



2ND INTERNATIONAL BLUE SOCIETY
KNOWLEDGE TRANSFER CONFERENCE 2017



Success in Knowledge Transfer: how DEVOTES project outputs have been used to inform policy

Angel Borja



The **Marine Strategy Framework Directive (MSFD)** aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend



DEVELOPMENT Of innovative TOOLS for understanding marine biodiversity and assessing good ENVIRONMENTAL STATUS

EU FP7 project 'Ocean of Tomorrow'

www.devotes-project.eu

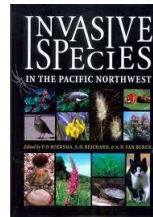


Qualitative Descriptors (Marine Strategy Framework Directive)

- Understand relationships between human activities and impacts at sea
- A definition of Good Environmental Status
- Indicators and associated reference conditions and targets
- Models to catch the oceans complexity
- Innovative monitoring tools
- Integrative assessment tools
- Socio-economic barriers preventing achieve Good Environmental Status
- Communication with stakeholders and policy-makers



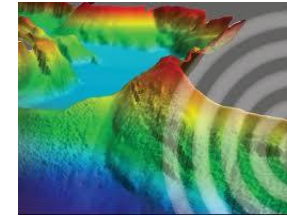
Biodiversity



Alien



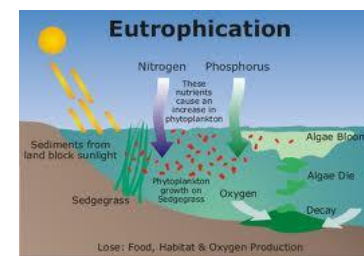
Foodwebs



Seafloor integrity



Fishing



Eutrophication



Hydrography



Pollution



Litter

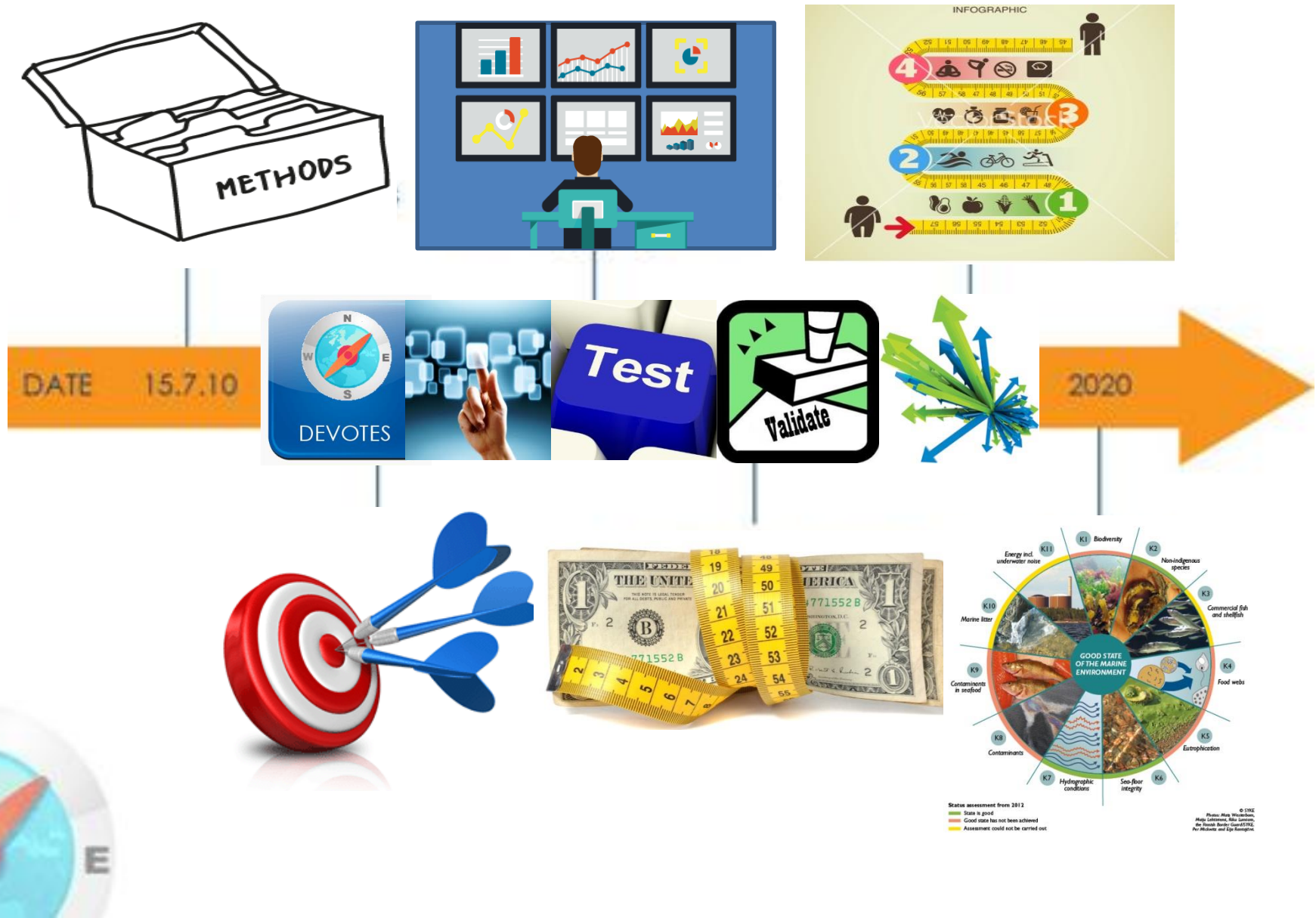
MARINE MAMMAL
POPULATIONS AND
OCEAN NOISE

