Actions for the conservation of emblematic marine species in the Ionian Sea

Antonios Mazaris & Stelios Katsanevakis

ARISTOTLE UNIVERSITY OF THESSALONIKI

UNIVERSITY OF THE AEGEAN
Department of Marine Sciences

ECOSUSTAIN O.E.

- Indicative applications for the conservation and restoration of emblematic marine species

- Parts of different projects supported by the Natural Environment & Climate Change Agency (N.E.C.C.A.)

N.E.C.C.A.

Stranding Records: A Valuable Source of Information

Stranding Records: A Valuable Source of Information

the event in which marine animals (e.g., whales, dolphins, sea turtles, seals) are found ashore or floating in waters, unable to return to their natural environment.

Could be the results of illness, injury, or disorientation, BUT mainly linked to human-related impacts (fishing gear entanglement, vessel collisions, pollution, or underwater noise)

Development of a database to support the effective conservation and management of sea turtles.

N.E.C.C.A.

Stranding Records: A Valuable Source of Information

15 years of stranding data
for marine megafauna species
in the Ionian Sea

Stranding Records: A Valuable Source of Information

How

A network of local Departments of Port Police Authority

Non-Governmental Organizations

Fisheries Departments of the Ionian Region

MPA Management Units

Stranding Records: A Valuable Source of Information

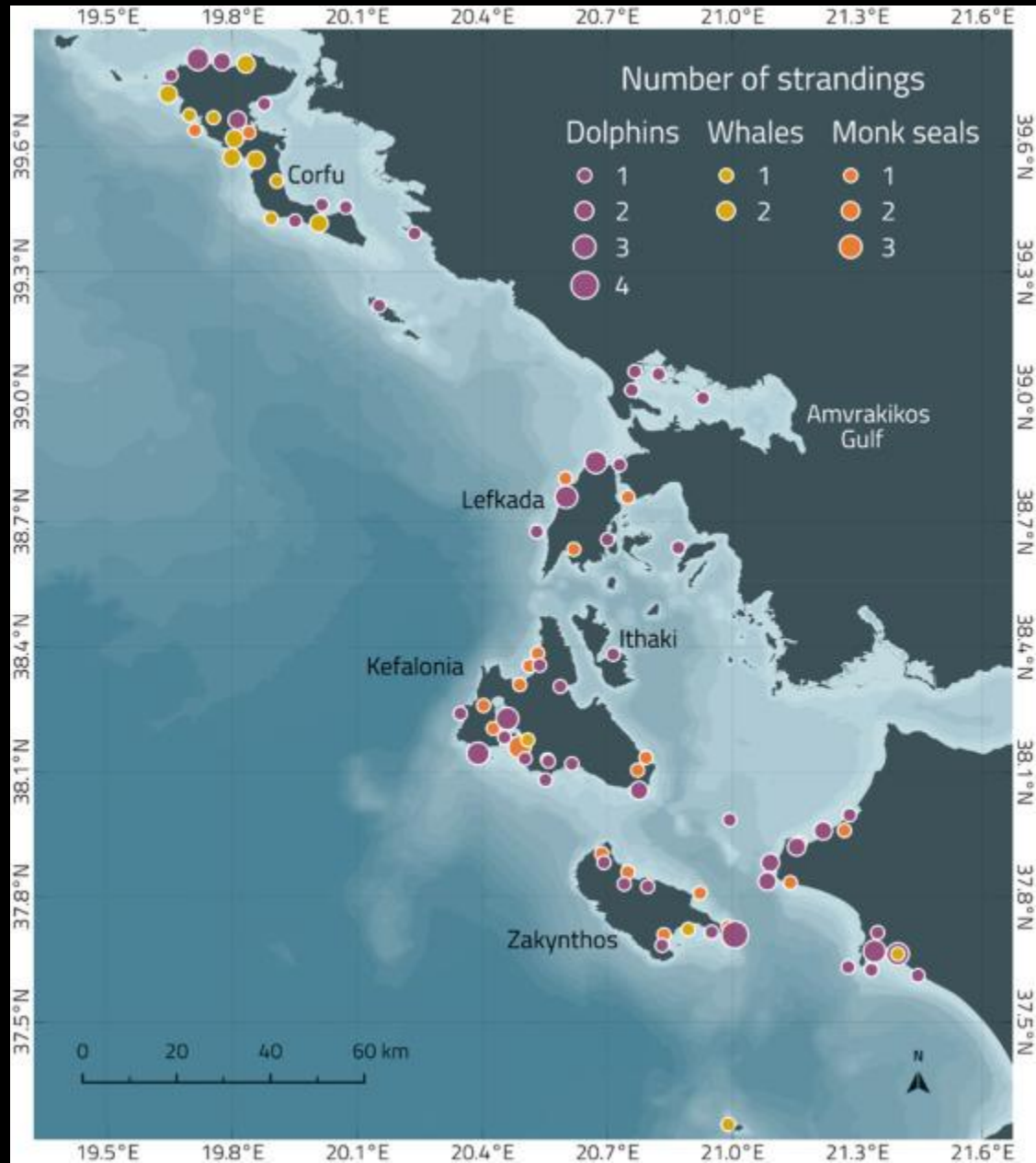
What

1544 records (2004-2021)

- species level (92%)
- size (84%)
- sex information (49%)
- condition (100%)
- cause of death or injury (28%)

