

Pick The Alien









Suggested reference

Sidiropoulou, N., Doumpas, N., Charitou, A., Giovos, I. 2022. Final Report of the project "Pick The Alien", iSea, Thessaloniki, Greece, 55pp

Project Manager

Nikoletta Sidiropoulou

Email: nikoletta.sidiropoulou@isea.com.gr

Tel: 2313090696







Content Table

Alien species in Greece	4
Collaborators	5
Main Activities	7
Implemented actions	9
Athens	10
Cyclades islands	12
Crete	16
Ionian islands	18
Argolic Gulf	20
Blue Crab Festival	23
Dodecanese islands	25
Athens Online Event	28
Pilot Lionfish Traps	31
Informative signs	33
Alliance	34
Alien species removals	35
Supply chain models	37
Communication	38
Next steps	50
Constrains	51
Conclusions	53
Financial report	55







Alien species in Greece



About 15 invasive alien species of fisheries concern can be found in the Aegean Sea, mainly affecting coastal small-scale fisheries, practiced by nets and long-lines. Several of these species are of high commercial value (e.g., Siganus spp., Upeneus spp. Callinectes sapidus etc.), which consist of important fishery resources in Mediterranean areas that are abundant, however the majority of them are of minor

commercial value in Greece. This is happening due to a number of factors, but primarily due to the fact that the Greek consumers and retailers are not familiar with the new species.

The project

Pick the Alien, is one of the main projects of iSea that falls under the scope of



Human and Aquatic Ecosystems pillar. Through the project, iSea aimed to promote the responsible consumption of seafood with a special focus on promoting the consumption of edible alien species. The project's actions included raising awareness about the negative effects of the presence of alien species among all the stakeholders involved in the seafood market chain and the promotion of their consumption as a mitigation measure against the increase and expansion of alien species in Greece. In addition, it

included actions that set the baseline of an alliance between small scale fishers, retailers, chefs/restaurants and consumers locally and nationally that will understand, share and respect the same values and notions of sustainability and marine protection. The main objectives of the project were:

- (i) the replacement of high trophic level species with more responsible seafood products, including edible alien species,
- (ii) the creation of supply chains and pioneer alliance that benefit the local economies and promote the responsible seafood consumption, and







(iii) the pilot testing of innovative fishing tools targeting alien species.

Collaborators

iSea always aims in building long lasting collaborations with respectable scientists and civil society representatives from all over the world and the Mediterranean Sea. For this specific project, apart from the contribution of Blue Marine Foundation in the design and implementation of every project's step, iSea collaborated with established scientists in the field of fisheries research and lionfish invasion and local foundations in the different areas of interest. The two main scientific advisors for the construction and deployment of pilot lionfish traps were the Department of Fisheries and Aquaculture of the University of Patras and the University of Plymouth.



The mission of the <u>University of Plymouth</u> is to advance sustainable use of the marine environment through their systems-thinking approach to research, education and innovation. With one of the largest marine and maritime portfolios of any institution in Europe, the university has a

long-held and outstanding international reputation for conducting world leading, transdisciplinary research. Through this, with partners and collaborators, the university is developing and optimizing positive interventions in response to global challenges, while training the scientists and business leaders of the future. The university has joined forces with the Marine Biological Association and Plymouth Marine Laboratory to launch Marine Research Plymouth. Collectively, it hosts the largest number of marine scientists in any UK city and establish Plymouth as an international center of excellence for marine research.



<u>The University of Patras</u> is the leading University in the Greek Ionian Sea (city of Patras), hosts 35 Departments with Undergraduate Study Programs, offers 49 Postgraduate Study Programs and is involving, approximately, 1600

faculty members and researchers with an activity of about 23.7 MEuro research funds. The Department of Fisheries & Aquaculture, in particular, has extensive experience in impacts on marine ecosystems triggered by fisheries and anthropogenic activities.







Additionally, to their financial contribution, the Ionian Environment Foundation, the Argolic Environment Foundation and the Cyclades Preservation Fund, also contributed to the coordination of the project in the Ionian, the Argolic and the Cyclades Islands respectively.



The essence of the Ionian Environment Foundation's approach is to provide support and guidance for conservation projects that the local communities themselves have initiated and designed. It has seen in its first three years that tangible local action can unlock solutions to

shared global challenges, and that this is best achieved by empowering communities to protect their own local environment through a 'bottom-up' approach.



The AEF was established in 2021 to help the communities of the Argolic Gulf become leaders in the transition to sustainability, protecting and regenerating key marine and terrestrial ecosystems and improving the relationship between humans and nature.



The Cyclades Preservation Fund is a Greek registered nonprofit association set up initially as a UK Charity to support sustainable initiatives and to promote the preservation of the exceptional beauty and natural value of the Cyclades.

