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Presentation of the concept note for a pilot study on non-indigenous species, and of the document guiding the establishment of a GFCM non-indigenous species observatory in Türkiye

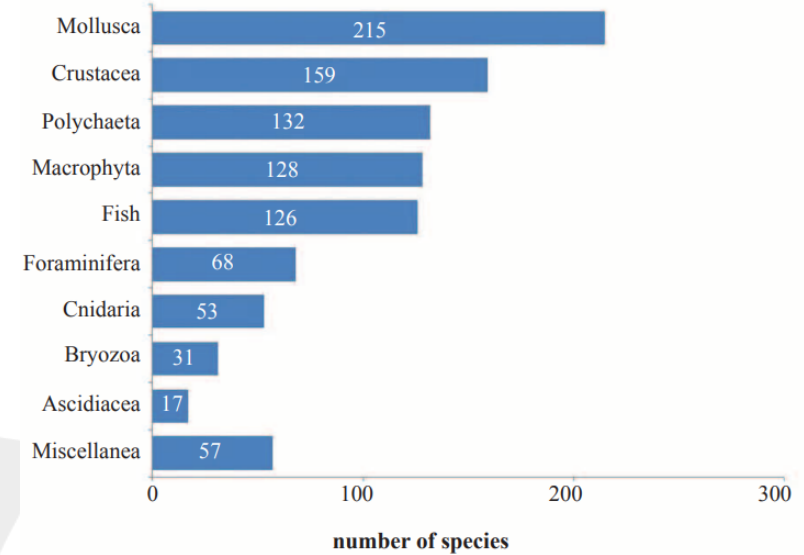
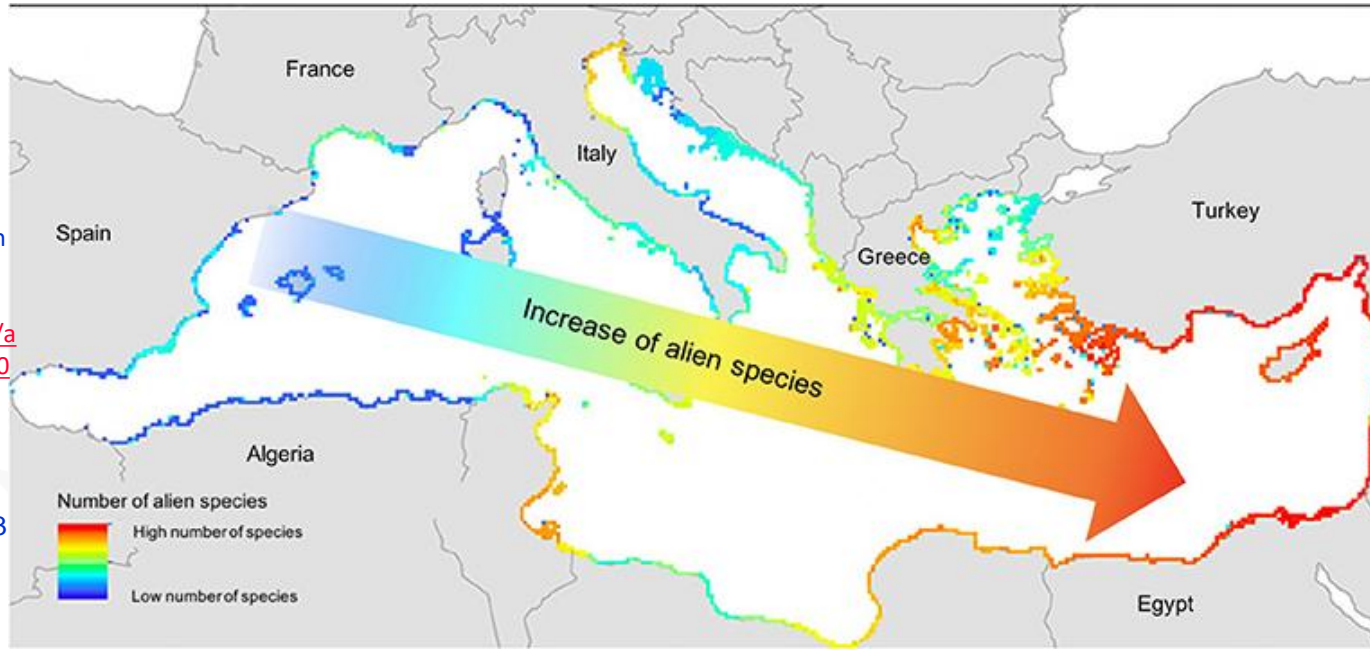
Presentation by G. Triantaphyllidis