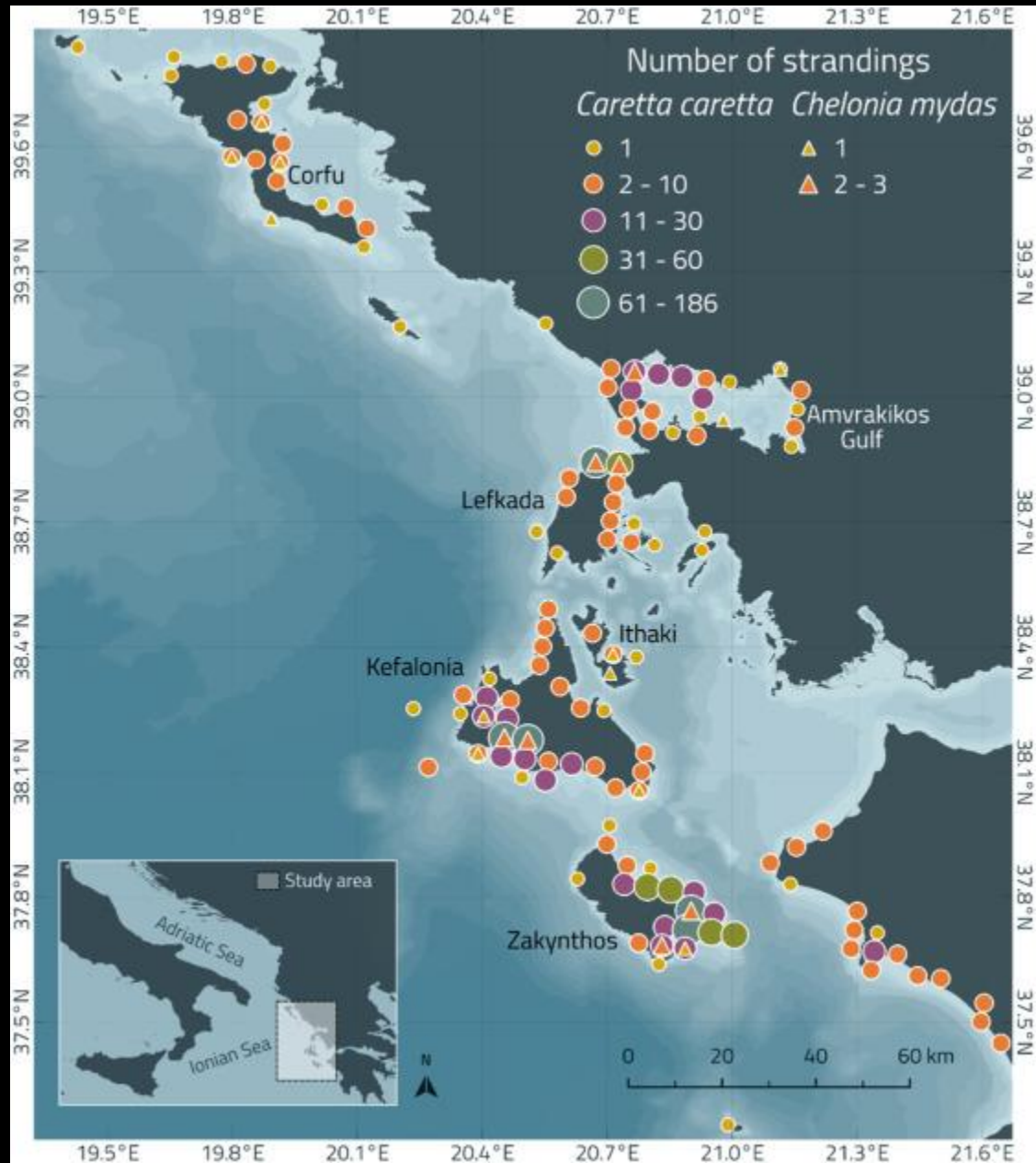
Stranding Records: A Valuable Source of Information

Where



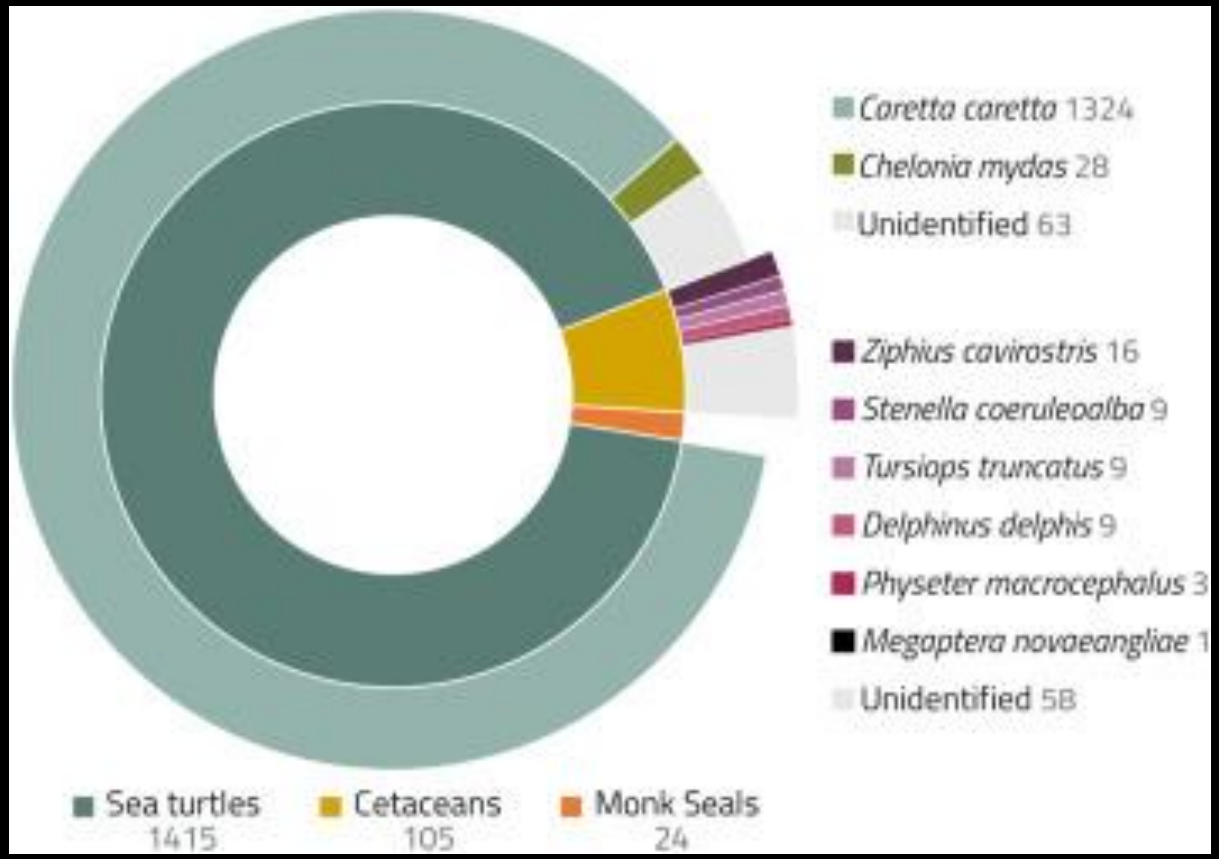
Stranding Records: A Valuable Source of Information

