Protocols seguiment efectes canvi climàtic

Interreg Mediterranean

MPA Engage

@MPAEngage

MPA ENGAGE

Engaging Mediterranean key actors in Ecosystem Approach to manage Marine Protected Areas to face Climate Change Impacts

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SESSIO INFORMATIVA PROCES PARTICIPATIU PLA D'ADAPTACIO CANVI CLIMÀTIC (22/09/2021)

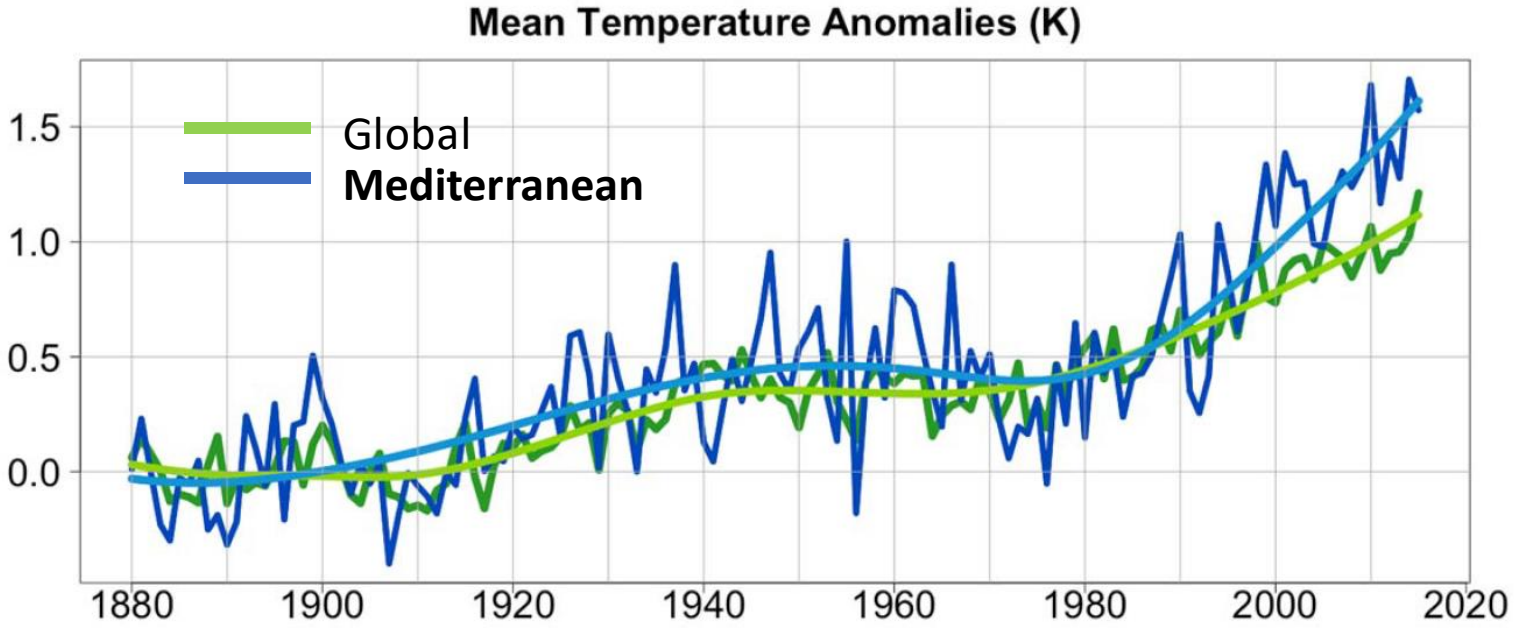
Institut de Ciències del Mar

