IL MARE IN AZIONE
Le nuove Traiettorie Blu

19 marzo 2024
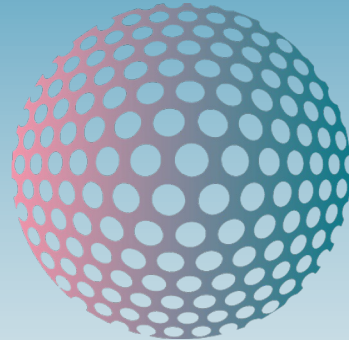
NATIONAL BIODIVERSITY FUTURE CENTER

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Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

NATIONAL BIODIVERSITY FUTURE CENTER

The Italian **National Recovery and Resilience Plan** *supports the creation of 5 National Centers dedicated to frontier research related to technological areas consistent with the priorities of the European research agenda and with the contents of the National Research Plan 2021-2027.*

1. High performance simulations, computation and data analysis
2. Agricultural Technologies (Agritech)
3. Development of gene therapy and drugs with RNA technology
4. Sustainable mobility
5**. Biodiversity**

<u>Biodiversity loss</u>
<u>Increasing human impacts</u>
<u>Decreasing competences in biodiversity studies</u>
<u>Low TRL</u>

1) **Assessing, monitoring, preserving** and **restoring** marine, terrestrial and urban biodiversity across selected national model ecosystems

2) **Valorizing biodiversity to make it a central element for sustainable development**, through an Open Innovation approach to encourage projects that enhance the science developed by the NBFC researchers, technology transfer paths and initiatives favoring the progress of Key Enabling Technologies
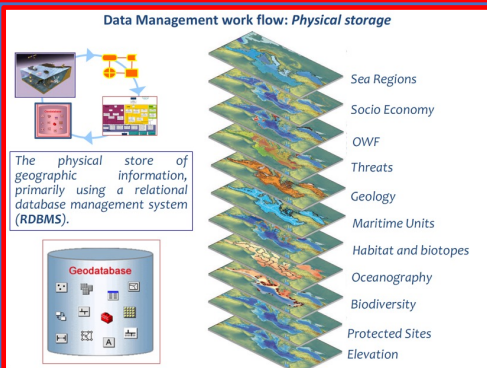
A very large initiative partnering <u>49 Research Institutes, Universities and Companies</u> for a total funding > 320 MEuro in three years – 1500 researchers

www.nbfc.it

Data Management work flow: *Physical storage*

The physical store of geographic information, primarily using a relational database management system (RDBMS).

Geodatabase

Sea Regions
Socio Economy
OWF
Threats
Geology
Maritime Units
Habitat and biotopes
Oceanography
Biodiversity
Protected Sites
Elevation

12% from a geomorphological point of view, 2,5% from a biological point of view

Integrated, georeferenced and self-sustaining National (Marine) Biodiversity Observatory: database (genetic/molecular, environmental, human pressure, biodiversity distribution)

GOAL 2: Open Data

To develop a new suite of cost-effective innovative tools to monitor /mapping biodiversity without forgetting the role of taxonomy
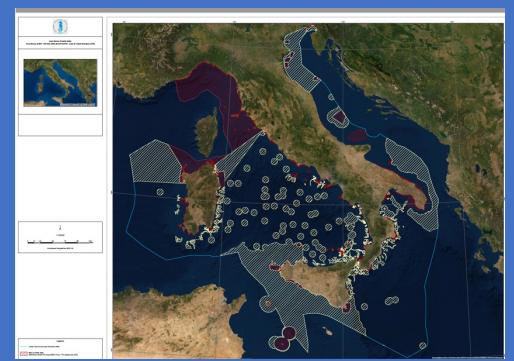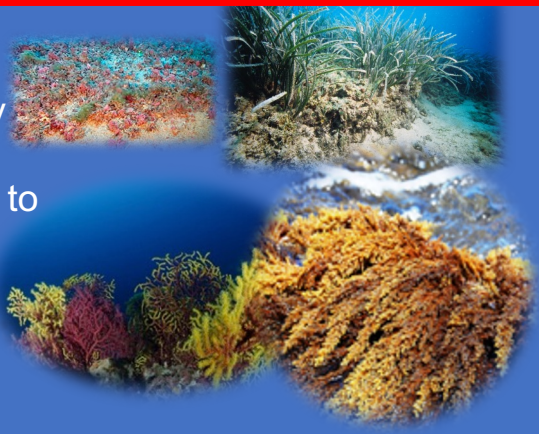
GOAL 3: Development of KETs

