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Marine Environment Research Centre



Italian National Agency
for New Technologies, Energy
and Sustainable Economic Development

RESEARCH AND INNOVATION
FOR THE COUNTRY'S
SUSTAINABLE DEVELOPMENT

- ✓ Energy Efficiency
- ✓ Renewable Energy Sources
- ✓ Nuclear Energy
- ✓ Climate and the Environment
- ✓ Safety and Health
- ✓ New Technologies

Offices and Research Centres

The **nine ENEA Research Centres** and **five Research Laboratories** – located all over Italy – are endowed with a wide range of expertise, advanced facilities and instruments put at the disposal of both ENEA's research programmes and of the Nation's scientific and productive world.

ENEA also operates through:

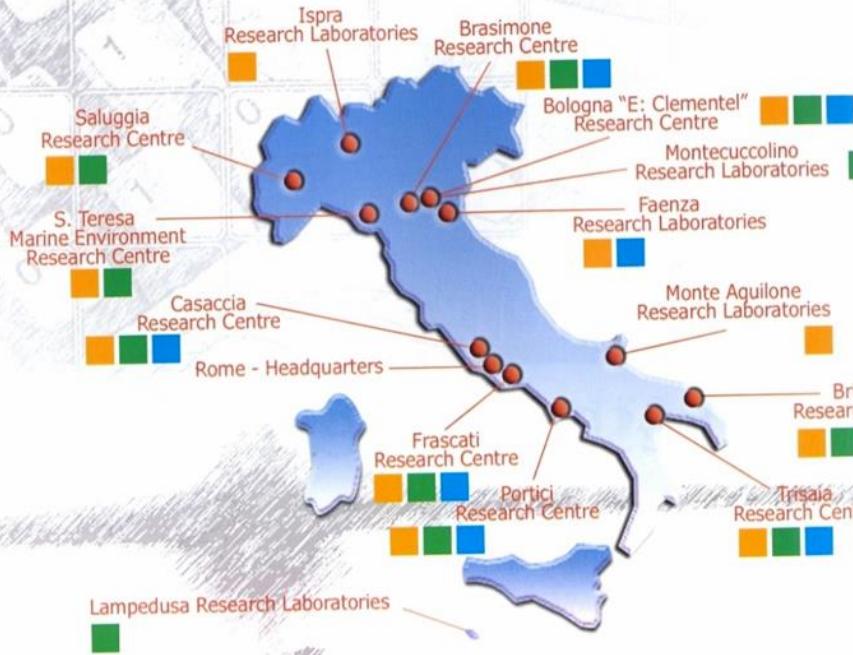
- a network of **territorial offices** providing information and consultancy services for local public administrations and enterprises
- an **ENEA-EU Liaison Office in Brussels** with the purpose of promoting and strengthening the image and participation of ENEA within the EU framework.

ENEA headquarters is located in Rome.

ENEA Headquarters

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00196 Rome
Tel. +39-06-36271 - Fax +39-06-36272777

ENEA Research Centres



ENERGY

SUSTAINABLE DEVELOPMENT

NEW TECHNOLOGIES

The background image shows a coastal landscape. In the foreground, there's a dense green hillside with some yellow flowers in the lower left. A long, low-profile building with a flat roof sits atop the hill. To the right, a curved concrete breakwater extends into the dark blue sea. In the distance, two small, green, tree-covered islands are visible under a clear, pale blue sky.

September 2013

Thirty years of research
at the Marine Environment Research Centre

Marine Environment Research Centre



Mission:

- to assess and predict the impact of natural changes and anthropogenic pressures on marine and coastal ecosystems;
- to produce basic knowledge for ecosystems protection, biodiversity conservation and management and sustainable use of marine resources.

Marine Environment Research Centre

Multidisciplinary structure: Physical, chemical, biological oceanography and marine geology.