CSIC

Consejo Superior de Investigaciones Científicas

Programme co-financed by the European Regional Development Fund

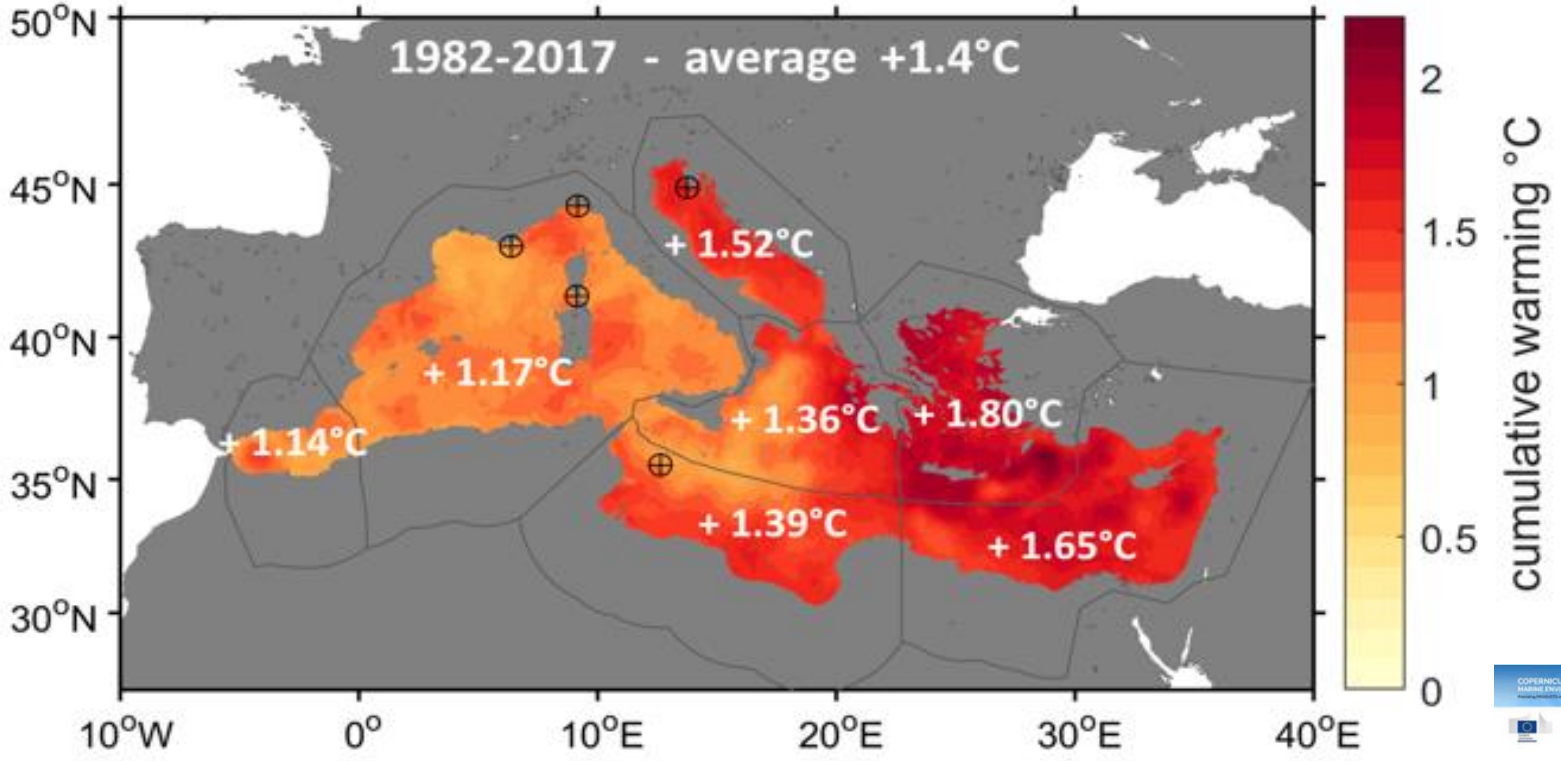
Mediterrània *hotspot* canvi climàtic



Mean air temperature anomalies
with respect to the period 1880-1899

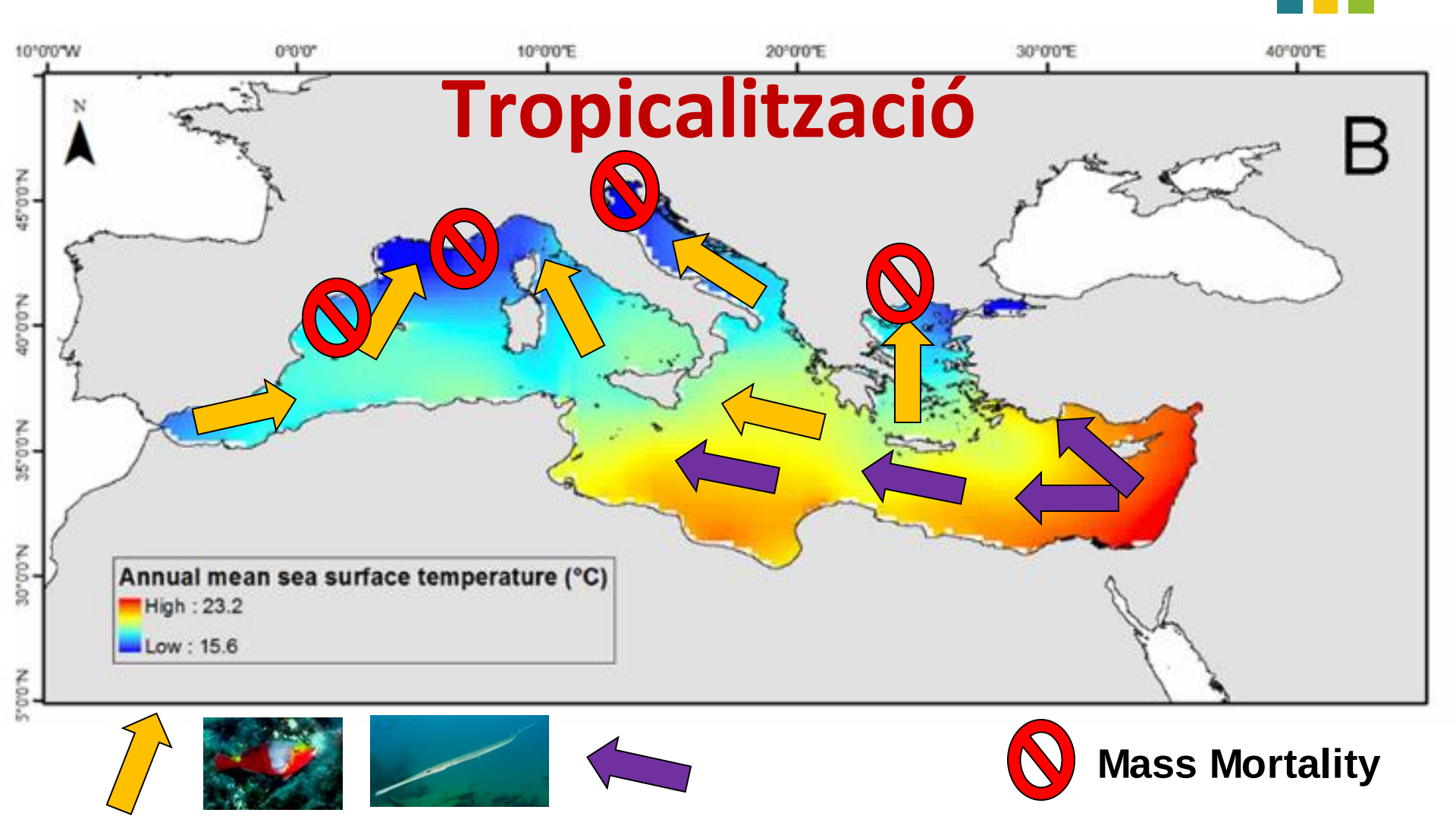
Cramer et al. 2018 Nat. Clim. Chang.

Mediterrània *hotspot* canvi climàtic



SST data from CMEMS

Tropicalització



Mass Mortality


LOOSER
WINNER

Why monitoring activities?

How CLIMATE CHANGE AFFECTED IS AFFECTING my MPA? WILL AFFECT

Categories of indicators

1. Temperature
2. Range shift of alien / temperature sensitive species
3. Episodic events
4. Phenology changes
5. Migration changes

OUR PHILOSOPHY

Practical and easy

A restricted set of simple measurements to capture greater dimensions of environmental change.

