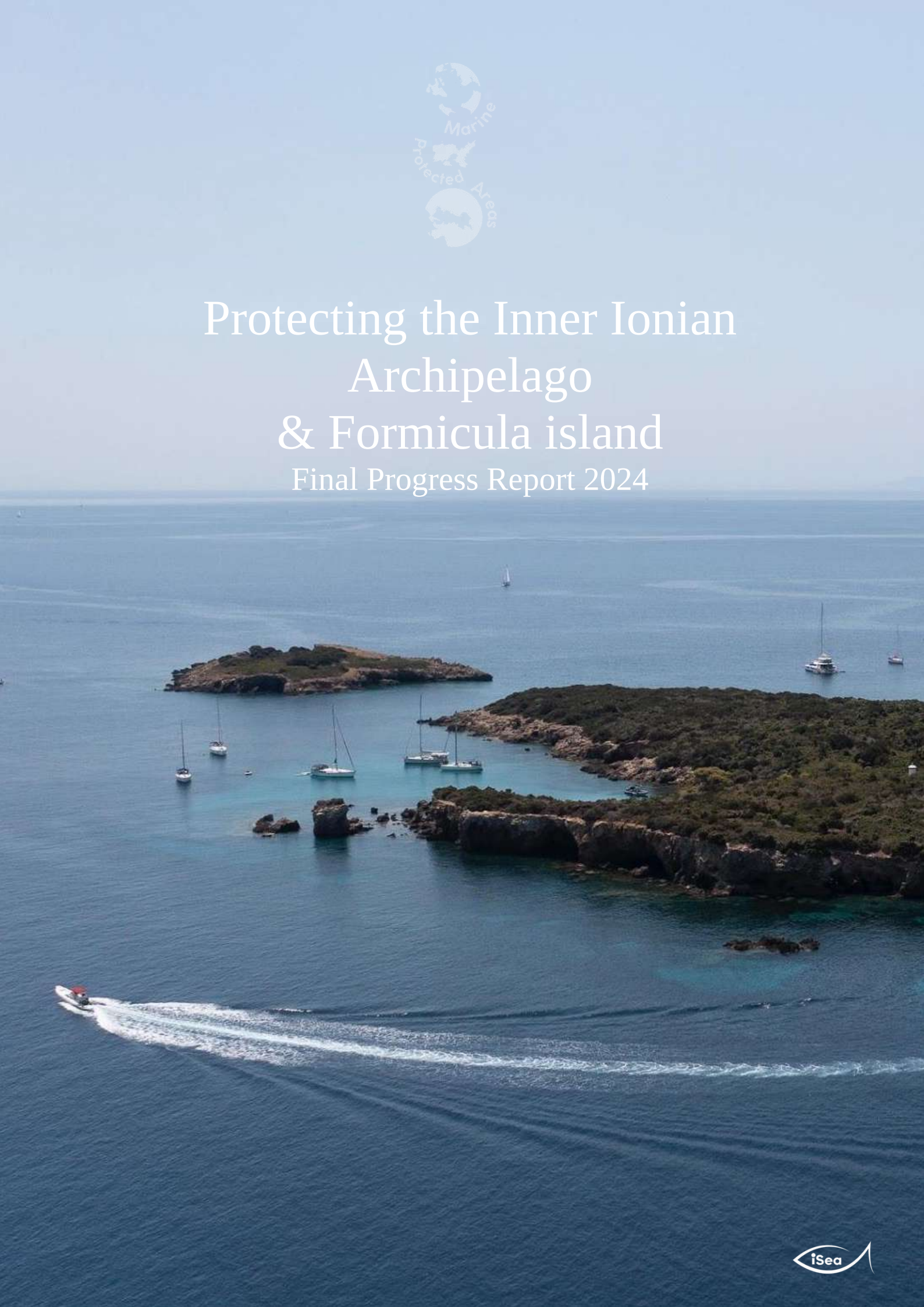
Protecting the Inner Ionian Archipelago & Formicula island

Final Progress Report 2024



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Declaration of conflict of interest:

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this report.

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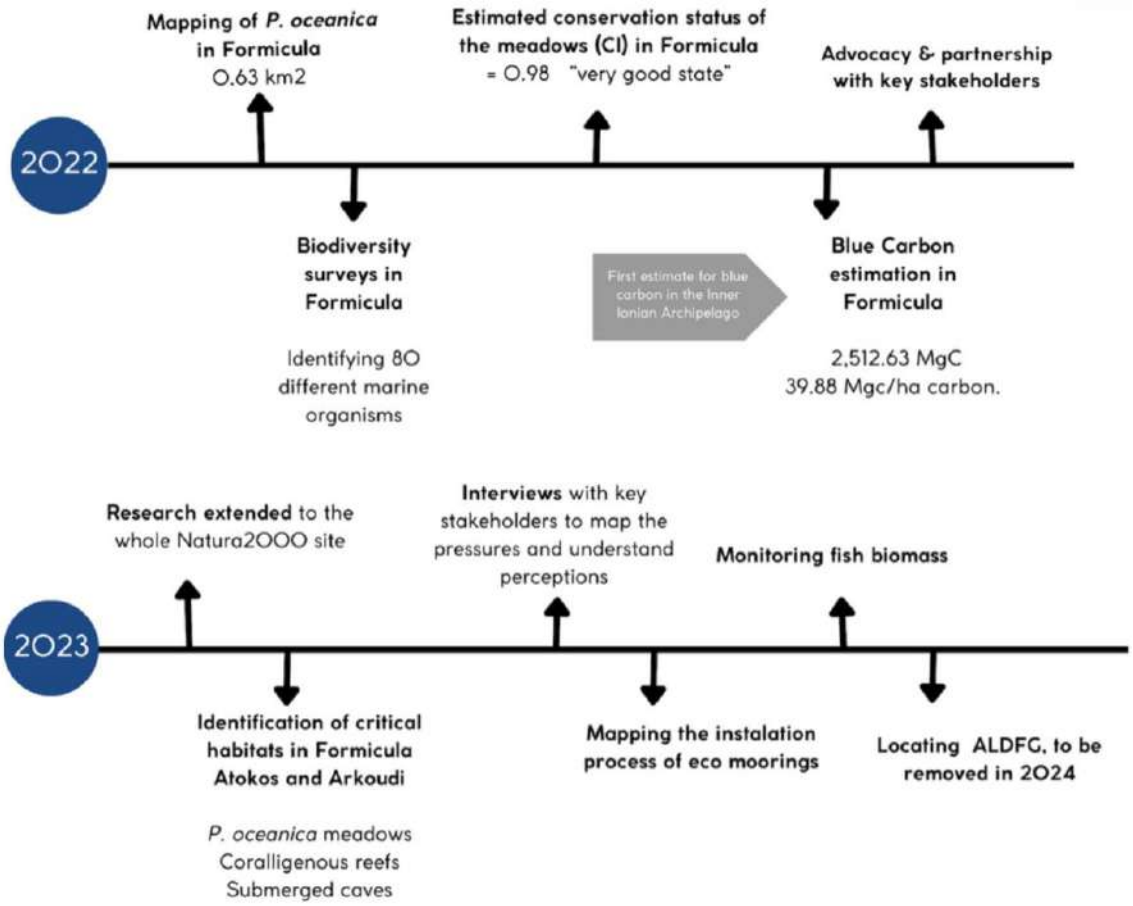
Baseline information

The Inner Ionian Archipelago, is considered an Area of Community Interest and designated as a Special Area of Conservation (SAC). The region has a great ecological value due to the presence of a significant number of marine megafauna species and the presence of extended *Posidonia oceanica* meadows. The site is also part of the wider Ionian Archipelago Important Marine Mammal Area – IMMA. In the past, the Inner Ionian Sea Archipelago hosted an important resident population of the endangered common dolphin, but in less than ten years their population collapsed from 150 to zero because of overfishing of their prey (Bearzi et al., 2006; Piroddi et al., 2011). Two species of sea turtles are present in the area, while the site has been also designated as an "Important Bird Area" (IBA) and more recently, identified as an Area of Interest (AoI) for sharks and rays. Finally, the distinct morphology of the area, characterized by submerged caves, provides an important habitat for the reproduction of the Endangered Mediterranean monk seal, and the area has historically been an important feeding and breeding ground with their presence appearing to have increased in recent years, and the record of more than 30 individuals with some showing strong site-fidelity. The condition of monk seals in the waters around Formicula is at the same time very exciting (due to the unprecedented and increasing numbers of sightings lately, including pups), but in parallel very worrisome due to disturbance caused by tourism. Formicula, although an uninhabited island of just 0.15 km^2, in the summer months is characterized by heavy traffic of boats, which often stop for leisure purposes. The regular presence of Mediterranean monk seals on the island has made it a destination for their observation which is done in an uncontrolled and often intrusive way. Some of the human activities regularly seen during the summer months include tourists chasing the seals, attempting to swim with them, and entering the breeding or resting caves. Despite this knowledge and the continued advocacy for the matter, and the prestigious commitments made by the Greek Government at Our Oceans Conference about a National Park in which the IIA and Formicula are included, there has been no real promising action from the ministry that would prevent this from happening for yet another year. At the same time, the uncontrolled anchorage within *Posidonia meadows* results in the fragmentation and degradation of the habitat, with characteristic signs of anchorage at the upper (shallow) boundary of the existing meadow while on the main beach of the island, where boats normally concentrate, the meadow has receded completely. Similarly, to Formicula, Atokos and Arkoudi are uninhabited islands where iSea detected the presence of coralligenous reefs, and underwater caves however the knowledge on these is limited. These islands also represent popular tourist destinations for sailing boats. A brief timeline of iSea's work in the region can be seen below.