DETERMINING WHEN NOISE CAUSES
BIOLOGICALLY SIGNIFICANT IMPACTS

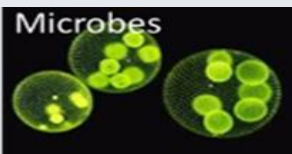
Noise

Ecosystem-based approach

Coupling with MSFD schedule



New knowledge: 29 indicators



Microbes biodiversity
Genetic based benthic
microbial community condition



Biomass of cyanobacteria
Share of cyanobacteria from
total phyto biomass
Chlorophyll from satellite
Production of phyto
Phyto community composition
as food web indicator
Phyto community composition
based on food quality traits
Phyto biodiversity
Phyto evenness
Seasonal progression of phyto
functional groups
Diatom/dinoflagellate index
Spring diatom/dinoflagellate
ratio



Copepods biomass
Meso zooplankton biomass



Lower depth distribution



AMBI
Genetic based AMBI
M-AMBI
BQI



Size composition of fish
communities
Large Fish Indicator
Mean maximum length of
demersal fish



Distribution of herbivores
waterfowl



Abundance and distribution of
Non-Indigenous Species (NIS)
Trends in arrival of NIS
Trends in arrival by pathway
Cumulative Impact Index of NIS

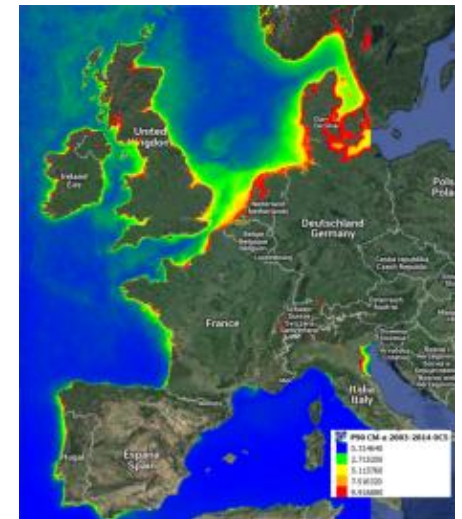
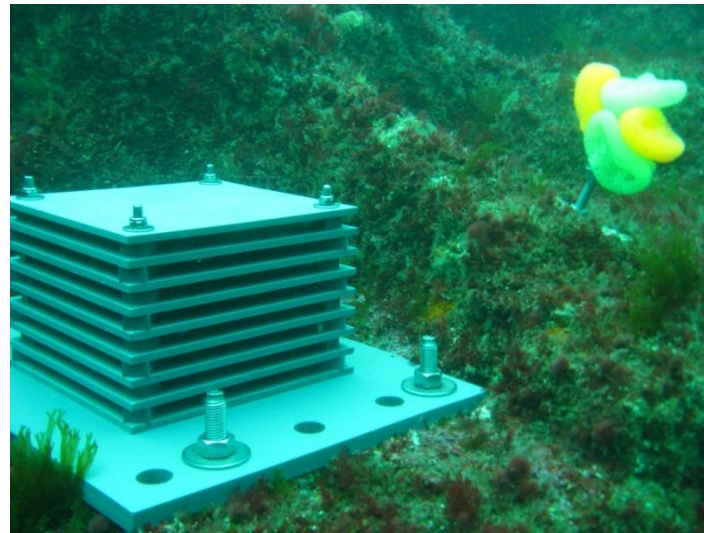
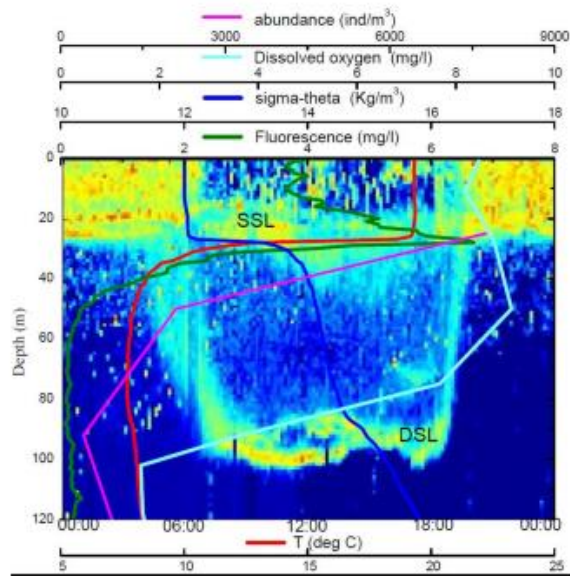
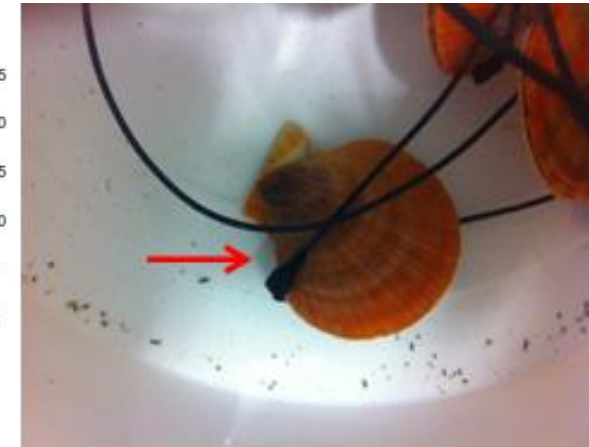
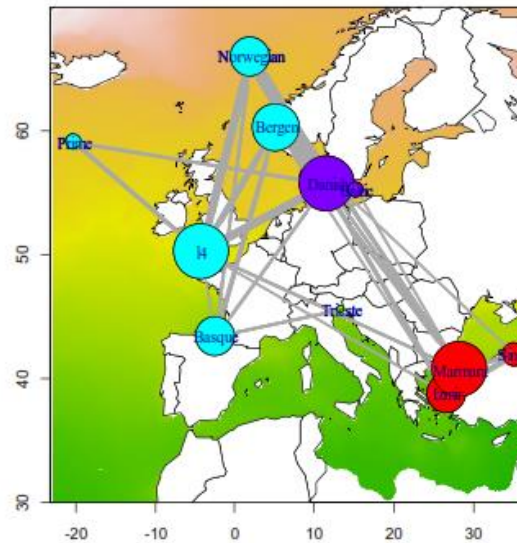
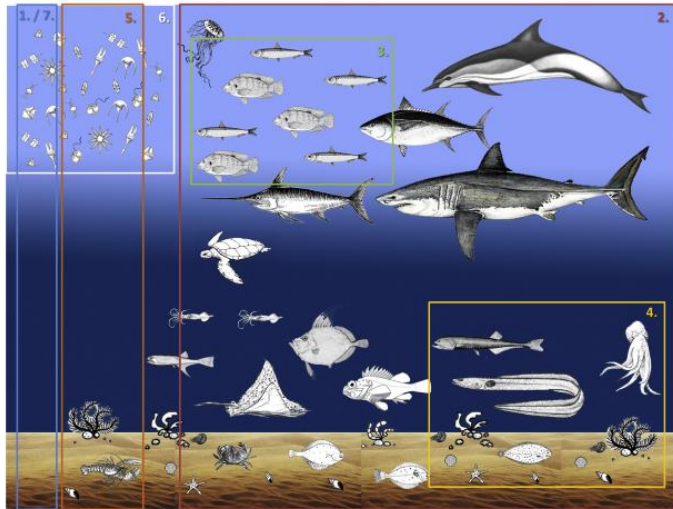