Common standard tools

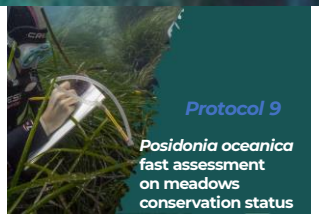
To be implemented in the Mediterranean Area, across national borders and jurisdictions.

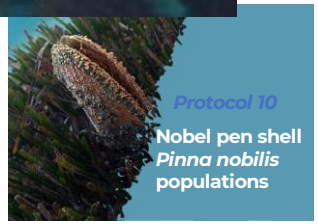
Engaging local people

Empowering local communities to better understand and manage Climate Change.

Interreg Mediterranean MPA Engage

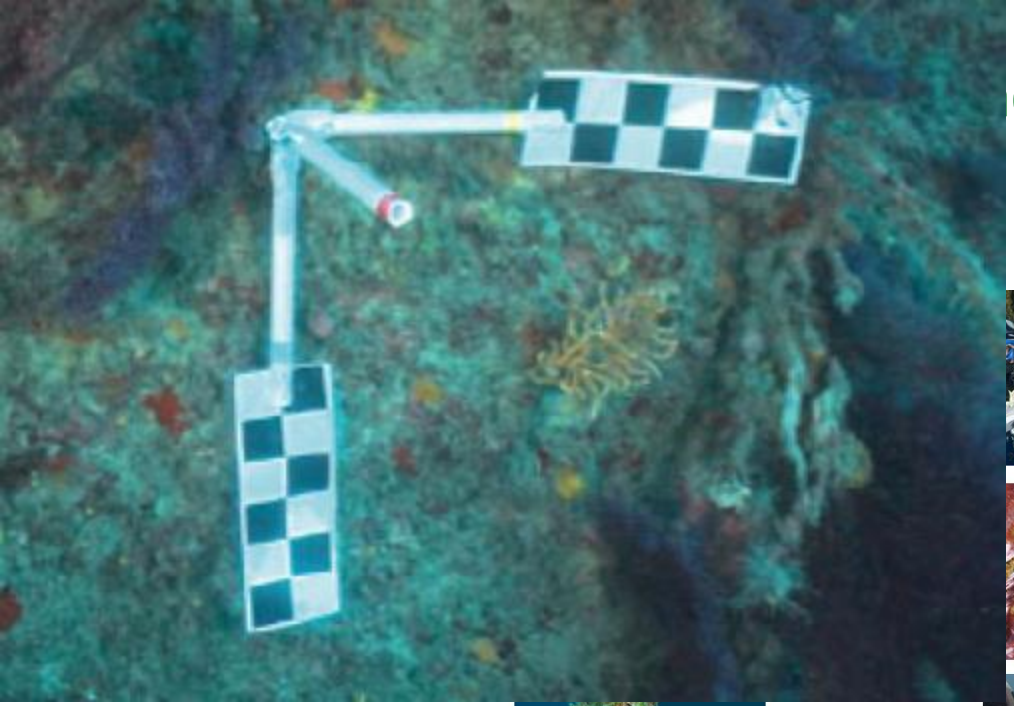
Protocol 11
SFM: Photogrammetry as monitoring tool for benthic habitats





- ✓ Ecosystem approach
- ✓ Scientifically robust
- ✓ Feasibility and cost effectiveness
- ✓ Public participation

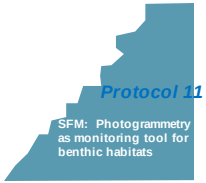
CSIC Consejo Superior de Investigaciones Científicas · Stazione Zoologica Anton Dohrn Napoli · portofino · partenaire Parc national des Calanques · Università Politecnica delle Marche · BRIJUNI · National Marine Park of Zakynthos · Generalitat de Catalunya Departament de Territori i Sostenibilitat · Area Marina Protetta Tavolara Punta Coda Cavallo · MIO-ECSDE · Future Oceans Lab Universidade de Vigo · Regione Liguria · APAWA ShMGjUSh · DAN Divers Alert Network Europe

