

Protecting Northeast Lemnos' habitats

Final Report 2025

THESSALONIKI 2025

iSea, 2025

Suggested citation
Sidiropoulou, N., Pyloridou, K., Cecconi, F., Naasan Aga - Spyridopoulou, R., Giovos, I. Protecting Eastern Lemnos Habitats. Final Report. iSea 2025, Thessaloniki, Greece, 50pp

Graphic design:
iSea

Images
iSea
Dimitris Tosidis

Licenced under:
Creative Commons Attribution 4.0 International (CC BY-NC-ND 4.0)

The present report was produced in the context of the project 'Protecting Northeast Lemnos' habitats in collaboration with University of Patras and funded by Blue Marine Foundation.



iSea

UNIVERSITY OF PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

BLUE MARINE FOUNDATION

Contents

Baseline information 6

Aim 7

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data 8

A.2 Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island 30

A.3 Habitat related research 31

A.4 Advocacy and management 34

A.5 Coordination of the project 36

Bibliography 39

Baseline information

The endemic species *Posidonia oceanica* (Linnaeus) Delile, 1813 is the most important seagrass in the Mediterranean Sea (Boudouresque et al. 2006) and along with Coralligenous reefs, comprise the most significant Mediterranean marine ecosystems (Giakoumi et al., 2013). Northeast Lemnos, includes coastal regions from the northeastern cape to the southeastern cape and extending up to 40 km offshore, including the Natura 2000 site Limnos: Chortarolimni - Limni Alyki kai Thalassia periochi (GR4110001).

This area hosts the largest cohesive *Posidonia oceanica* meadow in the Aegean Sea, extending beyond the Natura 2000 site boundaries (Topouzelis et al, 2018, Traganos et al., 2018, Aga- Spyridopoulou & Poursanidis, 2024). The importance of the area has led to iSeas' 3-year long presence in the region with diverse actions further supporting and enhancing the significance of this critical habitat not only to the environment but also to the local community.

Through the actions implemented the main results include, an updated detailed mapping of Posidonia meadow extending beyond the current limits summing to a total of 83.7km2., reduced meadow health based on the BiPo index, in relation to the previous decade (Gerakaris et al., 2017), identification of maerl beds, and documented presence of threatened and endangered species such as *Eunicella cavolini*, *Cladocora caespitosa* and *Squatina squatina*. Throughout the years iSea has continuously been working closely to the local community to raise awareness, establish strong relations and encourage sustainable practices for the protection and preservation of Northeast Lemnos unique ecosystems.

Aim

Contributing to science-based decision-making to achieve effective protection of Eastern Lemnos habitats by:

- Closing knowledge gaps for key habitats and species of Eastern Lemnos.
- Advocating for effective protection and management.
- Engaging and empowering stakeholders in bottom-up management.

Actions for 2025

Continuing research in northeastern Lemnos in order to, more robustly evaluate the ecosystem services that the meadows provide to fishers and its' blue carbon sequestration, map and document important habitats and species including maerl beds and Coralligenus presence, explore community assemblages and habitat use from vulnerable and threatened species and work to improve an ecosystem-based management of the area.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Actions on the estimation of fish biomass in Northeast Lemnos started in 2023. Since then, a total of 55 fishing trips and 268 fishing operations have been carried out, in collaboration with 5 small scale fishers active in the target area. In 2023, 13 fishing operations were monitored, where in 2024 they reached 96, while in 2025 so far 159 fishing operations have been monitored (Figure 1)*. The fishing gear used in these operations included gillnets, longlines and trammel nets. Among these the most frequently used were trammel nets. Specifically, 246 operations were conducted using trammel nets (GTR), 14 utilizing longlines (LLS) and 8 gillnets (GNS). Consequently, only the data collected with trammel nets fishing were used for the analysis. The data from the other gear types will be assessed once a sufficient amount has been collected.

All fishing trips were planned in advance to ensure that each habitat type was evaluated, however as different fishing grounds are used seasonally by fishers (e.g. maerl summer), the effort per habitat is not balanced. Corrections have been made in order to account for that. The targeted habitats were *Posidonia oceanica* meadows, Rocky substrates and Maerl beds. A total of 152 fishing operations were conducted in Posidonia meadows, followed by 70 in Rocky habitats and 45 in Maerl beds. Even though sand is not a target habitat, 2 fishing operations were conducted on sand.

More fishing trips will be implemented until the end of the 2025 in order to collect the remaining seasonal data.

*For the analysis of the results 29 fishing operations conducted in 2025 were used for 2024 to account for seasonality, as winter samplings of 2024 had to be postponed for early 2025, due do adverse weather conditions

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

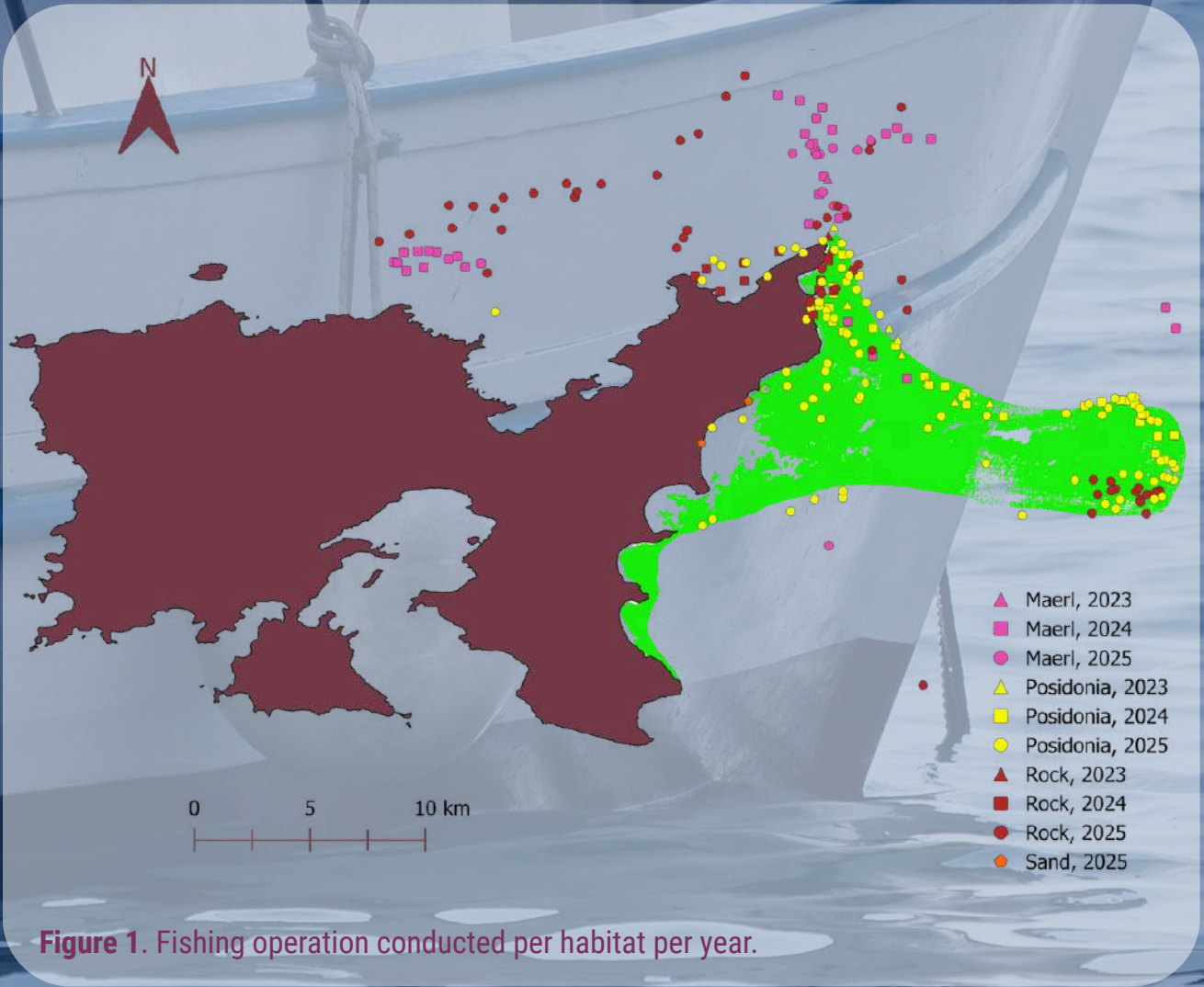


Figure 1. Fishing operation conducted per habitat per year.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

As each habitat was surveyed seasonally, fish community composition varied accordingly. The results presented below include all gear types. The most common target species in Posidonia meadows was the stripped red mullet (*Mullus surmuletus*), in rocky reefs were red porgy (*Pagrus pagrus*) and common dentex (*Dentex dentex*), in Maerl beds was lobster (*Palinurus elephas*) and on sandy substrate was cuttlefish (*Sepia officinalis*).

In Posidonia meadows, 77 species were identified to species level and only 1 to genus level (*Solea* sp.), with a total catch of 2,012.1 kg and 7,080 individuals. Of these, 775.8 kg (2765 individuals) were the target species and where the 457.9 kg (2072 individuals) were discarded.