Aims:

The ongoing activities aim at contributing to science-based decision-making for the Inner Ionian Sea Archipelago's effective protection by a) closing knowledge gaps for key habitats and species, b) advocating for protection, and c) engaging and empowering stakeholders in bottom-up management.

Actions 2024

A. Engagement with local stakeholders:

A.1 Engagement with stakeholders

Since the first year of the project, iSea has been in contact with many stakeholders in the area as their active engagement is key in achieving better management and protection for the area, while many of them are considered stable collaborators, these include Tethys Research Institute, Blue Marine Foundation, The MS Christina, Ionian Pro Divers, Nautilus Diving Club, Lefkas diving centre and Pura Vida, while many new stable collaborators were kept in close contact this year. By March 2024, iSea had engaged with several stakeholder entities to produce a letter signed by each regarding the protection of Formicula (see action C.1).

As part of the effort to increase signatory participation, the team visited Lefkada and nearby areas and undertook informal and formal meetings with stakeholder groups including sailing rental companies in Lefkada marina, dive centers of Meganisi, Lefkada, Palairos and Vonitsa, fishers' associations of Lefkada, Meganisi & Vonitsa (for the fleet in Palairos) and local business owners of Meganisi and cultural associations in Lefkada, during which the case for Formicula's protection was discussed and posters/materials were shared with business owners.

Furthermore, iSea had the opportunity to present their work in the Inner Ionian Sea Archipelago on multiple occasions. These include, one presentation co-organised by Melanindros association in Neochori, where sailing companies and the public were invited, with approximately 20 attendees; One presentation during the open public discussion on allocation of sewage treatment of Lefkada (from the Inner Ionian Sea to the open Ionian Sea, with approximately 50 attendees; Participation during the round table meeting between sailing companies operating in Lefkada marina discussing sustainability in sailing and sharing of materials and ideas, organized by Sustainable Sailing Greece, with approximately 15 participants; A meeting with the professional fishing association of Lefkada with the president (Mr. Nektarios Kavadas) and two members of the board, presenting the case of Formicula and discussing possible conflicts of interest and co-signing the letter; A meeting with the professional fishing association of Meganisi with the president (Mr. Kallinikos Vissarion) and an active member of the association, presenting the case of Formicula and discussing the conflict of interest regarding the proposed measures. Finally, one-on-one meetings with boat rental companies and diving centers were completed on many occasions to disseminate materials and have informal discussions.

On the second field visit of iSea in the region of the Inner Ionian Archipelago a total of 12 meetings with local stakeholders were conducted. In particular on the 20th of September iSea staff met with Pura Vida, Sea Farer Cruising and Sailing holidays, Blue Memories, and Lefkas Diving Center to distribute awareness-raising materials (see D.1). While on the 21st iSea team met with the diving center and dechnical diving crew in Palairos (Ionian Pro Dive) to discuss actions for ADLGF (ghost net) removals in a specific location as well as their observations and Local Ecological Knowledge (LEK) regarding critical habitats presence and threats. Finally, on the 22nd of September, iSea met with four professional fishers from Mytikas, Kalamos, and Lefkada to acquire insight into coralligenous assemblages' presence and habitat degradation related to aquaculture and on the 28th of September with professional and recreational fishers of Kastos for the same reason. Finally, iSea also met with municipal authorities both from Lefkada and Xiromero (see C.1 for details).

B. Data collection

B.1 Conducting ROV surveys to identify coralligenous habitats and submerged caves in Formicula Arkoudi and Atokos islets.

The action involved the collection of data for the identification of critical habitats in the Inner Ionian Archipelago through:

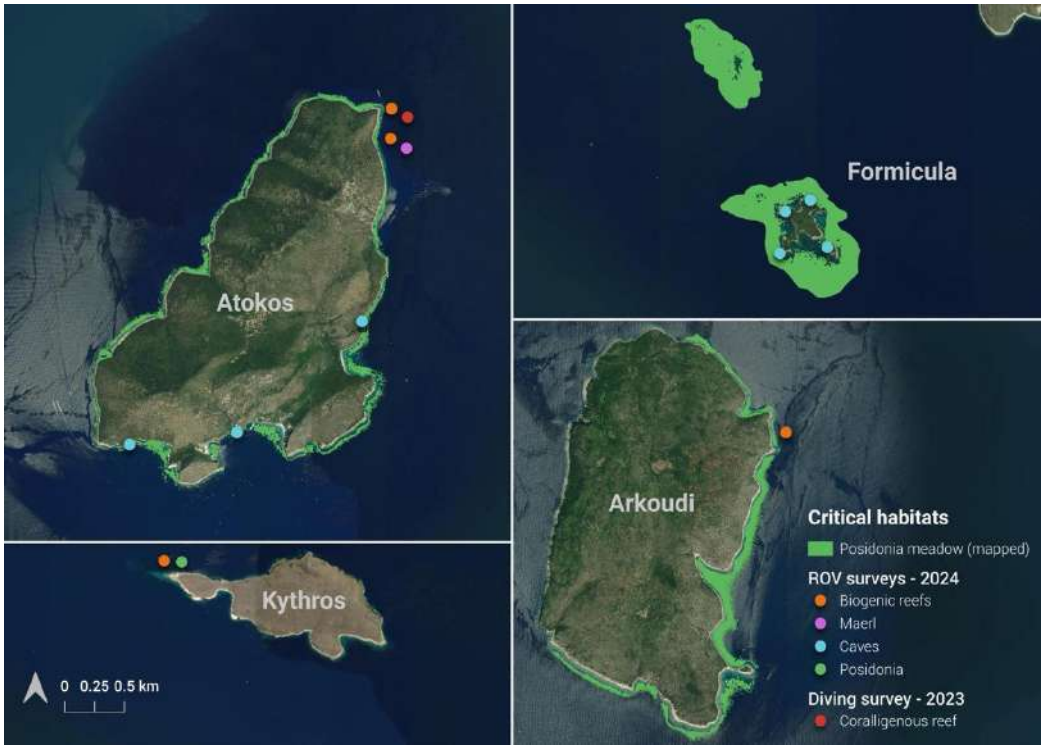
i. the completion of at least one ROV survey per area to identify point observation data on critical habitats including coralligenous reefs, biogenic reefs, and maerl beds
ii. boat surveys to identify shallow underwater caves partially submerged, and
iii. the use of local ecological knowledge (LEK) to guide research efforts through interviews with locals.

More analytically, eight ROV surveys were undertaken between the 24th of September, 2024, and the 28th of September, 2024. These included two surveys per site for Atokos, Arkoudi, and Formicula, as well as one survey each for Kastos and Kythros, expanding from the initially proposed study site. Table 1 presents the outline of the surveys completed (survey id, area, gps point, survey lower depth). In addition, six LEK interviews were conducted with professional fishers and divers in order to gather information about the presence of habitats of interest. These interviews had an informal character without a dedicated questionnaire, however, localities were obtained including coordinates and depth. While there were reports of a past fishery that needs to be further examined to get a better understanding.

Table 1: Summary table of ROV surveys completed

Survey ID	Location	Lat	Long	Survey maximum depth (m)
#1	Arkoudi	38.562976N	20.724275E	64.45
#2	Arkoudi	38.555957N	20.724972E	82.58
#3	Atokos	38.503221N	20.823858E	66.97
#4	Atokos	38.501426N	20.825250E	63
#5	Formicula	38.564257N	20.858942E	26.18
#6	Formicula	38.562801N	20.859296E	37.5
#7	Kythros	38.588442N	20.785303E	50.2
#8	Kastos	38.568232N	20.898135E	80.22

A total of four biogenic reef observations were made, two in Atokos, one in Kythros, and one in Arkoudi. Also, a record of maerl bed was confirmed in Atokos and extensive *Posidonia oceanica* meadows were detected in Kythros (Fig 1). In addition, numerous caves were detected, three in Atokos and four in Formicula. Despite the observations of washed-up *Corallium rubrum* corals and multiple reports from LEK, coralligenous habitat was not detected during the ROV surveys. A confirmed case of one presence record however was made during the fieldwork of 2023 in the context of the same project in Atokos (Fig 1).



At the first station in Arkoudi at depths between 38-42.4m the observed habitat was mixed (rocks, macrophytes, *Caulerpa spp*.), while at depths between 42-65m Biogenic reef was observed (Fig 2). At the second station in Arkoudi, the biogenic reef extended in depths between 66-82m, while mixed habitats (boulders, macrophytes, biogenic reef) and maerl bed were observed at 82m (Fig 3). In Atokos, on the first survey, a biogenic reef was detected between 46-67m. On the second, mixed habitat (boulder, macrophytes, biogenic reef) was detected between 45-63m and Posidonia meadow up to 13.7m (Fig 4). In Kythros islet, the deep limit of Posidonia was noticed at 28.4m with a steep slope ending, indicating the beginning of a biogenic reef for approximately down to 50m (Fig 5). In Formicula, Posidonia deep limit was observed at 26.18m on the first station, while on the second survey macrophytes and sand were detected between 33-37.5m (Fig 6). In Kastos no critical habitats were detected in one survey completed till the depth of 80.22m (Fig 7), however, the LEK suggests that the islands' southern side is the most critical and it will be surveyed in the future. Other observations of the ROV surveys include ghost nets, seen in Arkoudi at very high quantities, as well as a group of lionfish at 33.2m depth (Fig 2). A species list observed during the ROV surveys was drafted and included in Annex 1. In total 20 species were identified, four of which are listed under protection or exploitation regulations. Summarizing, a biogenic reef was observed in depths between 42-82m, Maerl at 82m, and Posidonia down to 28.4m.