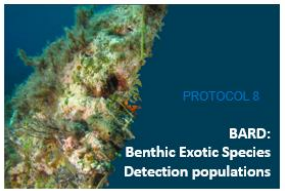


ge effects and impacts

3. Episodic events

4. Phenology changes





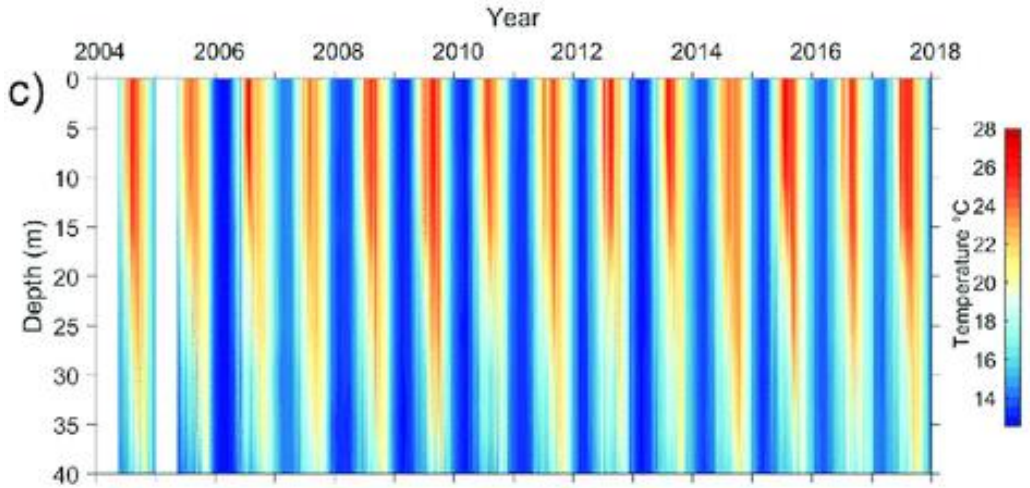
SUPPORT MPAs MANAGEMENT FACE TO CLIMATE CHANGE AND BEYOND