High resolution habitat
characterization

New (16)

Refined (13)

New knowledge: modelling and monitoring tools



New knowledge: methods to integrate & assess



Marine Pollution Bulletin 76 (2013) 16–27



Contents lists available at ScienceDirect

Marine Pollution Bulletin

journal homepage: www.elsevier.com/locate/marpolbul



Viewpoint

Good Environmental Status of marine ecosystems: What is it and how do we know when we have attained it?



Angel Borja^{a,*}, Mike Elliott^b, Jesper H. Andersen^c, Ana C. Cardoso^g, Jacob Carstensen^c, João G. Ferreira^d, Anna-Stiina Heiskanen^e, João C. Marques^f, João M. Neto^f, Heliana Teixeira^g, Laura Uusitalo^e, Maria C. Uyarra^a, Nikolaos Zampoukas^g

frontiers in
MARINE SCIENCE

REVIEW ARTICLE
published: xx July 2014
doi: 10.3389/fmars.2014.00022



Tales from a thousand and one ways to integrate marine ecosystem components when assessing the environmental status

Angel Borja^{1*}, Theo Prins², Nomiki Simbura³, Jesper H. Andersen⁴, Torsten Berg⁵, Joao-Carlos Marques⁶, Joao M. Neto⁶, Nadia Papadopoulou⁷, Johnny Reker⁸, Heliana Teixeira⁹ and Laura Uusitalo¹⁰

NEAT (Nested Environmental status Assessment Tool)

- Software for environmental assessment
- Integrative assessment across indicators
- Database with >600 indicators (DEVOTool)
- Customizable by the user
- Available free of charge for Windows and OS
<http://www.devotes-project.eu/neat> (2039 downloads)
- Presented in 20 conferences, from which 13 were training courses for a total of 320 scientists, managers, policy makers, consultants, etc.



