

THE ECOLOGICAL IMPORTANCE OF ERIMITIS MARINE AREA

An inventory of knowledge

UPDATE 2024



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**BLUE MARINE
FOUNDATION**

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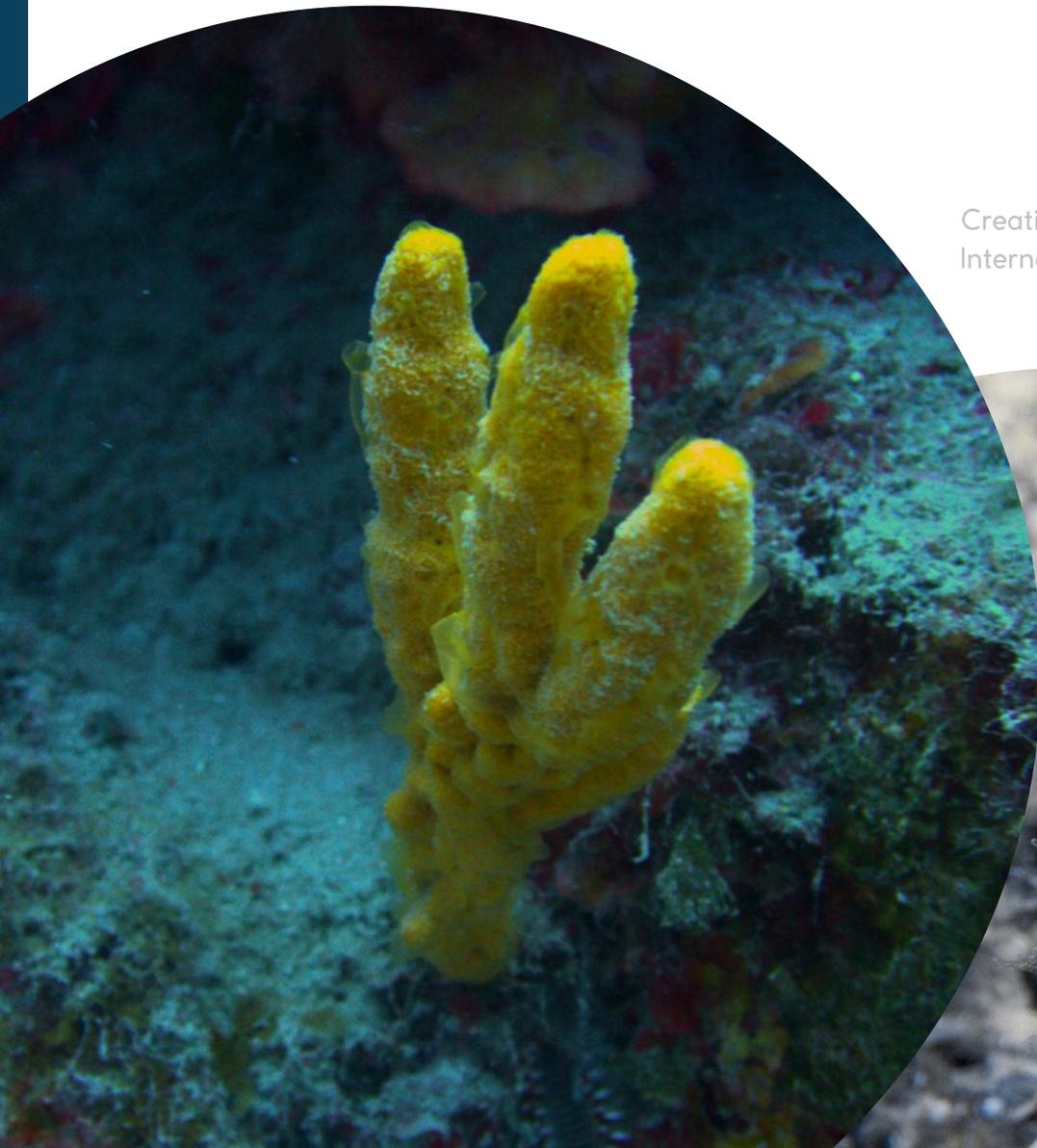


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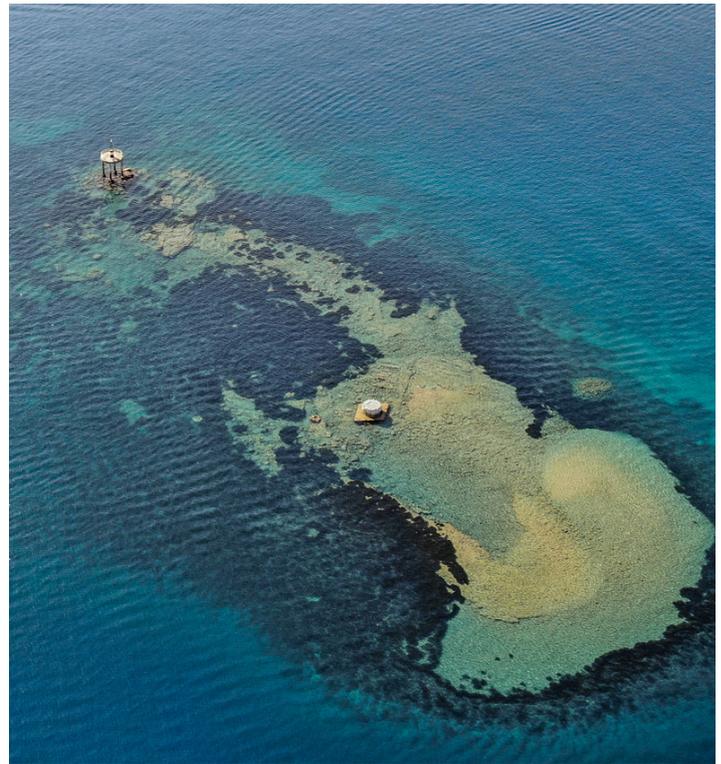
Erimitis