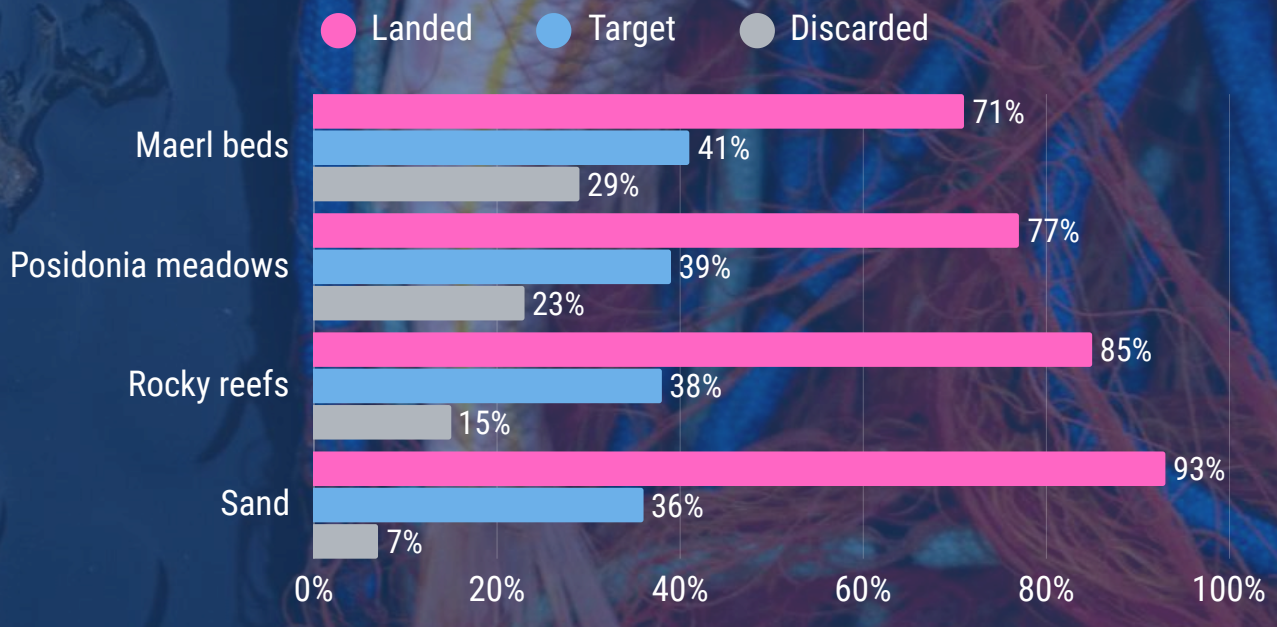


Figure 2. Catch composition (%kg) per habitat type

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

In rocky substrates, 59 were identified to species level and 1 to genus level (Solea sp.) yielding a total of 601.1 kg and 1,012 individuals, with the target species accounting to 228.1 kg (295 individuals) and the discarded amounting to 89.1 kg (282 individuals). In Maerl beds, 45 were identified to species level and 1 to genus level (Solea sp.), with a total catch of 441.4 kg and 729 individuals, of which 179.5 kg (332 individuals) were the target species and 129.6 kg (223 individuals) were discarded (Figure 2). Lastly, on sand 10 species were identified in a species level with a total of 13 kg and 33 individuals, of which 4.3 kg (13 individuals) were the target species landed and 0.1 kg (33 individuals) were discarded.

The discarded species is a category comprising the species that weren't kept onboard due to low profitable value, unintended capture (bycatch), minimum landing size regulations, protection status, and depredated individuals. In this report, the discarded category includes a subcategory, the "released species".

The released species subcategory includes individuals that were thrown back in the sea alive and unharmed, usually because there were undersized species or bytcatch. These species include target species, such as *Palinurus elephas*, as well as elasmobrach species.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

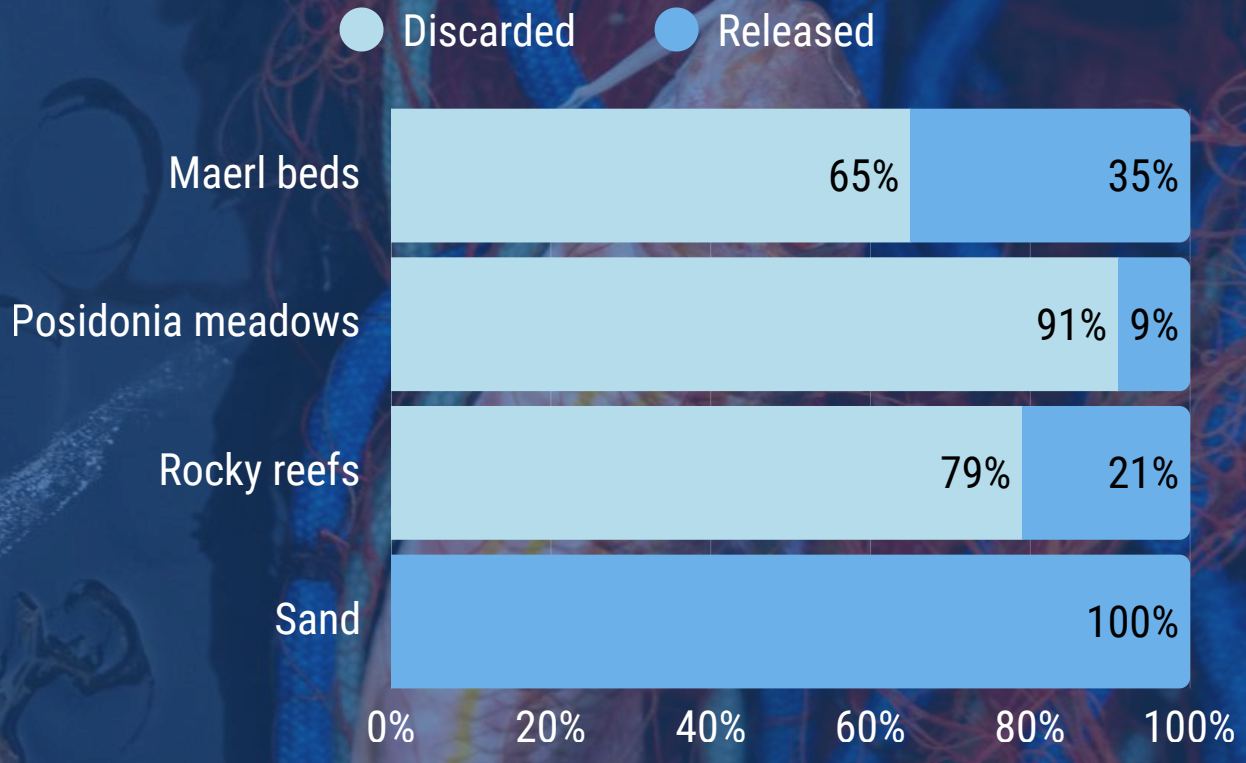


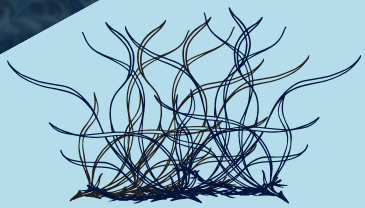
Figure 3. Discard composition (%) per habitat type

In Posidonia meadows, of the 2,072 discarded individuals (485.6 kg), 9% (81.8 kg; 177 individuals) were attributed to released species where in Maerl beds 233 discarded individuals (398.5 kg) were recorded, with released species accounting for 35% (46.9 kg; 79 individuals). In rocky reefs, 282 discarded species (89.1 kg) were documented, of which 21% (31.5 kg; 58 individuals) were released.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

A more detailed analysis for each habitat type is presented in the sections below. The analysis includes, the frequency of capture per fishing operation along with the Catch per Unit of Effort (CPUE) standardised per one km per hour, and the frequency of occurrence per fishing operation. The last was calculated as an indication of species composition in relation to the habitat and to account for exceptional catches. The analysis was performed utilizing only the trammel nets collected data, as data collected regarding other fishing equipment are not yet sufficient.

At present, the autumn and winter onboard samplings have not yet been completed. When all seasonal data is available, a more representative outcome will be presented.



152 fishing operations



70 fishing operations

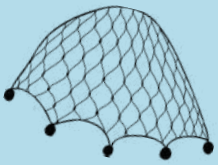


45 fishing operations



2 fishing operations

8 GNS



246 GTR



14 LLS



A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1120: *Posidonia oceanica* meadows

In Posidonia meadows, the most frequently captured species were scorpionfish *(Scorpaena scrofa)* (57.1% of operations), annular seablream (Diplodus annularis) (55.7%) and cuttlefish *(S. officinalis)* (52.9%). These three species were also the most frequently recorded in the previous year, showing consistent occurrence patterns (Sidiropoulou et al., 2024) (Figure 4).