Where



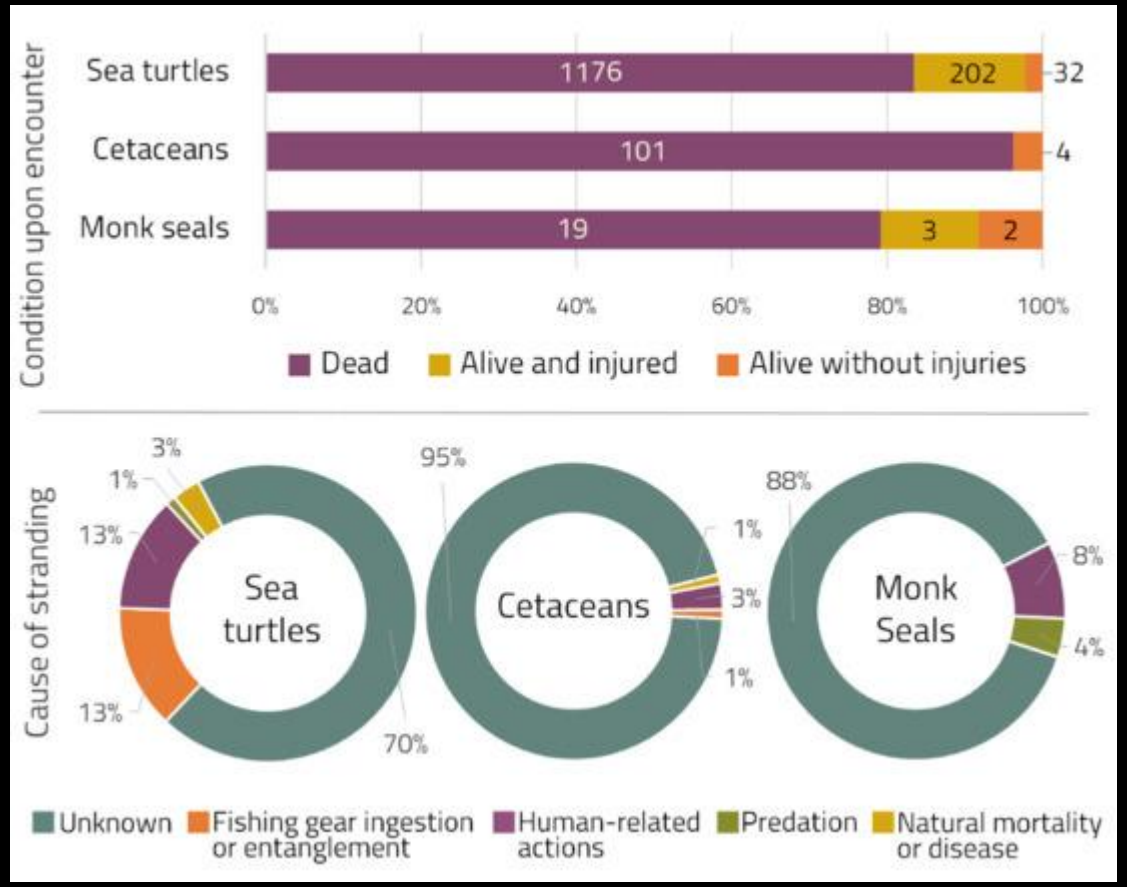
Stranding Records: A Valuable Source of Information

Species / groups



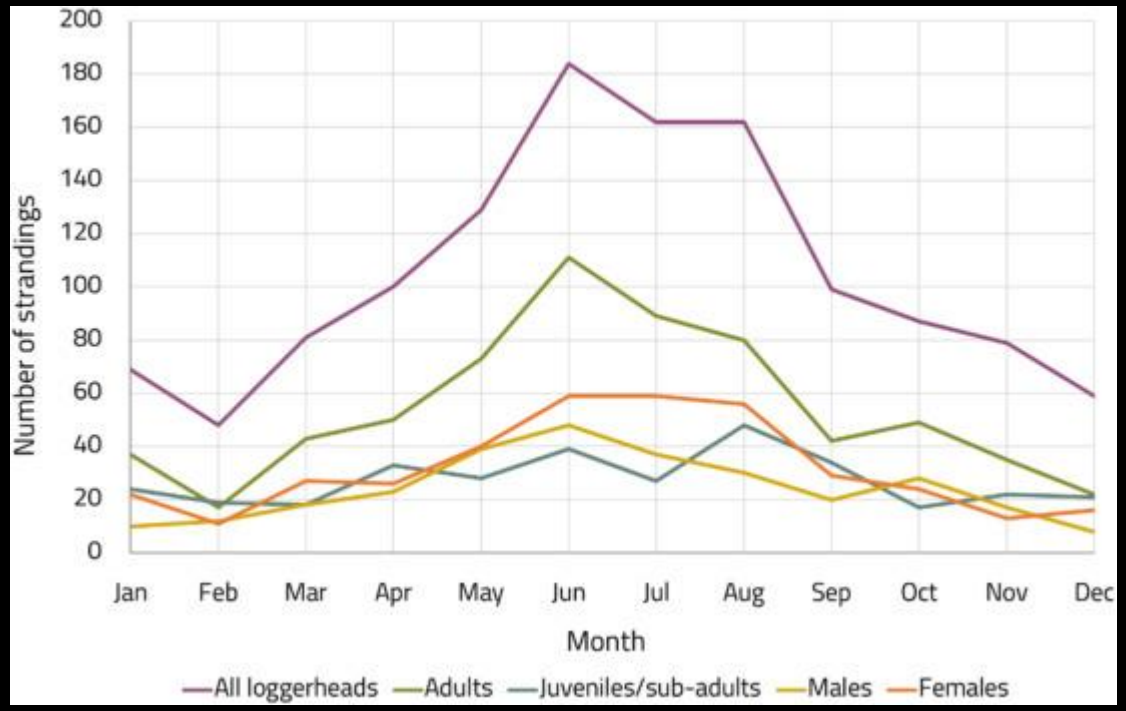
Stranding Records: A Valuable Source of Information