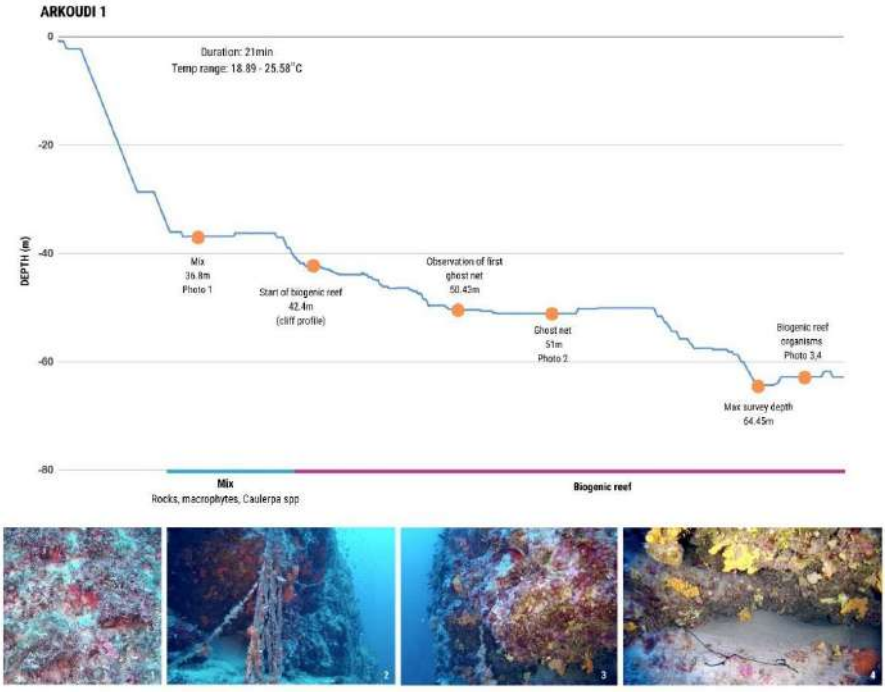


Fig 2: ROV survey insights from the first station in Arkoudi. Mixed (rocks, macrophytes, Caulerpa spp.) and Biogenic reef habitats were detected.

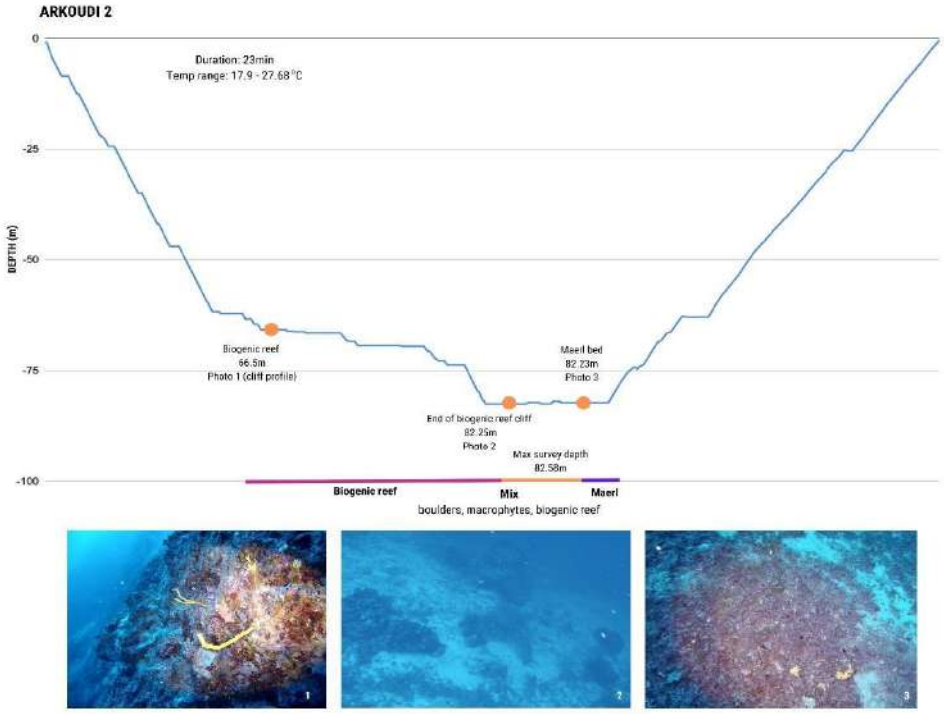


Fig 3: ROV survey insights from the second station in Arkoudi. Biogenic reef, Mixed (boulders, macrophytes, biogenic reef) and Maerl bed habitats were detected.

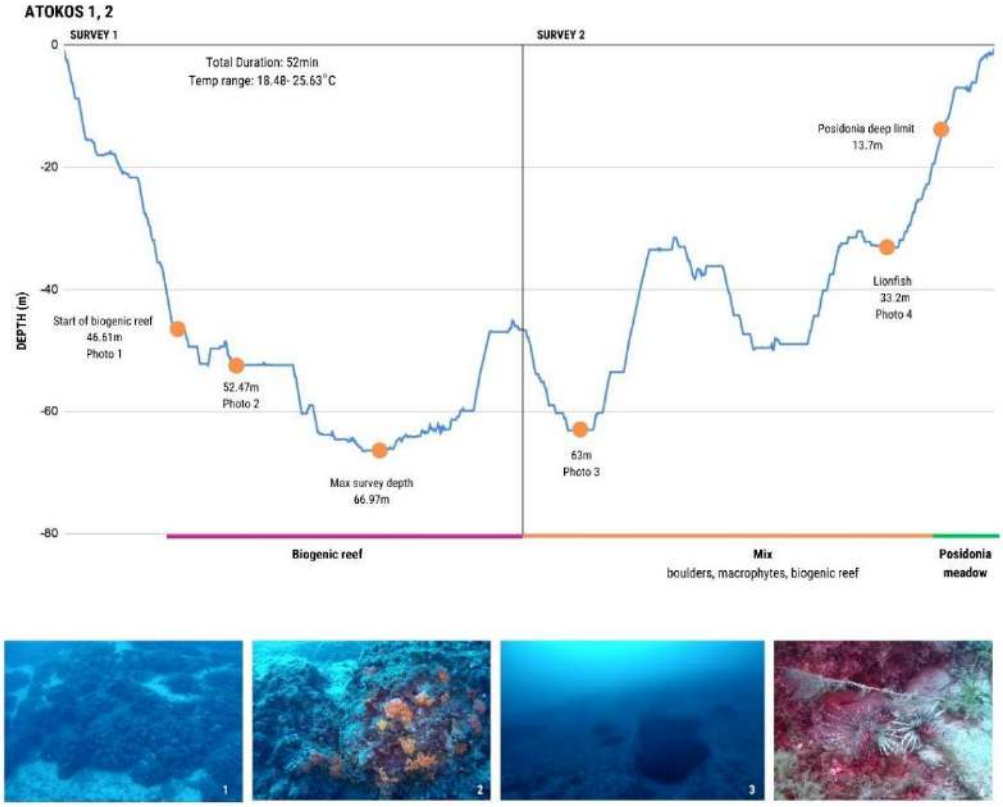


Fig 4: ROV survey insights from Atokos. At the first station, biogenic reef habitat was detected, while at the second, Mixed (boulder, macrophytes, biogenic reef) and Posidonia meadow habitats.