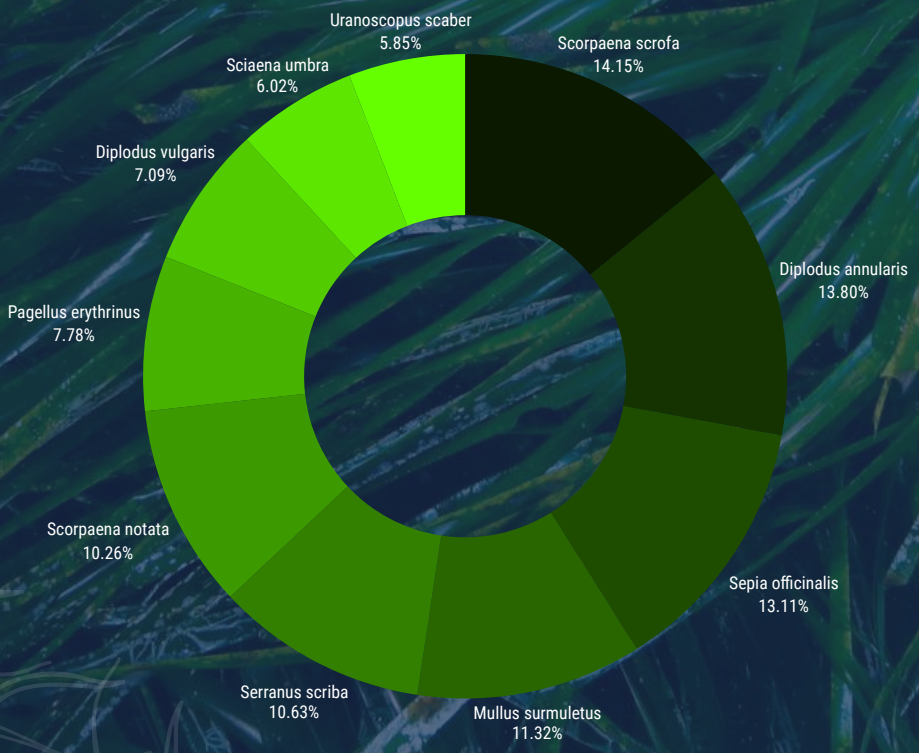


Figure 4. Top 10 species based on their frequency of occurrence per fishing trip in Posidonia meadows.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1120: *Posidonia oceanica* meadows

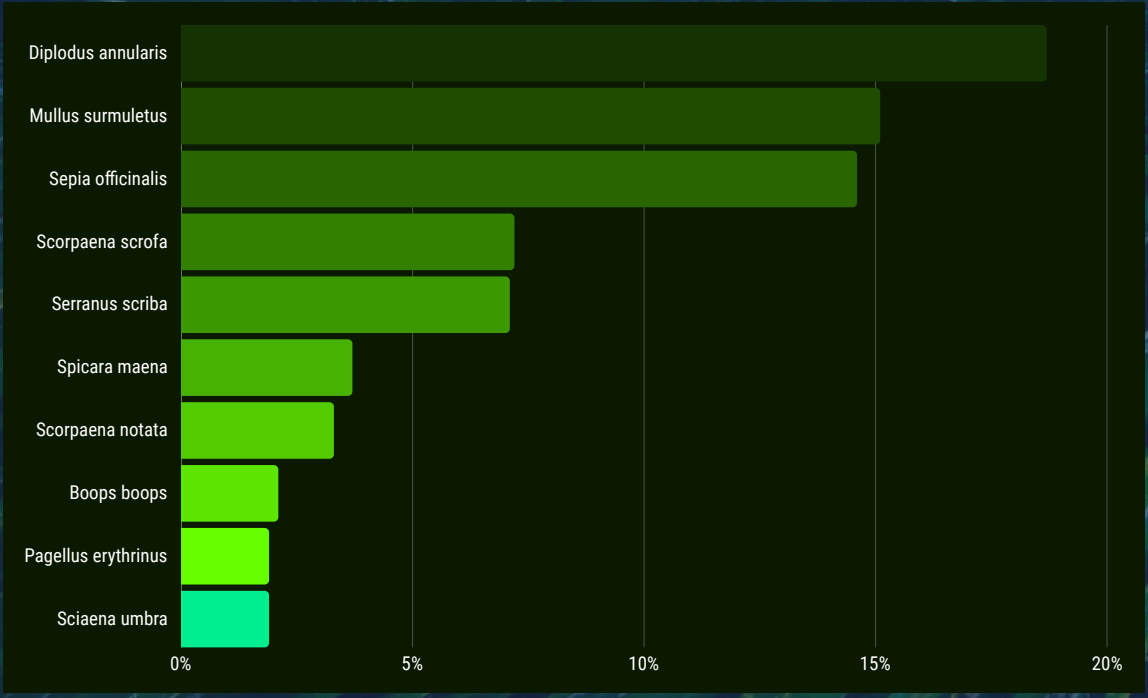


Figure 4. Composition of catches on Posidonia for the 10 most abundant species (No. of individuals).

Regarding the composition of catches, the most abundant species was the annular seabream (*D. annularis*) with 18.7% of the total catches referring to 1078 individuals, followed by the striped red mullet (*M. surmuletus*) with 15.1% corresponding to 869 individuals and the cuttlefish (*S. officinalis*) with 14.6% and 842 individuals. The remaining species, apart from the top 10 presented in Figure 4, accounted for 24.3% of the total catch.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1120: *Posidonia oceanica* meadows

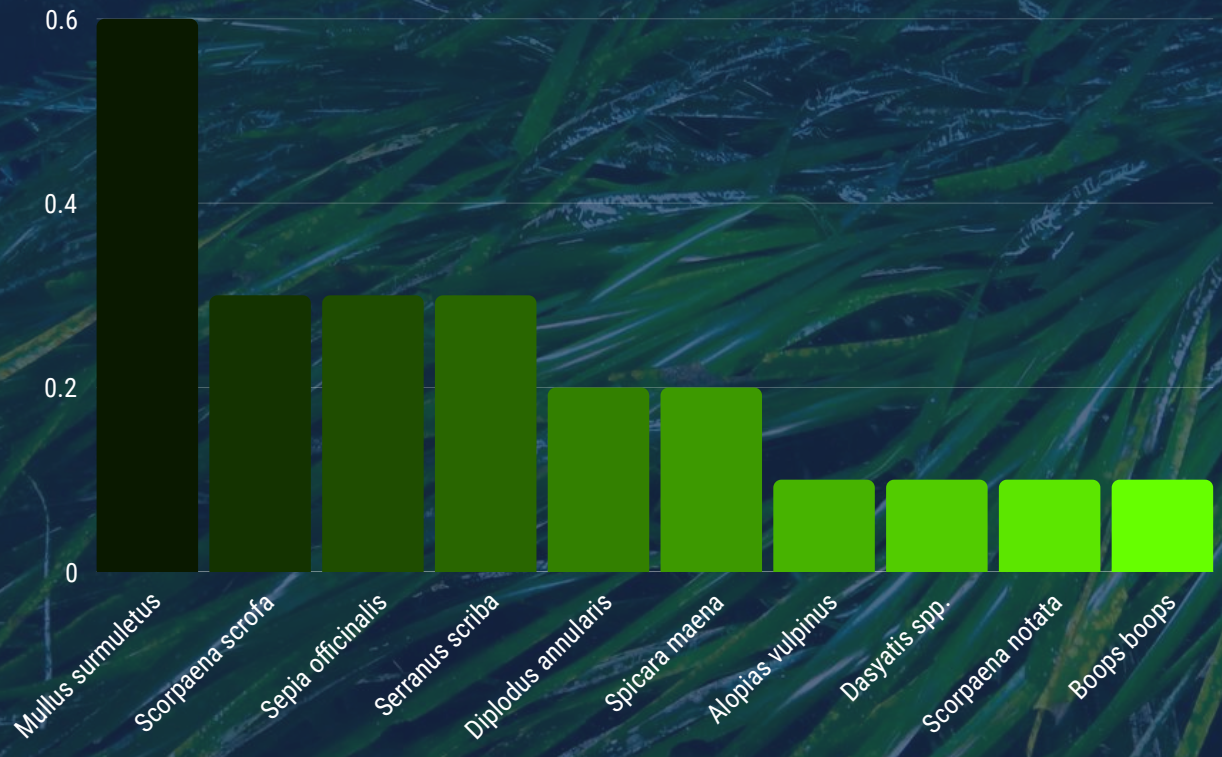


Figure 5. Top 10 species expressed in CPUE (kg/km/h) on *Posidonia oceanica*.

Finally, the standardized CPUE values in Figure 5 indicate that striped red mullet *(M. surmuletus)*, scorpionfish *(S. scrofa)* and cuttlefish *(S. officinalis)* recorded the highest biomass, with 0.6 kg/km/h, 0.3 kg/km/h and 0.3 kg/km/h respectively. The majority of the species presented in the graphs are the same, with differences in their abundance and biomass, indicating their strong presence and relevance with Posidonia meadows.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1170: Rocky substrate

In rocky substrates the most frequently captured species were cuttelfish (*S. officinalis)* with 45.8%, scorpionfish *(S. scrofa)* with 44.1% and lobster *(Palinurus elephas)* with 30.5%. Most of the species presented in the graph contributed to the average catches, indicating a relatively even distribution between dominant species (Figure 6).

