



Towards the identification of Italian deep-sea ecosystems for protection

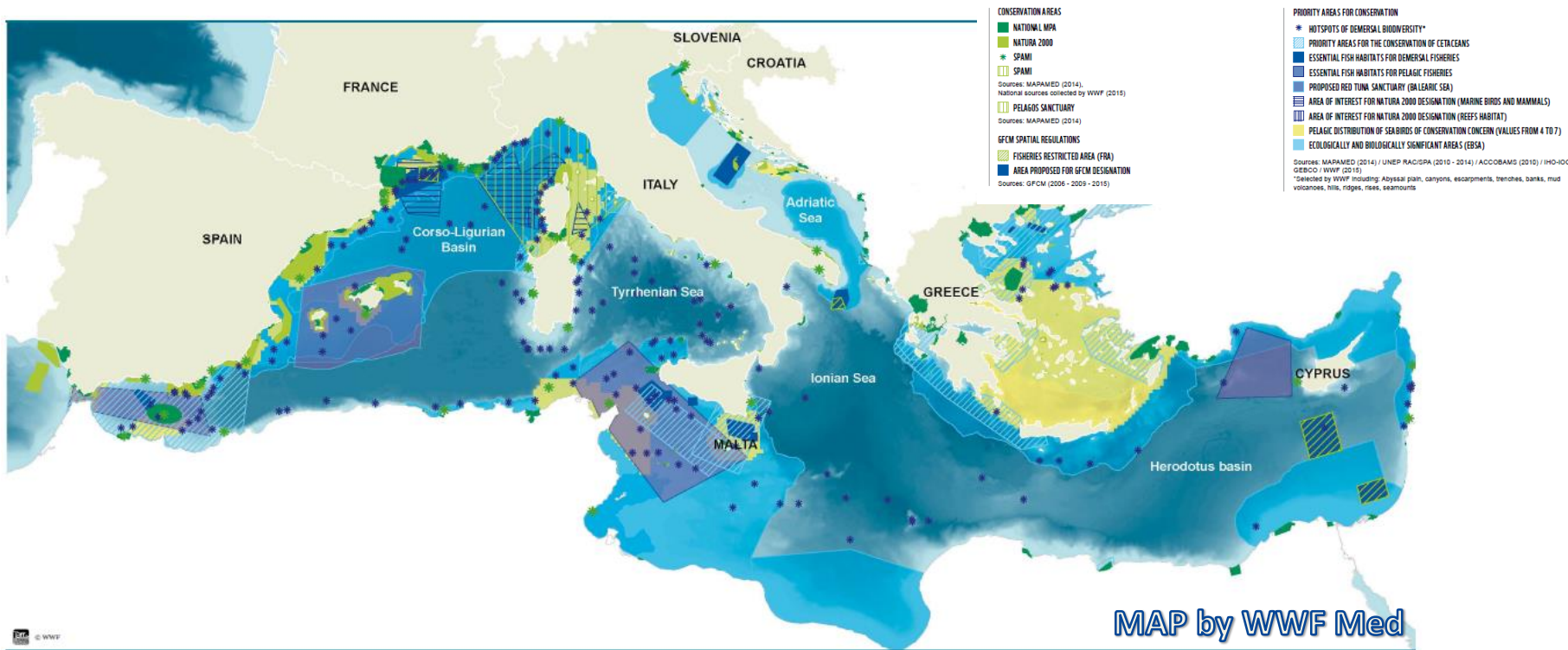
**Emanuela Fanelli, Roberto Danovaro
& IDEM consortium**

- 210 meters

Cold-water corals (*Madrepora oculata*)

Credits: IFREMER

MPAs and OECCM in the Med sea



- Mediterranean DEEP SEA covers ca. 80% of the area (ca. 1.99 millions km², avg depth 1,500 m) but most are still largely unexplored
- In the Mediterranean sea only **5.31% of the area deeper than 200 m is protected** (by MPAs and (Other Effective area-based Conservation Measures - OECCM) (UNEP-MAP, 2016).
- MPAs and OECCMs mostly cover shallow EU waters...what about N African countries?