Another scientific collaborator on Pick the Alien project on Citizen Science and stakeholder's participation in minimizing the impact of invasive species in the Mediterranean Sea was MER-Marine and Environmental Research Lab.



MER is an established SME composed of highly qualified, motivated, young and experienced scientists that offers specialized research and consulting marine and environmental services.







For the communication campaign and all the materials produced in the context of the project, apart from the internal iSea graphic designer, an external collaborator was hired.



<u>Slab</u> is an awarded communication design and printing office, based in Thessaloniki / Greece. It provides design services and solutions, paying attention to detail from the first sketch to the final product. iSea is collaborating with the office in the context of the project.

Main Activities

The project was implemented at a national level, facilitating informative and gastronomy events, pilot use of lionfish traps and removals of alien species in Natura 2000 regions. All these actions were framed by a communication campaign and the creation of informative materials. The project focused in the following areas:

- Ionian islands (Cofru, Paxi, Lefkas, Ithaca, Kefalonia, Zante)
- Cyclades islands (Paros, Amorgos, Santorini)
- Dodecanese islands (Kos, Rhodes)
- Crete (Heraklion, Agios Nikolaos, Dionisades islands)
- Argolic Gulf (Nafplio, Spetses, Hydra)
- Athens
- Thessaloniki

During all the informative events, the participants were informed about the alien species found in each area, their impact, possible measures to mitigate their expansion and abundance, as well as the ecological value of apex predators, the threats they face and examples of responsible seafood consumption. In addition, the participants were informed about the results and the goals of the project, as well as the alliance that the project aimed to create among the stakeholders involved in the supply chain of seafood. After the presentation of all the above information, a roundtable among all the participants followed. During the roundtables, active involvement of the participants was noted during discussions regarding the challenges of promoting the entry of alien species in the supply chain. On the other hand, creative ideas on ways to uplift the value of







alien species, familiarize the public with such species in order to increase their demand, bus also suggestions for addressing issues that arise during the efforts of promoting their consumption were thoroughly discussed during the informative events. In addition, apart from the presentation, project informative materials were distributed among the public according to their profession and needs, i.e. posters with the established alien species in each area for the fishers, recipes of edible alien species for the chefs, the responsible seafood consumption guide to the public etc.

During the gastronomy events, the participants were informed about alien species, with emphasis on the species prepared for the occasion. iSea representatives were also asking the participants' opinion and reactions on the tasting value of the recipes and alien species, as feedback for the chance of introducing them in their diet. An impressions book was available during the events where participants could write down their opinion on the initiative and what they have tasted. In addition, material created in the context of the project like more recipes with alien species was distributed among the attendees.

Additionally, through structured, in person and online interviews with professional and recreational fishers in all areas of interest, the social and economic interactions, ecological impacts, knowledge and perception of fishers for the most common alien species in each area was accessed.

The questioners focused on fishers' (1) demographic profile (2) their perception on alien species and (3) knowledge and interactions with each alien species. The collection of questionnaires and data processing has been completed and a publication regarding the interaction and perception of fishers on alien species will be produced and published in a scientific journal.

A relevant research has been implemented in Cyprus during 2020 and you can find the publication here.









Picture 1: Lionfish and spinefoots caught from professional fishers in the Argolic Gulf

Implemented actions

The project started implementing actions in April 2022 and the majority of the actions concluded in January 2023. However, upon discussions with the projects partners, it has been decided for the remaining actions to be implemented in the beginning of 2023. These actions include the instalment of the informative signs and the 3rd step of the communication campaign which will run later in the year in order to coincide with Greek national celebrations where seafood consumption is increased. Below you can see the results of the project regarding the actions in every region, the results of the communication plan and the results of the publications until February 2023. Additionally, you will find a section about the next steps, conclusions, constrains and the financial report of the project.









April-December 2022

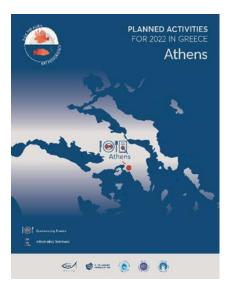
16 informative events

16 gastronomy events

31 participant chefs

More than 2000 people joining

Athens



April 29th - May 1st 2022

1 informative and gastronomy event

1 participant chef

More than 100 people joining









iSea participated in the "30th YCG Sailing Week" in collaboration with the Yacht Club of Greece to implement an informative and gastronomy event in Athens. For the event, the winner of the cooking competition Master Chef 5, Margarita Nikolaidi created 2 new recipes with lionfish (Pterois miles) and Atlantic blue crab (Callinectes sapidus) which were served to the attendees by her. The two recipes were also included in the updated "Pick the Alien" recipes book.