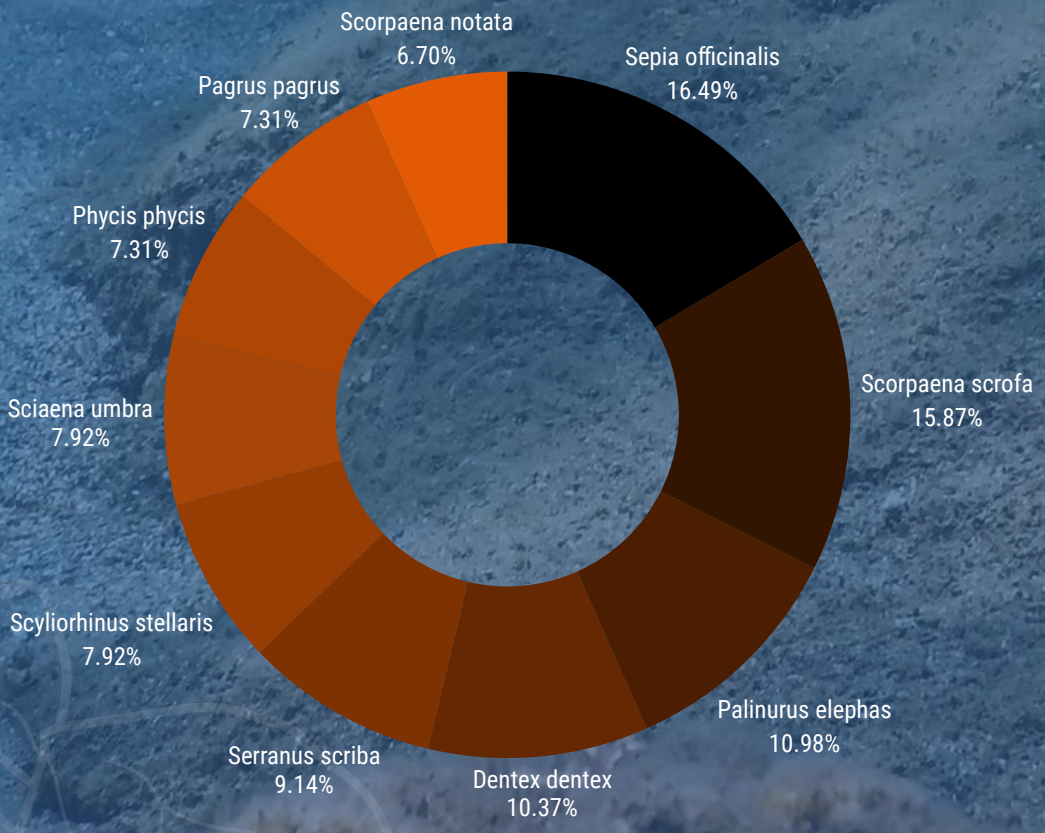


Figure 6. Top 10 species based on their frequency of occurrence per fishing trip in rocky substrates.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1170: Rocky substrate

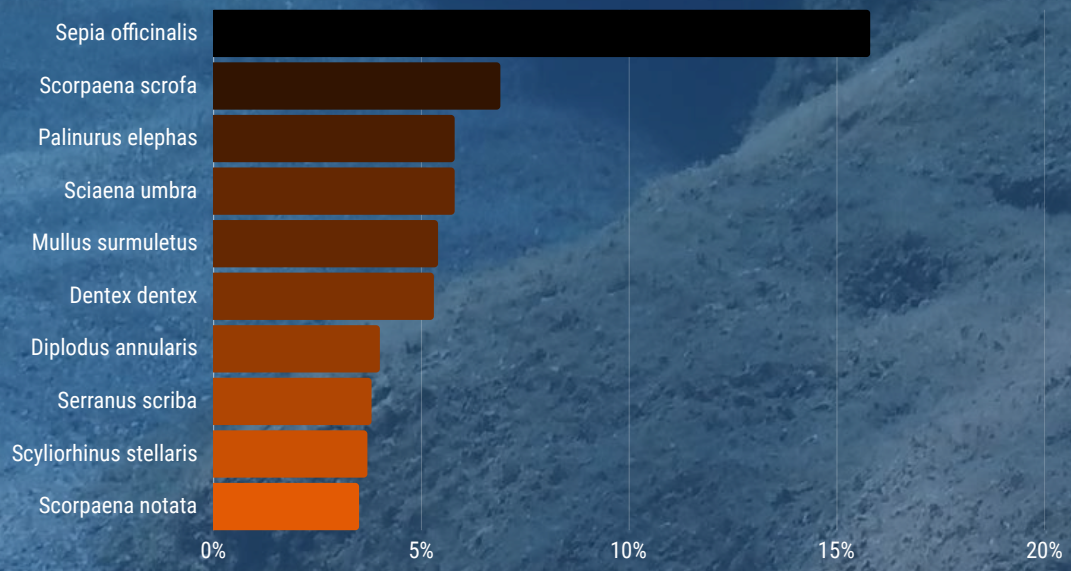


Figure 7. Composition of catches on rock for the 10 most abundant species (No. of individuals).

Regarding the composition of catches, cuttlefish (*S. officinalis*) was the most abundant species, comprising 15.8% of total catches and 141 individuals, followed by scorpionfish (*S. scrofa*) with 6.9% corresponding to 61 individuals and lobster (*P. elephas*) and brown meagre (*Sciaena umbra*) with 5.8% and 52 individuals each. All the other species, except the top 10, collectively accounted for 40% of the catch, representing almost half of the percentage of the top 10 recorded species. Other species included were the red porgy (*Pagrus pagrus*), forkbeard (*Phycis phycis*), common pandora (*Pagellus erythrinus*), groupers (*Epinephelus marginatus*) and various species of rays including *Dasyatis sp., Torpedo marmorata and Raja sp*.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1170: Rocky substrate

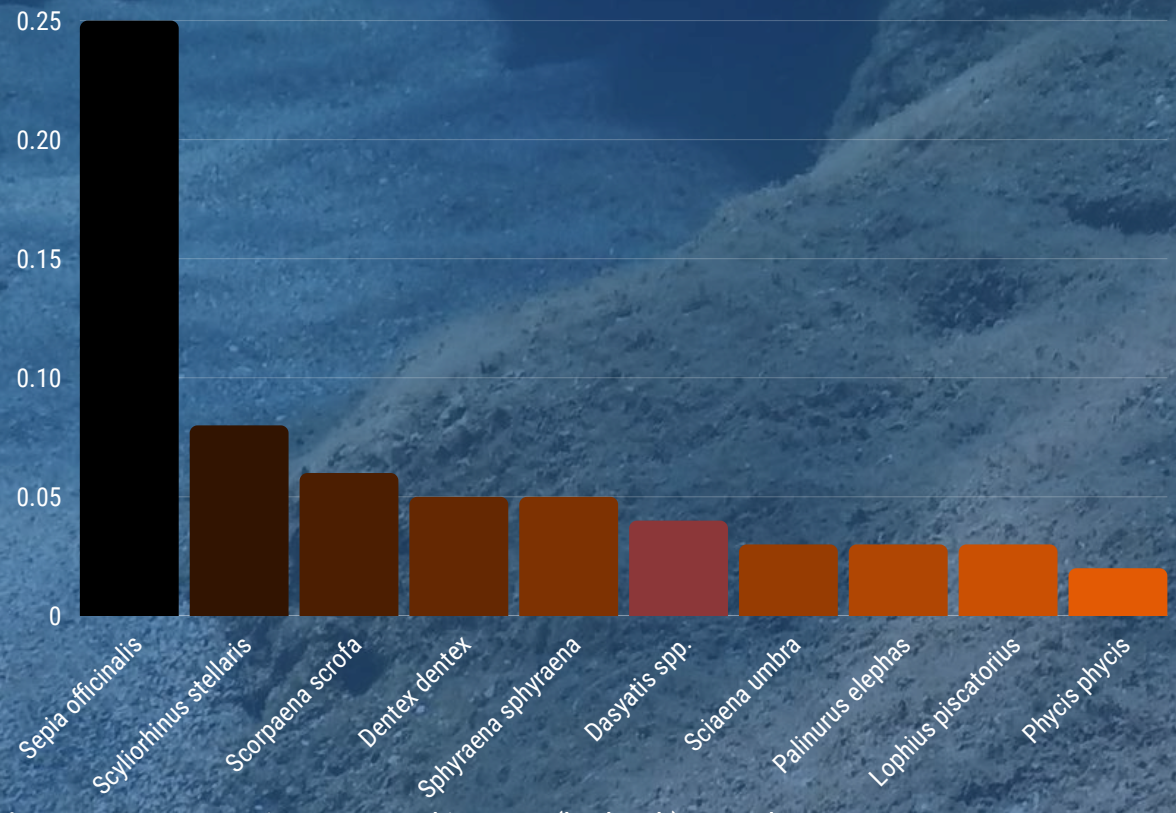


Figure 8. Top 10 species expressed in CPUE (kg/km/h) on rock.

Lastly the standardized CPUE values presented in Figure 8 indicate that cuttlefish (*S. officinalis*), nursehound (*Scyliorhinus stellaris*) and scorpionfish (*S. scorfa*) recorded 0.25 kg/km/h, 0.08 kg/km/h and 0.06 kg/km/h respectively. It is evident that cuttelfish was the most common species captured, exhibiting the highest values both in abundance and biomass.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1170: Maerl beds

Maerl beds were the habitat with the lowest frequency of fishing operations. Based on species occurrence frequency, the most commonly captured species were lobsters (*P. elephas*) (60%), scorpionfish (*S. scrofa)* (48.9%), and the common pandora (*P. erythrinus)* (35.6%). The majority of species depicted in Figure 9 occurred in more than 18% of typical catches.