MARINE BIODIVERSITY & ECOSYSTEM FUNCTIONING

marbef
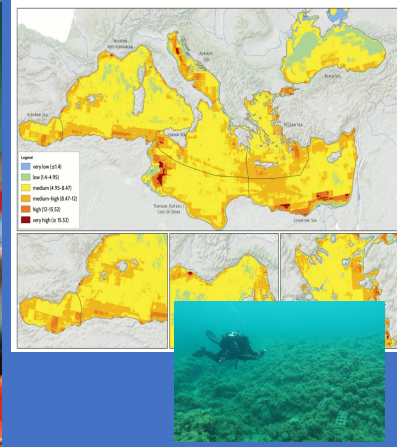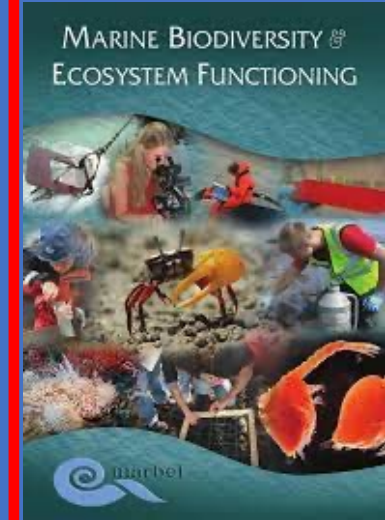
Assessment of changes of ecosystem functioning rates under environmental change and human uses

Assess the vulnerability the most important Mediterranean habitats to climate change-related stressors