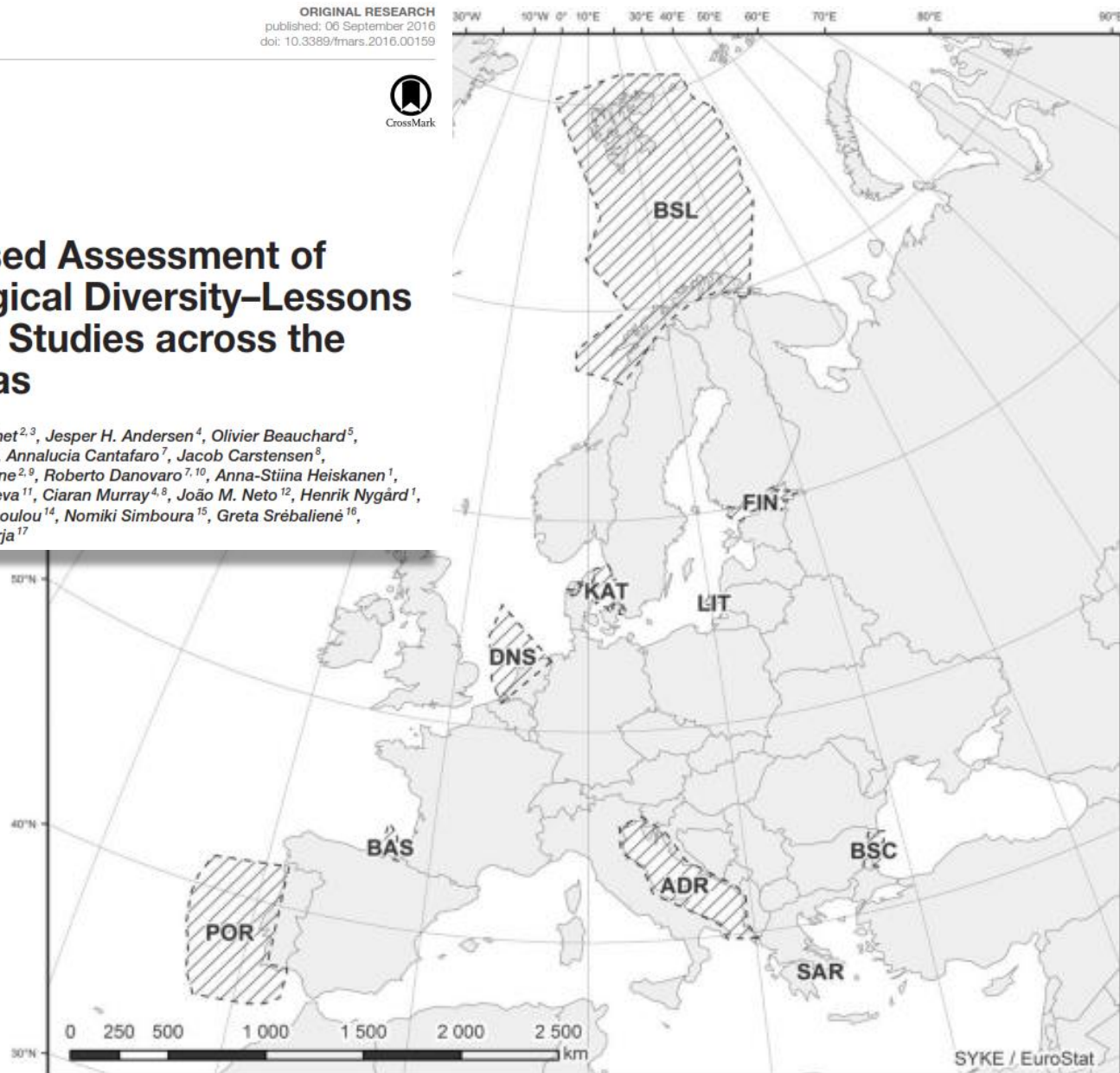


Indicator-Based Assessment of Marine Biological Diversity—Lessons from 10 Case Studies across the European Seas

Laura Uusitalo^{1*}, Hugues Blanchet^{2,3}, Jesper H. Andersen⁴, Olivier Beauchard⁵, Torsten Berg⁶, Silvia Bianchelli⁷, Annalucia Cantafaro⁷, Jacob Carstensen⁸, Laura Carugati⁷, Sabine Cochrane^{2,9}, Roberto Danovaro^{7,10}, Anna-Stiina Heiskanen¹, Ville Karvinen¹, Snezana Moncheva¹¹, Ciaran Murray^{4,8}, João M. Neto¹², Henrik Nygård¹, Maria Pantazi¹³, Nadia Papadopoulou¹⁴, Nomiki Simbora¹⁵, Greta Srébalienė¹⁶, Maria C. Uyarra¹⁷ and Angel Borja¹⁷