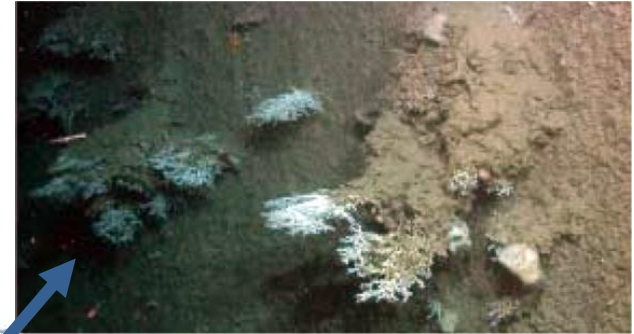
Fishery Restricted Areas in the Med



- 8 FRAs established by the GFCM to protect EFH or/and VMEs (ca. 22,500 km²)
- larger deep-sea FRA of ca. 1,700,000 km² (about 59% of the GFCM area of application) was established in 2005 to protect all sea bottoms below 1000 m

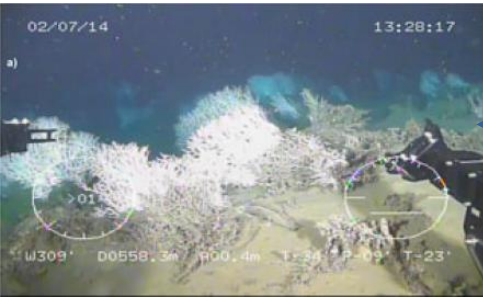
Hot spot of biodiversity in deep Italian waters

White corals



Freiwald *et al.*, 2009, Angeletti *et al.*, 2019; Bari canyon

- Records
- Province



Fanelli *et al.*, 2017 Levante Canyon



Taviani *et al.*, 2017 Nora Canyon



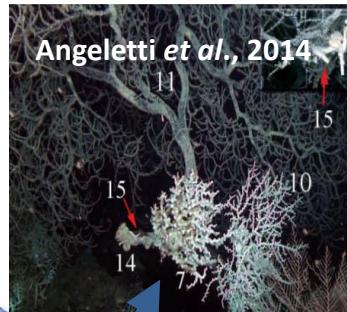
Various authors, S. Maria d Leuca

Hot spot of biodiversity in deep Italian waters

Black coral forests



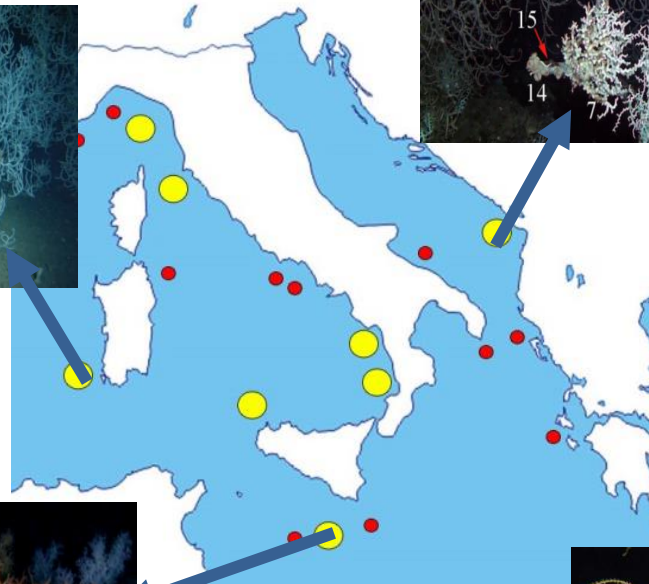
(Chimienti *et al.*, 2019)



Deep gorgonians



(Chimienti *et al.*, 2019)