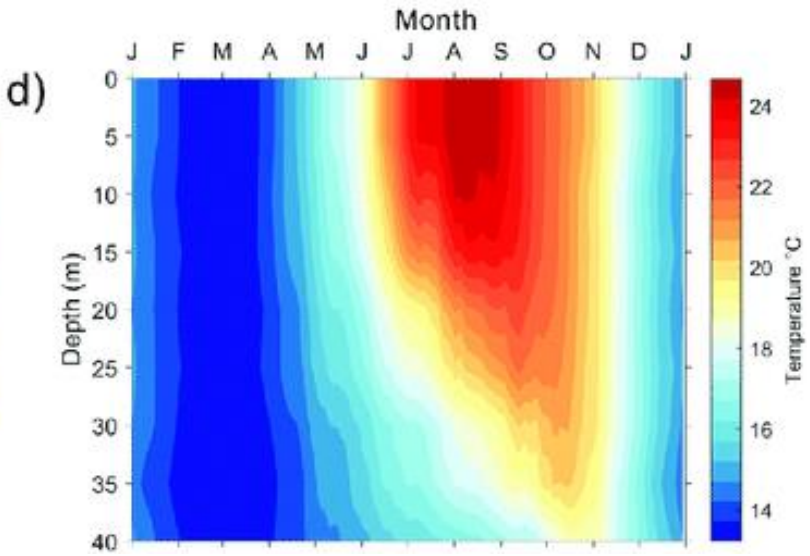

30
PROTOCOL 1
Monitoring temperature conditions

SETUP OF A NEW VERTICAL

Step 2. Deploy loggers

Sèries de temperatura horaries

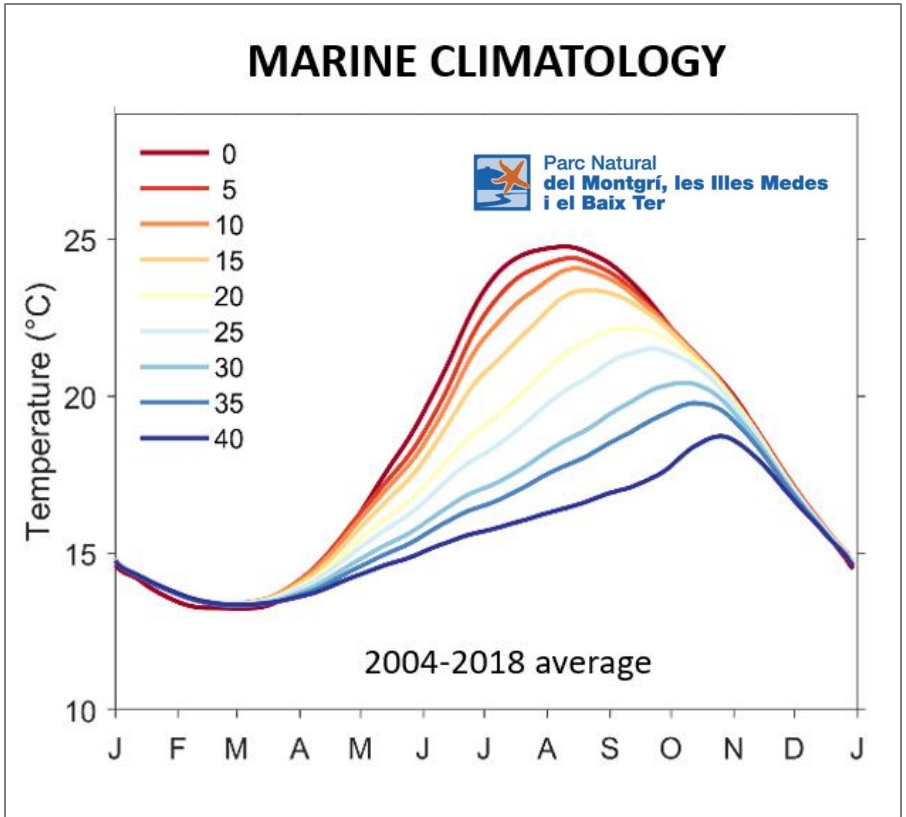


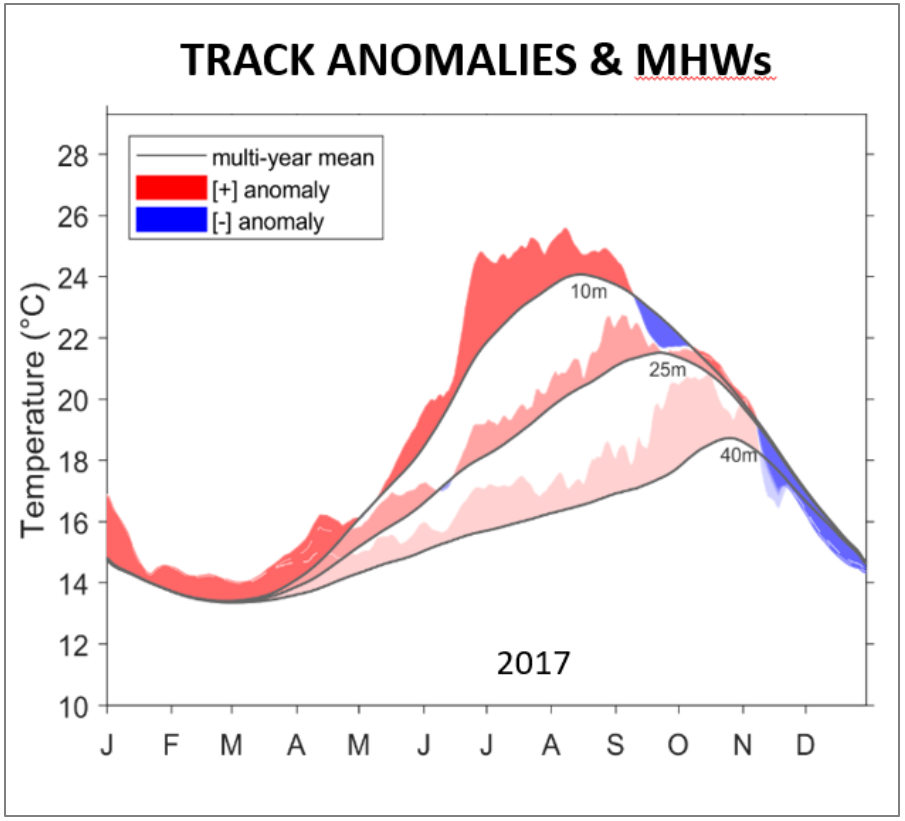


Unique near-shore oceanographic LONG-TERM series

Garrabou et al. 2009 Global Change Biology, Cebrian et al. 2011, Kersting et al. 2013 PLoS ONE, Hereu & Kersting 2016, Garrabou et al. 2019 Frontiers Marine Sciences

BUILD BASELINES TRACK CHANGES