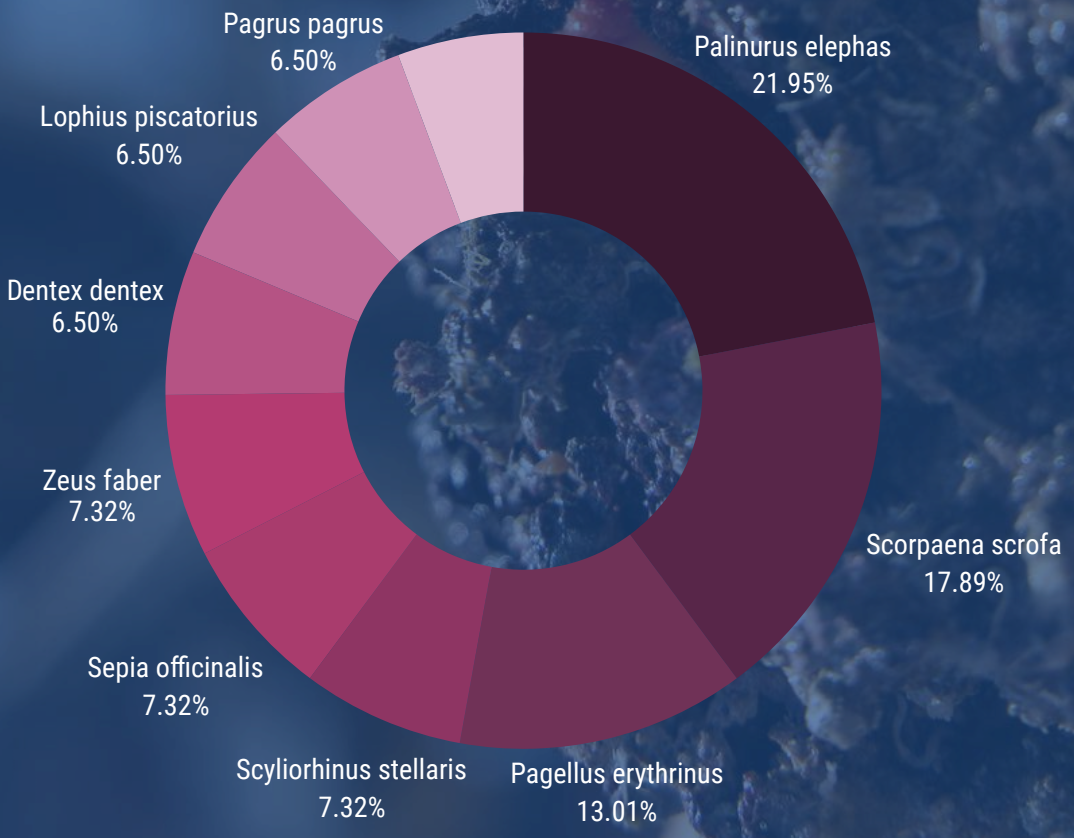


Figure 9.Top 10 species based on their frequency of occurrence per fishing trip in maerl.

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1170: Maerl beds

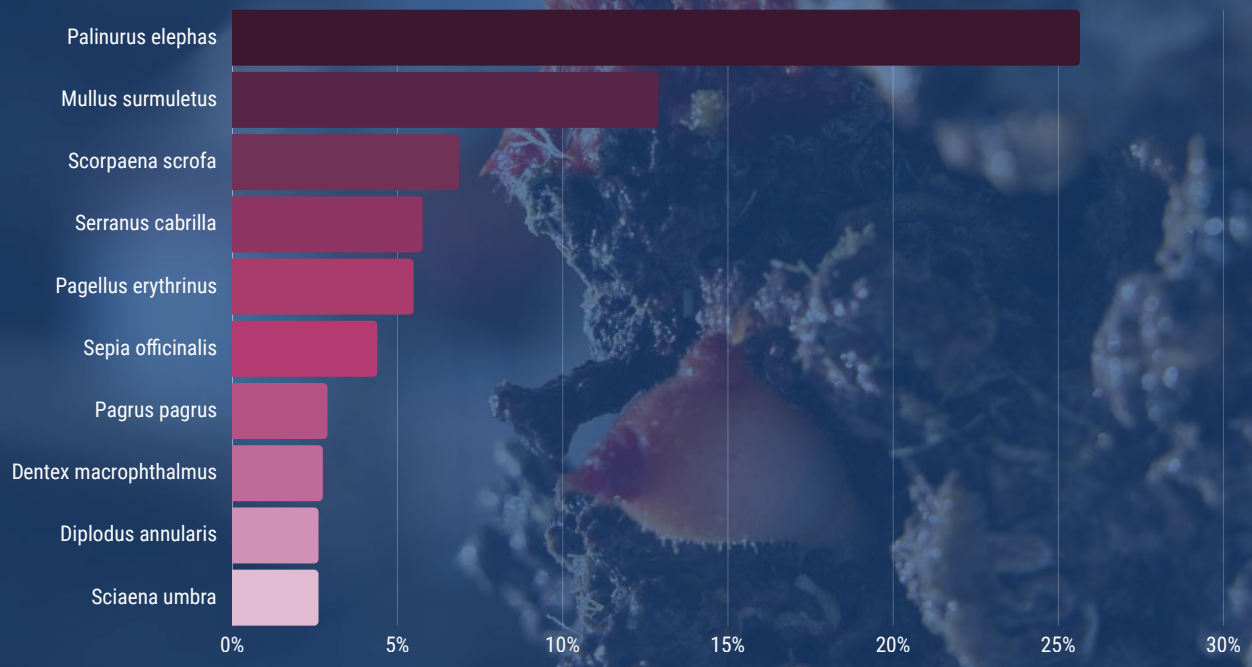


Figure 10. Composition of catches on Maerl for the 10 most abundant species (No. of individuals).

Regarding catch composition, the most abundant species were lobsters (*P. elephas*), accounting for 25.7% of the total catch (187 individuals), followed by the striped red mullet (*M. surmuletus*) with 12.9% (94 individuals), and scorpionfish (*S. scrofa)* with 6.9% (50 individuals). Species other than the top 10 represented in Figure 10 collectively comprised 28.1% of the total catch. Other species present included elasmobranchs (such as *Scyliorhinus sp., Dasyatis sp., Raja sp., Rostroraja alba*), monkfish (*Lophius piscatorius*) and common dentex (*D. dentex*).