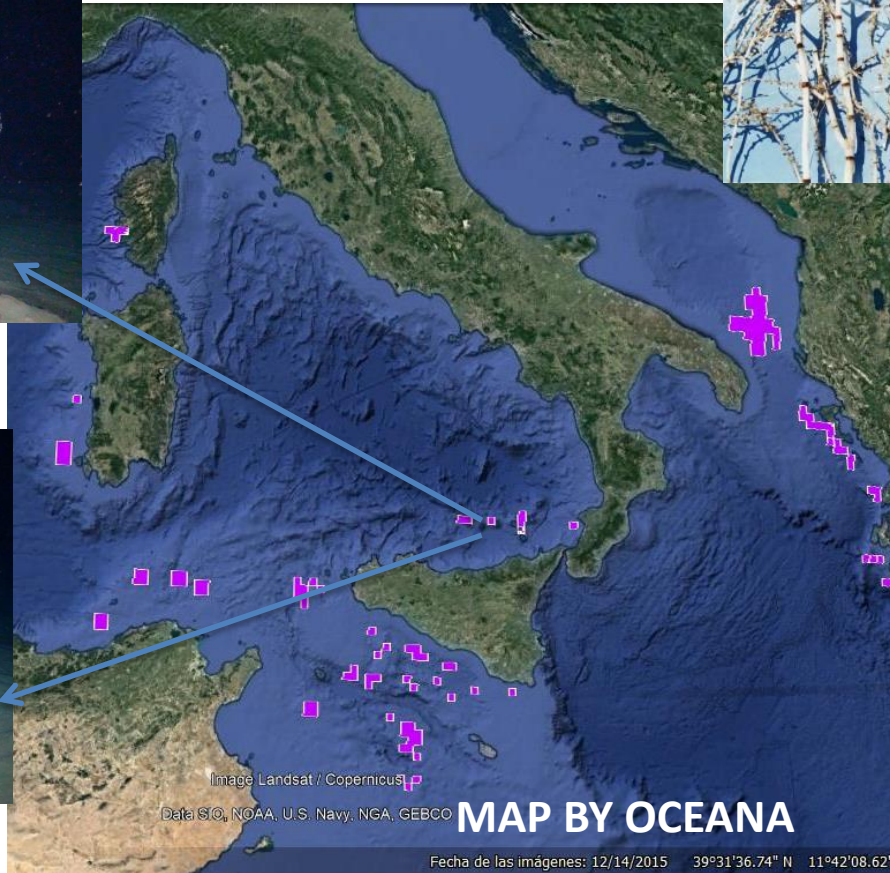
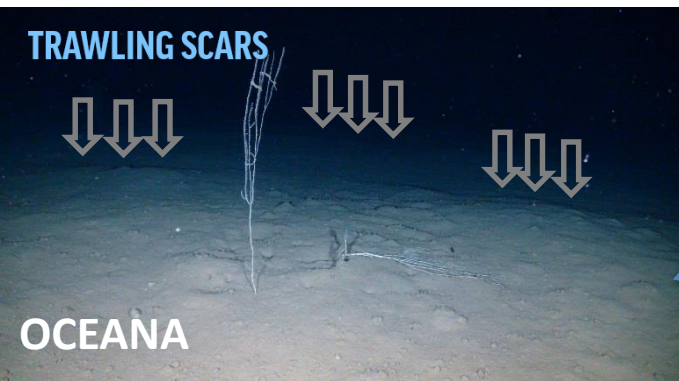
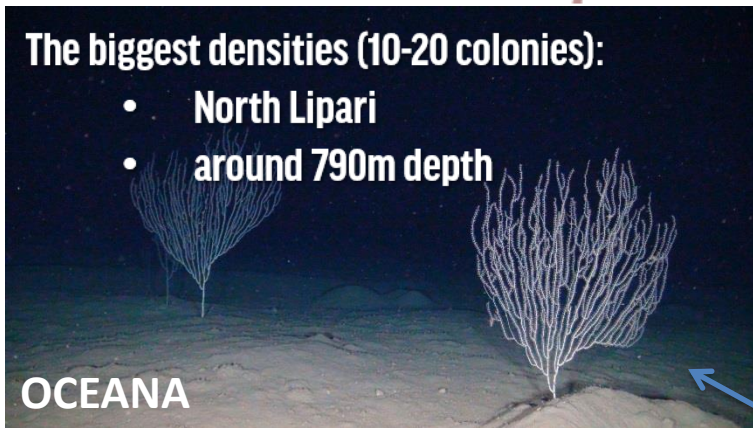
Hot spot of biodiversity in deep Italian waters