A few words

Erimitis peninsula, located in the Northeast of Corfu, borders the western coast of Albania through a narrow channel that links the Adriatic with the Ionian Sea.

The region includes 7 bays that remain largely intact by human infrastructures and are mostly enjoyed by locals, visitors and nature lovers. Surveys have been conducted by "Save Erimitis" on the terrestrial habitats, however, the marine region remains unexplored at large.

iSea has visited the area of Erimitis for four consecutive years and conducted studies on the marine area of the site, including the mapping of the Posidonia meadow (*Posidonia oceanica*) and defining its ecological status.



Actions throughout the years

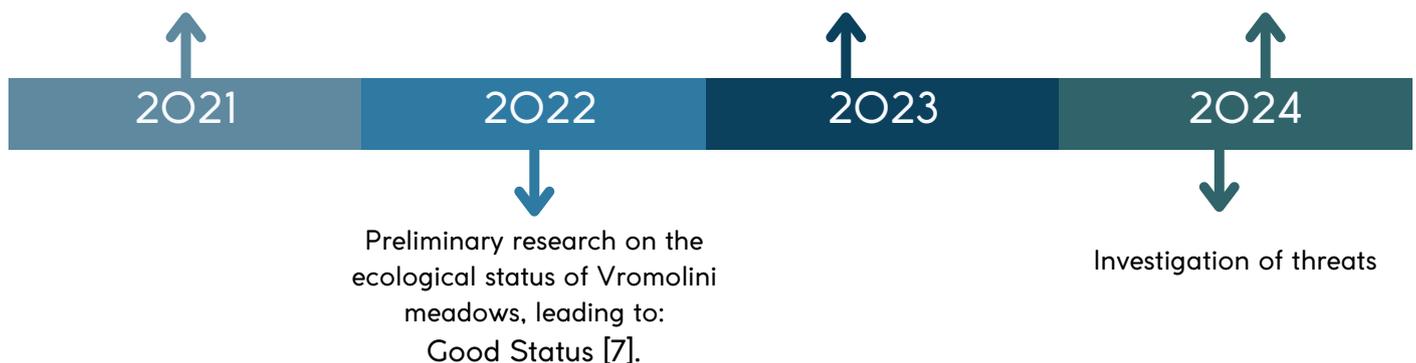
Mapping of the Posidonia meadows in 3 bays: Vromolimni, Korfovounia and Kaminakia

Resulted in 0.157 km² of cohesive Posidonia meadows.[15]

Extended Posidonia meadows mapping for the entire Erimitis peninsula, reaching a total of 0.62 km².

Definition of the status of the meadows for 9 stations. [1]

Estimation of total blue carbon, fishfauna abundance and biomass surveys.



Important marine habitats of Erimitis

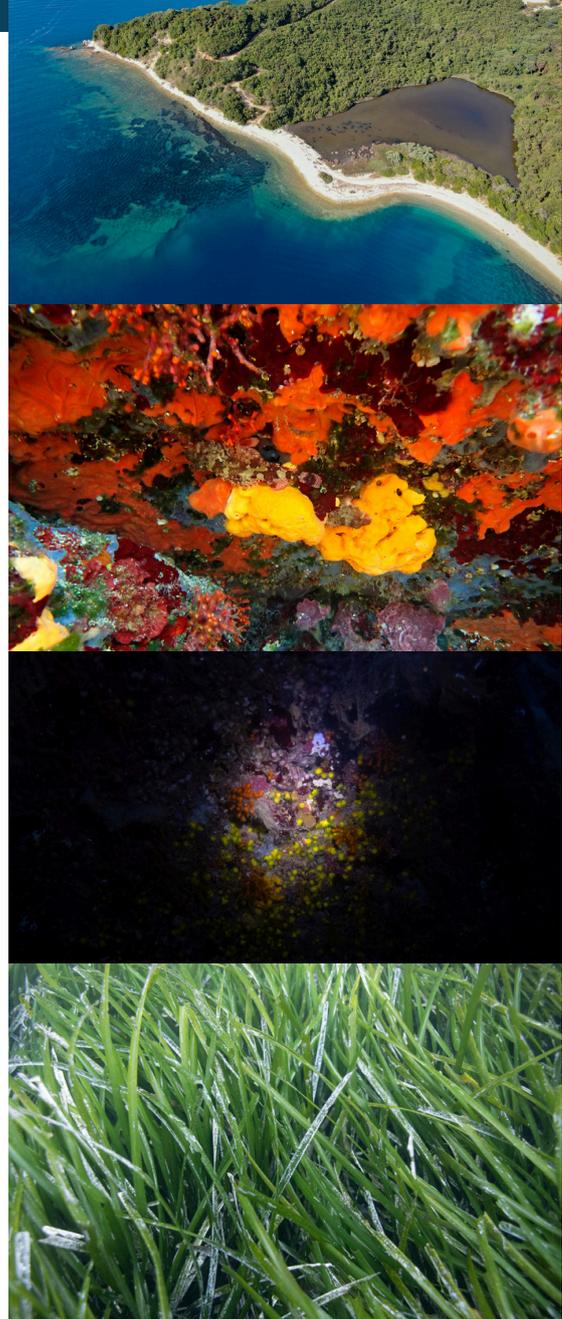
In the studied area, five habitat types were identified:

1. **Reefs,**
2. **Sandbanks,**
3. **Large shallow inlets and bays,**
4. **Submerged or partially submerged sea caves,**
5. **Posidonia beds (*Posidonia oceanica*)**

All 5 habitats are listed in Annex I of the Habitats Directive (92/43/EEC), with **Posidonia beds** being considered a priority habitat. In addition, it is worth noticing that a Biogenic Reef was identified below 20m depth in the Serpa area.

Posidonia oceanica is one of the most abundant marine seagrass species in the Mediterranean Sea. It forms extensive meadows that reach up to **45m** depth. The deep limit of a meadow highly depends on the clarity of the water, along with other factors.

This endemic plant is of a **great ecological significance**, as it contributes to the stabilization of the sediment, by minimizing the impact of the hydrodynamic conditions, thus protecting the coast from erosion [18].



Also known for the high primary production and oxygen generation, the meadows can store large amounts of organic carbon through their roots, making them an important habitat for blue carbon sequestration [17].

By scanning the QR code, additional information will be provided about the Posidonia meadows in the Ionian Sea.



Posidonia oceanica: a priority habitat

Supporting Fish fauna

Posidonia meadows are highly productive habitats, supporting nursery grounds for many fish species in the Mediterranean, many of which are of commercial importance.

In 2024, preliminary research was undertaken in Erimitis, involving **seasonal** fish fauna surveys in spring, summer and autumn conducted within the depth zones of <10m, 10-20m and >20m.

The results showed a large number of fish species associated with the meadows during their early life stages, which move to the surrounding rocky habitats as they mature (where higher values of biomass and abundance were found).



Biomass
mean

Abundance
mean number of
individuals



12.5
kg/km²



400 per
km²



28
kg/km²

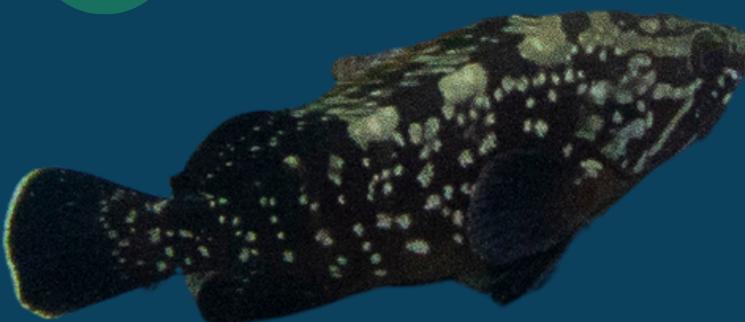


1,268
per km²

38 Total fish fauna species identified

8,932 Total individuals counted

Regarding seasonality, the highest abundance and biomass were observed during the late **Summer** surveys. The site with the highest abundance and biomass throughout the year was observed in **Serpa** in the biogenic reef habitat characterized by strong currents.



Posidonia oceanica: a priority habitat



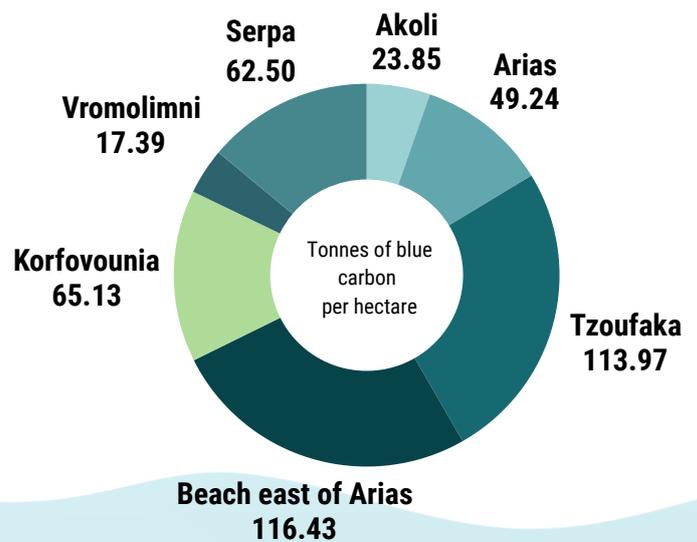
Blue Carbon

Posidonia meadows, throughout the physiological processes of seagrasses, capture carbon from the atmosphere and store it in the sediment within their root systems in the form of **blue carbon**, acting as long-term carbon storage systems.