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

Habitat 1170: Maerl beds

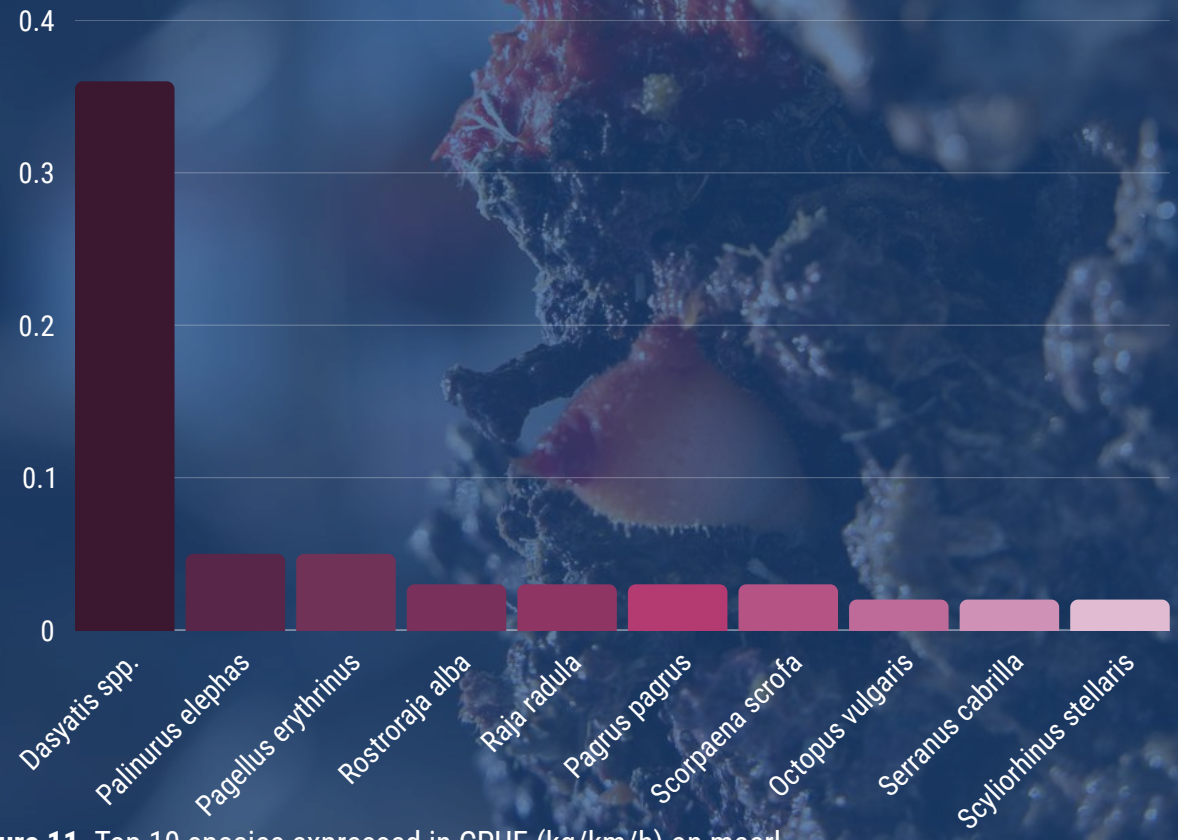


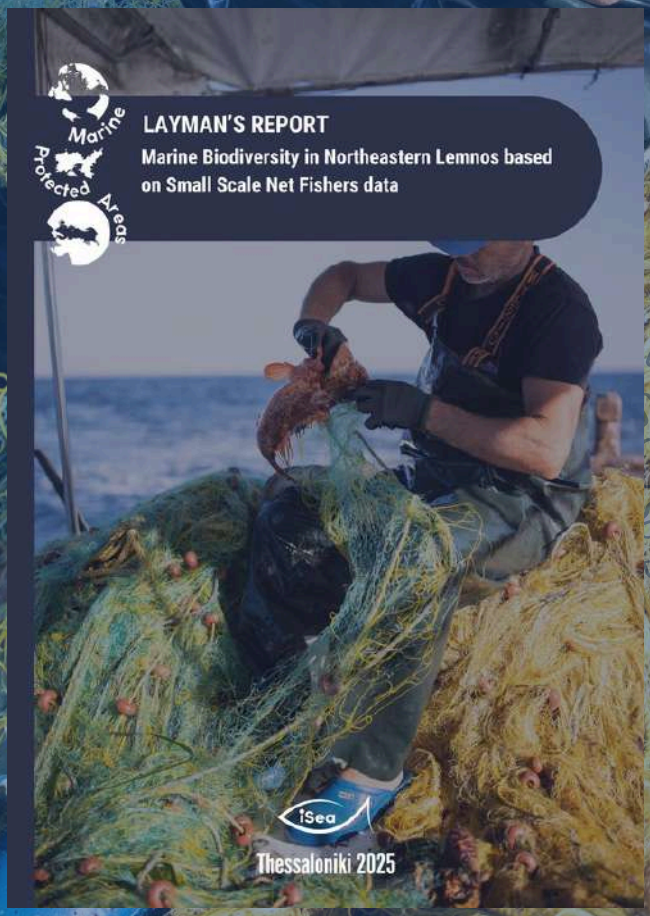
Figure 11. Top 10 species expressed in CPUE (kg/km/h) on maerl.

In terms of standardized CPUE (Catch Per Unit Effort), rays of the genus *Dasyatis*, lobsters (*P. elephas)*, and common pandoras (*P. erythrinus*) exhibited values of 0.36 kg/km/h, 0.5 kg/km/h, and 0.5 kg/km/h, respectively. Although lobsters showed the highest frequency and abundance, their relatively low biomass resulted in a lower CPUE, ranking them below *Dasyatis sp.* (Figure 11).

A.1 Estimate fish biomass and species-habitat affiliation using fisheries dependent data.

A.1.3 Layman's report

A Layman's report was produced in September 2025 based on the data collected during 27 fishing trips from 2023 through early 2025. The study showed distinct ecological roles among the three habitats. Posidonia meadows had the highest overall biodiversity and productivity but contained many juveniles, confirming its' importance as a nursery ground. Rocky reefs had the greatest species richness per unit of effort, reflecting their structural complexity and diverse fish communities. Maerl beds stood out as key habitats for mature individuals, especially spiny lobsters and nursehounds, indicating their value as adult or breeding areas. Species–habitat associations were also evident, with red mullet linked to Posidonia, lobsters and scorpionfish to maerl, and cuttlefish and scorpionfish to rocky reefs.



A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

The analysis of 35 corer samples collected during the projects activities from 2022 to 2024 yielded variable results, with particularly divergent findings in the 2024 samples that did not align with existing literature on the carbon stock content of *Posidonia oceanica* meadows. Acknowledging the inherent correlation between water depth, shoot density, and carbon sequestration capacity, the methodology for the 2025 samplings was revised. Specifically, shoot density measurements of the adjacent meadow were recorded in order to improve the accuracy of the results.



Figure 12: Sampling sites for blue carbon categorised per depth.

A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

Fieldwork activities were conducted from 3 to 17 June 2025. To ensure spatially distributed sampling and minimize bias a random sampling design was implemented across the meadow and near its edges (Figure 12). Sampling was divided by depth into four ranges: 5–10 m, 10–15 m, 15–20 m, and 20–25 m, with a total of 41 corer samples collected. The number of corers collected from each depth stratum is shown in Figure 13.

All surveys were conducted though scuba diving by teams of two. One-meter-long PVC corer tubes were used for sediment collection. For each sample, the insertion depth, length of extracted sample, sampling depth, and water temperature were recorded. Additionally, shoot density (cm^2/shoot) of Posidonia was assessed within a 5-meter radius around each station, using randomly placed 40 × 40 cm quadrats. All samples collected within the same depth range were spaced 25 meters apart to ensure consistent spatial distribution. This combined approach of sediment and shoot density data will enable a more comprehensive and accurate estimation of organic carbon content across different depth gradients.

A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

All the samples were weighed, labelled, and stored in a freezer until laboratory analysis was performed. The organic carbon content of the collected sediment samples was analysed following the IUCN methodology outlined by Howard et al. (2014). Specifically, the Loss on Ignition (LOI) technique was applied to determine the percentage of organic carbon in each sample using the relationship C_{org} (%) = 0.43 * LOI (%)− 0.33. This method is based on an empirical relationship between organic carbon and total organic matter, where the carbon content is inferred from the mass of organic material lost during combustion, specialised for seagrass habitats. The LOI analysis was carried out by an external certified laboratory and will be further analysed from an external collaborator, Dr. Dionisis Latinopoulos from AUTH, to assess the economic evaluation of the meadow. The results are expected by mid January.

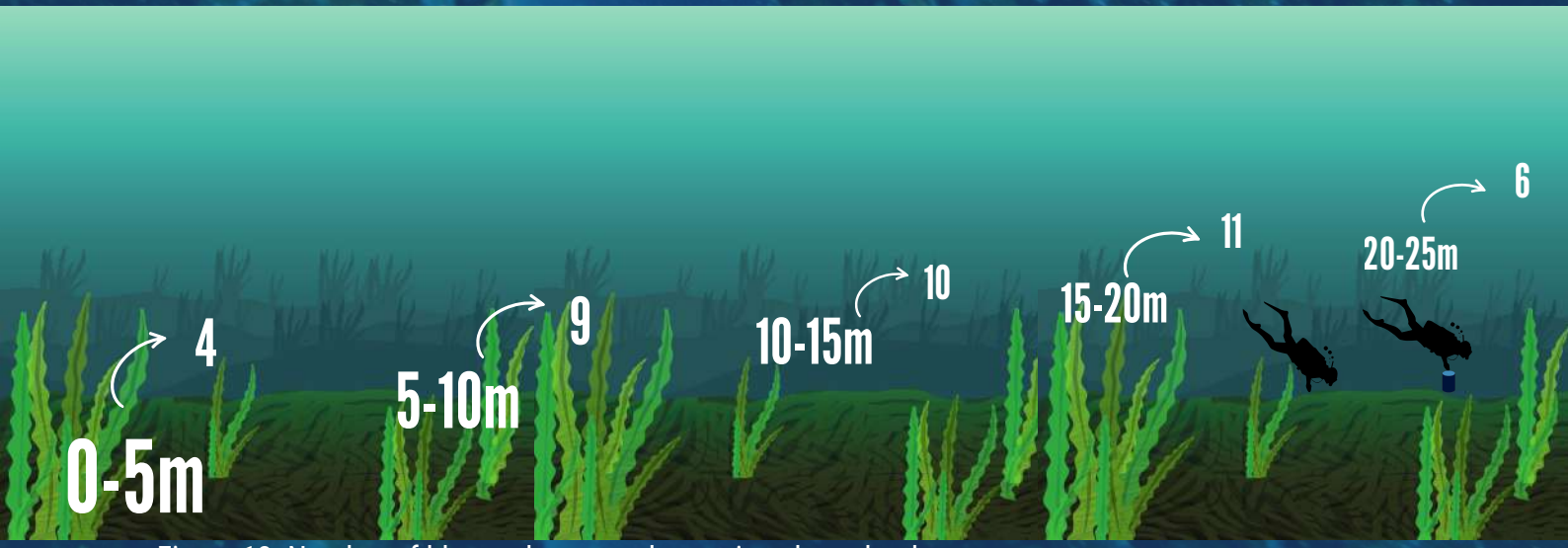


Figure 13: Number of blue carbon samples retrieved per depth range.

A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

For the assessment of the density, one quadrat (comprising 4 subquadrats) was used per corer extraction. In total, 41 corers were extracted (Figure 13) resulting in 164 assessed subquadrats. It is important to note that the substrate varied, ranging from sandy (32%) to muddy (37%) with the remaining 32% consisting of a mixed sandy-muddy substrate. Based on the LOI (%) results, the muddy substrate exhibited the highest values and subsequently the highest organic content, followed by the sandy substrate while the mixed substrate showed the lowest values.

As previously mentioned, one of the key parameters recorded was the insertion depth of the corer, which ranged from 8 cm to 28 cm with a mean depth of 19 cm. The extracted sediment showed a mean weight of 317 g (range: 22 g-558 g). Within these measurements, the insertion depth of 8 cm and the sample weight of 22 g were considered outlier values.

The weight referred to the original extracted weight where a sub-sample was taken, containing particles of cells, roots, and pebbles that were removed before the LOI process.