25 researchers and technicians

Collaboration with CNR – ISMAR, hosted in the same building

*Research and agency services in support
to public administrations,
public and private enterprises and
citizens.*



Infrastructures - Laboratories



Benthos



Nutrients



Organic
Chemistry



Hydrology



Phytoplankton



Environ.
radioactivity



Molecular
Ecology



Sedimentology



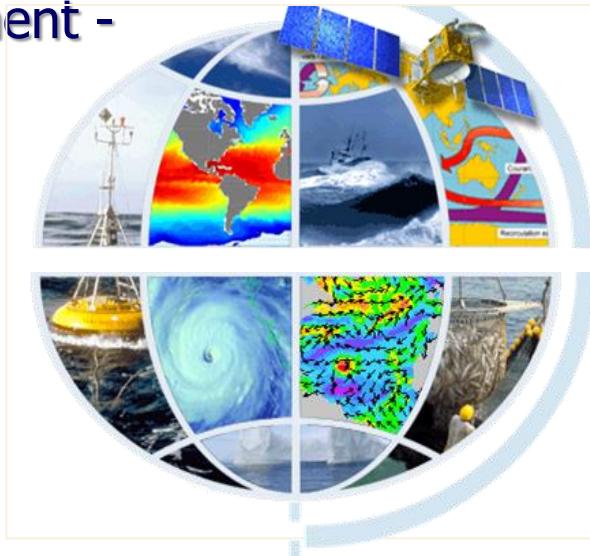
Climate change,
anthropic pressures
and marine ecosystem



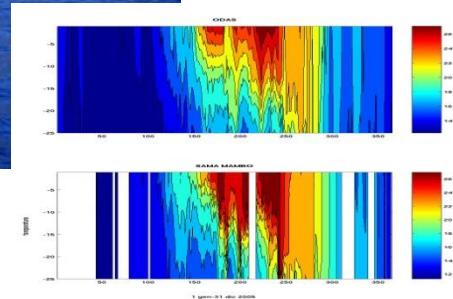
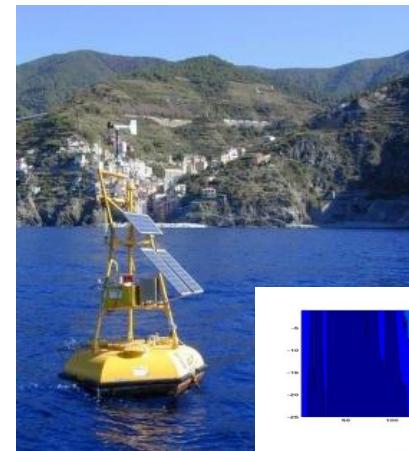
Products and services for the
marine environment -

Operational
Oceanography

Data
management



Research areas



Technologies and
methodologies for
marine and coastal
monitoring and
management

Climate change, anthropic pressures and marine ecosystems

Functioning, variability, trends
and possible changes in ecosystems,
through long time-series observations
and oceanographic campaigns at key-sites

Processes controlling spatial and temporal variability
of POC fluxes in the open Mediterranean Sea.

Time evolution of pressures in coastal areas



Climate change, anthropic pressures and marine ecosystems

Impact of physical processes, thermal anomalies, sea acidification, pollution, biological invasions, overfishing on biological communities.



Projects: Progetto Bandiera RITMARE
EU FP7 PERSEUS
MIUR – PRIN
MARES Doctoral School
CIESM – TROPICAL Signals
CSIC – ANTROMARE and TREND