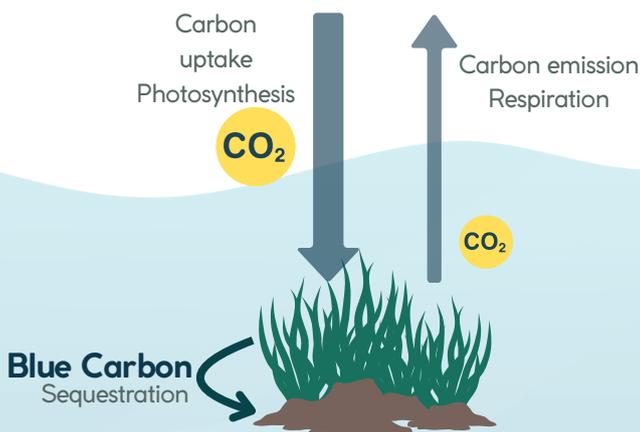
Blue carbon marine ecosystems are more efficient at sequestering carbon than terrestrial ones such as forests. The degradation and loss of seagrass meadows can lead to the release of their carbon stock into the atmosphere, increasing carbon dioxide (CO₂) emissions. Conclusively, Posidonia meadows play a crucial role acting as a **climate regulators**.

This year, dive surveys were conducted in the 62.1 ha of Posidonia meadows in Erimitis to measure their carbon sequestration potential. Results from 32 corer samples showed the meadows of Erimitis store about **3,384 tons of carbon**, with an estimated variability of **2,933 tons**!

The graph below shows the mean total blue carbon (tC/ha) per area, illustrating variations in carbon sequestration across regions, representative for the sampled depth zones per area.



Posidonia meadows of Erimitis
62.1 ha
3,384 tC



Posidonia oceanica: a priority habitat

Health status

Information on the conservation and ecological status of *Posidonia oceanica* meadows, a priority habitat and the most prevalent in the area, has been gathered. This data serves as a baseline for long-term monitoring of the meadows.

The assessment was conducted using two indexes, CI (Conservation Index) [13, 14] and BiPo (Biotic Index based on *Posidonia oceanica*) [11].