New experimental infrastructures

Support the protection / restoration of italian species - habitats
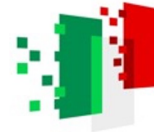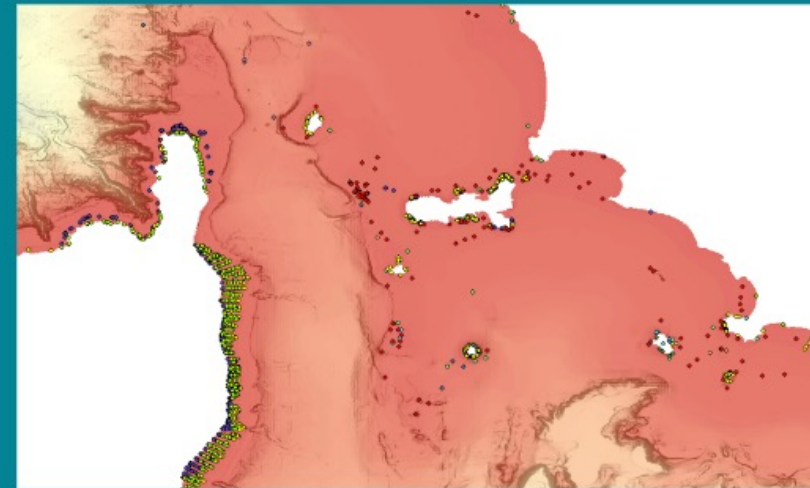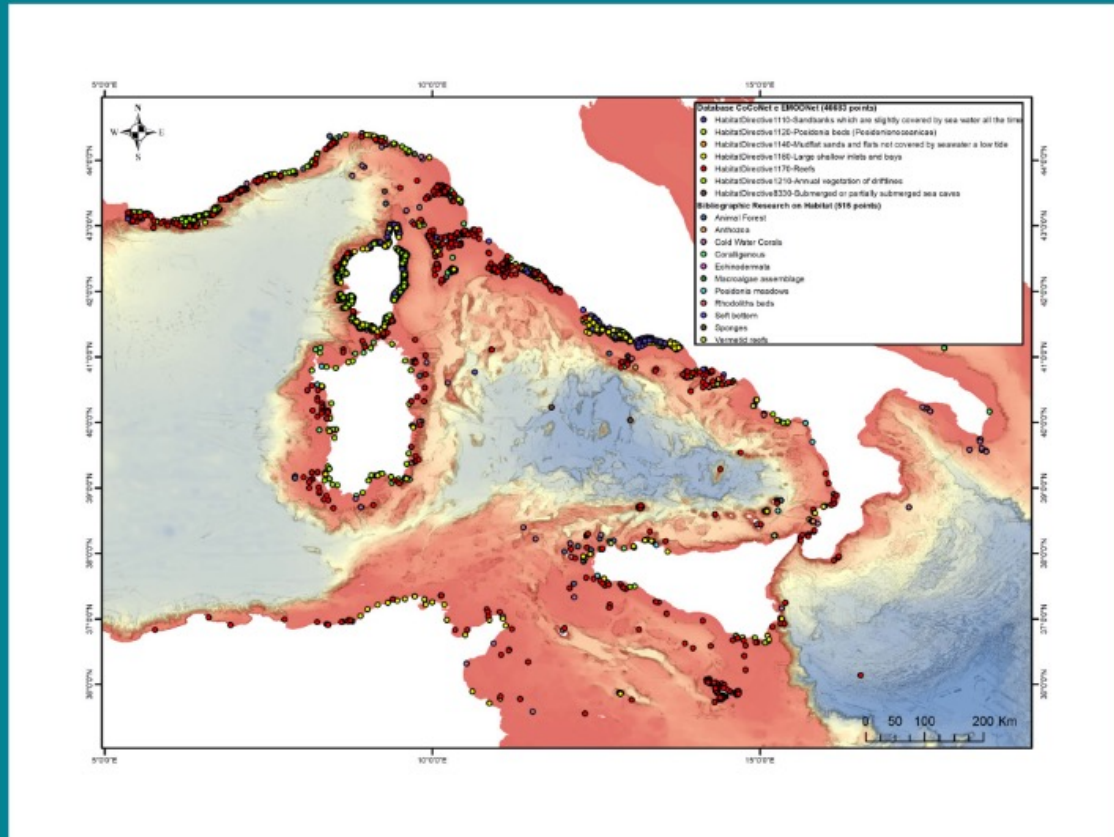
To attain GES (MSFD)

To support MSPD

Transferring

GOAL 1: Scientists
to educate of a new generation of scientists

Not only protection: data to support design and installation of marine cables

50000 point source data and maps

5-Develop innovative multi-omics based technologies to study biodiversity and address biodiversity threats