Marine observations and forecast

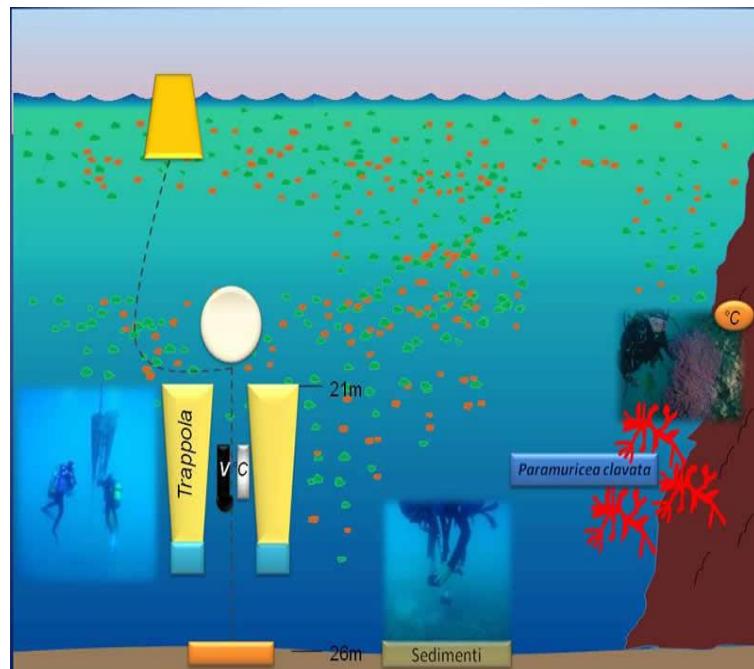
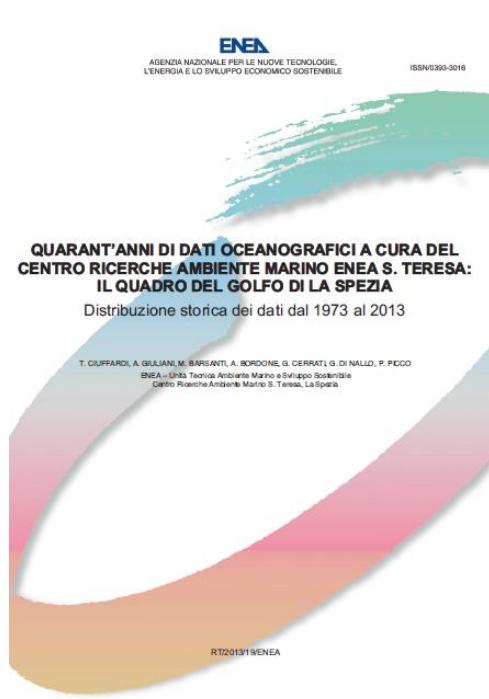
- Strategy for a national observation network:
 - Essential Ocean Variables
 - Strategic areas
 - Platforms
- Design and validation of innovative methodologies for marine monitoring
- Development and management of information systems for data storage, standardization and dissemination



Projects: Progetto Bandiera RITMARE
EU FP7 SEADATANET II
MY OCEAN
ODIP
MIUR RIMA

Eastern Ligurian Interdisciplinary Observing System ELIOS

- ✓ Meteo-oceanographic/hydrological, water quality
- ✓ Water mass characteristics
- ✓ Valuable benthic communities, invasive, harmful and thermophile species
- ✓ Periodic campaigns for morpho-bathymetric, sedimentological, biogeochemical characterization



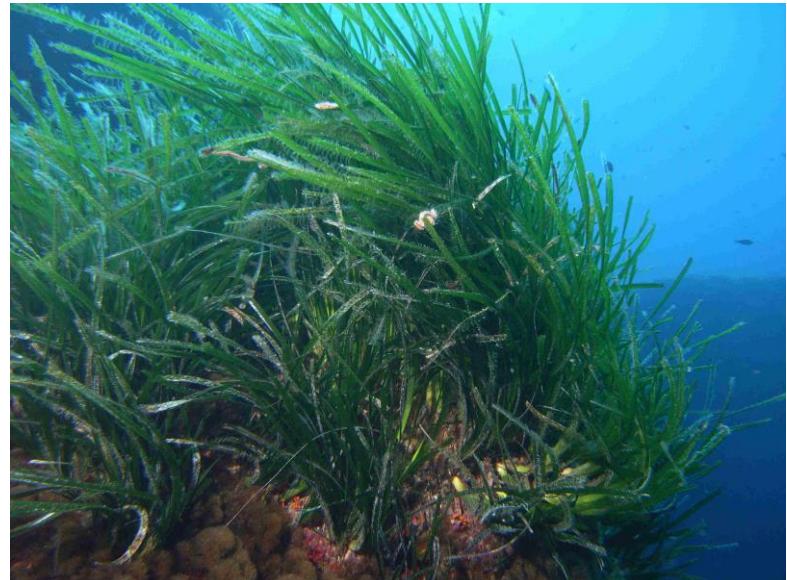
Eastern Ligurian Interdisciplinary Observing System ELIOS