Conditions



Stranding Records: A Valuable Source of Information

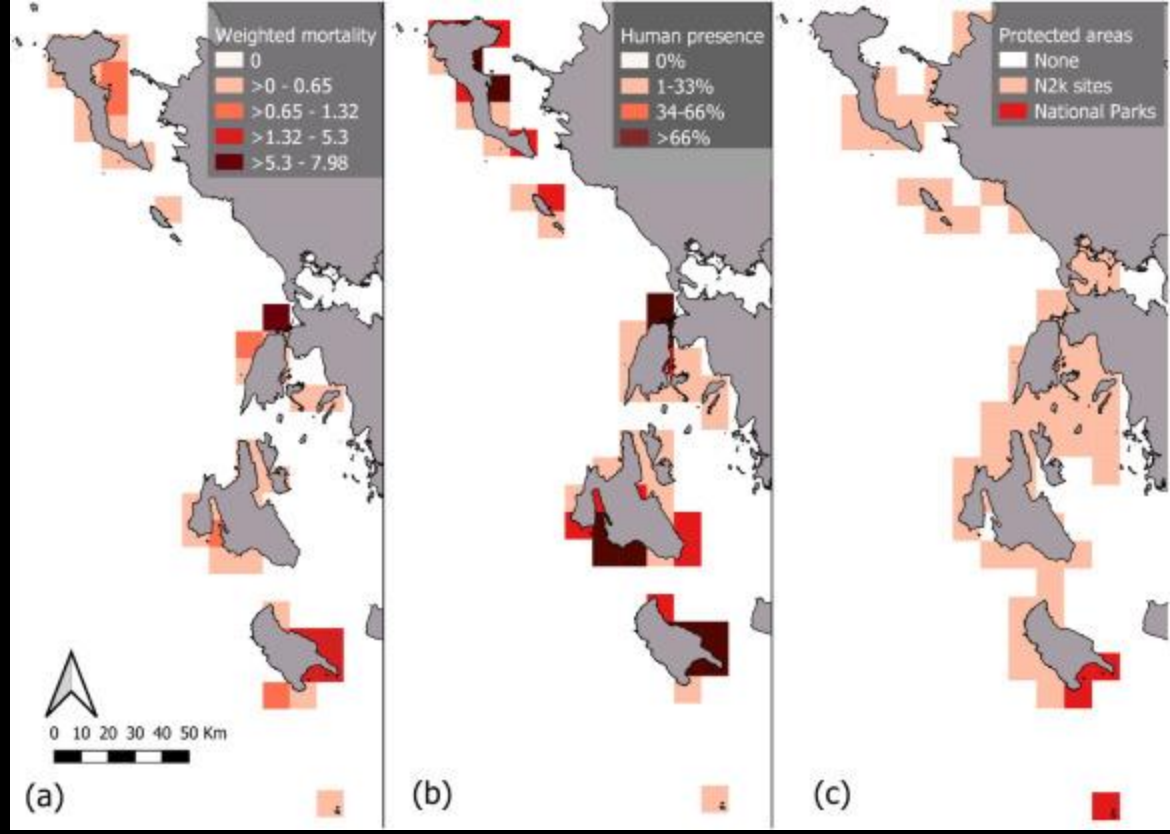
When



Stranding Records: A Valuable Source of Information

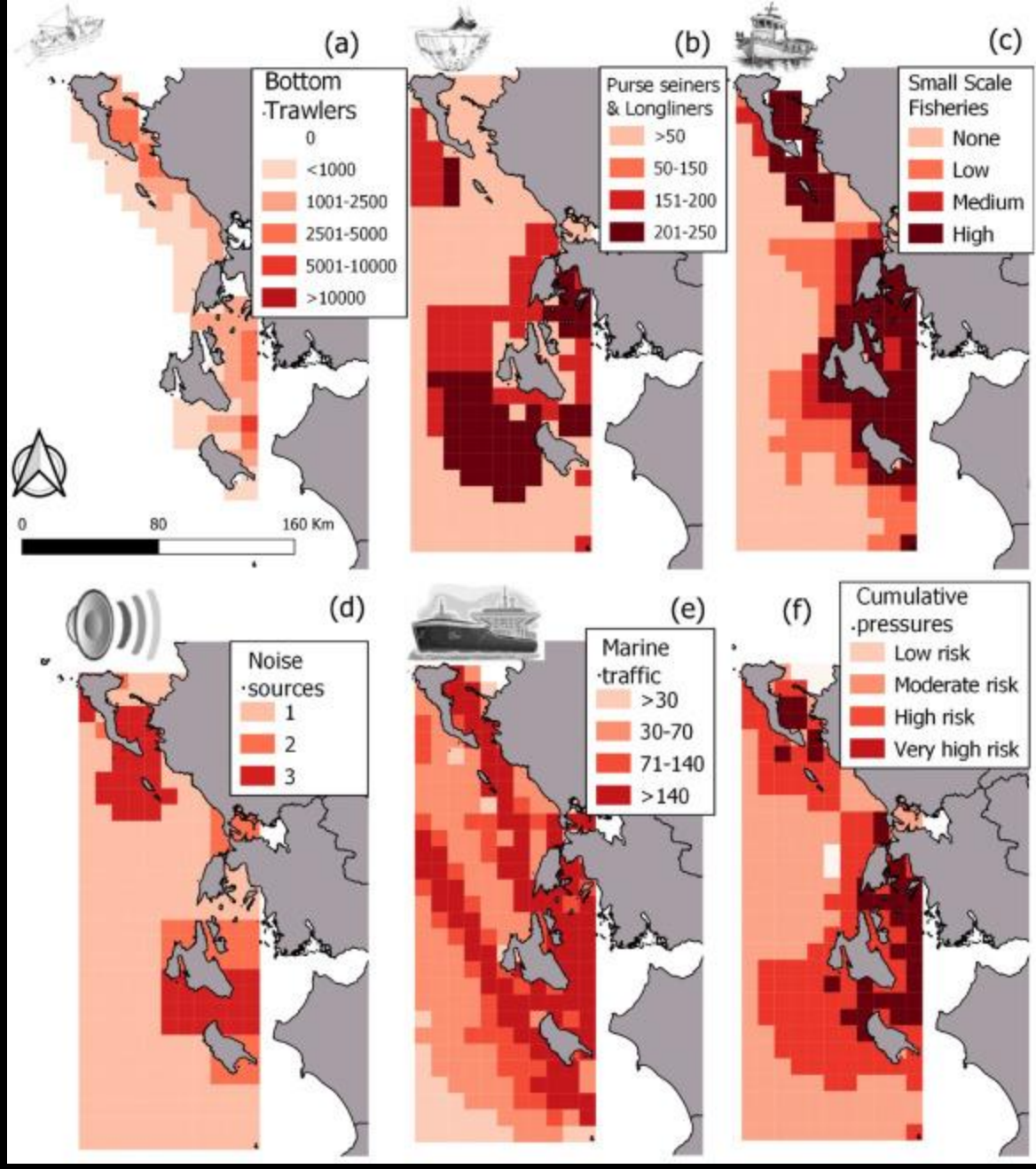
- Year-round presence of sea turtle individuals, highlight the ecological significance as a foraging and developmental habitat.
- Reveal the presence of green sea turtles (*Chelonia mydas*) in the region
- Higher stranding frequencies can be attributed to factors such as increased individual abundance, heightened reporting rates, or intensified human activities at sea.
- Still, the annual records of stranded Mediterranean monk seal raise questions about the viability of the local population