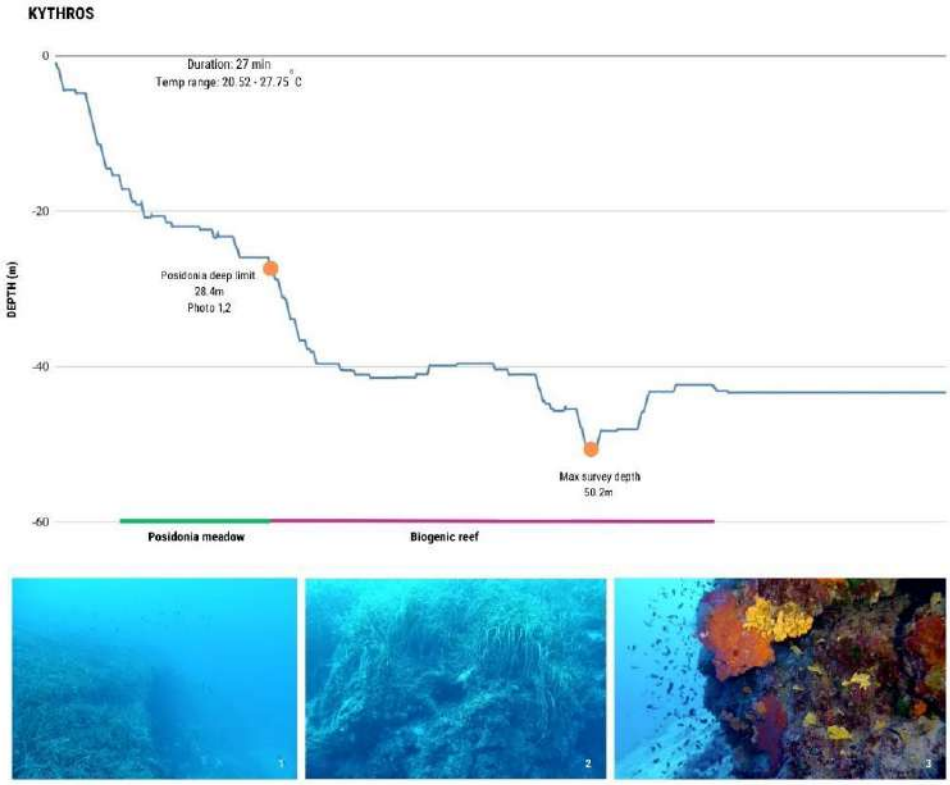
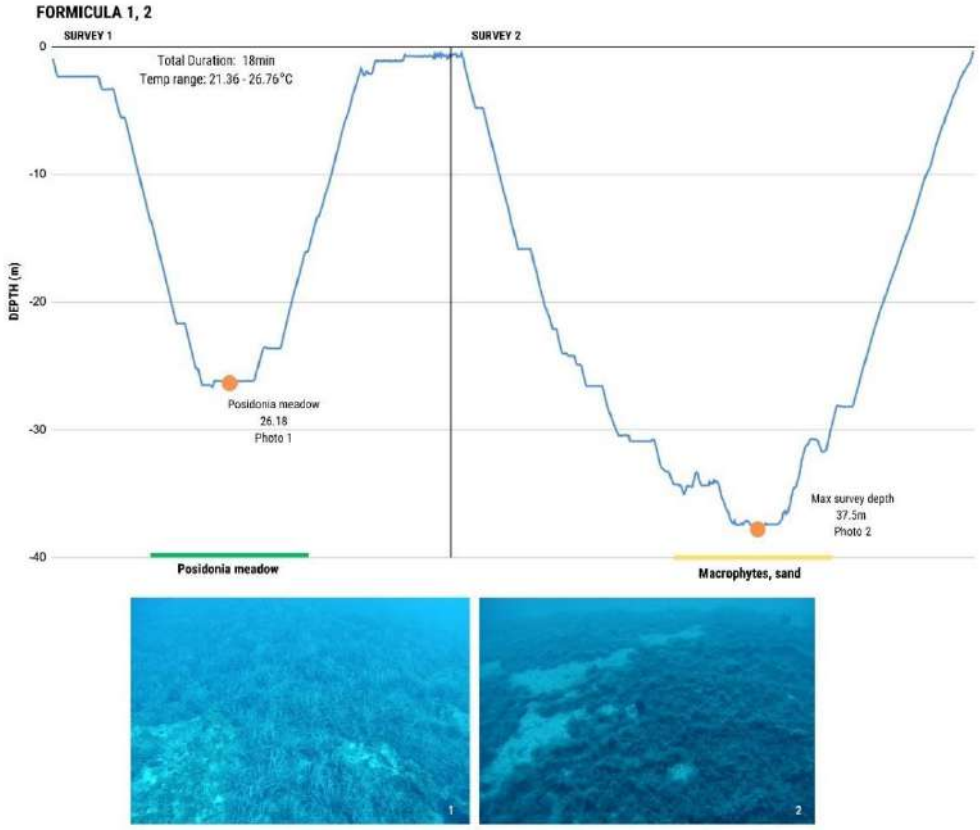


Fig 5: ROV survey insights from Kythros. Posidonia meadow and Biogenic reef habitats were detected.


FORMICULA 1, 2
SURVEY 1
SURVEY 2
Total Duration: 18min
Temp range: 21.36 - 26.76°C
DEPTH (m)
0
-10
-20
-30
-40
Posidonia meadow
26.18
Photo 1
Max survey depth
37.5m
Photo 2
Posidonia meadow
Macrophytes, sand
1
2

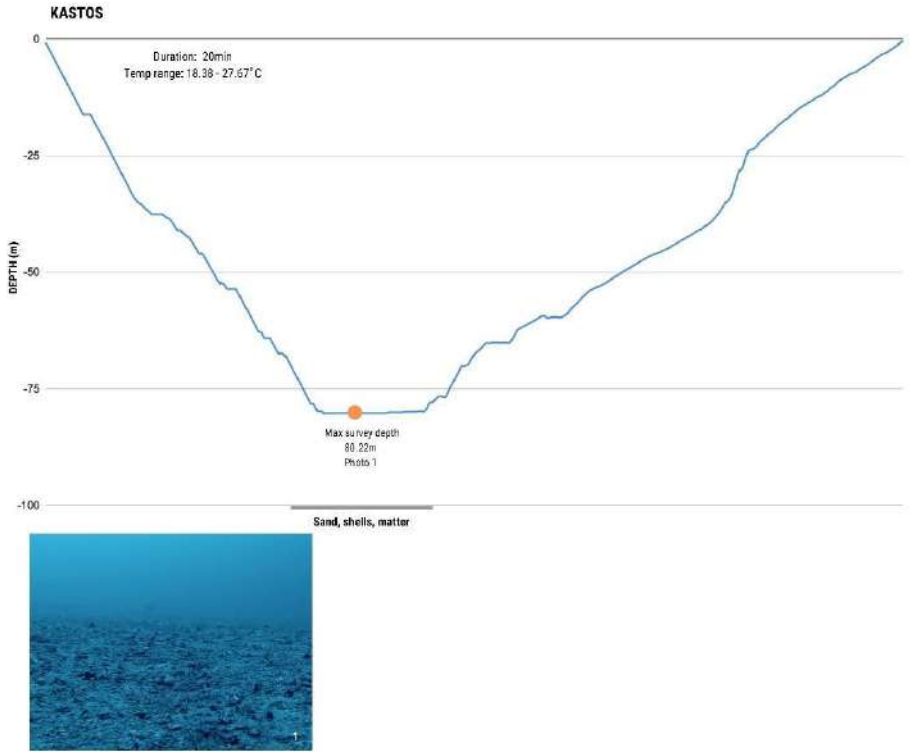


Fig 7: ROV survey insights from Kastos. Benthos consists of sand, shells, and matter, while no critical habitats were detected.

ROV surveys are characterized by numerous challenges that we were called upon to overcome during the data collection. The battery has a time constraint for the duration of its use, as well as the quality of the images is limited which in terms limits the identification capabilities of species and any other interesting observations. The nature of such surveys has also many movement constraints, due to the high risk of entanglement and collision of the device, reducing the capability of the camera to approach species and surfaces of interest. Furthermore, operations are weather-dependent, while wavy conditions add several levels of difficulty to them. In addition, the ROV lacks the ability to track GPS points and connect them to the observations, resulting in limitations on the accuracy of the results.

Added Value

Stranded fragments of *Corralium rubrum* were found and collected in Mytikas Northern shoreline on the 23rd of September (Fig 8). Specimens were stored to be used for future genetic analysis and comparison with other regions. These anecdotal findings and LEK interviews suggest the presence of the species around the area of Mytikas and Kalamos.

B.2 Defining the conservation status of Posidonia meadows using indexes and visual observations to set a baseline for long-term monitoring

In order to evaluate the health status of the meadow, a series of recognised and commonly used indices were utilised, namely; the Biotic index for *Posidonia oceanica* (BiPo; Lopez y Royo et al., 2010), the *Posidonia oceanica* Rapid Easy Index (PREI; Gobert et al., 2009) and the

Conservation Index (C.I.; Moreno et al., 2001). The BiPo and PREI indices give an indication of the meadow's ecological status in the context of assessing Posidonia oceanica, a bioindicator species for water quality in accordance with the Water Framework Directive (WFD), using metrics such as shoot density, the shoot leaf surface, shoot length, the deep limit of the meadow and its typology. The PREI index also utilises an additional descriptor, the ratio of the epiphyte biomass to the leaf biomass. The third index, CI, is an ecological index that assesses the status of the habitat considering the continuity of the meadow and the ratio between the percentage of the coverage of the live meadow against the coverage of the matte morte (dead meadow). Data collection took place under the research permit from the Ministry of Environment (Prot. No: ΥΠΕΝ/ΔΠΔ/44129/2657; ΑΔΑ: 97Μ54653Π8-Γ8Ρ). Following the protocol of the sampling (Montefalcone et al., 2007), a central point was determined as the start of the four transects of 25m, conducted in opposite directions, creating a cross-like shape. The transects were completed using a measuring tape in order to note the coverage of the meadow and change in habitat to the nearest cm (Posidonia, sand, rocks, dead matte). In the surrounding area five quadrats of 40x40cm (divided in 4 equal subquadrats; 20x20cm; Boudouresque et al., 2012), were used to count the shoot density, number of plagiotropic and orthotropic rhizomes, and from each sub-quadrat, an orthotropic shoot (N=130) was collected for further phenological analysis. The deep limit of the meadow along with its typology was also recorded as a parameter for indices calculation.