Habitat Mapping
Deep-sea corals
in the Ligurian Sea

Ecosystem services
in the 5 Terre
Marine Protected Area

FESR «Blue Carbon»





EMSO

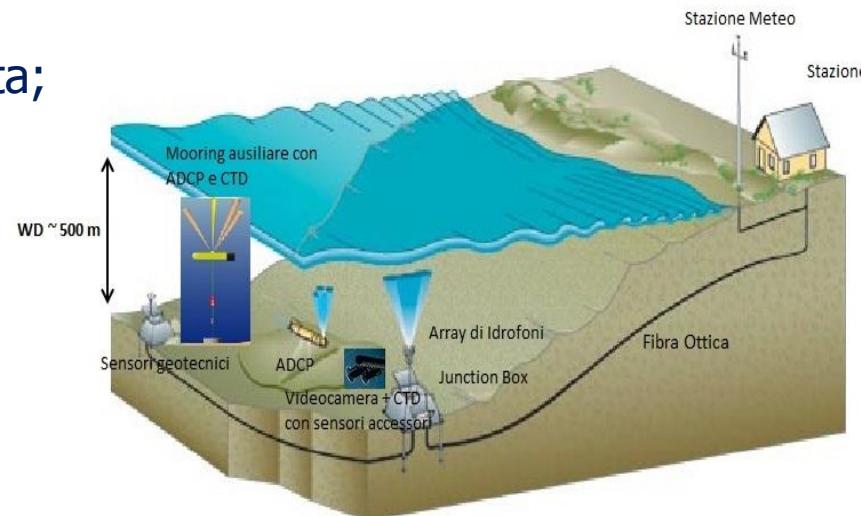
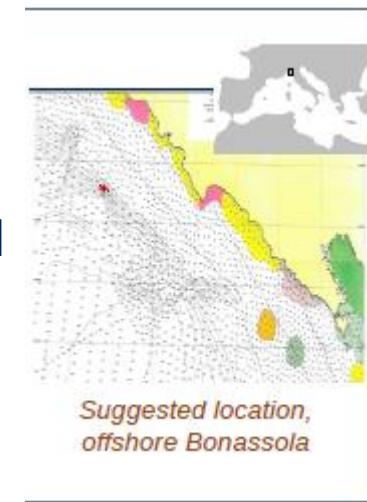
European Multidisciplinary Seafloor and water-column Observatory



<http://www.emso-eu.org/>

EMSO Eastern Ligurian Node

- Multidisciplinary approach (biological/geological/physical/chemical);
- Increase knowledge on:
 - ✓ deep-sea biodiversity and food web studies;
 - ✓ water-column and deep-sea circulation;
 - ✓ impact of climatic and human stressors on global change;
- Improve coastal health and safety;
- Validate and calibrate oceanographic models;
- Develop bio-acoustic experiments (e.g., cetaceans studies);
- Continuous, long-term and real-time data;
- Free access policy for data and images;
- Citizen Science



INGV, DLTN, ENEA, CNR, IIM, SME's

TRAINING AND EDUCATION

- Master courses and traineeships/stages for university students and early-stage researchers, in collaboration with Universities;
- Training courses and workshops on specialized sea-related subjects, with Italian and international training institutions;
- Host Institution of the MARES Doctoral School (ERASMUS MUNDUS).