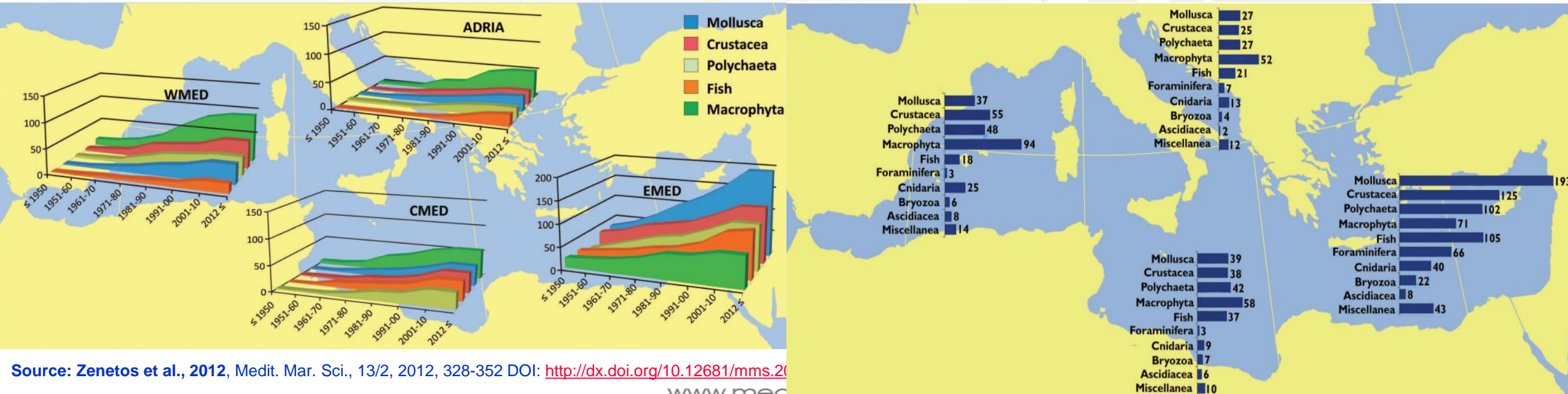
# Non-Indigenous Species (NIS) in the Mediterranean Sea

Number of alien species found in the Mediterranean Sea. Source: Giovos et al., 2019, <https://kids.frontiersin.org/articles/10.3389/frym.2019.00097>

Original Source Article: Katsanevakis et al., 2014 Front. Mar. Sci. 1:32. doi: 10.3389/fmars.2014.00032



Source: Zenetos et al., 2012, Medit. Mar. Sci., 13/2, 2012, 328-352  
DOI: <http://dx.doi.org/10.12681/mms.20716>



Source: Zenetos et al., 2012, Medit. Mar. Sci., 13/2, 2012, 328-352 DOI: <http://dx.doi.org/10.12681/mms.20716>

# Regional Observatory of non-indigenous species

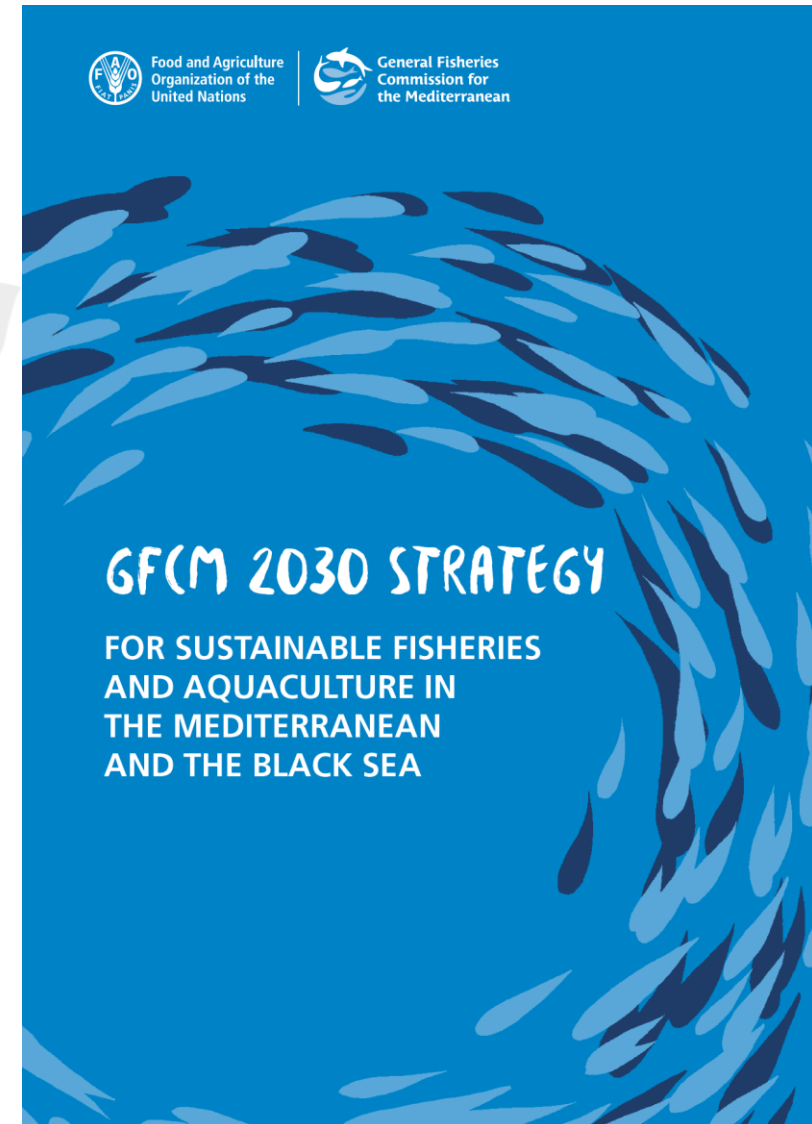
FAO. 2021. *GFCM 2030 Strategy for sustainable fisheries and aquaculture in the Mediterranean and the Black Sea*. Rome. <https://doi.org/10.4060/cb7562en>