4-Biodiversity mainstreaming in Maritime Spatial Planning

SPOKE 2
SOLUTIONS TO STOP MARINE BIODIVERSITY LOSS AND MANAGE MARINE RESOURCES SUSTAINABLY

3-Sustainable valorization of marine resources

1-Assess and mitigate impacts and threats to marine biodiversity

2-Restore biodiversity and ecosystems

PARTNERS INVOLVED: CNR, UNIGE, UNIPD, UNISALENTO, UNIVPM, SZN, OGS,UNISI, UNIBO, IMC, CORILA. (Coordinators Gian Marco Luna – Mariachiara Chiantore)
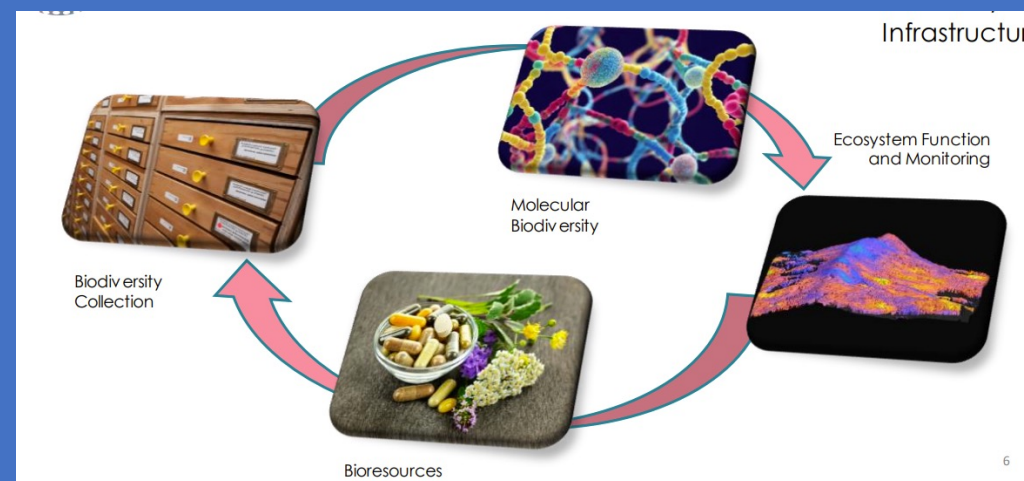
Mapping marine biodiversity in terms of patterns of distribution and status. Data mining sampling on more than **100** sampling sites (often with historical data), environmental and socio-economic data

30 Monitoring projects: expansion and integration of monitoring networks; advancement of monitoring technologies; optimal integration in the platforms;

57 Financed Parks and Protected areas, 15 MPAs where assessing present protection schemes and effectiveness

4 Platforms (CINECA) 1- Natural History Collections Digitization Infrastructure 3- Molecular biodiversity 4- Biomolecules, biosources, bioactivity 4- Biodiversity Ecosystem Function (BEF)

Working towards long term sustainability: NBFC Gateway

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National Biodiversity Future Center

NBS ITALY HUB

Marine Ecological Restoration: open labs in degraded environments

Translocation

Sowing
Nursery-raised corals

Seagrass transplant

Grazer removal

Seedling

Artificial reefs
Germling

Propagation

Corals transplantation

Giuseppe Guarnieri, CoNISMa-Unisalento

OGS, UNIPD

UNIVPM

UNIGE, UNIVPM

CNR

CNR

UNIVPM, SZN, CNR

UNISALENTO

ICM

CNR

CNR

> 25 protocols available;
67% started in 3 months
89% in 6 months

- 16 study areas
- 7 habitat types
- 19 species
- 30% actions implemented

10 Topics Identified: From Science to the Biodiversity Economy

- Innovative technologies for the identification and recognition of taxa

- Innovative systems for monitoring the biotic and abiotic components of habitats, ecosystems, infrastructures, or indoor environments.

- Development of advanced solutions for analyzing, integrating, and processing large volumes of data (Big Data) with the aim of managing biodiversity risks.

- Development and implementation of management systems through precision forestry techniques, precision agro-forestry, etc., aimed reducing the impact on biodiversity and managing structurally complex systems.

- Development of Nature-Based Solutions for the implementation of innovative actions to restore marine and terrestrial ecosystems, using sustainable materials and approaches.

- Advanced systems for the dissemination, communication, and utilization of data and content produced at the Center using virtual and augmented reality techniques, metacontent, digital twins, etc.

- Systems for precision fish farming and sustainable aquaculture, innovative and low-environmental-impact breeding methods, circular feeds, and low-carbon footprint in aquaculture.

- Identification, clinical experimentation, and production of compounds with pharmacological, nutraceutical, and cosmetic properties from animal and plant species.

- Development of innovative tools for solutions in favor of biodiversity conservation.

- Advanced systems for sustainable fishing with less impact on biodiversity

National Biodiversity Future Center | Scientific meeting | 5-6 February 2024

Bando PMI chiuso il 15 Marzo: 20 Milioni da assegnare.

The NBFC has made it possible to award a total of 34 doctoral scholarships covering a variety of topics