Personal Activities

- **Biodiversity and functioning of deep-sea ecosystems** (in collaboration with ICM-CSIC, Spain, ISMAR-CNR and Polytechnic University of Marche)
- **Pelagic food webs** (in collaboration with IAMC-CNR, Naples and Mazara del Vallo)
- **Alteration of food webs following Lessepsian invasion** (in collaboration with American University of Lebanon, ISPRA Livorno, ISMAR-CNR)



Biodiversity and functioning of deep-sea ecosystem

Journal of **FISH**
BIOLOGY



Journal of Fish Biology (2014) **84**, 1654–1688
doi:10.1111/jfb.12378, available online at wileyonlinelibrary.com



Trophic ecology of *Lampanyctus crocodilus* on north-west Mediterranean Sea slopes in relation to reproductive cycle and environmental variables

E. FANELLI^{*†}, V. PAPIOL[‡], J. E. CARTES[‡] AND O. RODRIGUEZ-ROMEU[‡]

Deep-Sea Research I 78 (2013) 79–94



Contents lists available at SciVerse ScienceDirect

Deep-Sea Research I

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



Environmental drivers of megafaunal assemblage composition and biomass distribution over mainland and insular slopes of the Balearic Basin (Western Mediterranean)



E. Fanelli ^{a*}, J.E. Cartes ^b, V. Papiol ^b, C. López-Pérez ^b

Vol. 490: 199–221, 2013
doi: 10.3354/meps10430

MARINE ECOLOGY PROGRESS SERIES
Mar Ecol Prog Ser

Published September 17

Trophic webs of deep-sea megafauna on mainland and insular slopes of the NW Mediterranean: a comparison by stable isotope analysis

E. Fanelli^{1,*}, V. Papiol², J. E. Cartes², P. Rumolo³, C. López-Pérez²



Pelagic food webs

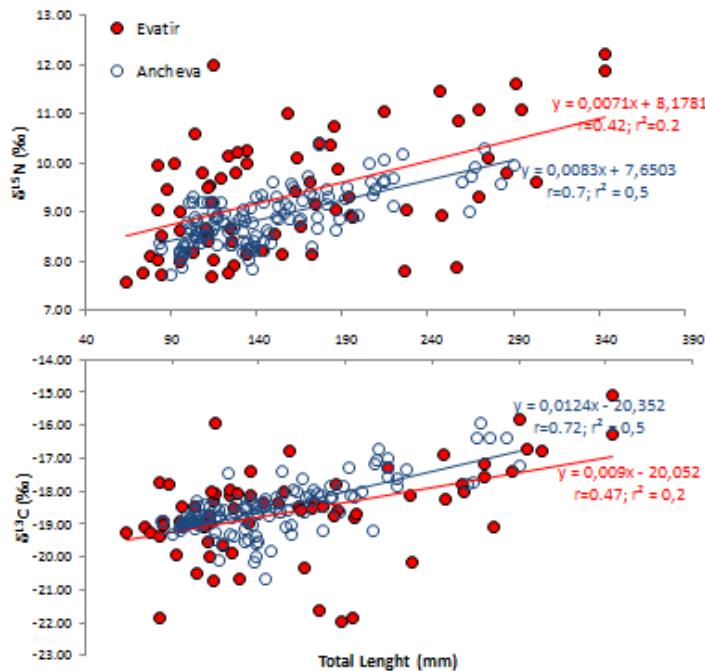


Fig. 1. Trends of $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ with size