The 2021 GFCM 2030 Strategy, Target 1.4, calls for the establishment of "a regional observatory of nonindigenous species, exchanging information with other GFCM monitoring tools and interacting with relevant partners' platforms".

In 2021, the 22<sup>nd</sup> GFCM Scientific Advisory Committee on fisheries (SAC), agreed on the need to launch an in-depth reflection on NIS as well as a dedicated research programme to, *inter alia*, consolidate an "observatoire".

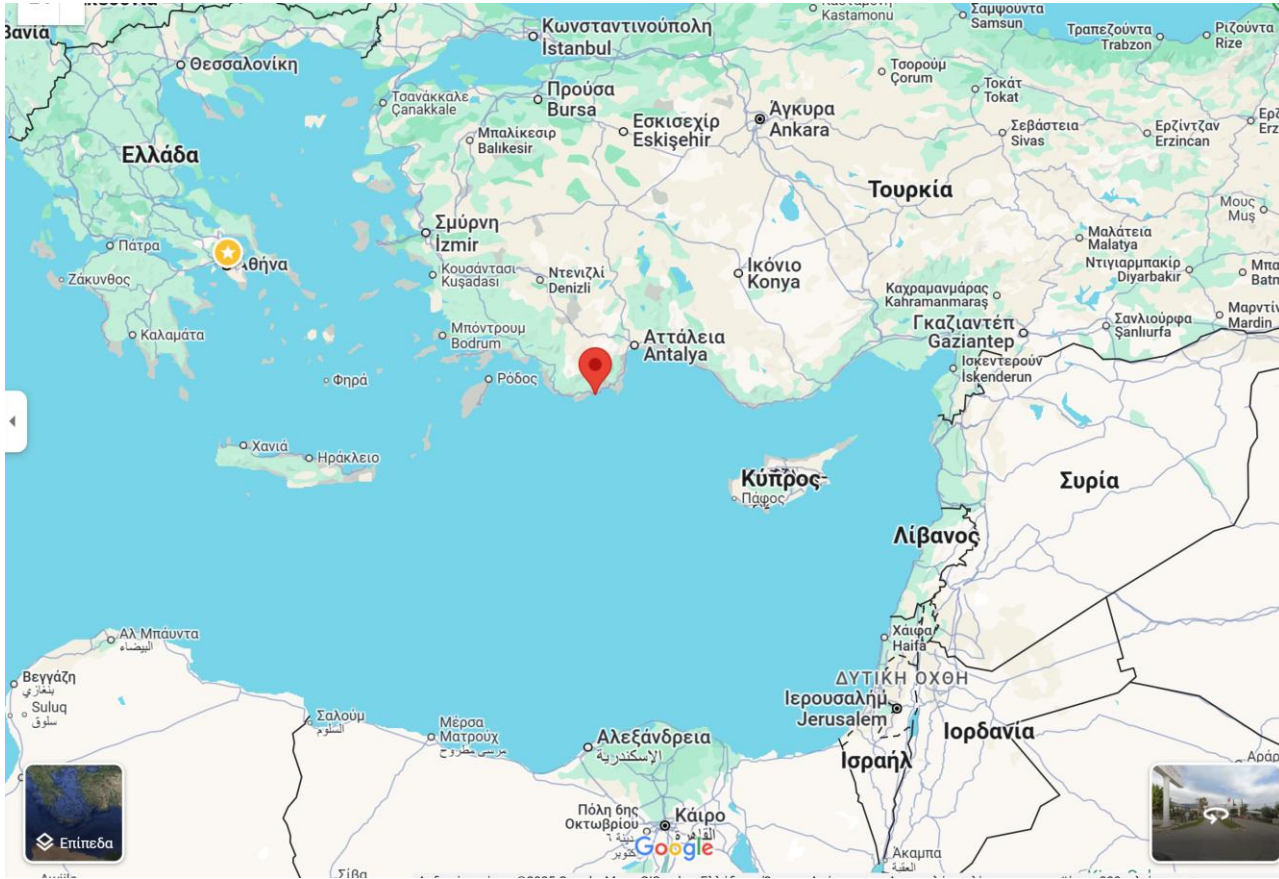
In 2022, at the 45<sup>th</sup> GFCM annual session, the Commission agreed to create a Mediterranean-wide NIS observatory based in Türkiye with the objective of fostering regional discussions on best practices for the management of NIS (GFCM Secretariat, SRC-EM 2024).