RESULTS

CI index

Values range: 0.79 to 1.00

Conservation Status: **Good to High**

BiPo index

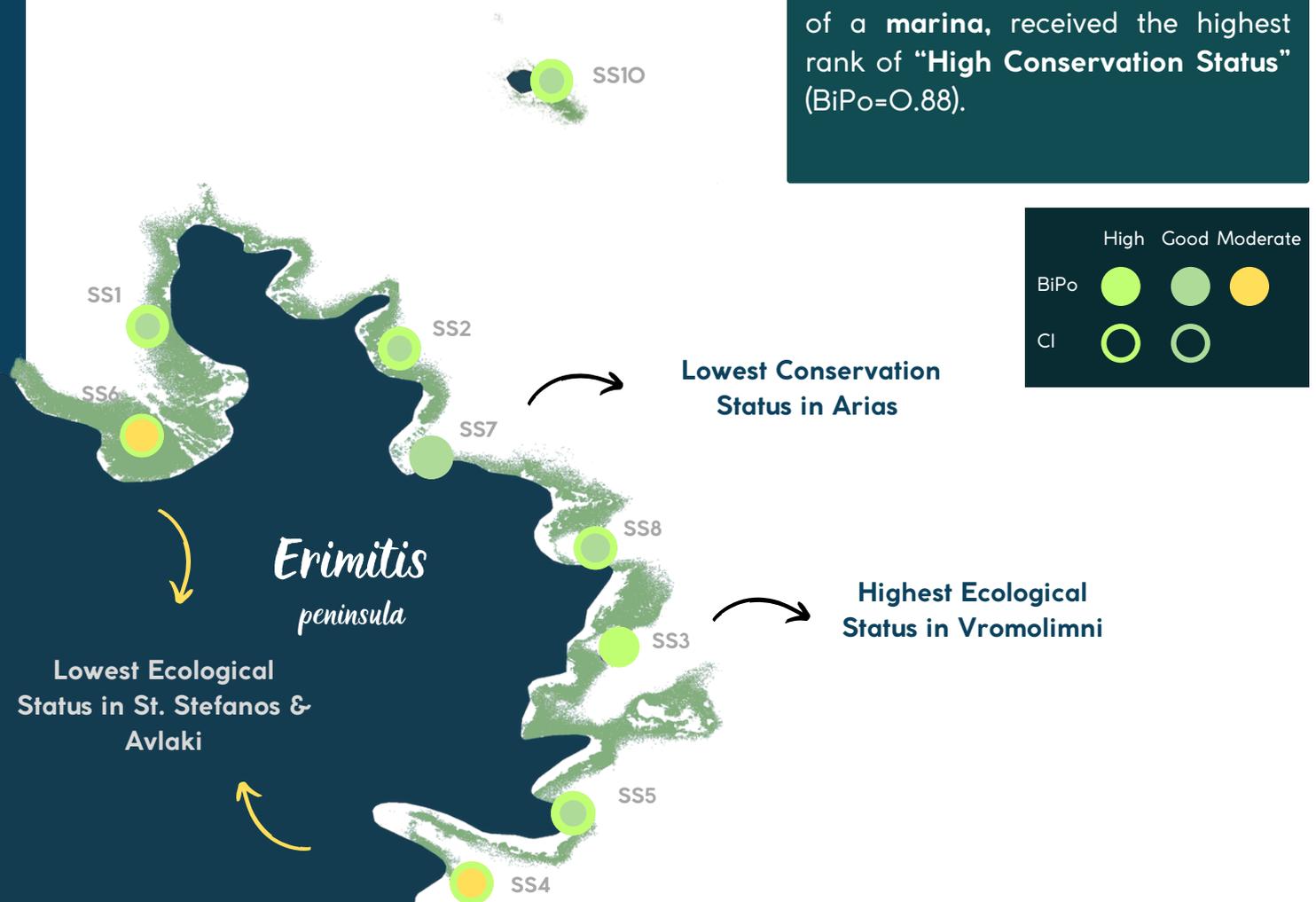
Values range: 0.41 to 0.88

Ecological Status: **Moderate to High**

St. Stefanos (SS4) and **Avlaki bay (SS6)** located in an area with coastal development, were both classified as having “**Moderate Ecological Status**”. The bay of St. Stefanos, which contains a port, received the lowest BiPo value (0.41) among all locations.

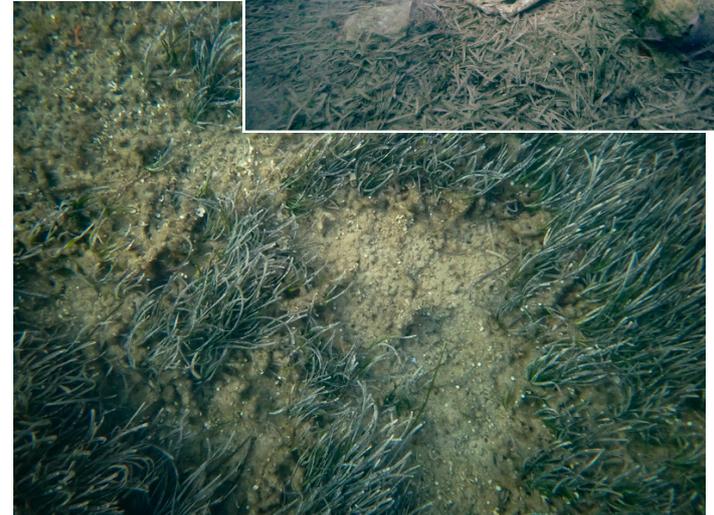
The spatial distribution of *Posidonia* meadows (green shaded) in Erimitis area, and the sampling stations (SS) for the health status analysis resulting in BiPo (inner circle) and CI (outer circle) classification.

The area of **Vromolimni (SS3)**, for which the Greek State has recently issued a permit for the construction of a **marina**, received the highest rank of “**High Conservation Status**” (BiPo=0.88).



Health status continued...

Field observations revealed evident effects of anchoring and pollution on the meadows.



Most impacted areas

Station 4 & Station 7

Station 7, located in Arias bay, had the most evident impacts from anchoring, noticing the highest percentage of matte morte (21%), with very recent scars and many uprooted rhizomes. In accordance with the previous results, its Ecological Status was assessed as “Good” with the value of 0.57 according to the BiPo’s ranking [11], though being very close to the upperlimit value (0.549) of the “Moderate” ranking class.

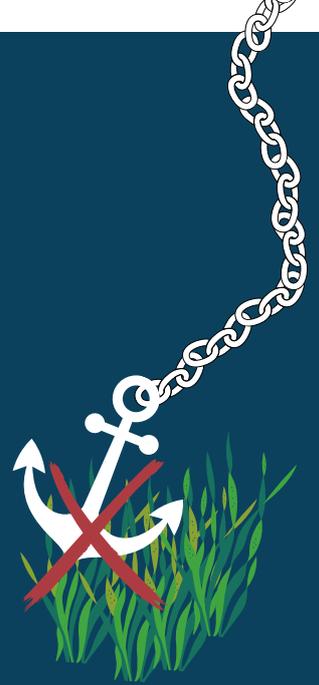
Similarly, **Station 2** displays the same outcome in the BiPo’s status, but with no evident anchoring scars in the area. Avlaki bay (**Station 6**), which exhibits a “Moderate Ecological Status” with the value of 0.51, is also very close to the lower limit value (0.55) of “Good” status ranking class.

Pollution was mostly evident in **Station 4** (St. Stefanos harbour); with litter being observed and mucous aggregates covering the meadows from depths of 10-14. We suspect that this “mucous blanket” was caused by the brown algae *Acinetospora crinite*, however microscopic identification is needed.

The mucous structure appeared anchored to the upper portion of the leaves, whereas the lower shoot portions and shoots were not impacted, similar to reports in other areas [12,19]. Such phenomena are related to higher nutrient concentrations in combination with low hydrodynamic conditions, while they typically occur during spring and summer months for short periods up to two months [12].