Isidella elongata



The biggest densities (10-20 colonies):

- North Lipari
- around 790m depth



CR = Reduction of the 80% of the populations in the last 50 years due to trawl fishing

Hot spot of biodiversity in deep Italian waters

SCIENTIFIC REPORTS

OPEN

A unique and threatened deep water coral-bivalve biotope new to the Mediterranean Sea offshore the Naples megalopolis

Received: 24 May 2018
Accepted: 11 January 2019
Published online: 04 March 2019

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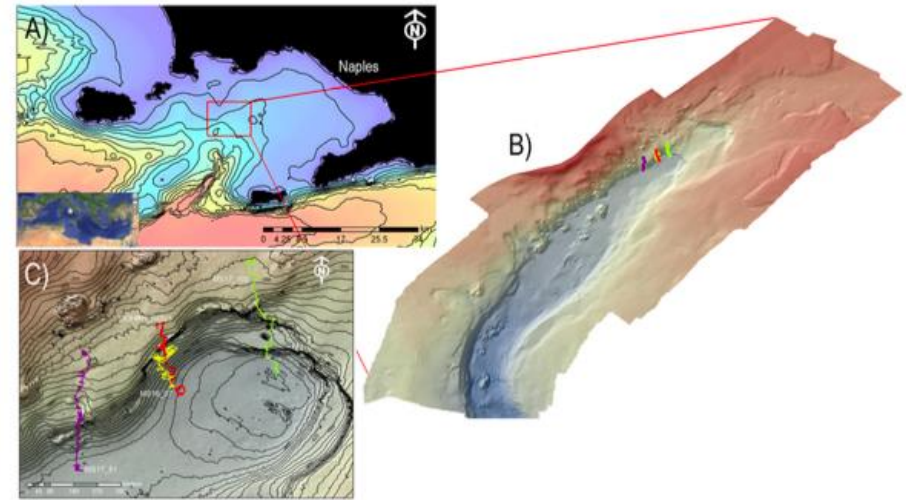
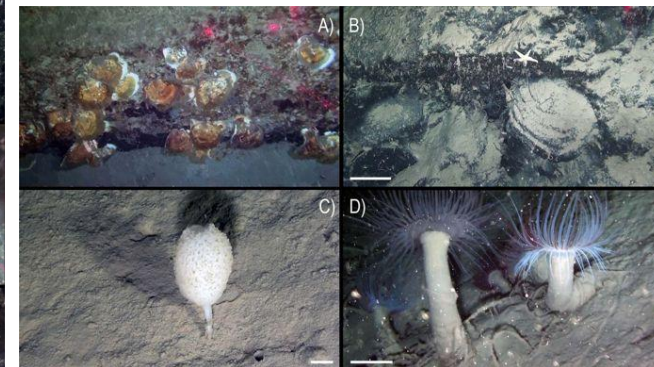
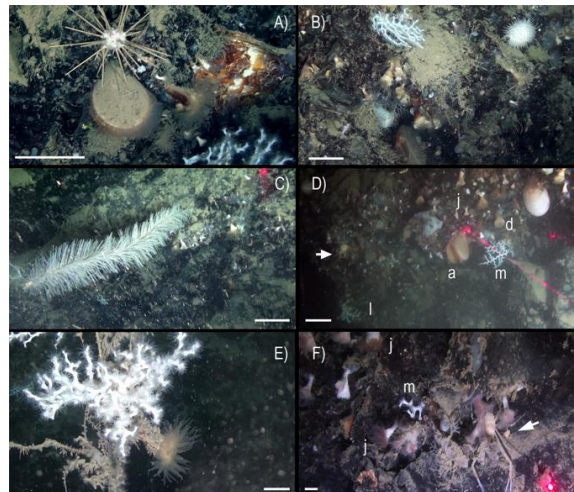
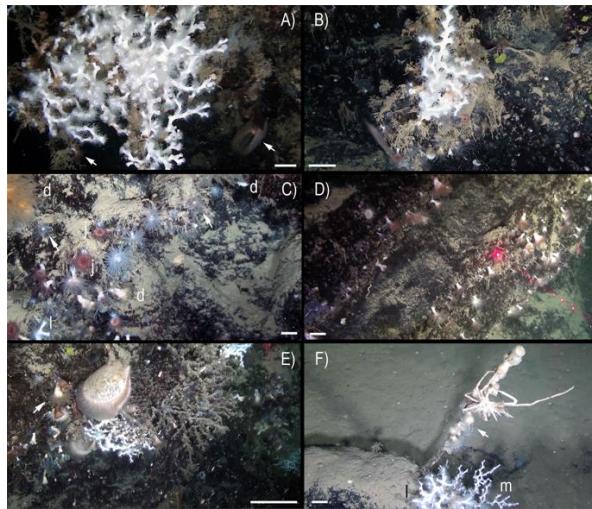