On February 19, 2024, during FishForum2024, the GFCM Secretariat and Türkiye's Ministry of Agriculture and Forestry discussed the establishment of an observatory. Türkiye's Deputy Director General, Mr. Turgay TÜRKYILMAZ, emphasized the urgency of addressing non-indigenous species and supported immediate action. In response, GFCM Executive Secretary Mr. Miguel BERNAL requested an information note for further discussion.



# Regional Observatory of nonindigenous species

The Observatory will be located on the campus of the Mediterranean Fisheries Research, Production, and Training Institute (MEDFRI), affiliated with the Ministry of Agriculture and Forestry, in the district of Demre, Antalya, Türkiye.



MEDFRI  
Demre Unit



New R&D building



Office

# Regional Observatory of nonindigenous species

## Planned Mission

To promote and assist scientific research, data collection and analysis, for monitoring, researching and managing NIS in the Mediterranean Sea.

## Planned vision

To contribute to the development and implementation of effective NIS management strategies to preserve the health of marine ecosystems in the Mediterranean, contribute to local economies and communities, and preserve biodiversity.

## Planned objectives

- To promote collaboration among policymakers, scientists, local stakeholders, and international organizations and facilitate the sharing of knowledge and experience on NIS.
- To assist in the comprehensive data collection and analysis to determine the distribution, population dynamics, ecological impacts and commercial opportunities of NIS in the Mediterranean
- To assess the effects of NIS on marine ecosystems and fisheries resources and assist in the development of appropriate management strategies.
- To raise awareness among the public about the ecological and economic impacts of NIS as well as its possible uses and promote community awareness on this issue.

# Regional Observatory of nonindigenous species

## Planned activities

- Facilitating international cooperation and knowledge exchange with other countries and international organizations on issues related to NIS.
- Collating existing data collection results
- Contribute to the harmonization of data collection methodologies and continuing data collection effort, foreseeing the collection and analysis of additional data for e.g. utilize egg and larvae samples obtained from field surveys for species identification using electronic DNA (e-DNA) with the aim of streamlining the species detection process by enabling the molecular analysis of samples collected during field surveys
- Assist in the development of policy recommendations to support NIS management strategies and collaborating with policymakers.
- Organizing educational and awareness-raising activities to raise public awareness about the ecological and economic impacts of NIS.

## Expected outputs

A Species Library for Non-Indigenous Species (NIS) in the Mediterranean Region.

- Collating existing data collection results
- a digital repository containing all data collected on NIS across the region.
- a physical collection featuring species displayed in glass jars within the library. Each specimen will be linked to the digital repository under point. 3.1.1 above by a QR code or similar system for accessing detailed information about its origin, distribution, biology, and ecological impact.

# Regional Observatory of nonindigenous species

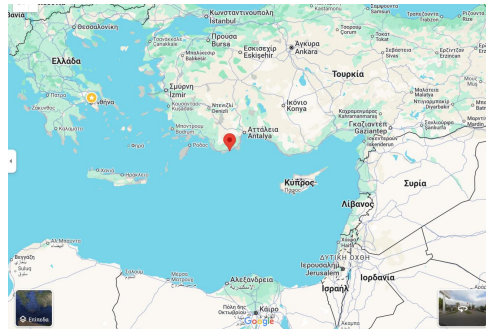
## Proposed Management options

Based on the information provided by the species library researchers, policymakers, and educators will be in a position to discuss and propose potential management actions in near real-time.

## Institutional capacity and Proposed Observatory Location

MEDFRI operates as a pioneering institution in the field of research, providing national and international stakeholders with international-level data and information on fisheries, aquaculture, water quality, and aquatic environments. Additionally, it engages in production activities and organizes training programs.

MEDFRI has 73 technical personnel, including 10 PhD and 25 master's researchers, focusing on invasive species and climate change. It collaborates with universities and NGOs like Istanbul University, WWF Türkiye, and others. The Observatory will be based at MEDFRI in Demre, Antalya, with a dedicated office in the new R&D building and plans for a species library.



# Concept note for a pilot study on non-indigenous species in the eastern Mediterranean

The pilot study on Non-Indigenous Species (NIS) in the eastern Mediterranean (**PS-NIS-EM**) falls under the broader framework of the Ecosystem Approach to Fisheries (EAF). Overall, it will contribute to the achievement of the GFCM 2030 Strategy for sustainable fisheries and aquaculture in the Mediterranean and the Black Sea.

The primary objective of the PS-NIS-EM is to contribute to the identification of future management strategies that can be implemented swiftly and adaptively, with a specific focus on generating key scientific information to support the overall management of NIS through, inter alia, their exploitation, commercialization, and valorization. The overarching goals are to optimise the overall value (e.g. ecological, economic, and other) and to understand the impact of NIS on the fishery.