Cumulative impact assessments

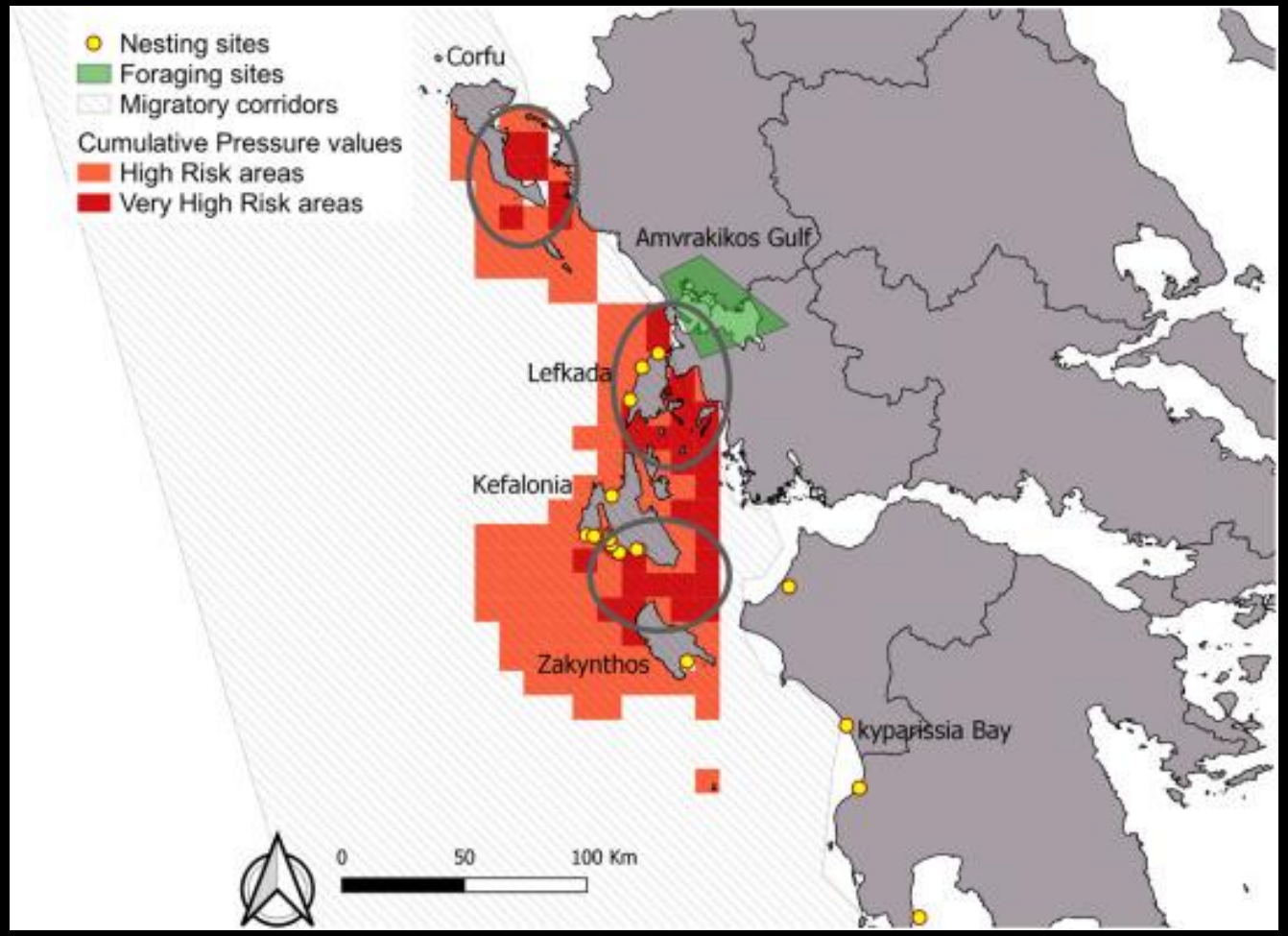


(a) sea turtles' weighted mortality values (*stranded animals per total length of the coastline at each grid cell*) across the eastern Ionian Sea (categories of weighted mortality values were produced by Jenks natural breaks classification method),
(b) the total spatial extent of human presence (e.g. ports, marinas, villages, towns, roads, and infrastructures) across the coastline expressed as % coverage categories at each grid cell, and
(c) the presence of protected areas (Natura 2000 sites and National Parks) within each grid cell.

Cumulative impact assessments



Cumulative impact assessments



Practical use?

- Spatial prioritization
- Targeted conservation planning
- Adaptative management

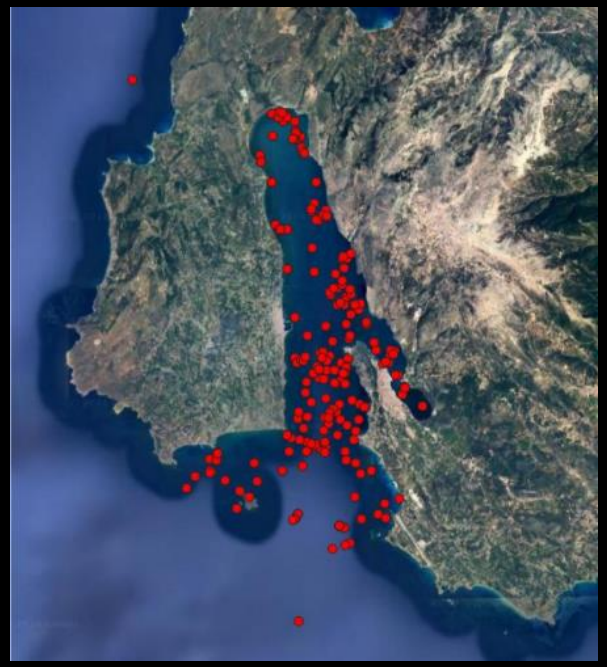
Stranding Records: A Valuable Source of Information

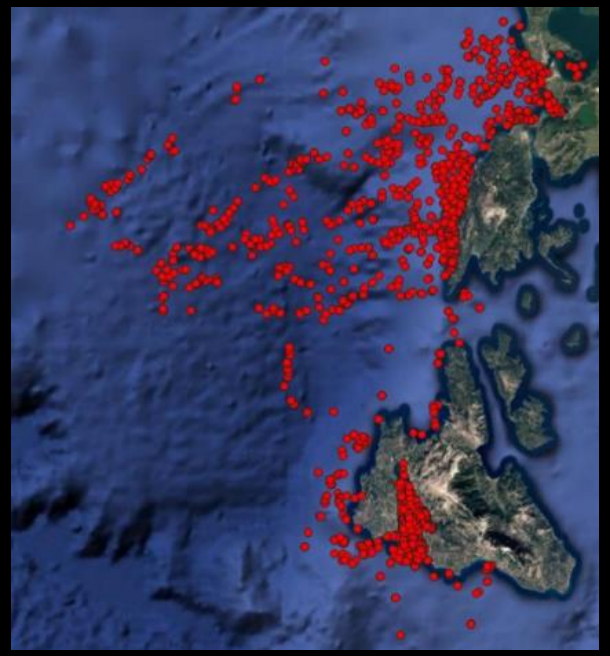
Detecting critical habitats

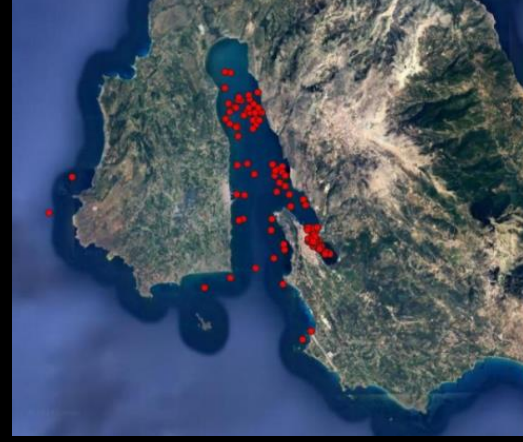
Management and conservation actions at foraging and reproduction habitats of sea turtles in the protected marine/coastal cities of Kefalonia - Ithaka

N.E.C.C.A.