TMEDNet

T°-MONITORING SITES

Network of mini-loggers
IN SITU at High-Frequency

Marine Protected Areas
Near-coast Mainland and islands

Multiyear time series
Some 20 years long

Vertical profiles 0 to 40 m
or more (max 67 m)
Also single depth in habitats

75 sites
18 Million T° samples

Spain, France, Italy, Croatia, Tunisia, Greece, Turkey

www.t-mednet.org

1 to 5 years

5 to 10 years

More than 10 years

Collaborative network

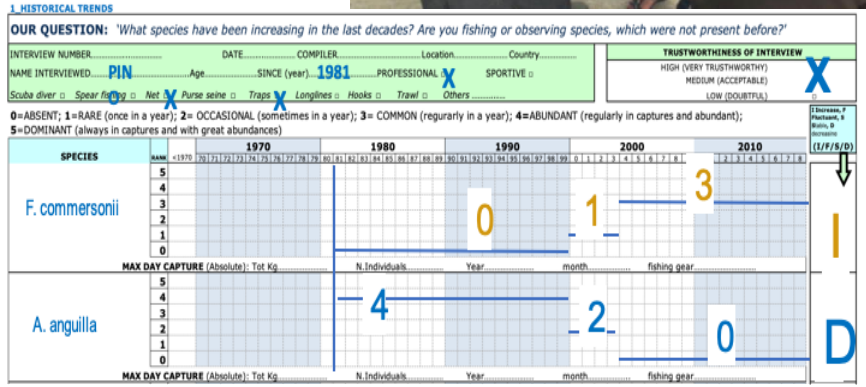
Marine Scientists:

MPA managers:

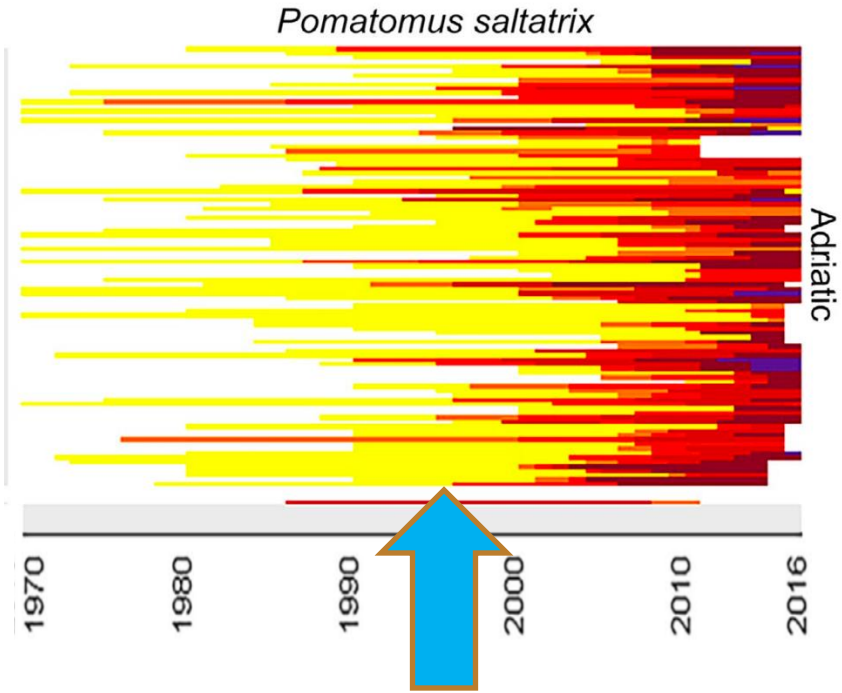
PROTOCOL 3

LEK-1: exploring Local Ecological Knowledge to reconstruct historical changes

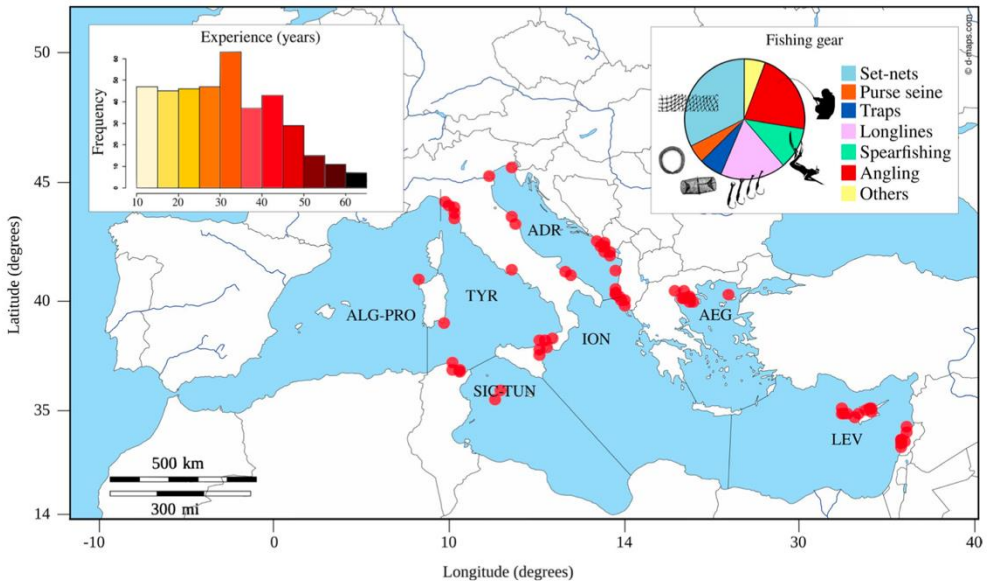
YOU: *Do you know any other species that recently appeared in the area or increased in its abundance?*



Local Ecological Knowledge is the information that people have about the ecosystems where they spend most of their time. The following protocol can be used to interview experienced fishermen or other sea users, to reconstruct historial changes in species abundances and distribution. It can also be used for the early detection of new species.



Kind of ongoing changes at the local, subregional and regional scale



PRIMARY RESEARCH ARTICLE

Global Change Biology WILEY

Climate change, biological invasions, and the shifting distribution of Mediterranean fishes: A large-scale survey based on local ecological knowledge

Azzurro et al., Global Change Biology, 2019

1320 opportunities to contribute to adapt and mitigate climate change and biodiversity loss crisis

MAPAMED

UN environment programme | Mediterranean Action Plan Barcelona Convention | SPA/RAC

MedPAN

Thank You

Interreg
Mediterranean
MPA Engage


Benvenuti nell'Area Marina Protetta
AREA MARINA PROTETTA
TAVOLARA
PUNTA CODA CAVALLO
WORK
NG IN NATURE
CONSORZIO DI GESTIONE
AREA MARINA PROTETTA
TAVOLARA- PUNTA CODA CAVALLO
#ActLocalThinkMediterranean
Marine Protected Area

CLIMATIC HOTSPOT

During the 21st century, the basin mean sea surface temperature is expected to **warm** by 2.7 to 3.8°C and 1.1 to 2.1°C under the RCP8.5 and the RCP4.5 scenarios, respectively (very high confidence).

Marine **heat waves** will very likely increase in spatial extent, become longer, more intense and more severe than today

MEDECC 2020 (conclusions of 190 Mediterranean Scientists)
<https://www.medecc.org/first-mediterranean-assessment-report-mar1/>

Warming faster

Invasive species

Changes in species distribution

Mass mortalities

MEASURABLE IMPACTS