Despite the ecological challenges posed by NIS, many of these species represent new opportunities for fisheries development. This paradigm shift (converting NIS into assets as potential fisheries resources), not only addresses environmental concerns but also offers socio-economic benefits. Nevertheless, this transition requires several challenges to be addressed.

A key challenge is collecting scientific data for managing NIS fisheries and developing markets. The pilot study benefits from GFCM monitoring, including sea surveys and discard tracking. Additionally, the 2021 FAO-EastMed LEK-1 training helped enhance stakeholder data collection.

Another challenge is collaboration among scientists, decision-makers, communities, and fishers to balance NIS management and ecological impact. The PS-NIS-EM plays a strategic role in shaping future management with a pragmatic, collaborative approach.





**WP1**

- The main activities can be summarized as follows:
1. Continuation of the work plan for 2014
  2. Collection of data on Ecological Indicators
  3. Starting the implementation of the LEK monitoring strategy



**WP2**



**EAF BASELINE STUDY**

- collation of available information
- possible implementation of country-based pilot studies

**WP3**



**LEK MONITORING STRATEGY**

- Implementing the LEK-1 protocol
- Setting and testing the LEK-2 methodology

**WP4**

**DATA ANALYSIS AND REPORTING**

- species distribution maps
- analysis of main indicators
- technical paper on LEK monitoring strategy



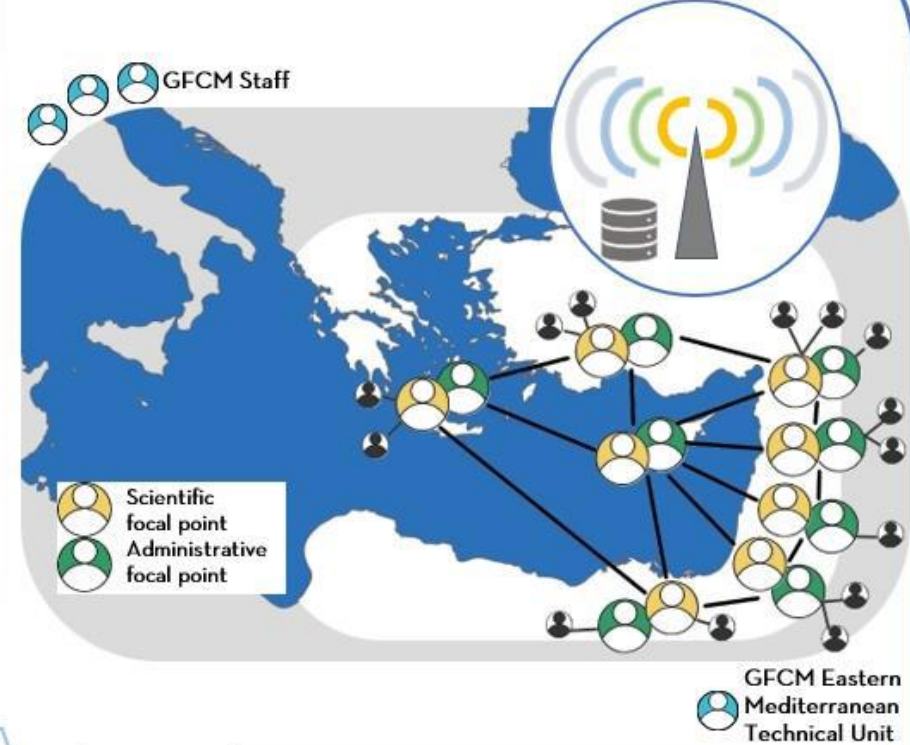
**WP5**

**RECOMMENDATIONS FOR MANAGEMENT**

Development of technical recommendations for species management with specific highlights for country cases



**OBSERVATORY**  
Sharing experience on NIS



... strategy can be implemented in other regions. Local common...