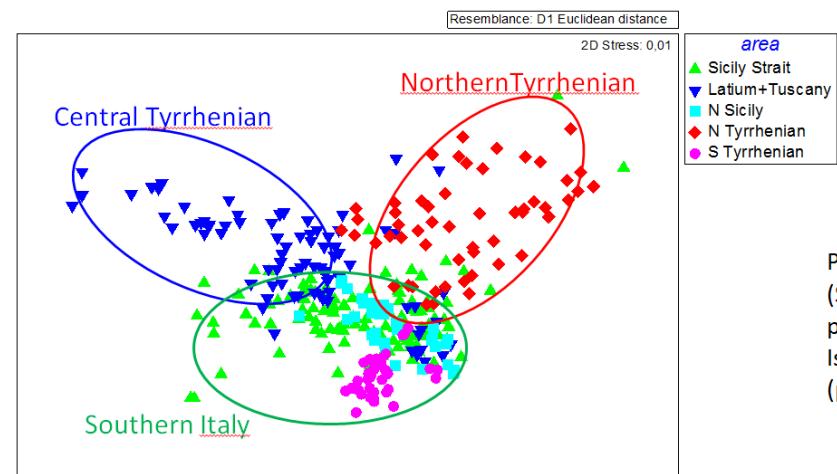


Fig. 2. non-metric multidimensional scaling (NMDS) of $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ values of all specimens collected in this study. Legend indicates areas selected *a priori*, while circles evidenced *a posteriori* groupings.

Ocean Sci., 10, 93–105, 2014
www.ocean-sci.net/10/93/2014/
doi:10.5194/os-10-93-2014
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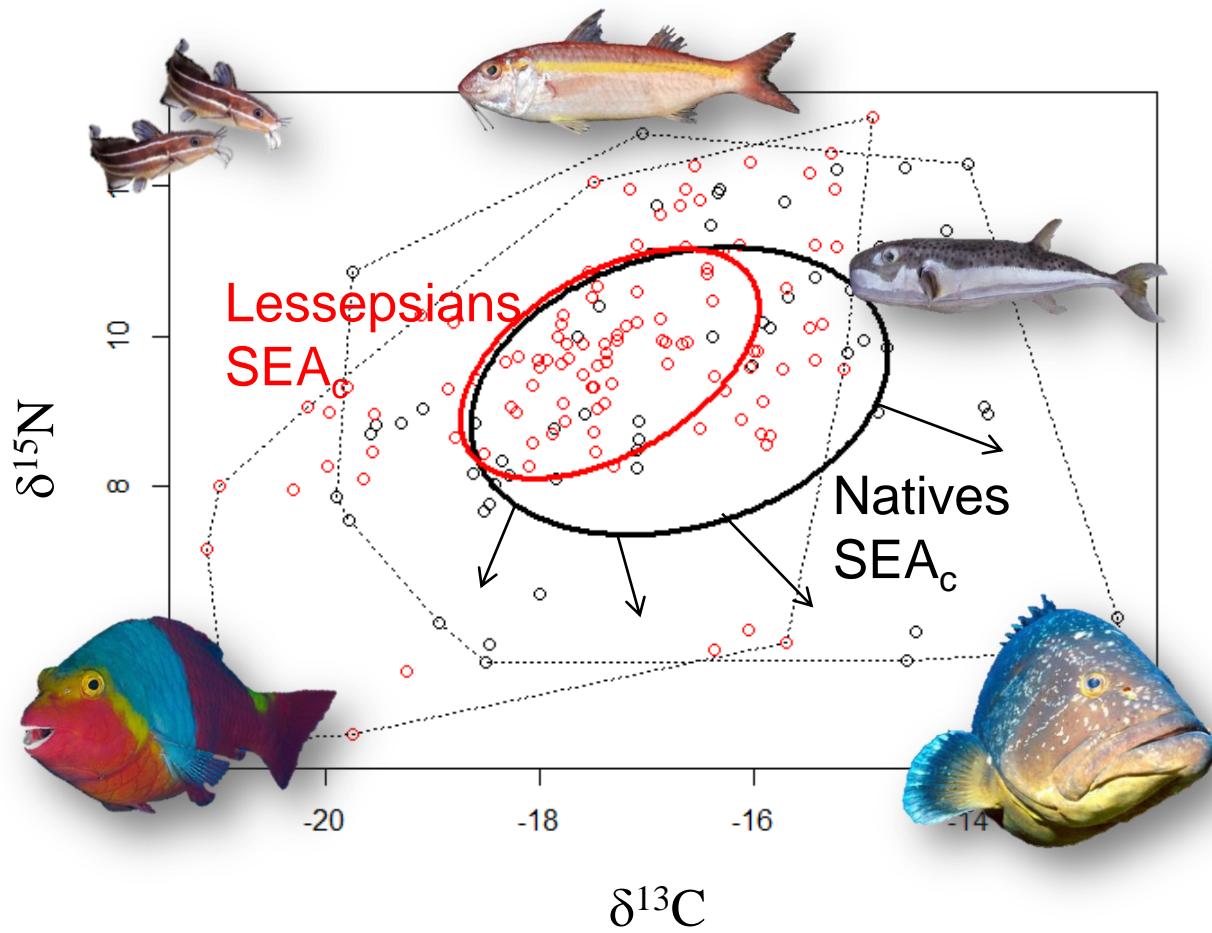
Ocean Science