Detecting critical habitats



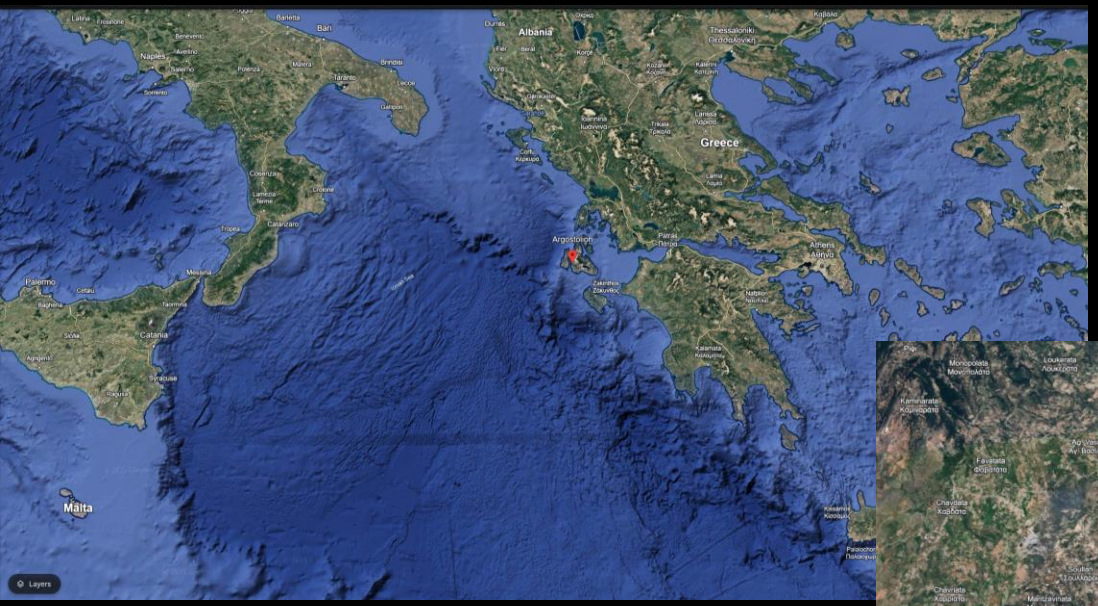


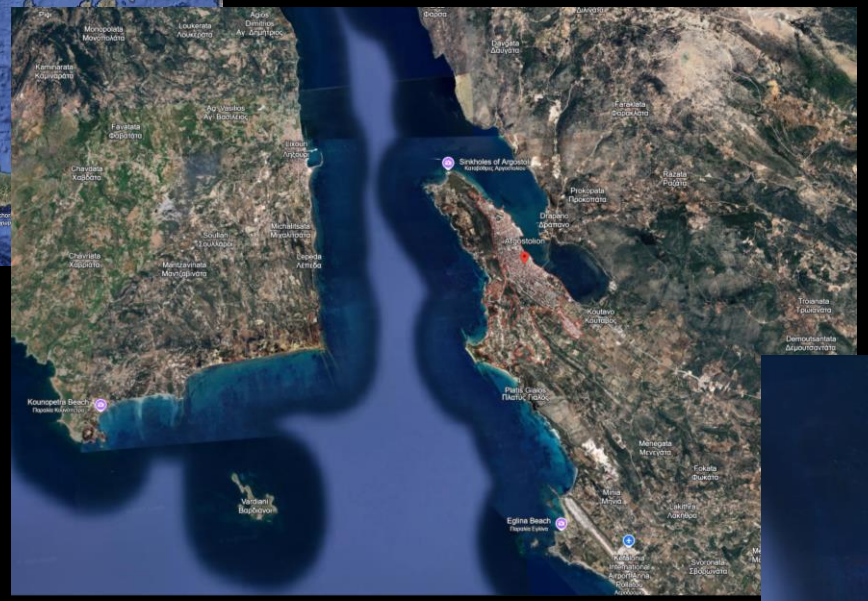


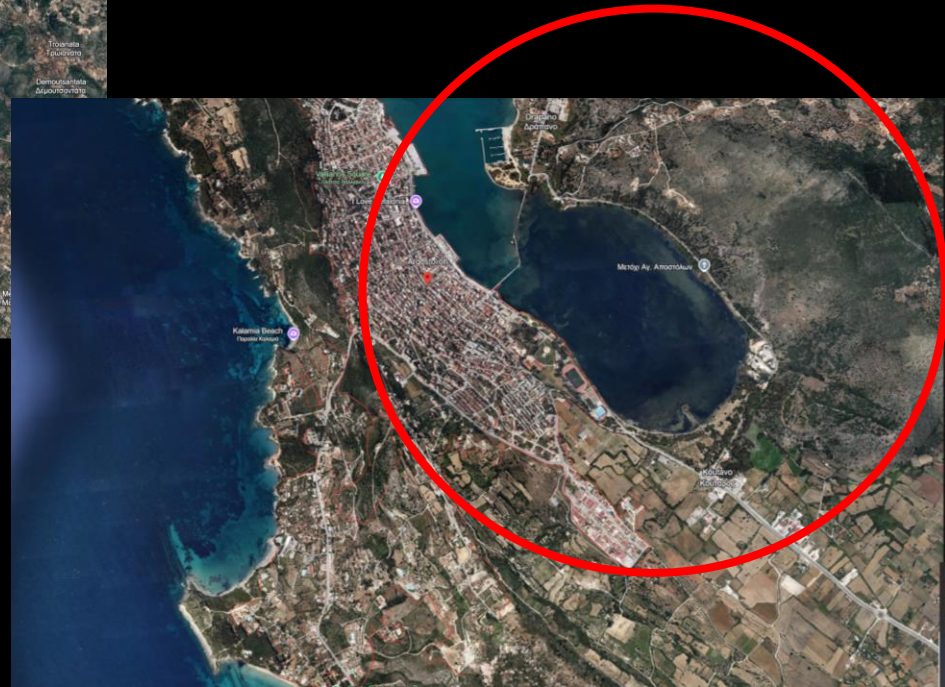
Development and pilot implementation of a monitoring plan for marine habitats hosting significant populations of sea turtles and facing substantial pressures.

