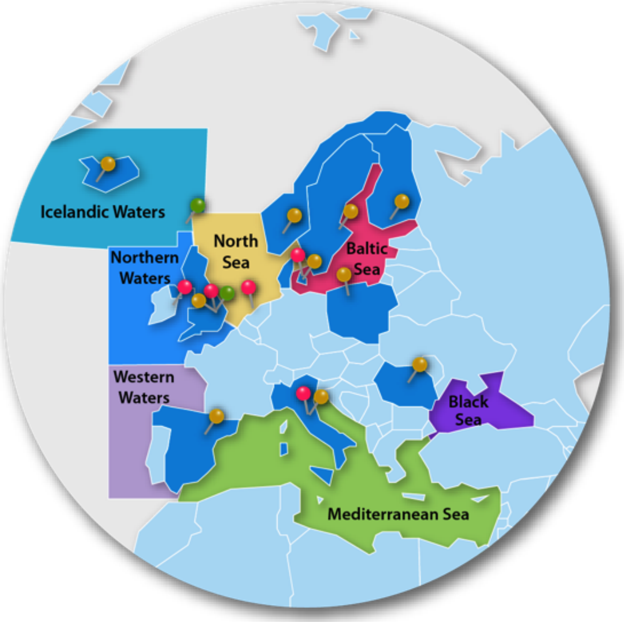

WP2: Select and apply analytical methods

Final meeting, December 12, 2017 Brussels

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

Objectives of WP2

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What were the objectives and how have they been met?

Main: Integration of novel critical processes and supporting State of the art data into EAFM process

1. Collect and identify new technological information
2. Evaluate this information
3. Define the functions needed to implement this information into assessment models (raw data, processes, likelihood functions, management measures, etc).
4. Identify and recommend areas of future data collection for optimum implementation of the models.

Structured in 4 Tasks (with 5 milestones) to produce 5 Deliverables.

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Main Challenges

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KBBE.2013.1.2-08: Innovative insights and tools to integrate the ecosystem-based approach into fisheries advice

*"…The first objective of the project is to make the best use of new tools and **technologies such as genetics, microchemistry, and isotope analyses** to develop **new knowledge** on population distribution, spatial patterns of spawning components, stocks structure and definition, habitat preferences, species interactions (including food-web and predator-preys interactions), migration patterns, and some biological parameters such as, growth and fecundity …"*

Mareframe-WP2 designed an **experimental approach** for novel data considering both, **technological** and non-technological data

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Legacy – What now?

What are the most significant results of the project and how to make sure they will be exploited after the project end

1. **Internal: Contribution to model development in CSs**
2. **External:**
    1. **Protocol for novel data implementation (Del 2.4)**
    2. **Report with conclusions of the evaluation of the novel information used (Del 2.5)**

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Legacy – 1 (internal)

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1. Many different data types:
   1. Biological (ages, sex, abundance)
   2. Fisheries dependent (effort, knowledge, VMS)
   3. Environmental (microchemist, climate, oceanography)
   4. Diet (isotopes and stomach)
   5. Genetics (clos-kin, connectivity)
2. 7 CS
3. 5 different model types (GADGET, EwE, Atlantis, CSM, MSPM)

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Legacy 2 – Del 2.4. Protocols

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Case Study	Data types	Protocol (Del 2.4)
Baltic Sea	diet effort zooplankton	A1: diet, effot, zooplankton in EwE; A2: diet and effort in GADGET A3: diet in MSPM
North Sea	**isotopes** fishing knowledge	B1 (isotopes and knowledge) in CSM
NWW - Iceland Waters	**genetics (close-kin)** whale diet oceanographic	C1: close-kin GADGET C2: whale diet in GADGET? C3: oceanographic in Atlantis
NWW – West Scotland	ocean (temp and NAO)	D1: temperature and NAO in EwE
SWW – IP	**hake genetics** sex ratios at length **anchovy microchemistry**	E1: hake genetics in GADGET E2: hake sex ratios in GADGET E3: microchemistry in GADGET
Med Waters – SoS	**isotopes** VMS Biogeochemical data	F1: Isotopes, VMS and Biogeo data in Atlantis
Black Sea	turbot diet	G1 Diet in EwE
Chatham Rise – NZ	**isotopes** diet mesopelagic composition	H1: iso, diet and mesopelagics EwE and in ATLANTIS

- **14 different protocols were written**
- **They describe the final implementation of the novel data into models within each case study (CS)**
- **These protocols can be useful to the scientific community to implement similar data in ecosystem models.**

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Legacy 3 – Del 2.5. Conclusions

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	Baltic S.			NS		NWW-IW			NWW-WS	SWW-IP	Med-SoS	Black S.	NZ-CR	
Data Type	Gadget	EwE	MSPM	CSM	ALL	GADGET-like	GADGET	ATLANTIS	EwE	GADGET	ATLANTIS	EwE	Ecopath Like	ATLANTIS
Biological (ages, sex, abundance)		x								x				
Fisheries dependent (effort, knowledge, VMS)	x	x			x						x			
Enviromental (microchemist, climate, oceanography)								x	x	x	x			
Diet (isotopes and stomach)	x	x	x	x			x			x	x	x	x	x
Genetics (close-kin, conectivity)						x				x				

- Critical report to evaluate the utility of novel information (D2.5).

- It will consider the usefulness of each information type in improving the ecosystem models,

- Recommendations to improve future data collection.

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Publications

•Elvarsson, B. P. 2015. Evaluating stock structure hypotheses using genetically determined close relatives: a simulation study on North Atlantic fin whales. ICES Journal of Marine Science, 72 (2): 661-669. doi: 10.1093/icesjms/fsu140.

• Perez et al. (in prep.) Questions and answers about the use of genetics for stock assessment and management. European hake as an example.

• Contribution to others through novel data implementation into models:

•Baltic CS. Diet data in the Baltic Sea especies.

•Pope, J.G., Hegland, T.J. Ballesteros, M., Nolde Nielsen, K. (in prep). The N Dimensional Potato: A simple approach to finding feasible solutions to fisheries systems where different Stakeholder Groups have conflicting objectives.

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