Assessing Anchoring pressure

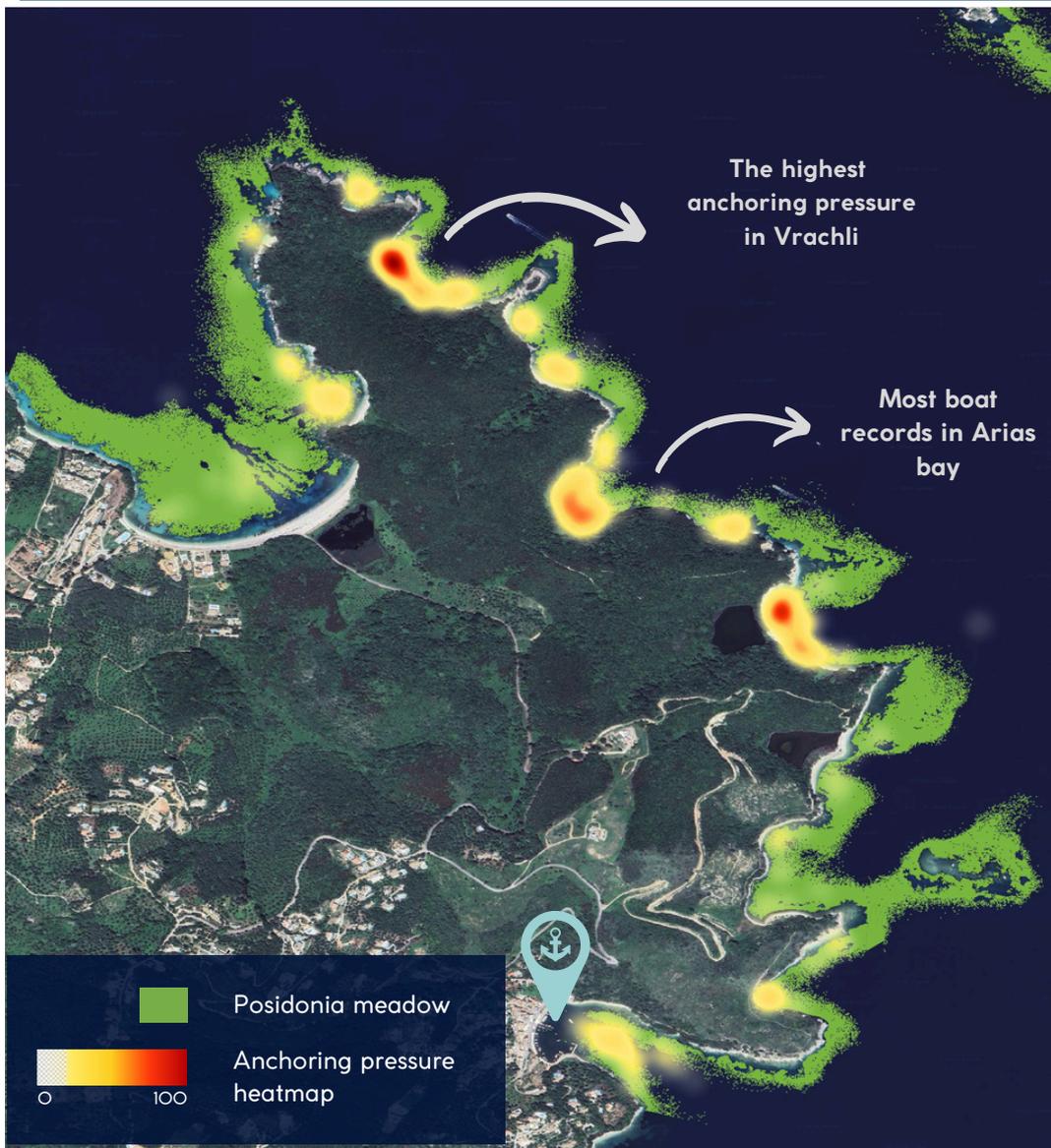
During the summer period of 2024 (July, August, September) drone surveys were undertaken in Erimitis during the busiest hours of the day, four times per month to evaluate the most threatened areas of Posidonia by anchoring pressure.



RESULTS

The highest proportion of boat records were located in **Arias bay** (21.6%) followed by **Vrachli** (18.3%) and **Akoli** (15.8%), while Vromolimni had the fewest observations ($n=8$, 1.6%).

The results indicate that over **65%** of the recorded boats were **anchored on Posidonia meadows**, while from the total boats recorded, over **60%** were **small rental boats**.



Although Arias bay recorded the highest number of boats, **Vrachli** experienced the greatest anchoring pressure, due to the **presence of larger vessels**.

The Heatmap presents the anchoring pressure weighted by the anchor weight. Larger boats use bigger and heavier anchors, causing more extensive damage to the meadows.



The action was funded by the Ionian Environment Foundation. Find the full report here:



A Species Checklist for Erimitis

Four dives were performed in the study area, covering Posidonia meadows and rocky reefs. Observed organisms were recorded, photographed, and identified to species level. The identified records were uploaded on the iNaturalist platform to be accessible to the general public through the project “Save Erimitis” (QR code).

Finally, a marine species checklist for the Erimitis region was created based on the species observations during the diving surveys, extracted records from iNaturalist, as well as bibliographic data [1; 4; 6; 8; 10; 15], in order to provide a holistic representation of the existing fauna and flora in the area.



A total of **211** marine species (spp.) were identified in Erimitis, of which **186** fauna species and **25** flora.