A total of 8 sampling stations were completed for this activity (Fig 9, Table 2). The fieldwork took place in late September from 21/09/24 until 28/09/24 (Table 2). An intern from the University of Bologna was involved in the data collection and analysis for their undergraduate thesis. Eight locations across five distinct areas were selected in order to collect a) baseline data in the areas of focus where an accurate Posdionia map exists (Formicula, Atokos, and Arkoudi) to allow for long-term monitoring of the status of the habitat as its monitoring is required by all member states according to the Water Framework Directive (2000/60/EC) and the Marine Strategy Framework Directive (2008/56/EC), while actions to preserve it are required to achieve and maintain Good Ecological Status (GES), as well as b) include two sampling stations where Posidonia is under some type of anthropogenic pressure. For the collection of the baseline data in the mapped areas, two samplings were conducted in Atokos, two in Arkoudi, and two in Formicula. The pressure site stations were carried out in close proximity to the aquaculture facilities in Kalamos and Asprogiali. Regarding the chosen location of the pressure sites initially, these were different, however, to further support good collaboration with the local community and improve the usability of the results by other stakeholders, these two stations were selected. For the estimation of the CI index, the stations with observed *Halophila stipulacea*, (SS1, SS3, SS5) were assumed as dead matte zones of the meadow. This is because is an invasive species of seagrass that is known to colonise and grow on dead matte areas (Sghaier et al., 2011). From SS1 and SS2, the dataset displayed some outlier values (zero values for the density parameter due to the presence of dead matte). Therefore, to take this into account within the analysis and results, the median of the density value was used for the calculation of the BiPo and PREI index, instead of the mean that is used for the other stations.

Fig 9: Sampling stations for assessing health status of Posidonia oceanica in the Inner Ionian Archipelago

Table 2. Information on locations where the samplings of *Posidonia oceanica* status were conducted.

Date	Sampling station	Name	Coordinates
21/9/2024	Sampling station 1	Kalamos	38.610204N, 20.878092E
22/9/2024	Sampling station 2	Atokos 1	38.478466N, 20.813016E
24/9/2024	Sampling station 3	Atokos 2	38.482852N, 20.822497E
25/9/2024	Sampling station 4	Formicula 1	38.562620N, 20.856525E
26/9/2024	Sampling station 5	Arkoudi 1	38.549627N, 20.715356E
27/9/2024	Sampling station 6	Arkoudi 2	38.561603N, 20.719264E
28/9/2024	Sampling station 7	Asprogiali	38.539046N, 21.011846E
28/9/2024	Sampling station 8	Formicula 2	38.565612N, 20.851244E

Regarding the results, due to the loss of slade data from the final sampling station (Sampling Station 8) in Formicula this station is not assessed in the present report. The results evaluating the health status of the meadows are presented below using the indices of CI, BiPo and PREI (Table 3). According to the CI index, three sampling stations were classified as “High state of

conservation" (SS4 Formicula 1, SS6 Arkoudi 2, SS7 Asprogiali). Three of them exhibited a "Low to moderate conservation status" (SS2 Atokos 1, SS3 Atokos 2, SS5 Arkoudi 1) which are characterised as areas with high anchoring pressure during the summer months (iSea, Unpublished Data, 2024). Only one showed the worst status of "Advanced degree of regression" (SS1) which was the station in Kalamos aquaculture site (Table 3). As this index focuses on the percentage of the alive compared to the dead meadow (population level parameters), indices like BiPo and PREI (Table 4) are used to assess the health of the meadow on the individual plant level. BiPo index has shown only one station with "High ecological status" (SS4 Formicula 1), one with a "Good ecological status" (SS6 Arkoudi 2), two "Moderate ecological status" (SS2 Atokos 1, SS7 Asprogiali) and three with a "Poor ecological status" (SS1 Kalamos, SS3 Atokos 2, SS5 Arkoudi 1), whereas PREI has exhibited one station with "High ecological status" (SS4 Formicula 1), three with a "Good ecological status" (SS2 Atokos 1, SS6 Arkoudi 2, SS7 Asprogiali), one with "Moderate" (SS3 Atokos 2) and one with "Poor" (SS1 Kalamos) (Fig 10).

Table 3. Exhibited results of the conservation status of the chosen sampling stations using the mean value of CI index per station.

Sampling station	CI	CI Status
Sampling station 1	0.10	Advanced degree of regression
Sampling station 2	0.58	Low to moderate conservation status
Sampling station 3	0.74	Low to moderate conservation status
Sampling station 4	0.98	High state of conservation
Sampling station 5	0.67	Low to moderate conservation status
Sampling station 6	0.98	High state of conservation
Sampling station 7	0.99	High state of conservation
Sampling station 8	n/o	n/o

Table 4. Exhibited results of the ecological conditions of the chosen sampling stations using mean values of BiPo and PREI indices per station.

Sampling station	EQR	BiPo Ecological Status	EQR	PREI Ecological Status
Sampling station 1	0.268	Poor	0.314	Poor
Sampling station 2	0.521	Moderate	0.551	Good
Sampling station 3	0.262	Poor	0.334	Moderate
Sampling station 4	0.810	High	0.940	High
Sampling station 5	0.314	Poor	n/o	n/o
Sampling station 6	0.700	Good	0.758	Good
Sampling station 7	0.542	Moderate	0.569	Good
Sampling station 8	n/o	n/o	n/o	n/o

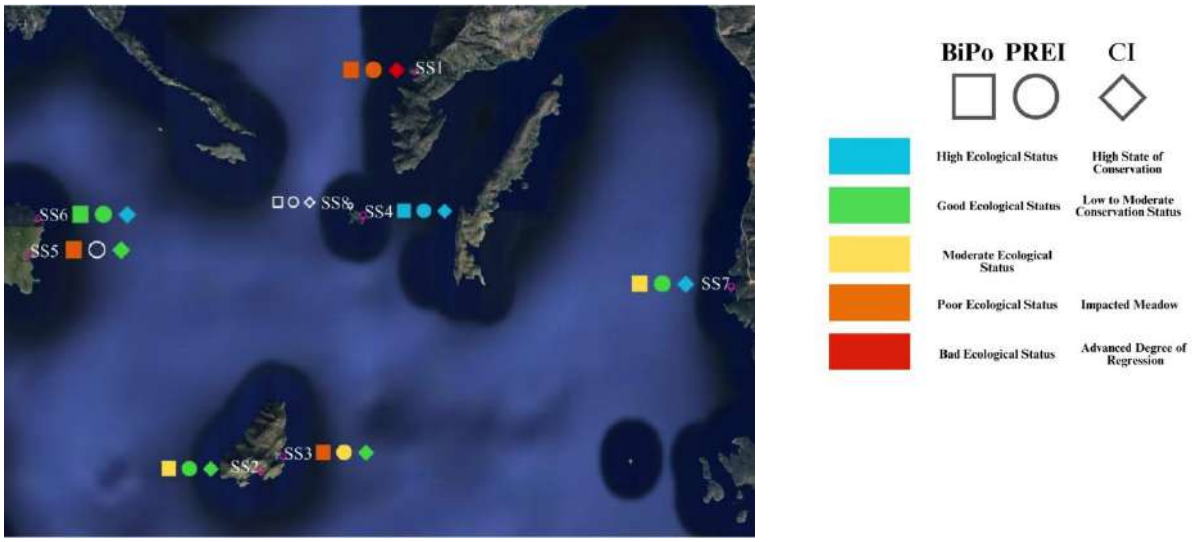


Fig 10: The results of the health status analysis using the three indeces (CI, BiPo, PREI) at the assessed sampling stations in the Inner Ionia Archipelago

The SS1, which is the aquaculture facility of Kalamos, was the station with the worst conditions, exhibiting the lowest status in all three indices (0.27, BiPo; 0.31, PREI; 0.10, CI), whereas station 7, the aquaculture facility of Asprogiali, exhibited better results, with a "Moderate" and a "Good" ecological status, for BiPo (0.54) and PREI (0.57), and with the highest conservation noted of all stations (0.99). Station 2 and 3, both situated on the same island, Atokos, have similar outcomes with station 2 classifying as a "Moderate" for BiPo and a "Good" status, however close to the limit of "Moderate" for PREI (0.52, BiPo;0.55, PREI), compared to its conservation status which was "Low to moderate" (0.58; CI). Station 3 resulted in the worse results with a "Poor" (0.26) and "Moderate" (0.33) ecological status, for BiPo and PREI accordingly, whereas its conservation status was also "Low to moderate" (0.74; CI). Sampling station 4, Formicula, exhibited the highest results of all stations according to BiPo and PREI, with "High ecological status" for both indices (0.81, BiPo; 0.94, PREI), and the second highest value (0.98) for CI with a "High conservation status" as well, indicating to a highly healthy and well-preserved meadow. Lastly, stations 5 and 6 located in Arkoudi, exhibited similar results to Atokos, with one station being better than the other. Station 5 resulted in a "Low to moderate conservation status" (0.67; CI), with BiPo index outcome being a "Poor ecological status" (0.31). PREI index was not utilized for this station due to the loss of epiphyte samples. Station 6 has shown "Good ecological status" for both health indices (0.70, BiPo; 0.76, PREI) and a "High conservation status" for CI (0.98).

