

Description of Funded Research Projects

1<sup>st</sup> Call for H.F.R.I. Research Projects  
to support Post-Doctoral Researchers

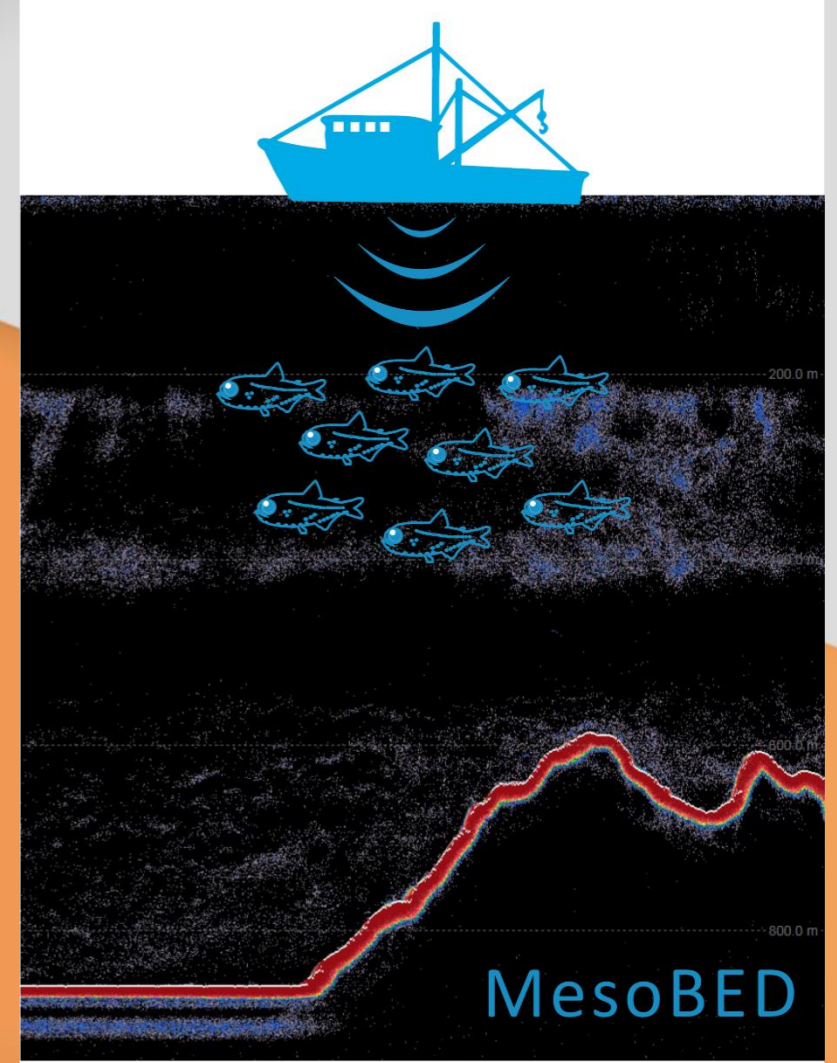


**H.F.R.I.**  
Hellenic Foundation for  
Research & Innovation

Research Project Title:

**MESOpelagic fish: Biology, Ecological  
role and Distribution of a disregarded  
trophic link (MesoBED)**

**Principal Investigator:**  
Konstantinos Tsagarakis



**Popular Title:**  
Biology, ecology and distribution of mesopelagic fish

**Scientific Field:**  
Environment and Energy

**Host Institution:**  
Hellenic Centre for Marine Research, Greece

Mesopelagic fish constitute the most abundant vertebrate group in the marine environment. They are small species inhabiting the mesopelagic zone (100-1000 m), while several species perform Diel Vertical Migrations (DVM). Together with other organisms they form Deep Scattering Layers (DSL) detected by echosounders. Mesopelagic fish constitute a link between zooplankton and apex predators, they contribute to benthic/pelagic coupling to the "biological pump", and are responsible for a large fraction of carbon fluxes in the oceans. Despite these, research on mesopelagic fish is still at a relatively early stage.

However, recent findings have triggered an increased interest on their biology, population ecology, abundance, distribution and ecological role. MesoBED, will explore the distribution, biological aspects and the ecological role of mesopelagic fish in the Greek seas. The project includes the application of the acoustic methodology during research cruises in selected study areas of the Aegean and Ionian Seas, aiming to shed light on the properties and species composition of the DSL, to study the horizontal and vertical distribution of mesopelagic fish in relation to environmental factors and derive density estimates of the DSL. In addition, the project will study the biology of mesopelagic fish populations, including aspects of reproductive strategies (e.g., sex ratio, maturity, fecundity), length-weight relationships, age and growth. Finally, their feeding habits will be studied and along with (i) a review of their use as a prey by predators, (ii) the biomass estimates and (iii) biological parameters, will be used to parameterise an ecosystem model in order to explore the ecological role of mesopelagic. Overall, MesoBED aims to advance knowledge on mesopelagic fish and the pelagic environment in general, advance the application of Ecosystem Approach to Fisheries in the Mediterranean Sea, as well as set the basis for future research on this topic.

MesoBED is a step towards the Ecosystem Approach to Fisheries (EAF). Especially in the Mediterranean where the majority of stocks are considered overexploited and where fisheries have a large socioeconomic impact, new paradigms in fisheries management are sought, including the application of the EAF. Furthermore, as mesopelagic fish are important prey for charismatic species (e.g., cetaceans and elasmobranchs), the knowledge gained is expected to promote conservation of such species. The latter is important for preserving ecosystem functions, for economic reasons (e.g., tourism) and for preserving natural heritage. Finally, the mesopelagic zone is an unexploited biological source which, under certain requirements, could contribute to food security and the development of products for use in aquaculture, poultry and/or pharmaceuticals. Based on the above, MesoBED is expected to attract the attention of stakeholders and increase public awareness on a widely disregarded but important group.

“



H.F.R.I. funding provides me with the opportunity to conduct basic research on a topic that has not been studied in the Greek Seas and which has recently attracted interest globally. Given that funding on basic research is diminishing, this project is important as it will set the basis for further development, including applications on marine environment management and possibly on the capitalization of overlooked marine resources. In addition, since this project funding has coincided with my appointment as a researcher in a tenure track position, it gives me the opportunity to start building my research team by recruiting early carrier scientists.

*The Principal Investigator,  
Konstantinos Tsagarakis*

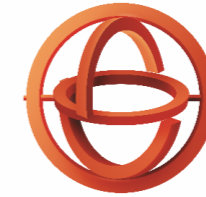
## Funding

Amount: **155,000 €**

Duration: **30 months**

Foundation: **H.F.R.I.**





**H.F.R.I.**  
Hellenic Foundation for  
Research & Innovation

## CONTACT

185, Syggrou Ave. & Sardeon St. 2

17 121 Nea Smyrni, Greece

[info@elidek.gr](mailto:info@elidek.gr)

[www.elidek.gr](http://www.elidek.gr)



HELLENIC REPUBLIC  
MINISTRY OF  
DEVELOPMENT AND INVESTMENTS

**GSRT**

GENERAL SECRETARIAT FOR  
RESEARCH AND TECHNOLOGY