The fauna species included fishes (86 spp. 46% of fauna), mollusks (39 spp. 21% of fauna), echinoderms (9 spp.), marine mammals and reptiles (5 spp.), and others (47 spp. 25% of fauna).



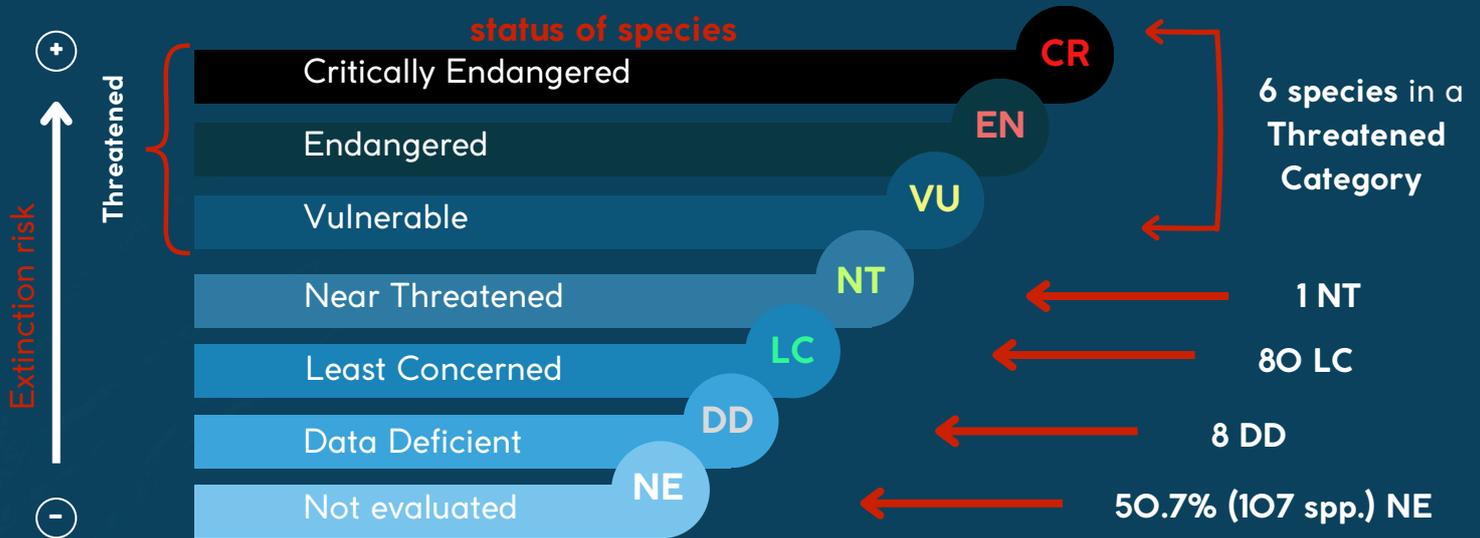
Save Erimitis
iNaturalist project QR code



Priority Species

Mediterranean IUCN status of the species found in Erimitis

IUCN Red List Categories of the conservation status of species



21 species of fauna and **2** species of flora present are protected on a national and/or European level, or their exploitation is regulated [2; 3; 5; 9]. These are as follows:

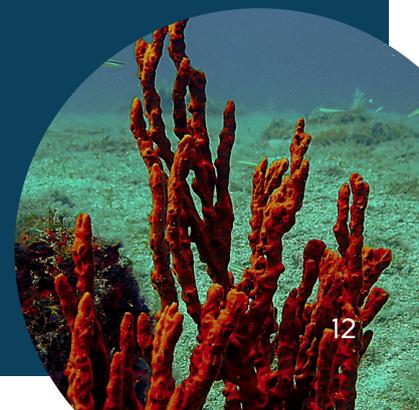
Fauna

- Monk Seal (*Monachus monachus*)
- Common Dolphin (*Delphinus delphis*)
- Bottlenose Dolphin (*Tursiops truncatus*)
- Loggerhead Sea Turtle (*Caretta caretta*)
- Green Turtle (*Chelonia mydas*)
- Dusky Grouper (*Epinephelus marginatus*)
- Parrotfish (*Sparisoma cretense*)
- Cleaver wrasse (*Xyrichtys novacula*)
- Fan Mussel (*Pinna nobilis*)
- Spiny Fan Mussel (*Pinna rudis*)
- Giant Tun Snail (*Tonna galea*)
- Purple Seastar (*Ophidiaster ophidianus*)
- Purple Sea Urchin (*Paracentrotus lividus*)
- *Aplysina Aerophoba*
- Orange Candlestick Sponge (*Axinella cannabina*)
- Common Antler Sponge (*Axinella polypoides*)

- Tooth Coral (*Balanophyllia (Balanophyllia) europea*)
- Carpet Coral (*Hoplania durotrix*)
- Sunset Cup Coral (*Leptopsammia pruvoti*)
- Date Shell (*Lithophaga lithophaga*)
- Mediterranean Slipper Lobster (*Scyllarides latus*)

Flora

- Neptune Grass (*Posidonia oceanica*)
- Little Neptune Grass (*Cymodocea nodosa*)



Alien species

More than 300 marine alien species have been recorded in Greece, while a number of these are considered invasive causing **ecological damage such as displacement of indigenous species, loss of genotypes, alteration of the structure of indigenous communities, change of food webs** etc. Equally, they have a significant impact on local economies in regions throughout Greece as they affect fishing catches and tourism. The European Commission has estimated the economic impact of invasive species at 12 billion euros per year. Lastly, some species pose a **direct threat to people**. For instance, Silver-cheeked Toadfish is toxic if consumed and can lead to death, while lionfish has poisonous spines, and contact with them can result in intense pain or even fatal consequences.