Detecting critical habitats

Detecting critical habitats



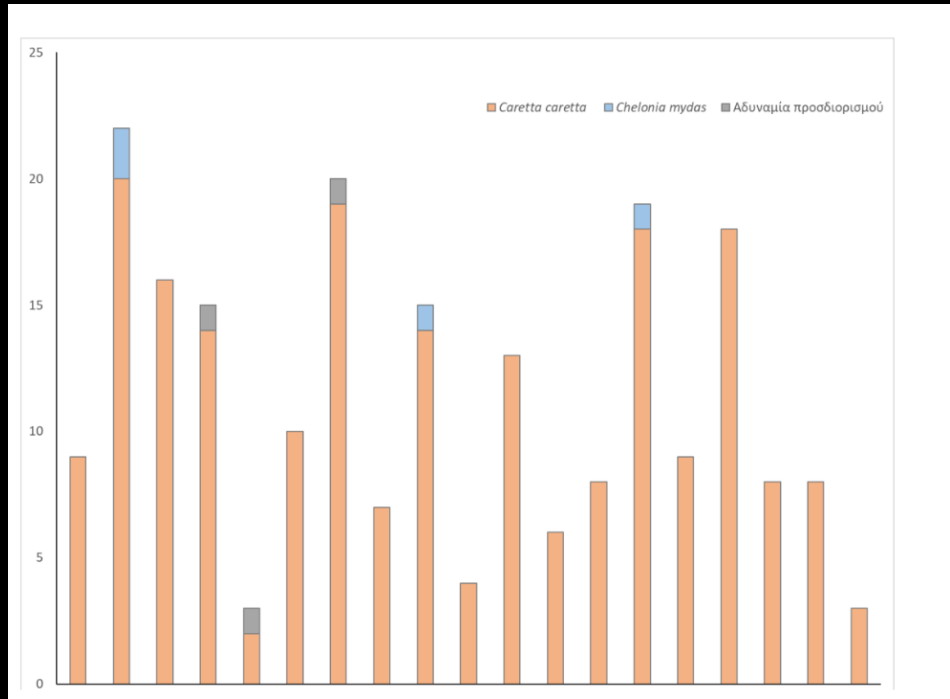




Detecting critical habitats

Detecting critical habitats

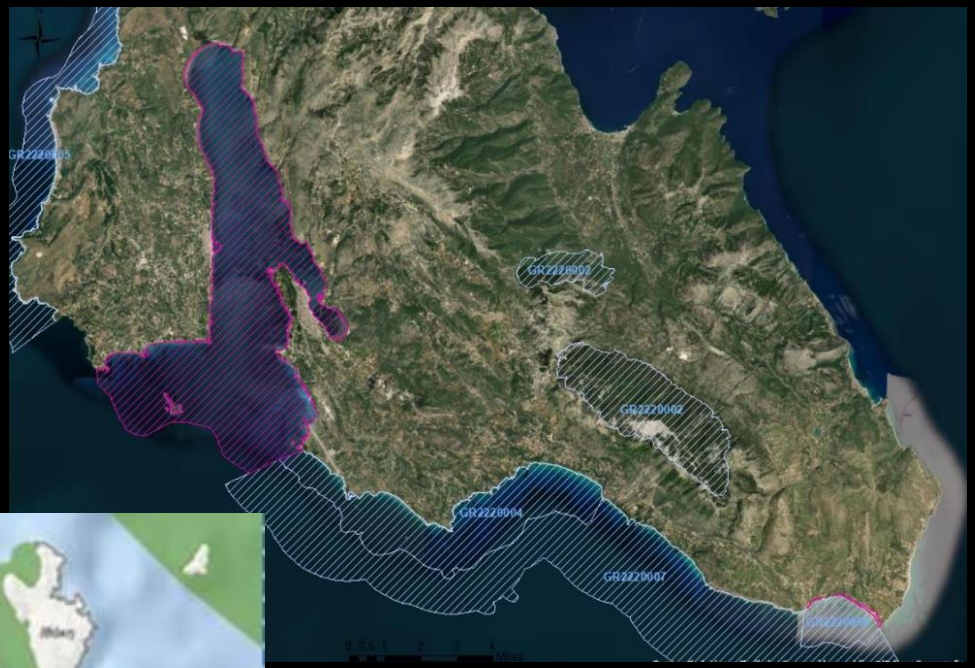
Detecting critical habitats

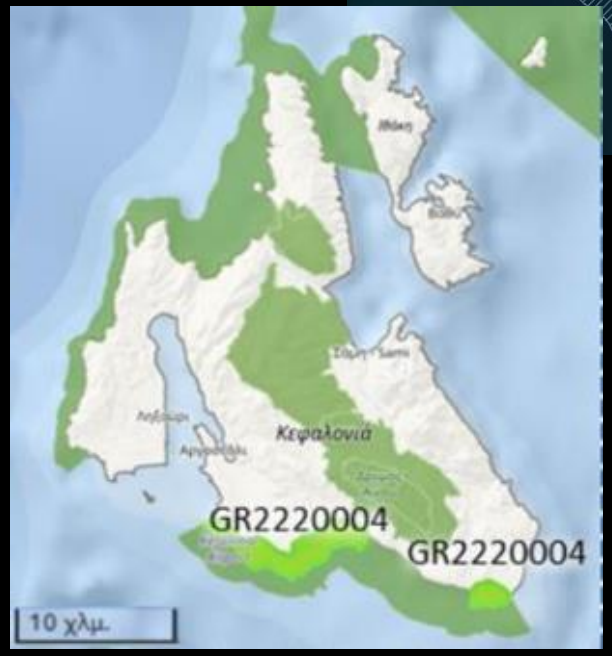


Detecting critical habitats - > improving conservation capacity

Detecting critical habitats

Detecting critical habitats





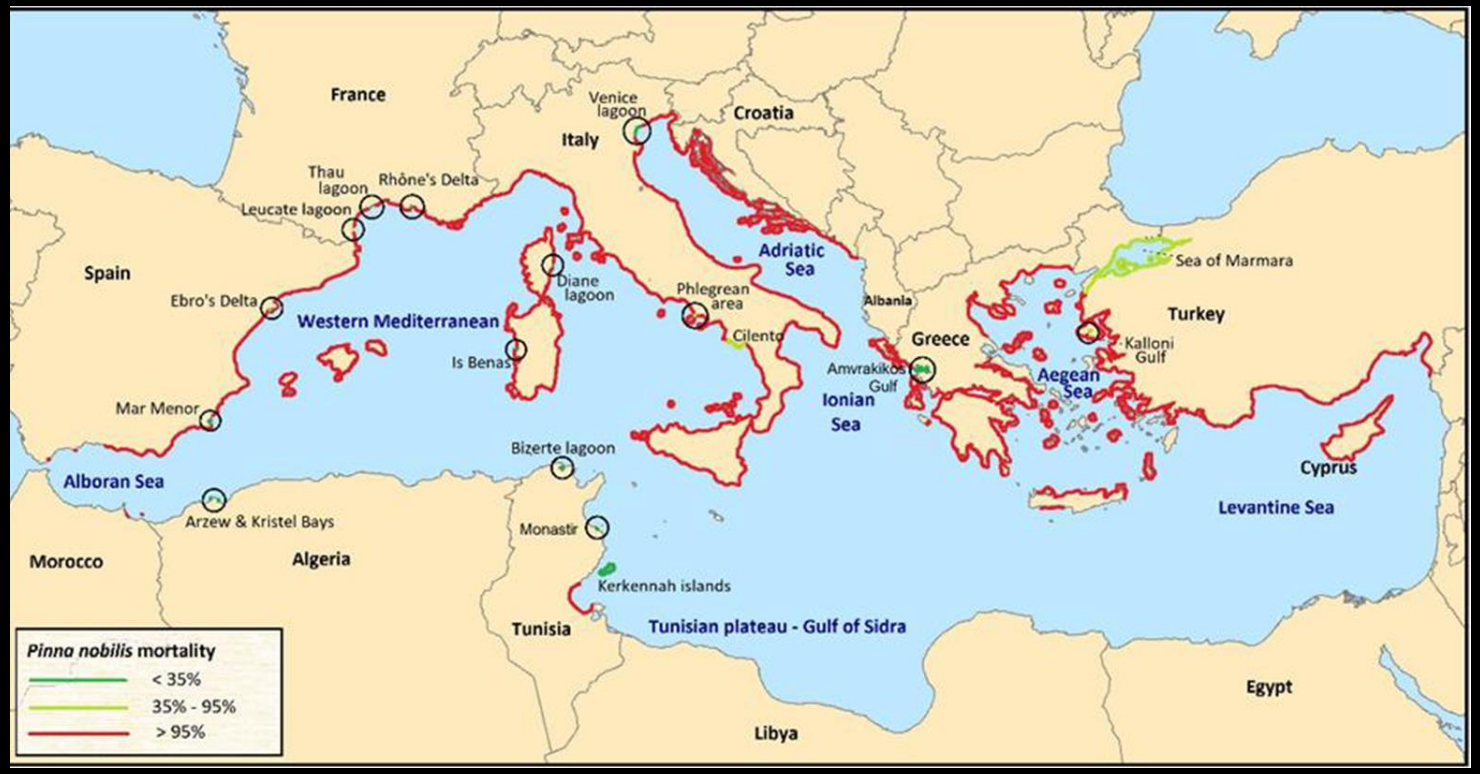
Stranding Records: A Valuable Source of Information