Temporal variations of zooplankton biomass in the Ligurian Sea inferred from long time series of ADCP data

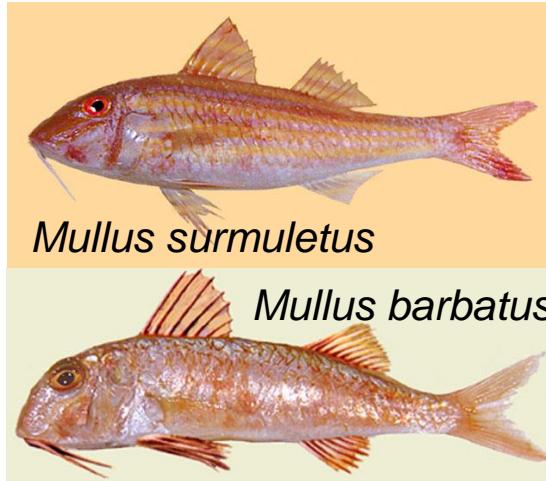
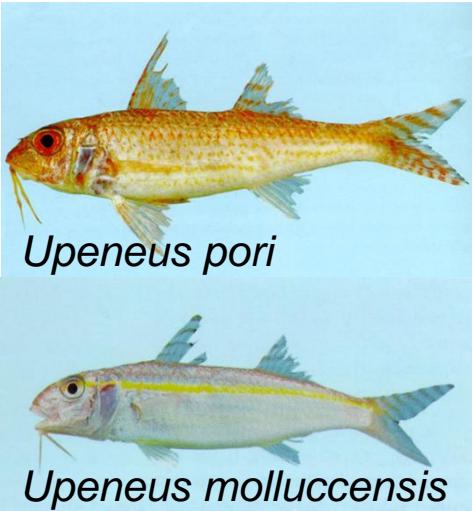
R. Bozzano¹, E. Fanelli², S. Pensieri¹, P. Picco², and M. E. Schiano³

Alteration of food webs following Lessepsian invasion



Alteration of food webs following Lessepsian invasion

The case of mullets



Similar diet in the four species, high consumption on carnivore polychaetes (Sigalionidae)

Golani 1994 *J.Fish Biol.*

2012: Higher $\delta^{15}\text{N}$ values in Lessepsian species than in native mullets (comparing similar size)

<i>U. pori</i>	10.24 ± 0.78
<i>U. mollucciensis</i>	9.37 ± 0.28
<i>M. surmuletus</i>	6.06 ± 0.38
<i>M. barbatus</i>	8.10 ± 0.35

Thank you for the attention



Photo courtesy E. Azzurro

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