During the phenological analysis, additional parameters such as the foliar and photosynthetic surface of the leaves, grazing signs, cut ends and broken leaves were further inspected. Furthermore, the percentage of plagiotropic shoots was recorded along with the percentage of the dead matte (matte morte) and the rhizome stripping (burial). All mean values are displayed in Table 5.

Table 5. Mean values for phenological parameters were computed for each sampling station.

SS	Mean Foliar Surface (cm^2)	SD	Mean Photosynthetic Surface (cm^2)	SD	Grazing signs (%)	Broken leaves (%)	Coefficient A (%)	Plagiotropic (%)	Mean Matte morte (%)	Mean Burial (cm)
1	109.3	62.4	101.1	58.1	4.8	19.0	21.4	27.6	87.5	1.4
2	70.3	58.8	64.4	55.5	0.0	23.1	46.2	46.4	41.0	2.7
3	144.4	40.5	130.1	35.3	0.0	30.4	23.2	74.3	6.1	0.8
4	420.5	126.1	394.9	118.1	3.6	25.5	38.7	1.5	1.5	9.2
5	182.8	85.8	168.4	79.3	2.2	12.2	24.4	19.9	19.7	3.1
6	222.1	93.1	206.4	87.5	6.9	15.5	31.9	8.0	2.0	6.5
7	282.0	89.7	262.7	82.8	0.0	39.2	37.3	8.7	0.5	6.9

Regarding the foliar surface, SS2 exhibited a minimum mean value of 70.3 $cm^{2,}$ and SS4 had a maximum mean value of 420.5 cm^2. The same outcome was recorded for photosynthetic surface, wherein SS2 in Atokos exhibited the minimum mean value (64.4 cm^2) and SS4 in Formicula the maximum (393.9 cm^2), whereas the mean value of all stations was 216.8 cm^2. The majority of grazing signs were found on SS6 in Arkoudi with 6.9%. The SS7 in Asprogiali recorded the highest percentage of broken leaves at 39.2%, while SS5 in Arkoudi recorded the lowest percentage at 12.2%, whereas the highest percentage of cut ends was recorded on SS2 in Atokos at 46.2%, and the lowest on SS1 in Kalamos with 21.4%. Plagiotropic shoots reached the percentage of 74.3% on SS3 in Atokos, having a huge deviation with the lowest percentage noted on SS4 in Formicula with 1.5%. SS1 in Kalamos was the station with the highest percentage of matte morte (87.5%) and had the lowest CI status of all stations assessed. The rhizome stripping reached the highest mean value of 9.2 cm at SS4 and the lowest of 0.8 cm at SS3. Amongst all the stations and according to the previous observations, the healthiest meadow appears to be on Formicula island as its ecological and conservation status reached the highest possible status in all three indices, with the highest photosynthetic capacity noted. In contrast, the worst conditions were observed on Kalamos area where an abandoned aquaculture facility is located (Fig 10).

Added Value

As an additional action, 6 Layman's reports (1 for each location: Kalamos, Atokos, Arkoudi, Formicula, Asprogiali) will be prepared and disseminated in 2025 with a more precise and focused analysis and discussion of the results. The report for the area of Kalamos (Annex 2, attached with this report) has already been produced and delivered to the municipalities of Xiromero and Kalamos. This series of mini-Layman's reports will be communicated through a campaign and will be distributed to the local municipalities and relevant stakeholders.

Furthermore, as an additional action, in the context of assessing the health status of Posidonia meadows in areas of aquaculture pressure, and to further encourage bottom-up management, iSea collected validation points in the area of Xiromero municipality and produced an

orthophoto map of Asprogiali bay (Sampling Station 7) to assist in the mapping of *Posidonia oceanica* within aquaculture development zones in Xiromero municipal area. The collected data and results were shared with the municipality of Xiromero and were made publicly available on Zenodo (see the above links). The Layman's report regarding the second aquaculture pressure site (Sampling Station 7) will also be shared with the municipality and made publicly available once finalised in the following months.

C. Advocacy actions:

C.1 Continue advocacy efforts with the Ministry and all relevant authorities for strictly protecting Formicula based on the common proposal formulated by iSea, Tethys and Blue Marine Foundation in 2022

In January and February, iSea continued the communication with the Ministry of Environment for the issue of a Ministerial Decision on the protection of Formicula island. Unofficially, iSea was informed that the ministerial decision was drafted however it was put on hold after alleged "complaints" by the local community. Based on this, in March, iSea decided to prove the opposite by drafting a letter in collaboration with Tethys and Blue Marine Foundation to be co-signed by local entities addressed to the Minister of Environment, asking for Formicula's protection.

iSea mapped and contacted 124 tourist operators, 36 local associations, via phone and emails, and in person (see action A.1) informed them about the situation, the urgency and importance of the matter and pledged for their participation via co-signing the letter. The **letter** was co-signed by **36** stakeholder entities in total, and sent to the Ministry of Environment (Minsters and Secretary General) on the 5th of April 2024, advocating for the immediate protection of Formicula, after the announcement of two big National Marine Parks in the Aegean and the Ionian, accompanied by a **letter** asking if Formicula is included in the Ionian Park, the report on fisheries in the Inner Ionian Archipelago. No formal reply was received regarding the matter, however, iSea participated in Our Oceans' Conference, and during the announcement of the parks and the talk of Secretary General Mr. Varelidis, iSea asked if Formicula is included, to which the reply was positive and although no official map had been published yet, in Greece's commitments it states that the Ionian Park will include the Natura2000 area of the Inner Ionian Sea Archipelago (GR222003).

Following a long silence and the appointment of a new Minister, in July, iSea contacted the Mayor of Lefkada to request a meeting regarding supporting the advocacy actions for Formicula, the meeting was initially scheduled for the 17th of July, but it was shortly canceled by the municipality due to unprecedented duties of the Mayor. A new appointment was scheduled for the 20th of September. iSea staff, Ilektra Athinaiou and Roxani Naasan Aga – Spyridopoulou, with Joan Gonzalvo from Tethys Research Institute, were present at the meeting in the Municipality of Lefkada, the meeting was attended by Mrs. Sevasti Konstantinidi, Deputy mayor, Mr. Panagiotis Gianniotis, Vice mayor for municipal region of Kalamos, Mr. Aggelos Papadopoulos, ichthyologist and head of fisheries department of

Lefkada municipality. The mayor Mr. Ksenofon Verginis, came to the meeting to greed and apologize for not being able to be present, however, during this brief period the case of Formicula was presented and he agreed that action should be taken. During the meeting, the case of Formicula was presented, and the vice mayor along with the deputy mayor and head of fisheries, presented questions and concerns regarding implications, if and where the measures would be taken and the team of representatives responded to all concerns based on the evidence-based proposal, expressing their support for future implementation. The feedback was very positive and the municipal representatives agreed to present the case of Formicula to the municipal board and put into vote the support of the municipality (see iSea letter for the municipal board meeting of Lefkada here). Furthermore, iSea conducted a meeting with the Mayor of Xiromero which is the municipality that includes the mainland from Mytikas south to Valti. The meeting was conducted on the 21st of September, in a local cafeteria in Mytikas. From iSea staff, Ilektra Athinaiou and Roxani Naasan Aga – Spyridopoulou, were present at the meeting, and from the side of the municipality the Mayor Dr. Giannis Triantafylakis, Mrs. Paraskevi Zavogianni Architect Engineer of the municipality, Mr Vasilis Soulas Electrical & Computer Engineer municipal consultant. The case of Formicula was presented and the mayor agreed to take action for Formicula and, similarly to the municipality of Lefkada, bring the matter to the board for voting. The meetings discussed the positive results that the proposed protection will bring to the wider area and its importance in sustainable tourism development, setting an example for other municipalities. Furthermore, the involvement of the municipalities in the future improvement of monitoring and enforcement of protection measures and opportunities for further cooperation, such as awareness-raising actions for the local community, were mentioned. A positive response was received from the Municipality of Xiromero with the unanimous agreement of the municipal council, and they sent the signed letter to the Ministry of Environment (Minister of Environment and Energy Mr. Theodoros Skylakakis and the General Secretary of Natural Environment and Waters Mr. Petros Varelidis), while the board meeting of the Municipality of Lefkada was postponed to December. The iSea project manager kept a close contact with the municipalities to monitor the progress of this meeting and answer any questions that may arise during this. An update regarding the process of the Ministerial Decision was received during a high-end event 'Marine Protected Areas in Greece: perspectives and challenges for achieving the European target 30X30', co-organized by WWF Greece and Greenpeace Greece with the support of the European Parliament, on Monday 2nd of December 2024, at the European Parliament Office in Athens. During the event, Petros Varelidis, the General Secretary for Natural Environment and Waters, announced that the Joint Ministerial Decision for the strict protection of Formicula islet has been signed. Currently, the final decision is awaited to be published in the Government Gazette soon, to understand the measures adopted. To continue keeping close contact and good relations with the signatories of the co-signed letter, the team has informed them via email and phone of this progress and keeps them updated with any changes. This ensures the signatories understand their important role in participating and keep an active role not only in the advocation for protection but in future implementation of the measures encouraging compliance between customers and competitors.

Actions related to news articles have been discussed in section D.