Figure 1. (A) Location map of the Gulf of Naples (white star in the inset. Basemap data: Google, SIO,



Bo *et al.*, 2014



Taviani *et al.*, 2017



Oceana © LIFE BaHAR for N2K



Ingrassia *et al.*, 2016

Which areas for conservation?

Existing MPA

Canyon name

Existing FRA

Proposed FRA

Isidella gardens



CWC provinces



Black coral and gorgonian forests



Oyster beds



Sea pen fields



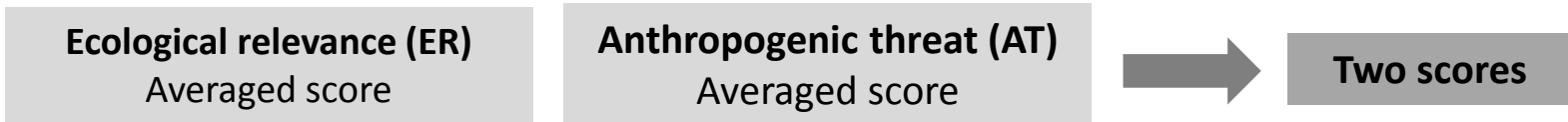
Towards the identification of priority areas



The IDEM approach I (Canals, Guell et al. University of Barcelona)

- Based on Taranto et al. (2012); <https://www.cbd.int/ebsa/>

Criteria (to be scored)
Two blocks:
Ecological relevance (ER)
Anthropogenic threat (AT)



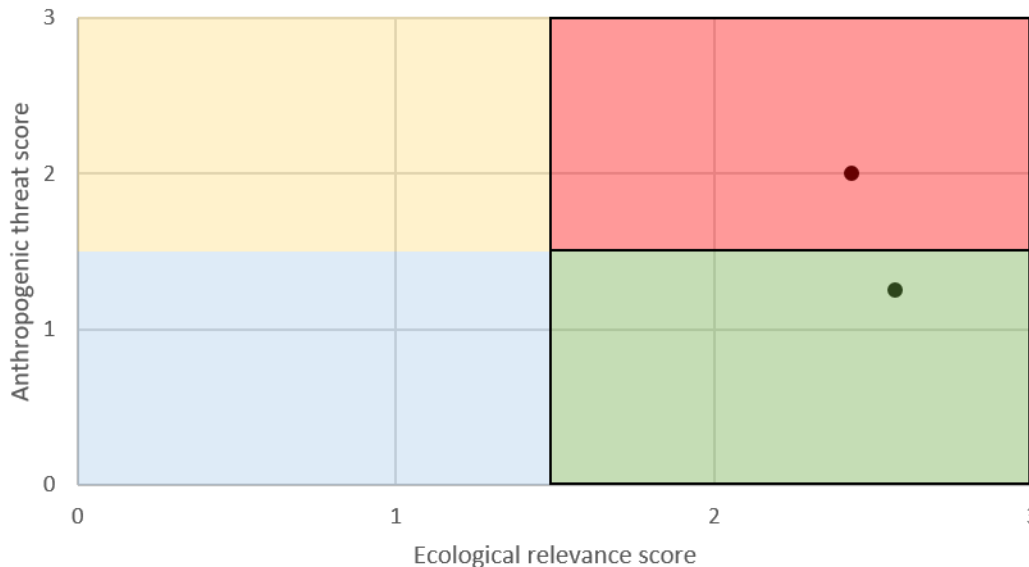
Annex I. Evaluation tables (of each suggested area) DELIVERABLE 3.3