Detecting critical habitats

Management and restoration

Management and restoration

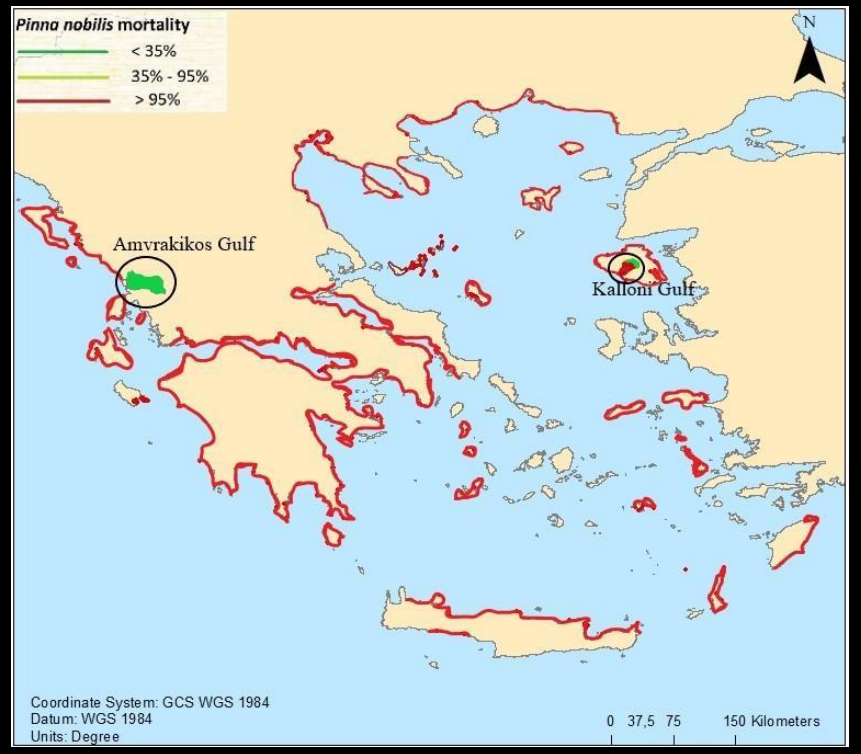
Pinna nobilis Mass Mortality event: 2016 - now



Status of fan mussel populations in the Mediterranean
(updated from Katsanevakis et al., 2021)

The only remaining live P. nobilis populations in Greece:

- Amvrakikos (not affected – refugium)
- Kalloni (substantially affected – but still live individuals)



Status of fan mussel populations in Greece
(from Zotou et al., 2021)

NECCA project: Monitoring of populations and mapping of the fan mussel *Pinna nobilis* in the NATURA marine areas of the Northern Aegean and Amvrakikos Gulf – Implementation of management actions and proposal of further conservation measures.

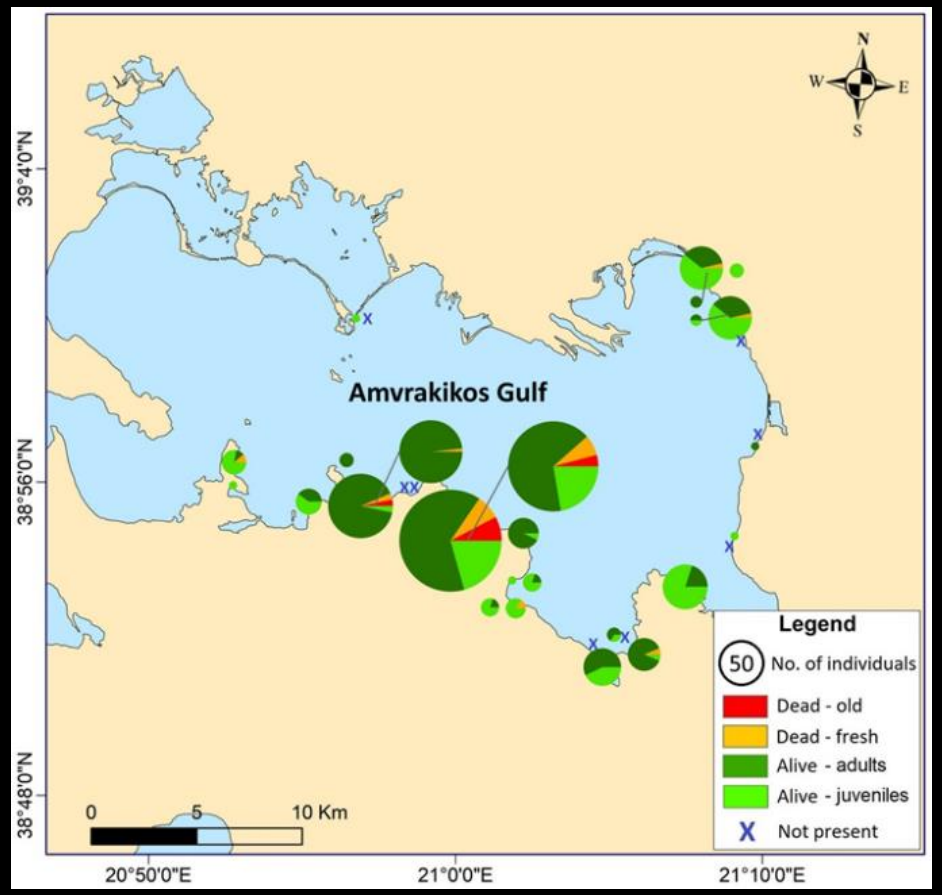
fan mussel *Pinna nobilis*

The largest saltwater bivalve species in the Mediterranean Sea

Critically Endangered

Dramatic declines due to massive mortalities caused by the parasite (*Haplosporidium pinnae*)

Management and restoration



45 min underwater surveys

Population estimation:
Distance sampling
36 transects – stratified sampling

Abundance estimation (2024): 292,000 individuals
95% CI [81,500 - 1,044,000]

Successful recruitment in 2024

Management and restoration

Threats:

- Distribution in very shallow water (0.5 - 3.5m)
- Illegal towed gear
- Poaching
- Restricted space due to anoxia

Transplantation of vulnerable individuals – monitoring growth and survival

2024

- Amvrakikos Gulf
- 45 translocated individuals
- 2 sites

Assessing recruitment through larval collectors

2024

- 12 larval collectors
- Remained for 4-5 months
- Collection of 12 juveniles
- Protected in cages and monitored

Thank you