OPEN ACCESS

Edited by:
Michael Elliott,

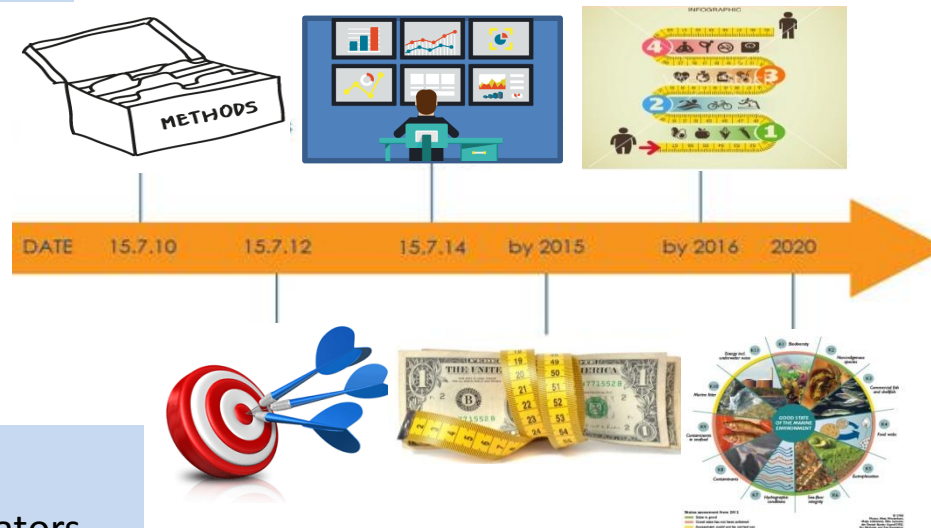


Filling in the gap between science and policy

- Revision of existing models
- Conceptual models ready
- Pressure – impact matrices and keystone species
- Spatial ecosystem models

- Catalogue of monitoring networks
- New monitoring methods
- Revision of innovative tools and protocol for testing new ones.
- Optimization of monitoring protocols
- Cost-effectiveness of monitoring

- Proposal of an integrative definition of GES
- Key barriers for GES



- Recommendations
- Regional workshops
- Training courses
- User interfaces
- Promotional material available
- Results, data, publications, and tools from DEVOTES freely available

- DEVOTOOL
- Criteria for good indicators
- New indicators and methods for setting references and targets
- Reference levels of indicators

- Cost-benefit of management measures

- NEAT tested and available
- Management implications of NEAT



From Science to Policy and Society: Enhancing the Effectiveness of Communication

Marianna Mea^{1*}, Alice Newton^{2,3}, Maria C. Uyarra⁴, Carolina Alonso⁴ and Angel Borja⁴

Three
apps



APPLICATIONS

many



PRESS RELEASES

Web 308k
Link: 206 m
Twit: 489 f



SOCIAL MEDIA

6 festivals



EXHIBITIONS

6 in total



NEWSLETTERS

4 with
stakehold



WORKSHOPS

COLUMBUS

“ Although **DEVOTES** has made a great effort to transfer the knowledge to the end users, **COLUMBUS** has enhanced this task by identifying new end users and by collaborating in a coordinated action between projects to enable the transfer of the knowledge in a more effective way. ”

Dr Ángel Borja, **DEVOTES** Project Coordinator and Researcher at AZTI-Tecnalia, Spain.



management
plan for Europe

**MARINE NON INDIGENOUS SPECIES:
KNOWLEGDE TRANSFER OPPORTUNNITIES
AND CHALLENGES AROUND DATA AND DATA
MANAGEMENT SYSTEMS**

Mallorca, Spain

24 – 28 April 2017

Madrid 6th Sept 2017

- All our outputs are public and open access:
 - Deliverables & software: www.devotes-project.eu
 - Publications: <https://zenodo.org/collection/user-devotes-project>
 - Gene sequencing: www.boldsystems.org
- OSPAR, HELCOM and Black Sea RSCs are using or considering to use some of our indicators
- Some new NEAT uses, in geographical areas (Canada, Iran) and for other applications (environmental impact studies, bathing waters,...)
- Some monitoring methods (bio-sensors, satellite, acoustic, genomic,...) are being considered by some monitoring authorities
- Some of the ideas proposed by DEVOTES have been included in the EU Com Dec 2017/848 of 17 May 2017
- Our developments can be applied to MSFD, MSPD, WFD, HD, CFP, ICZM and other marine policies



BRIDGING THE GAP BETWEEN POLICY AND SCIENCE IN ASSESSING THE HEALTH STATUS OF MARINE ECOSYSTEMS

2nd EDITION

EDITED BY: Angel Borja, Michael Elliott, Maria C. Uyarra,
Jacob Carstensen and Marianna Mea

PUBLISHED IN: Frontiers in Marine Science

- Open access book that can be downloaded from Frontiers in Marine Research webpage
- 168,484 views
- 2nd prize in the Spotlight Award from Frontiers

THANKS!



Grant agreement n° 308392



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under the grant agreement n° 308392

www.devotes-project.eu

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COLUMBUS conference
Brussels, 7 November 2017