RULES:

ER AVERAGE $\geq 1.5 \rightarrow$ High ER
 ER AVERAGE $< 1.5 \rightarrow$ Low ER
 AT AVERAGE $\leq 1.5 \rightarrow$ High AT
 AT AVERAGE $< 1.5 \rightarrow$ Low AT

High ER and high AT
Type 1. Key area for priority monitoring (under AT) (vs. GES)

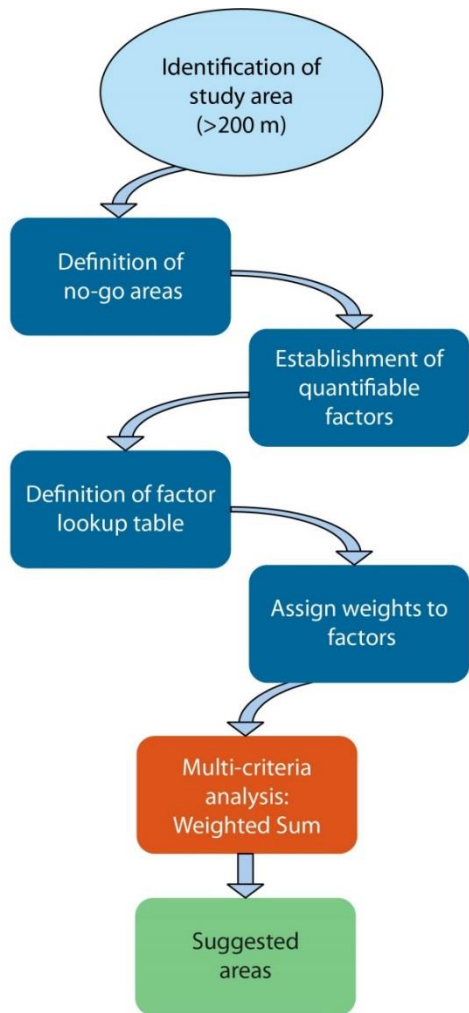
High ER but low AT
Type 2. Key area for priority monitoring (vs. GES)