C.2 Educational Campaign with local schools of Lefkada

An educational campaign “Dear Minister take action!” was co-developed with Tethys Research Institute, whose results aimed at endorsing advocacy actions and sensitizing the local community (attached with the present report). The materials developed are addressed to students of elementary and middle school, within the materials the importance of Formicula for Mediterranean Monk seals and its unique habitats and the threats they face are highlighted in beautiful illustrations adapted to the students’ age groups. Then, the solution to the threat was presented based on the management plans proposed for the area and students were prompted to write a letter to the Minister of Environment to ask for the immediate protection of Formicula and a letter template was provided. The materials were adapted for schools and summer camps-kids clubs (in Gr and Eng). In the materials, a manual for teachers was included so that they could conduct the activities independently. The materials were sent to all public schools in the area of Lefkada, Meganisi, Palairos, and Mytikas in March while the Center of Environmental Education of Lefkada was also contacted.

Nautilus Diving Club, an important stakeholder and collaborator based in Vasiliki Lefkada, as part of its educational programs, launched in 2023 an environmental education program for children 6-12 years old, the Ocean Academy, “Ocean Explorers” (recognized by the European Diving Agency EDA). The children were asked to choose an activity that expresses active citizenship actions with the question "What can children do to save the biodiversity of the marine ecosystem?" They chose the activity "Write a letter to the Minister" and the area of Formicula as the lesson was about the Ionian Sea area and the Mediterranean monk seal Monachus-Monachus. The children delivered six handwritten letters with the wish to be delivered to the Minister of Environment. The school's education officer then came into contact with i-Sea's education department and Blue Marine Foundation, seeking a way to meet the request of the children of n. Lefkada. This year, an adapted version of the “Dear Minister take Action!” developed by iSea and partners was produced for Nautilus Diving Club. For this, 10 booklets presenting the case of Formicula were printed along with 50 letter templates to be used by the summer school (sent along with the report). In July and August 2024, Nautilus Diving Club, within the framework of its educational program OCEAN EXPLORERS, collected eight letters from children. On August 12 and 21, the Nautilus Diving Club, within the framework of its educational program OCEAN EXPLORERS, carried out voluntary educational activities for marine biodiversity at the Summer Camp of the Municipality of Lefkada in the area of Vasiliki. The children wrote 11 letters within the action and made them in order to inform the Minister about the Mediterranean monk seal *Monachus-Monachus*, and the need to protect it in the area of the island of Formicula (Fig 11). The children who participated in the above actions wrote and made letters, with the wish to deliver them to the Minister. In total **25** letters were completed by children (delivered along with the report).

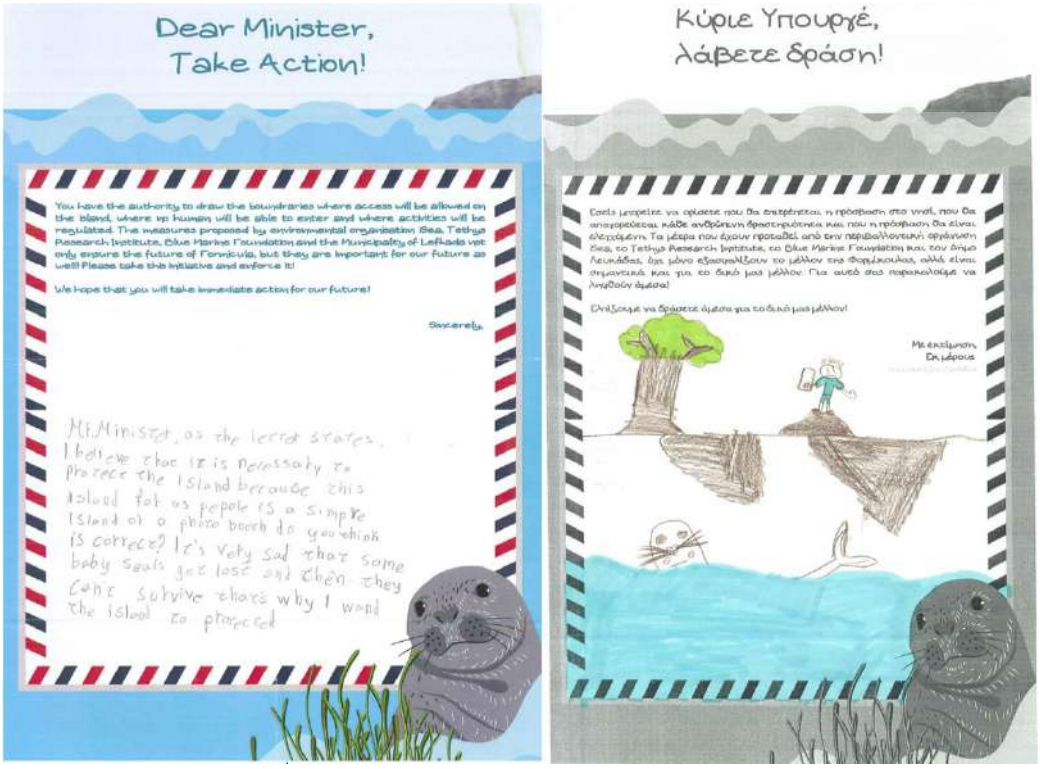


Fig 11: Sample letters to the minister schools campaign completed by children from Summer Camp Lefkada on 03/08/24 and 21/08/24.

iSea had aimed to re-approach the schools in September to ensure enrolling the activity in the new school year for at least five schools in the area, however, the action was postponed to await any progress on the issuance of the ministerial decision and was scheduled to continue along with the online petition to increase the pressure from the local community. Given the development of the situation, the schools' campaign is foreseen to continue into 2025 to engage and sensitise the younger generation in terms of the implementation of measures via an adapted version, in the context of the 2025 project.

Added Value

C.3 Fisheries in the IIA

In the context of advocacy for the strict protection of Formicula, and to provide insights into the fishing activities taking place in the wider area of the Inner Ionian Archipelago, the results of the 33 questionnaires undertaken in 2023 with local fishers were collated into a short Layman's report (see here in Gr). The report was printed and used as accompanying material during the relevant stakeholder meetings as supporting evidence of the low value of Formicula islet and surrounding waters as fishing grounds. The report has been delivered along with the present report.

To further widen the audience and reach of the project and actions from 2023, the team of iSea, presented the results of the 2023 fisheries questionnaires and metiers of the Inner Ionia Sea in the 5th International Congress on Applied Ichthyology, Oceanography & Aquatic Environment (Hydromedit) that took place in Mytelene, Lesvos island, between the 30th May till the 2nd of June 2024, through a talk, undertaken by an intern as part of their university thesis project delivery.

D. Dissemination actions

D.1 Communication campaign for highlighting the importance of the Inner Ionian Sea Archipelago.

Dissemination of materials

iSea has developed good practices posters for tourism businesses, developed in collaboration with the Ionian Dolphin Project by Tethys Research Institute (See Annex 3). The posters were designed to promote Citizen Science, good practices when interacting with marine mammals, and Posidonia friendly anchoring. The posters were printed in waterproof material (n=250) to be placed in boats and regular paper (n=30) for offices, to be distributed to boat rental, diving, and sup companies that are willing to take part in the awareness efforts. Currently, the materials have been distributed to over 12 companies in Lefkada; namely: Athenian Yachts (n=15), Creating blue memories and two associated businesses (n=30), Istion Yachts (n=10), Pura vida Sailing (n=10), Sunsail Lefkas (n=60) Enalia Conceptual sailing and two associated businesses (n=10), Manos Yachts(n=10) and Nautilus Diving Club (n=4) and more are shortlisted to receive the materials in future field visits, while photos are anticipated from each when the sings are placed.

Articles and press

Finally, in the context of C.1., a joint Press Release was released on 22nd of March 2024, to 30 local media outlets that were mapped regarding the immense need to protect Formicula. The PR was published by six local outlets. Another article was published on the website of iSea under the section Latest New, following the announcement of two National Parks in light of the Oceans Conference. The article was republished by tetarto press. An article in a National media outlet was foreseen and iSea, approached Giorgos Lialios, a renowned environmental journalist in Greece, to publish an article that would also feed the advocacy actions, with appealing imagery from Formicula during the summer months which will highlight the urgent need for the enforcement of the actions. An English short version of the article was published in e-Kathimerini, which however had some errors, but for which corrections were later sent. Measures to prevent this from happening in the future have been taken internally. iSea keeps track of all the publications regarding Formicula in an article repository (see the Communication Campaign report attached with the present report).

Social Media and Website

Finally, Social Media could not have been excluded from the dissemination actions, in total seven posts were made on iSea's Social Media, the first one published on the 10th of April 2024, connecting Formicula and the support received by local entities with the announcement of two big National Marine Parks in the Aegean and the Ionian and one on the 12th of April 2024, connecting Formicula with Our Oceans Conference and the commitments to be announced by the Prime Minister. Shortly after, on the 14th of April 2024, another post was shared with the good practices poster.

In posts regarding updates on advocacy, stakeholders who co-signed the letter were tagged with many of them sharing the posts in their channels. iSea keeps track of all the SoMe stats in a repository and a more detailed analysis on the performance of the posts is accompanying the final project report (see Communication insights report, delivered along with the present report). A dedicated page for the project has been developed, on the iSea website in Gr and Eng (Formicula page, the Inner Ionian Archipelago page) where the actions and results of this year's project will be updated and communicated. In total, the social media posts had an outreach (views) of more than 240,000 while the website reach for Formicula's page had just below 1000, and the page for the 'New Marine Park in the Ionian' had 551 reach.