# Structure of the pilot study

## WP1: Coordination, Networking, Dissemination, and Sustainability

### Task 1.1 Coordination

### Task 1.2 Network

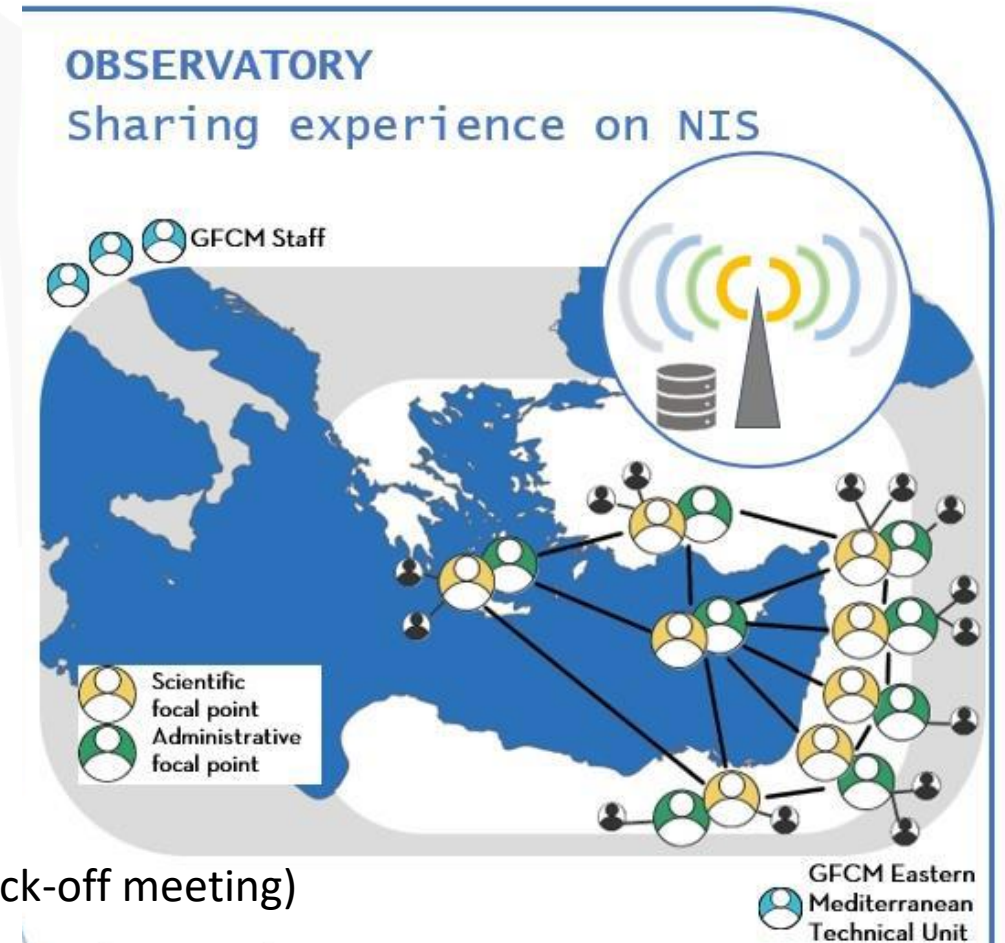
### Task 1.3 Dissemination

### Task 1.4 The NIS Observatory

#### Foreseen deliverables\*:

1. Network of focal points, experts and other stakeholders;
2. Communication materials;
3. Web portal for the NIS Observatory;
4. Final terms of reference and structure of the NIS Observatory

(\*Foreseen deliverables will be further discussed during the kick-off meeting)



WP1



# Structure of the pilot study

**WP2: Ecosystem Approach to Fisheries (EAF) baseline study: collation and analysis of available information, and possible implementation of country-based pilot studies**


## **Task 2.1 EAF Baseline**

## **Task 2.2 Country-based case studies**

### **Foreseen deliverables\*:**

- 1. Database on NIS species and related fisheries information (codified to allow the interface with the GFCM DCRF);**
- 2. Archive of relevant scientific papers and grey literature;**
- 3. Baseline report;**
- 4. Case studies country reports.**

(\*Foreseen deliverables will be further discussed during the kick-off meeting)

**WP2** 

**EAF  
BASELINE STUDY**

- collation of available information
- possible implementation of country-based pilot studies

# Structure of the pilot study

## WP3: Testing Local Ecological Knowledge (LEK) protocols towards effective and long-term participatory NIS monitoring

### Task 3.1 LEK-1 protocol

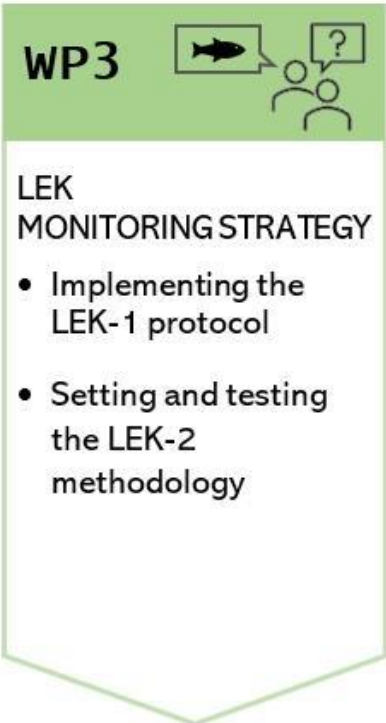
### Task 3.2 LEK-2 methodology

### Task 3.3 Ensuring further stakeholder engagement

(\*Foreseen deliverables will be further discussed during the kick-off

### Foreseen deliverables\*:

1. List of NIS species relevant for monitoring in the Eastern Mediterranean (including the criteria for listing);
2. LEK-1 toolkit and training;
3. LEK-2 toolkit and training;
4. Dataset of information collected;
5. SSF Forum session on “Non-indigenous species: exchange of experience on species handling and developing a market for new species”



WP3

LEK  
MONITORING STRATEGY

- Implementing the LEK-1 protocol
- Setting and testing the LEK-2 methodology

# Structure of the pilot study

## WP4: Data analysis and reporting

WP4

### DATA ANALYSIS AND REPORTING

- species distribution maps
- analysis of main indicators
- technical paper on LEK monitoring strategy