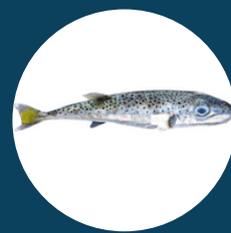
Despite a lack of records of alien species in Erimitis in 2021 and 2022, a total of **8 alien species** have been recorded within 2023 and 2024, of which 3 species of fish fauna and 5 of marine flora (seaweeds and seagrasses).



Common Lionfish
Pterois miles



Dusky Spinefoot
Siganus luridus



Silver-cheeked Toadfish
Lagocephalus sceleratus



Grape alga
Caulerpa cylindracea



Broadleaf Seagrass
Halophila stipulacea

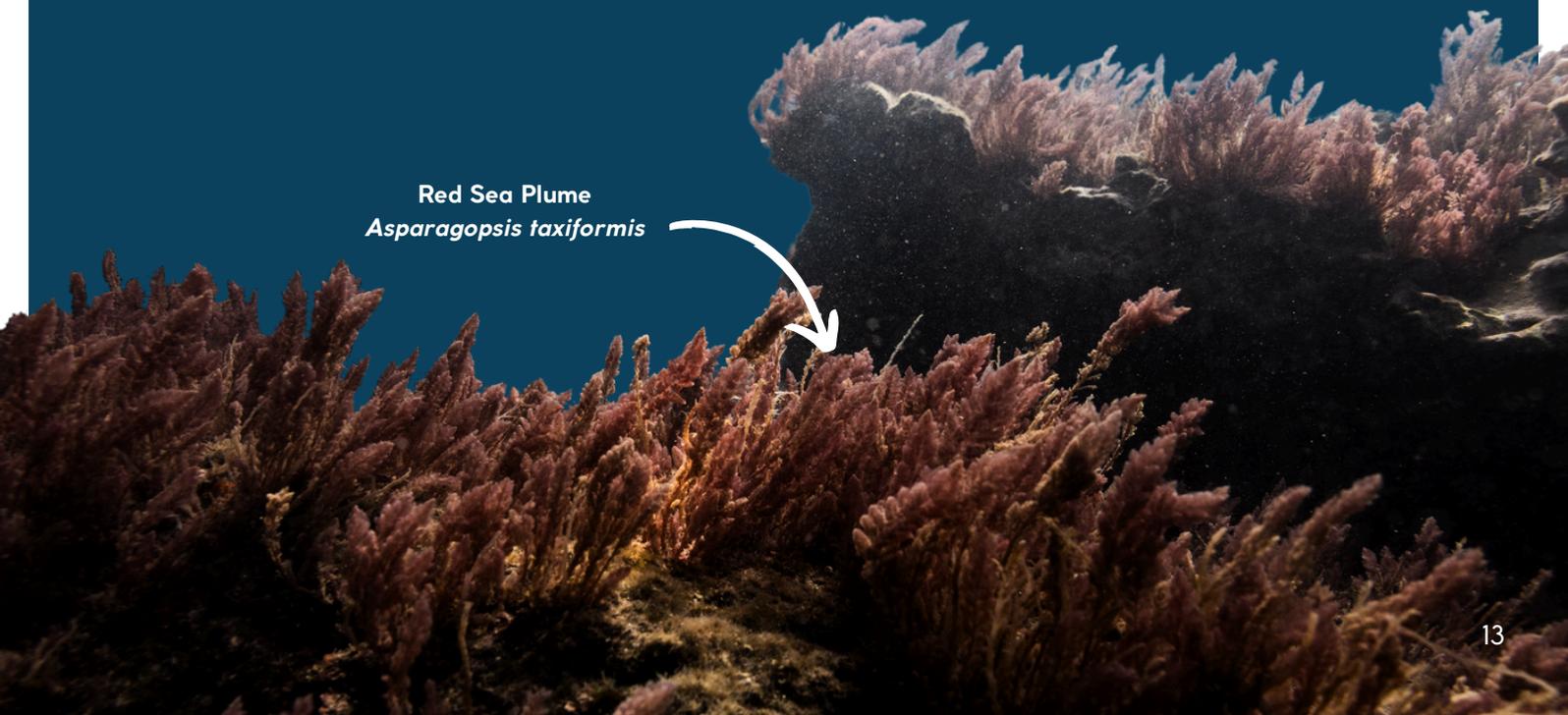


Dead Man's Fingers
Codium fragile



Galaxaura rugosa

Red Sea Plume
Asparagopsis taxiformis



More information



Find out more about our work in Erimitis.

How can I help?

You can contribute to the ongoing effort aiming to showcase the ecological importance of Erimitis by recording species you observe in the area through the **iNaturalist app**.

If you are visiting the area by boat, make sure to anchor responsibly by avoiding Posidonia meadows and using sandy bottoms to lay your anchor instead!



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