A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

For the determination of the density conditions, the protocol of RAC/SPA - UNEP/MAP (2014) was followed. The depth of the site was the main factor infulencing the density classification. Most of the subquadrats (Figure 14) assessed resulted in “Poor” status (37.2%; N=61), followed by “Bad” status (34.8%; N=57) and “Moderate” status (21.3%; N=35). Only 6.7% of the subquadrats were classified as “High” (N=2) and “Good” (N=9)

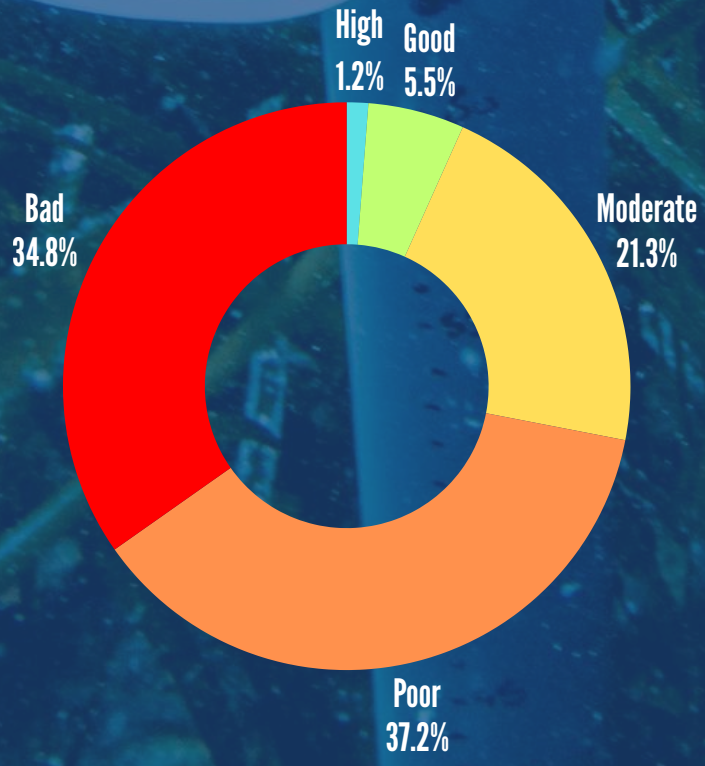


Figure 14: Percentage of density conditions corresponding to the site depth based on the RAC/SPA - UNEP/MAP (2014) monitoring protocol.

A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

Out of the 41 corers, the total mean carbon was 17.77 tC/ha with the highest mean found in the depth range of 20-25, followed by the depth ranges of 10-15, 5-10 and 0-5. The depth range of 15-20 showed very low carbon content with only 6.8 MgC/ha as presented in Figure 15.

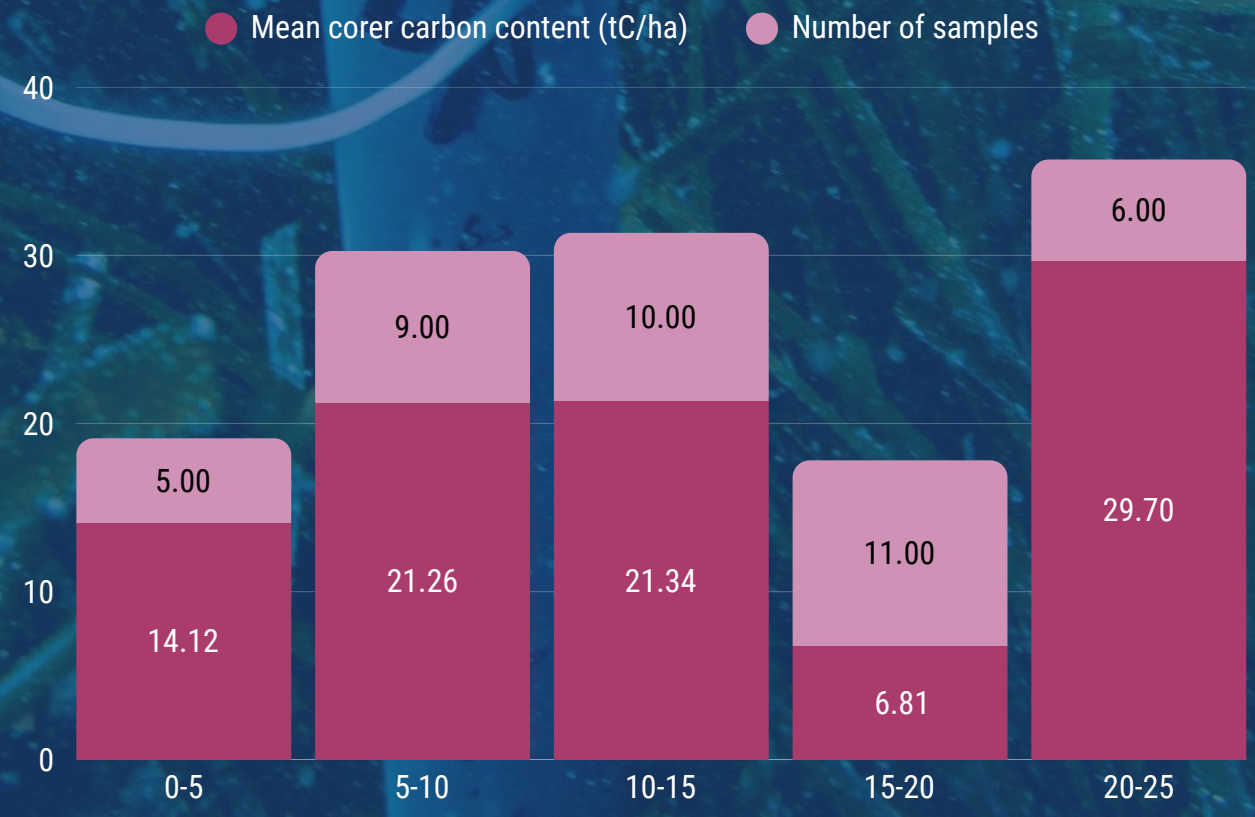


Figure 15: Mean organic carbon content and number of extracted samples categorised (tC/ha) by depth range.

A.2. Evaluation of ecosystem services of the Natura2000 site of Northeast Lemnos Island.

A.2.1 Quantification of blue carbon of the meadow hosted in the Natura2000 site.

Table 1: The outcome of the carbon content per depth range and parameters related to the extraction.

Depth range	Mean Total core carbon (MgC/ha)	SD	$N_{samples}$	Min Depth (m)	Max Depth (m)	Mean Density (cm^2/shoot)
0-5	14.12	11.00	5	4.6	5	275
5-10	21.26	10.32	9	5.1	6.4	262
10-15	21.34	7.64	10	11	13.4	254
15-20	6.81	6.11	11	15.1	19.3	236
20-25	29.70	8.99	6	20	22.9	145

The total blue carbon sequestrated by *Posidonia oceanica* was calculated by extrapolating the mean carbon values of the samples to the total meadow area. Based on the mapping of 2022 (Naasan Aga Spyridopoulou et al., 2023), the meadow covers 8,370 ha (83.7 km^2) and the estimated stock exhibited to be 156,085.17 MgC. According to the compined mapping (Taganos et al., 2018,Topouzelis et al., 2018, Naasan-Aga Spyridopoulou et al., 2023), the meadow covers 16,040 ha and the estimated stock exhibited to be 299,116.62 MgC.

According to previous blue carbon assessment conducted (Naasan Aga Spyridopoulou et al., 2023), the results for Lemnos region appeared to be lower than reported before. However, the results were comparatively higher than other areas due to the extent of the meadows' coverage. This indicates Lemnos as an important area for the blue carbon storage.

A.3. Habitat related research

A.3.1 Deployment of BRUVS for species assemblage and habitat use



Figure 16: BRUVS deployment sites categorised by depth.

Throughout iSeas' monitoring efforts most biodiversity data collected to date have been fisheries-dependent. In June and October 2025, these efforts were expanded by initiating fishery-independent monitoring using Baited Remote Underwater Video Systems (BRUVS). This method offers the opportunity to study species assemblages, behavior, interspecies interactions, and habitat use across a depth gradient, with minimal disturbance (Langlois et al., 2018).