WORK IN PROGRESS

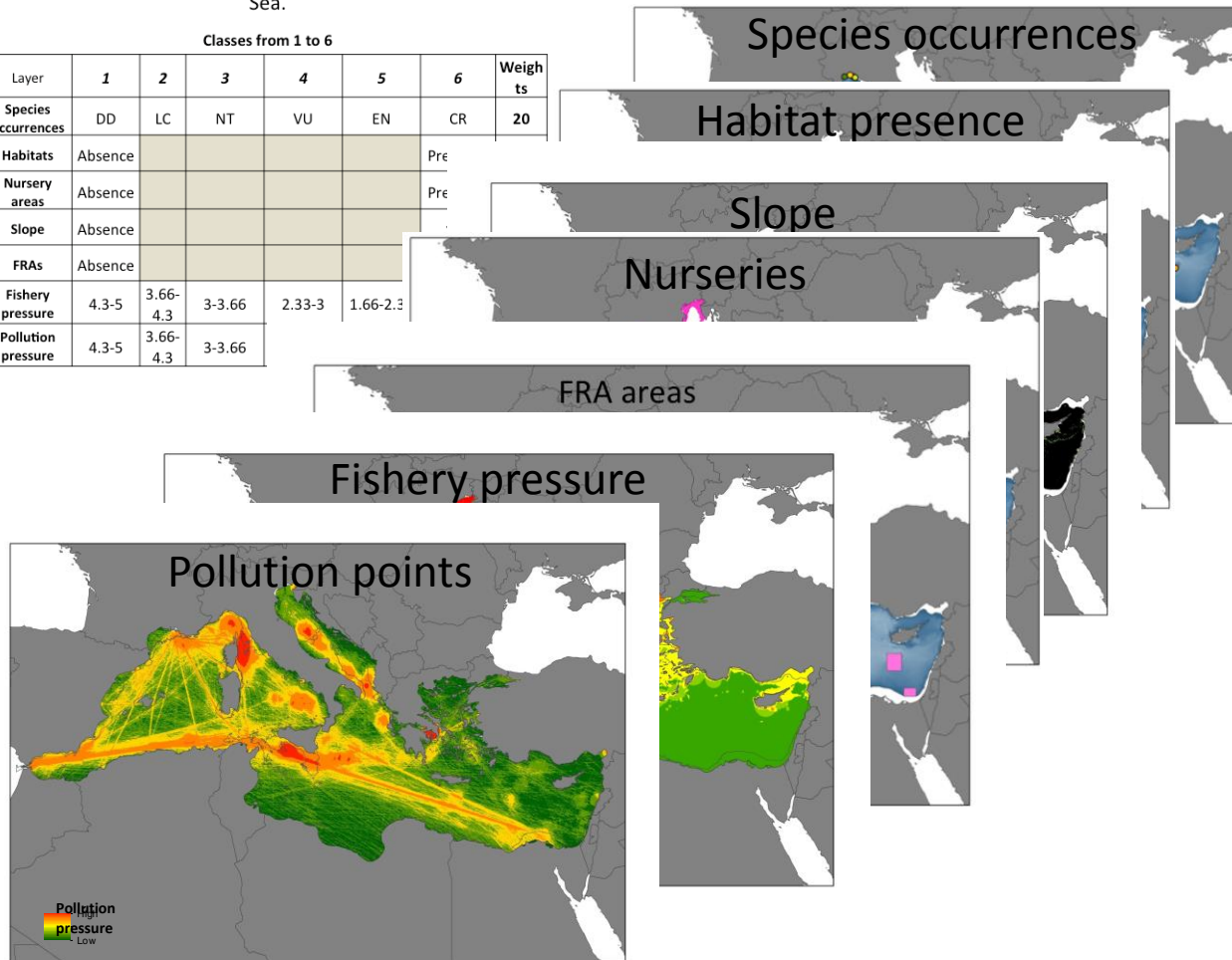
Towards the identification of priority areas

The IDEM approach II: Multicriteria analysis (Foglini, Angeletti, Bressan, ISMAR Bologna)



Parameters and factors that will define and adjust the ranking of potential areas for MPAs development in the deep Mediterranean Sea.