### Task 4.1 Indicators

### Task 4.2 LEK results

### Task 4.3 Joint results

### Foreseen deliverables\*:

1. Common indicators
2. Maps of NIS historical trends and distribution
3. Publication of technical paper on the LEK monitoring strategy in the eastern Mediterranean

(\*Foreseen deliverables will be further discussed during the kick-off meeting)

# Structure of the pilot study

## WP5: Proposal of technical recommendations for management by species

WP5

### RECOMMENDATIONS FOR MANAGEMENT

Development of technical recommendations for species management with specific highlights for country cases

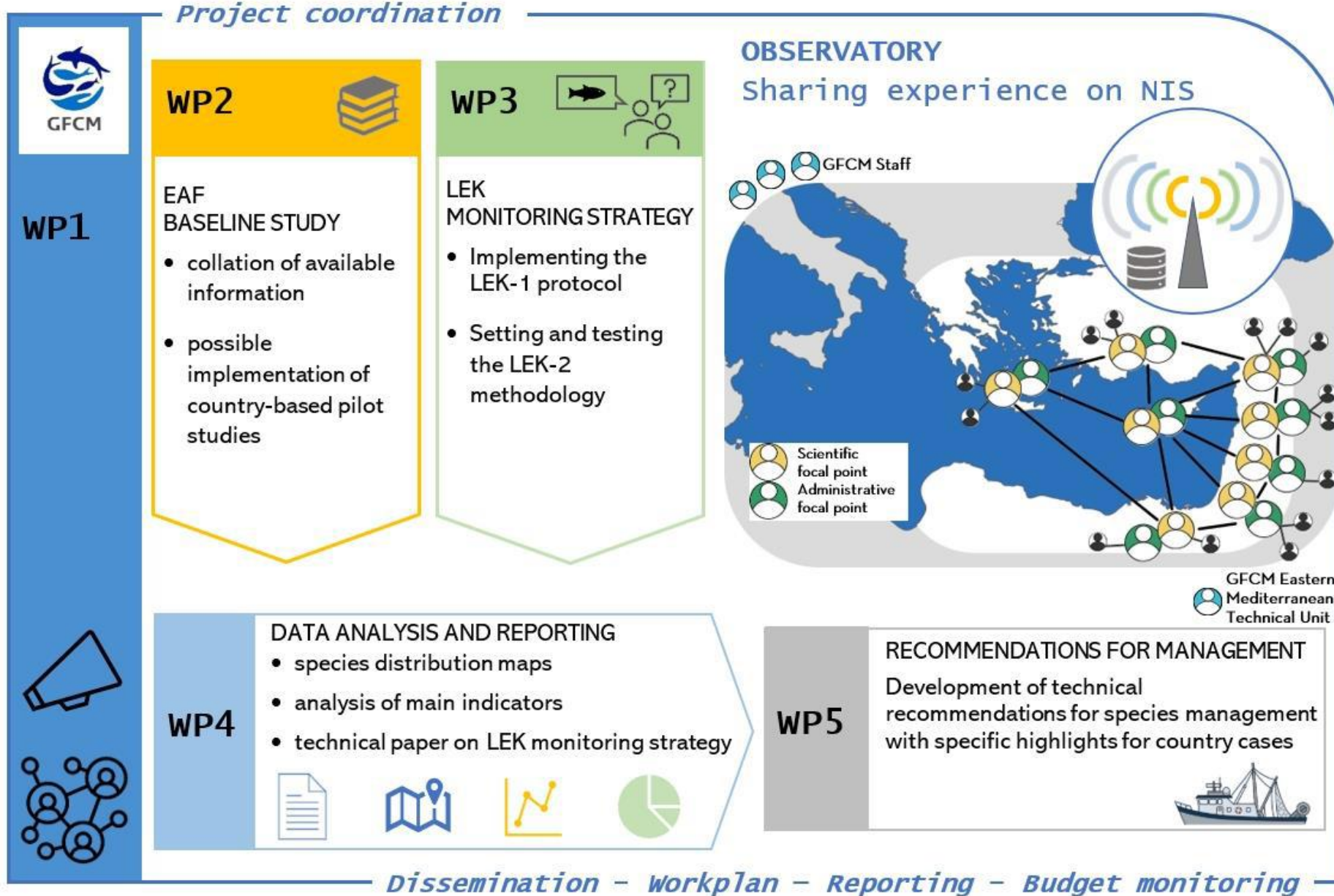


### Foreseen deliverables\*:

- 1. Draft of technical recommendations to be proposed to the SRC-EM and the SAC**
- 2. Elements for an early-detection system for an Observatory of emerging NIS**
- 3. Publication of GFCM studies and Reviews on the results of the PS-NIS-EM**

(\*Foreseen deliverables will be further discussed during the kick-off meeting)

# Structure of the pilot study



# Operationalising the NIS observatory

WP1 of the PS-NIS-EM, under task 1.4, indeed foresees the following deliverables that could be considered the starting point for the operationalization of the Observatory:

1. Network of focal points, experts and other stakeholders;
2. Communication materials;
3. Web portal for the NIS Observatory with the aim of integrating tools and accommodating data, hosting data analysis dashboards and acting as a repository for dissemination material, including as emerging from PS-NIS-EM;
4. Final terms of reference and structure of the NIS Observatory

## Proposed actions and next steps

The interaction between the PS-NIS-EM and the need to operationalise the NIS Observatory, resulted in the definition of objectives, activities and outputs, formalised in the guidelines above which are summarised in Table 1 below, that also outlines starting points and needs. In particular, it is proposed that the NIS Observatory require the following resources for its initial operationalization:

1. Expert to oversee the work and determine strategic objectives, including the design of a physical collection
2. On-the-ground expert to perform day-to-day tasks related to the operationalization of the NIS Observatory, based in Demre
3. Resources to design and facilitate the creation of a digital data repository and of a web-portal equipped with tools for data analysis, visualisation and query

**GFCM funds are available to support this initial phase.**



# Proposed actions and next steps

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**GFCM funds are available to support this initial phase.**

The immediate actions required to start are summarised as follows:

1. Draft terms of reference for the expert to oversee the work and determine strategic objectives and share with partners of the PS-NIS-EM for comments.
2. Draft terms of reference for the on-the-ground expert to perform day-to-day tasks related to the operationalization of the NIS Observatory, based in Demre.
3. Understand infrastructure needs for the digital data repository, the web-portal and the physical collection of NIS samples

# Provisional Gantt Chart

↓ January 2024

		2024	2025	2026
WP	Task	YEAR 1	YEAR 2	YEAR 3
1	1.1 Administrative	█	█	█
	1.2 Network	█	█	█
	1.3 Dissemination	█	█	█
	1.4 Observatory	█	█	█
2	2.1 Baseline study	█	█	█
	2.2 Case studies	█	█	█
3	3.1 LEK-1 and LEK-2 study	█	█	█
	3.3 Further stakeholder engagement	█	█	█
4	4.1 Indicators	█	█	█
	4.2 LEK data analysis	█	█	█
	4.3 Joint analysis	█	█	█
5	5.0 Technical recommendations	█	█	█

# Summary of objectives, activities and outputs of the NIS Observatory complemented by starting points and needs and resources for its operationalization

Objective	Activity	Outputs	Starting point in NIS-PS-EM	Needs and resources
Promote collaboration among policymakers, scientists, local stakeholders, and international organizations and facilitate the sharing of knowledge and experience.	Facilitate international cooperation and knowledge exchange with other countries and international organizations.	Consolidated community across the Mediterranean	Network established by the NIS-PS-EM: + WP1, Task 1.2	<ul style="list-style-type: none"> <li>• Expert to oversee the work and determine strategic objectives, including the design of a physical collection</li> <li>• On the ground expert to perform day-to-day tasks related to the operationalization of the NIS Observatory</li> </ul>
Conduct comprehensive data collection and analysis to determine the distribution, population dynamics, and ecological impacts of NIS in the Mediterranean Sea.	<ul style="list-style-type: none"> <li>• Centralize existing data collection results starting from the network established by the NIS-PS-EM</li> <li>• Harmonize data collection methodologies and continue data collection efforts, foreseeing the collection and analysis of additional data (for example, the use of egg and larvae samples obtained from field surveys for species identification using electronic DNA (e-DNA)) with the aim of streamlining the species detection process by enabling the molecular analysis of samples collected during field surveys</li> </ul>	<ul style="list-style-type: none"> <li>• A Species Library for non-indigenous species (NIS) in the Mediterranean region aiming to provide a comprehensive repository for NIS from all countries bordering these seas collected from various sources, including scientific research, monitoring programs, and citizen science initiatives.</li> <li>• A digital repository containing all data collected on NIS across the region</li> </ul>	<ul style="list-style-type: none"> <li>• Information collected by the NIS-PS-EM</li> <li>+ WP2 Task 2.1</li> <li>+ WP3</li> <li>+ WP4</li> </ul>	<ul style="list-style-type: none"> <li>• Resources to facilitate the creation of a webpage and digital repository</li> </ul>

# Summary of objectives, activities and outputs of the NIS Observatory complemented by starting points and needs and resources for its operationalization

Objective	Activity	Outputs	Starting point in NIS-PS-EM	Needs and resources
Assess the effects of NIS on marine ecosystems and fisheries resources and develop appropriate management strategies.	Develop policy recommendations to support NIS management strategies and collaborating with policymakers.	<ul style="list-style-type: none"> <li>• A physical collection featuring species displayed in glass jars within the library.</li> </ul>	Outcomes and advice of the NIS-PS-EM: + WP5	
Raise awareness among the public about the ecological and economic impacts of NIS and promote community awareness on this issue	Organize educational and awareness-raising activities to raise public awareness about the ecological and economic impacts of NIS.		Activities under: + WP1, Task 1.3 + WP2 Task 2.1	



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THANK YOU!

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