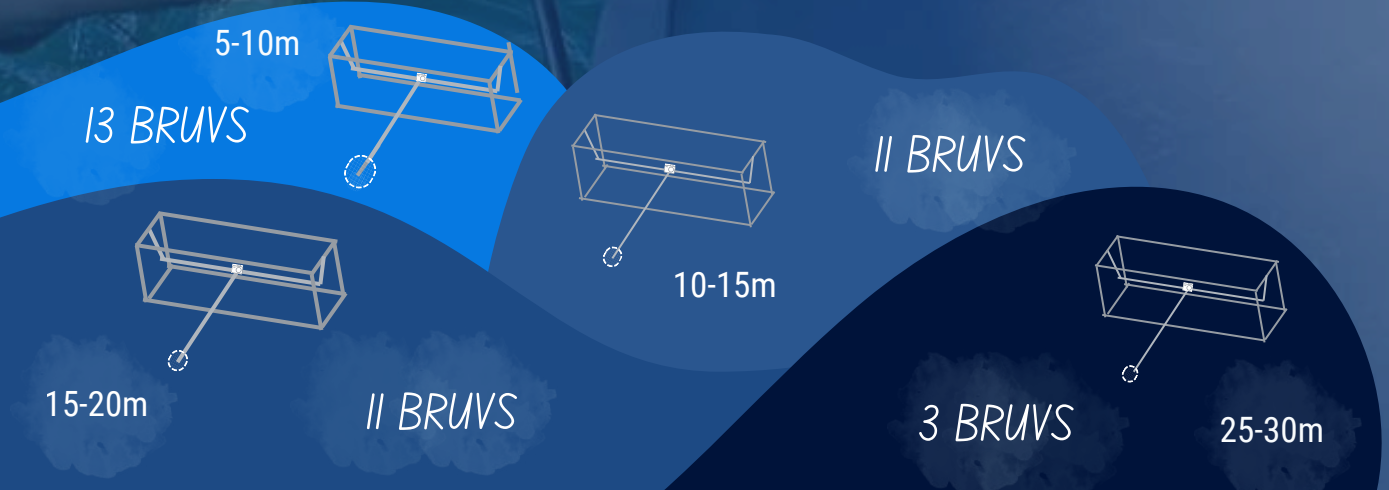
A.3. Habitat related research

A.3.1 Deployment of BRUVS for species assemblage and habitat use

During the fieldwork, 21 BRUVS deployments were conducted in June and 17 in October, corresponding to eleven sets of three, across three depth ranges: 5-10m, 10-15m and 15-20m. In addition 2 extra deployments were conducted in the shallow range and 3 in a deeper, from 25 to 30 meters. Due to the morphology and hydrodynamics of the area, there was a buffer of 2m for each depth range.

All BRUVS deployments had a minimum duration of one hour and were conducted between one hour after sunrise and one hour before sunset, with the exception of 6 deployments, carried out slightly later, closer to sunset and 3 deployments carried out after sunset using lights mounted on the system. The bait used in June deployments was twaite shad (*Alosa fallax*), while bogue (*Boops boops*) was used in October.

BRUVS deployment in Lemnos proved challenging, primarily due to strong currents that often prevented proper placement on the seafloor and occasionally caused the system to drift. In order to account for that, weights were attached to the base of the system during October samplings. This adjustement gave the system more stability and will be incorporated in future deployments. Additionally, although the baits used (*Alosa fallax and Boops boops*) are commonly used by local fishers for longline fishing, preliminary observations suggest they might not be as effective in attracting species.



A.3. Habitat related research

A.3.1 Deployment of BRUVS for species assemblage and habitat use

Preliminary analysis of videos showed that the most common species observed are the annular seabream, the rainbow wrasse *(C. julis)*, the painted comber (*S. scriba*), while octopus (*O. vulgaris*), moray eel (*M. helena*), european squid (*L. vulgaris*) and the brown meagre (*S. umbra*) were also observed however much less frequently. This may also highlight the difficalty of recording less abundant species in an open marine environment.

As BRUVS deployment in the area is still under testing in order to establish a standard protocol (i.e best bait species, deployment timing, system stability etc), further adjustments will be required to determine the best practises.

Each deployment is currently analysed individually, documenting all species observed, along with interspecies interactions and interactions with the bait. Two of the deployments, analysed so far, will be excluded from the analysis due to equipment malfunction during fieldwork.









A.4 Advocacy and management

A.4.1 Participate in the SES for Lemnos and the National Park that will be produced in collaboration with the local fishers' association

Comments on the SES 7B: Natura 2000 areas of the Attica Region and the North Aegean Region were submitted on the 15th of February 2025. The proposals were developed collaboratively with 18 different entities from the local communities of Lemnos and Lesvos. These measures were co-designed with local fishing associations, including the Fishers Association of Lemnos "Agios Nikolaos," and other community groups from both islands, drawing on scientific data provided by iSea and other researchers. The overarching goal is to ensure the protection and sustainable management of marine ecosystems while taking into account the needs and priorities of local stakeholders.

The proposals include among others:

1) Special measures for the protection of sharks, rays, and ommercially important species such as groupers, seabreams, and octopuses, with the aim of supporting population recovery.

This involves the creation of small protected areas for dusky grouper (Epinephelus marginatus) in known spawning aggregation sites, along with the continued enforcement of bans on protected elasmobranch species in accordance with national and EU regulations. Additional measures include spatial and seasonal fishing restrictions, depth limits, and modifications to fishing gear—such as the use of electropositive metals and magnets—to reduce bycatch.

2) Targeted removal of invasive species to help restore ecological balance.

3) Enhanced protection of the priority habitat Posidonia oceanica through the expansion of the GR4110001 area, which constitutes the largest "marine lung" of the Greek seas.

4) Awareness-raising campaigns aimed at informing and engaging local stakeholders.

A.4 Advocacy and management

A.4.2 Submission of a relevant proposal, for the expansion of the marine area of the NATURA2000 GR4110001 region

Regarding the submission of the proposal for the extension of the Natura 2000 site, we have been in communication with the competent authorities responsible for implementing the action and submitted all relevant documents to the Ministry of Environment and Energy, Department of Protected Areas, on 21st August. We have also been in contact with the Environmental Consultancy Company responsible for the "Monitoring and Assessment of the Conservation Status of Protected Species and Habitats in Greece", ENVECO S.A., as well as HCMR, which was in charge of providing recommendations for the expansion or establishment of marine Natura 2000 areas. Furthermore, all relevant data were forwarded to the CEO of N.E.C.C.A., Mr. Konstantinos Triantis, during an in-person meeting on 1st November. We are currently awaiting further updates before determining our next steps.



A.5 Coordination of the project

A.5.1 Monitoring the project actions, ensuring high-quality deliverables and reporting

One project manager has been assigned to the project, who is closely monitoring its actions to ensure their timely implementation, while a broader team is also involved in some of the activities (e.g., onboards, diving, financial reporting, analysis, communication). Regarding projects timeline, the majority of planned actions have been implemented on schedule. Delays have occurred to ROV deployments due to equipment malfunction. However, these activities have been rescheduled and are planned during December sampling period.

A.5.2 Financial monitoring

The project manager, the conservation officer, and the financial officer are following the finances of the project, ensuring that the expenses follow the budget. All original receipts are kept in iSea's headquarters and copies can be given to the funder upon request. The expenses to date can be seen below. The remaining expenses for fishers' compensation for the autumn/winter sampling will be included in the updated report once all actions have been completed.

A.5 Coordination of the project

A.5.3 Communication of the project

Website Reach



The project website has been updated with existing materials, data and resources of the work in Lemnos from 2022-2025 to increase accessibility.

Mass Media Reach

1 Press Release was sent to the Local Press with the aim to present project's actions in the area of Lemnos in 2025.







The articles were published in the local press: 24 News, Lesvospen, Limnos FM100, Limnos Report, LimnosFM100, OnLemnos.gr.

Social Media Reach

4 posts on Social Media platform of iSea, presenting the work in Lemnos and informing about the marine biodiversity and different habitats of the area.

94,700 people reached

33,652 people reached

2,645 people reached

22,415 people reached

Also a Newsletter was sent on LinkedIn which received **602 views**.

Bibliography

Boudouresque, C. F., Bernard, G., Bonhomme, P., Charbonnel, E., Diviacco, G., Meinesz, A., ... & Tunesi, L. (2006). Préservation et conservation des herbiers à Posidonia oceanica. Ramoge.

Giakoumi, S., Sini, M., Gerovasileiou, V., Mazor, T., Beher, J., Possingham, H. P., ... & Katsanevakis, S. (2013). Ecoregion-based conservation planning in the Mediterranean: dealing with large-scale heterogeneity. PloS one, 8(10), e76449.

Howard, J., Hoyt, S., Isensee, K., Telszewski, M., & Pidgeon, E. (2014). Coastal blue carbon: methods for assessing carbon stocks and emissions factors in mangroves, tidal salt marshes, and seagrasses.

Langlois, T., Williams, J., Monk, J., Bouchet, P., Currey, L., Goetze, J., ... & Whitmarsh, S. (2018). Marine Sampling Field Manual for Benthic Stereo BRUVS (Baited Remote Underwater Videos)[Version 1].[SUPERSEDED by.

Roxani Naasan Aga - Spyridopoulou, & Dimitris Poursanidis. (2024). Posidonia oceanica meadows (1120) Norheastern Lemnos island [Data set]. Zenodo. https://doi.org/10.5281/zenodo.10912351

Topouzelis, K., Makri, D., Stoupas, N., Papakonstantinou, A., & Katsanevakis, S. (2018). Seagrass mapping in Greek territorial waters using Landsat-8 satellite images. International journal of applied earth observation and geoinformation, 67, 98-113.

Traganos, D., Aggarwal, B., Poursanidis, D., Topouzelis, K., Chrysoulakis, N., & Reinartz, P. (2018). Towards global-scale seagrass mapping and monitoring using Sentinel-2 on Google Earth Engine: The case study of the Aegean and Ionian seas. Remote Sensing, 10(8), 1227.

Gerakaris, V., Panayotidis, P., Vizzini, S., Nicolaidou, A., & Economouamilli, A. (2017). Effectiveness of Posidonia oceanica biotic indices for assessing the ecological status of coastal waters in Saronikos Gulf (Aegean Sea, Eastern Mediterranean). Mediterranean Marine Science, 18(1), 161–178. https://doi.org/10.12681/mms.1893


iSea