D.2 Eco-Moorings Policy Brief

Regarding the Policy brief on the eco-moorings, an action that has been initiated during the project of 2023 and has been since delayed due to the complexity of the topic and the legal advice required for the finalization of the document. Currently, the review from a legal firm is being completed that will ensure that all the legal framework is included. The policy brief is anticipated to be finalised in the coming months and will be published with a series of posts on social media. A draft version of the Policy Brief is attached.

E. Project Managing and Reporting

E.1 Monitoring the project actions, ensuring high-quality deliverables, communication with the funder, overall coordination, planning, and reporting

A project manager has been assigned to the project who is closely monitoring the project's actions and ensures the timeline and the actions of the project are being met. While a broader team is involved in the implementation of various actions of the project. The project manager works with the team and coordinates the implementation of the project.

E.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.

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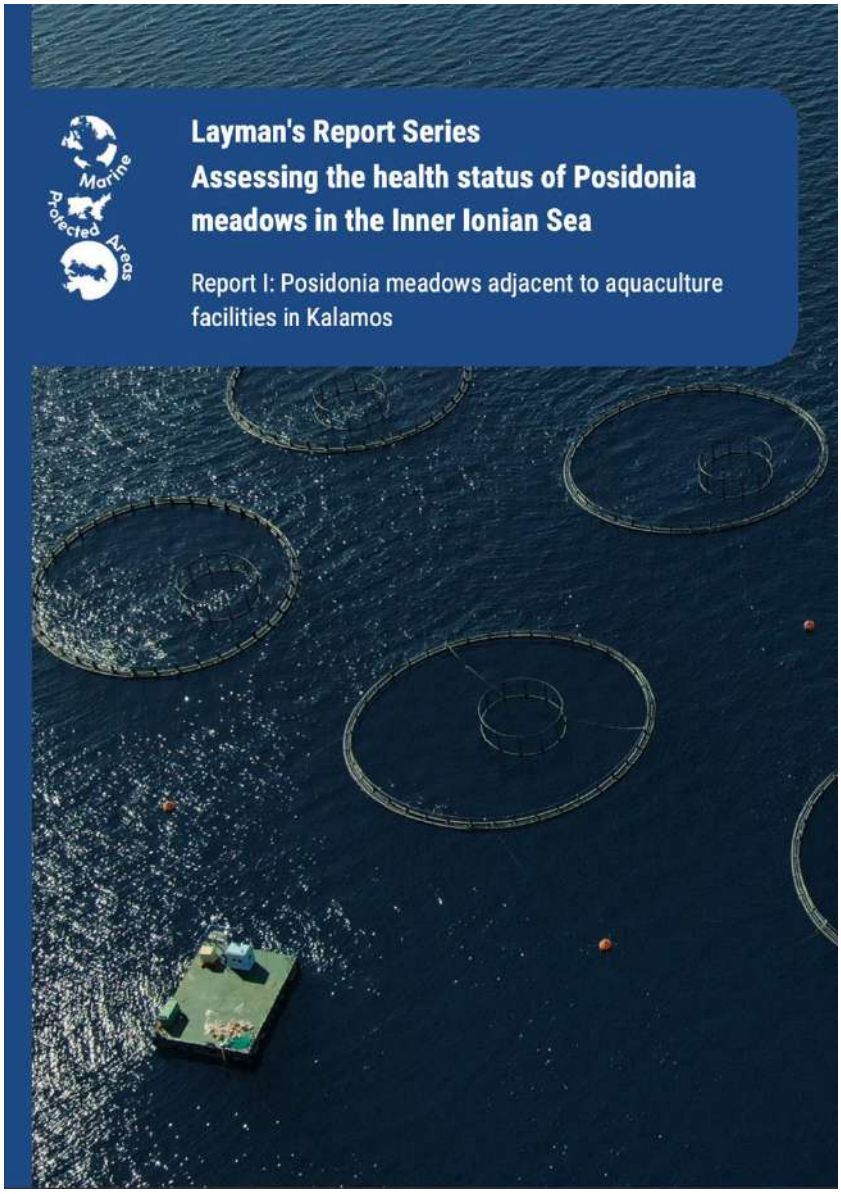
ANNEXES

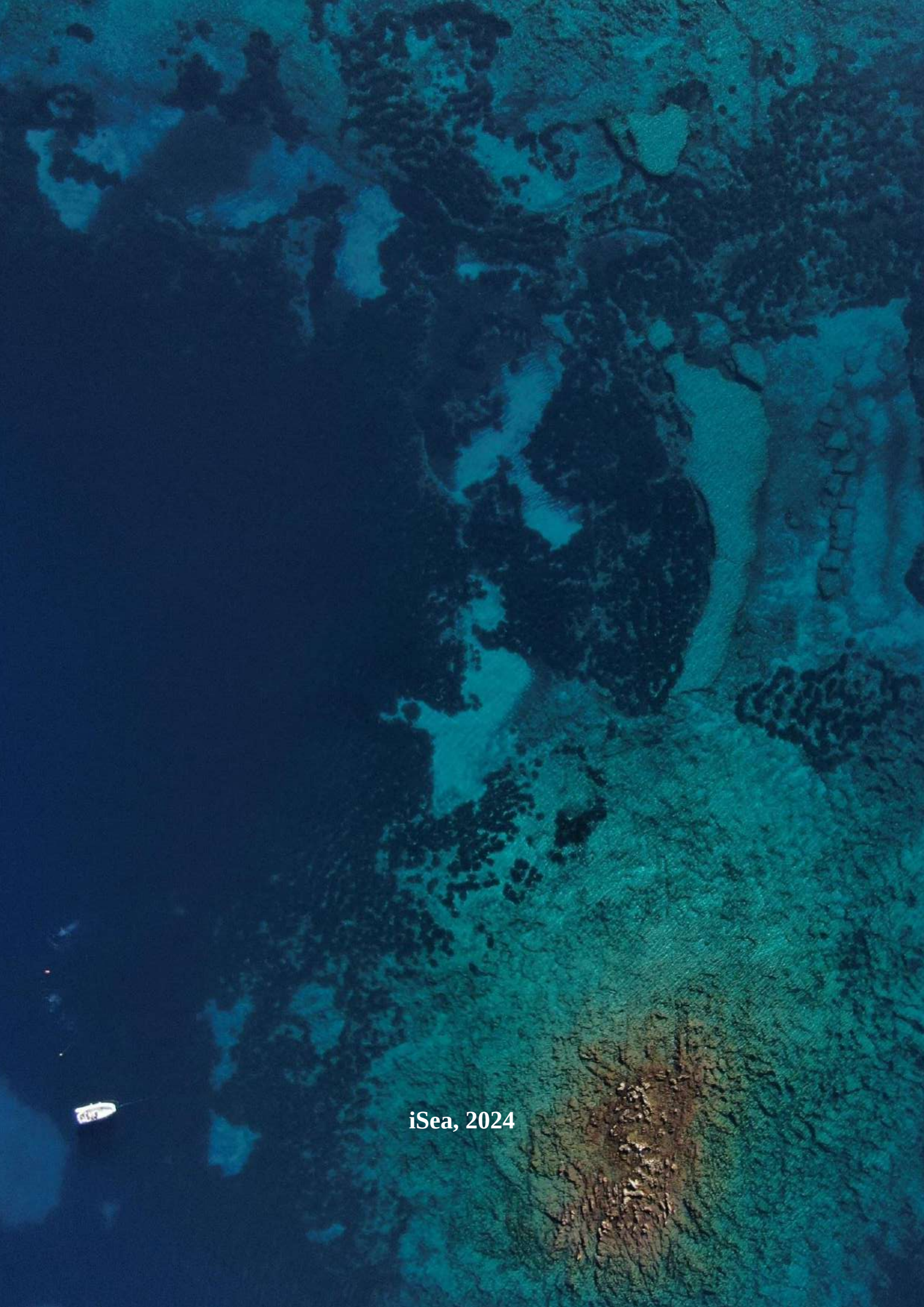
Annex 1: Species list identified from ROV surveys. Includes species scientific name, legal protection and IUCN status for the Mediterranean (preliminary results).

Species name	Legal protection	IUCN status
Agelas oroides		Not evaluated (NE)
Axinella cannabina	SPA/BD Protocol	NE
Axinella damicornis		NE
Axinella polypoides	Bern, SPA/BD Protocol	NE
Bonellia viridis		NE
Caulerpa racemosa		NE
Codium bursa		NE
Crambe crambe		NE
Dysidea avara		NE
Halocinthya papillosa		NE
Hexadella racovitzai		NE
Leptopsammia pruvoti	CITES	Least Concern (LC) (Mediterranean)
Mesophyllum lichenoides		NE
Myriapora truncata		NE
Palmophyllum crassum		NE
Peyssonnelia squamaria		NE
Phorbas tenacior		NE
Plumularia sp.		NE
Smittina cervicornis		NE
Spirastrella cunctatrix		NE

Annex 2: Layman's Kalamos Report on status of *Posidonia oceanica* (Gr, Eng version attached with this report)



Annex 3: Informational Material Produced



iSea, 2024