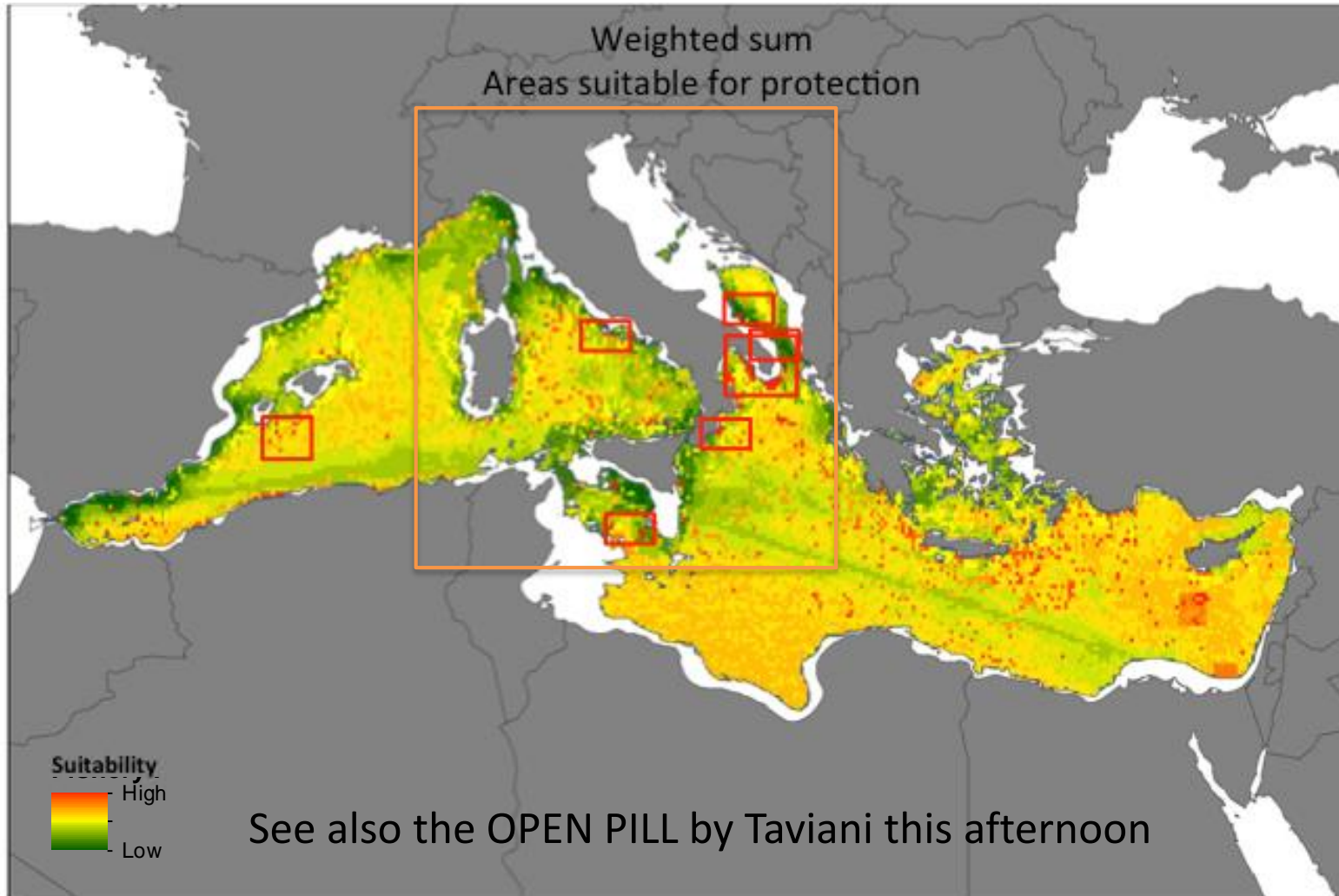
Layer	Classes from 1 to 6						Weights
	1	2	3	4	5	6	
Species occurrences	DD	LC	NT	VU	EN	CR	20
Habitats	Absence					Pre	
Nursery areas	Absence					Pre	
Slope	Absence						
FRAs	Absence						
Fishery pressure	4.3-5	3.66-4.3	3-3.66	2.33-3	1.66-2.33		
Pollution pressure	4.3-5	3.66-4.3	3-3.66				



WORK IN PROGRESS

Towards the identification of priority areas

The IDEM approach II: Multicriteria analysis (Foglini, Angeletti, Castellan, ISMAR Bologna)



WORK IN PROGRESS



Thanks for the attention

For details or further information, please refer to <http://www.msfd-idem.eu/> (“Research products” section)

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This project has received funding from the European Union’s DG Environment programme under grant agreement No 11.0661 /2017/750680/SUB/EN V.C2.

