SUMMER

SUSTAINABLE MANAGEMENT
OF MESOPELAGIC RESOURCES

Horizon 2020
European Union funding
for Research & Innovation

SUMMER's ambition is to obtain the information vital for a sustainable use of ocean resources through a comprehensive understanding of ocean functioning across its full depth.

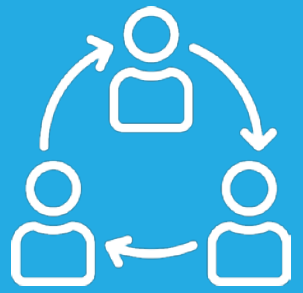
SHORT DESCRIPTION

SUMMER will establish a protocol to accurately estimate mesopelagic fish biomass, quantify the ecosystem services provided by the mesopelagic community (food for aquaculture, for humans, for other wild fish, climate regulation and potential for bioactive compounds) and develop a decision support tool to quantitatively balance the trade-offs between the different services for any given exploitation scenario.

SUMMER's ambition is to obtain the information vital for a sustainable use of ocean resources through a comprehensive understanding of ocean functioning across its full depth. Up to now the ocean has been studied in layers, with a bias towards the surface one where photosynthesis takes place and viewing the flux of material as simply downward. However, the unexpectedly large new estimates of mesopelagic biomass clearly indicate that we need to consider the whole ecosystem vertically integrated from surface to seafloor because these abundant organisms frequently traverse the full water column.

PROJECT

OBJETIVES



TEAM

DISSEMINATION

INNOVATION

Mesopelagic

MESOPELAGIC LAYER

The mesopelagic layer is one of the least understood ecosystems on Earth. Recent research suggests that the fish biomass in the mesopelagic ecosystem might be 10 times higher than previously thought, and therefore represent 90 % of the fish biomass of the planet. SUMMER will establish a protocol to accurately estimate mesopelagic fish biomass, quantify the ecosystem services provided by the mesopelagic community (food, climate regulation and potential for bioactive compounds) and develop a decision support tool to measure the trade-offs between the different services.

POTENTIAL

Mesopelagic organisms will be tested for their potential as fish meal, nutra and pharmaceuticals. The project will develop a decision support tool to enable accounting for trade-offs between services in when considering sustainable use of mesopelagic resources. Finally, a range of interactions with stakeholders, policy makers and public will ensure that any strategy to exploit the mesopelagic ecosystem takes account of all the consequences.

OBJETIVES

01

Determine the best combination of methods (including submersible broad-band acoustics, environmental DNA (eDNA) and scientific trawls) to obtain unbiased biomass and biodiversity estimates of the mesopelagic community.

02

Estimate global abundance of mesopelagic fish based on a combination of the developed methods and models.

03

To quantify the bycatch and impact on biodiversity of fishing (WP2).

04

To measure the role of mesopelagic organisms in the vertically integrated food web, its “service” as food for commercially fished species, deep-sea species and emblematic species and to model the effects of different fishing scenarios on trophic network stability (WP3).

05

To estimate the carbon sequestration due to active migration relative to the gravitational flux and to model the effects of different fishing scenarios (WP4).

06

To explore the potential of mesopelagic organisms for pharmaceutical and nutraceutical products, processed human food and animal feed, and to evaluate the intangible value of the ecosystem for production of high-value products (WP5).

07

To provide a holistic assessment of the services provided by the mesopelagic ecosystem and to establish trade-offs and tipping points between different services under different fishing harvest rates scenarios (WP6).

08

To engage managers, stakeholders and society on defining strategies and associated risks to use mesopelagic resources, proposing strategies for its sustainability (WP6 and WP7).

PARTNERS

- AZTI (WP6,WP8, WP9)
- UNIVERSITAET BREMEN (WP1)
- THE UNIVERSITY COURT OF THE UNIVERSITY OF ST ANDREWS (WP2)
- IMAR – INSTITUTO DO MAR (WP3)
- UNITED KINGDOM RESEARCH AND INNOVATION (WP4)
- HELMHOLTZ ZENTRUM FUR OZEANFORSCHUNG KIEL – GEOMAR (WP5)
- SINTEF OCEAN AS (WP7)
- UNIVERSITETET I OSLO
- UNIVERSITETET I BERGEN
- AGENCIA ESTATAL CONSEJO SUPERIOR DEINVESTIGACIONES CIENTIFICAS
- UNIVERSITE DE LA ROCHELLE
- INSTITUT FRANCAIS DE RECHERCHE POUR L'EXPLOITATION DE LA MER
- UNIVERSITY OF STRATHCLYDE
- UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA
- INSTITUT DE RECHERCHE POUR LE DEVELOPPEMENT
- DANMARKS TEKNISKE UNIVERSITET
- HAVFORSKNINGSINSTITUTTET
- MIDDLE EAST TECHNICHAL UNIVERSITY
- ACONDICIONAMIENTO TARRASENSE ASSOCIACION
- HAFRANNSOKNASTOFNU, RANNSOKNA- OG RADGJAFARSTOFNUN HAFS OG VATNA
- BARNA SA
- KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

WORKPACKAGES

OPEN SCIENCE	BIODIVERSITY AND BIOMASS	FOOD-WEB STRUCTURE AND RESILIENCE	CARBON STORAGE AND CLIMATE REGULATION	HIGH VALUE PRODUCTS	ECOSYSTEM SERVICES AND MANAGEMENT EVALUATION	COMMUNICATI-ON, DISSEMINATION AND EXPLOITATION	MANAGEMENT	ETHICS REQUIREMENTS