More than 100 people attended the event and tasted the value of edible alien species while they were informed about them, their effects on the

marine ecosystems and possible mitigation measures. The attendees seemed particularly interested on the project and impressed with the information provided. As the majority of people were interested in sailing and regularly interacting with the marine environment, some of them had already encountered alien species during their sea interactions.

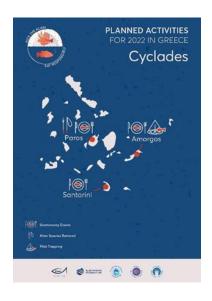
The participation to the event was of great importance, since the attendees of the event were directly connected with activities in the sea and could disseminate the obtained information to all the places they visit. Another positive outcome from our participation was the collaboration with the Master Chef winner Mrs. Nikolaidi, as she is a well-known chef in Greece and had a greater impact in the project's promotion.







Cyclades islands



16th-17th April & 20th - 23rd October 2022

3 informative events (Amorgos, Santorini, Paros)

3 gastronomy events (Amorgos, Santorini, Paros)

7 participant chefs



The project visited Amorgos island on the 16th and 17th of April to implement an informative and a gastronomic event. The informative event was conducted at the Cultural Center of Katapola in collaboration with the Municipality of Amorgos and the Fishers' Association of Amorgos. At the informative event 11 people attended, 7 from the fishing community, including the president of the fishers' association, and 2 from the catering industry and in particular restaurant owners.

After the informative event, all the stakeholders discussed the main constraints in adding edible alien species in the local market and possible solutions. During the discussion it was noted from the restaurateurs' point, that spinefoots (Siganus spp.) do not have a great taste value, are small in size, and require many working hours for processing while from the side of the fishers, they try to avoid the species because it needs many working hours to remove them from their nets, while their







market price is very low or they cannot even be sold. On the other hand, chefs expressed their interest in lionfish, which the fishers either avoid, or discard. As a result, a baseline was set for promoting the lionfish in the local fish market. The gastronomy event was conducted on the central square in the beachfront of Katapola. More than 70 people attended the event including the Mayor and Vice Mayor of Amorgos.

The attendees were informed about invasive alien species and tried their taste value. At the specific event 4 restaurants participated, namely, <u>Mouragio taverna</u>, <u>Yukali restaurant</u>, <u>Fata Morgana restaurant</u> and <u>Almyriki restaurant</u> and the chefs created 4 recipes in total. The 3 participants closely collaborated with each other, shared their ideas and space in order to create common recipes and gourmet plates. The 4th participant, representing the traditional local kitchen replaced other fish species with alien species in traditional recipes.

From the aforementioned restaurants, only one used to serve lionfish in its menu on regular basis. This can also be attributed to the fact that the owner of the restaurant is also a recreational fisher and catches lionfish by himself. The attendees of the event, the majority of which were locals, were mostly familiar with the presence of alien species, but most of them have never tasted them before. According to their statements, after tasting them, they were willing to include them in their regular diet, especially the spinefoots, due to its low price and the easy and quick traditional recipe provided to them.

When the high touristic season ended, in late October, the actions in the Cyclades islands continued with actions in Santorini and Paros.



In Santorini the informative and gastronomy event was held on the 20th of October. The seminar took place at the De Sol Spa Hotel and was attended by hotel and restaurant owners, diving centers, the fishing tourism industry and the public.











The gastronomic event followed straight after, at the reception of the hotel and the attendees tasted recipes prepared from the chefs of Santorini Wet Stories restaurant, Caldera Collection Group and Lauda Restaurant who were impressed by the cooking experience of lionfish and bluespotted cornetfish. The basic ingredients used in the recipes were lionfish, spinefoots and blue spotted cornetfish. All the attendees of the informative event tried the taste value of the aforementioned alien species. During the event, the chefs, the representative of iSea and some of the fishers that attended the event discussed possible ways of supplying the restaurants and the chefs with edible alien species. Additionally, the chefs traded

contacts with the fishers in order to supply them with alien species. Furthermore, the chef Kostas Aggelopoulos, continued experimenting on lionfish even after the event by creating a "fish dolmas" with lionfish (Picture 2).









#dolmas #fishdolmas #lionfish #citrussauce #7steakloungesantorini #desolhotel #woodoven #grilled #barbeque #woodcook #winter #2022



Picture 2: Chef Kostas Aggelopoulos creation "fish dolmas"



In Paros the informative event was conducted at the <u>Municipal Room of AMES- NIREAS</u> on the 22nd of October in collaboration with the <u>Municipality of Paros</u>. Representatives from the professional and recreational fishing community along with general public were present.









The gastronomic event was held at the central square of Manto Mavrogenous on the 23rd of October. More than 50 people had the chance to alien taste species from prepared Thalassamou restaurant made with lionfish and got informed about marine invasive species. It is worth mentioning that "Thalassamou" restaurant started cooking lionfish after our visit during the project back to 2019.

Crete



13rd-14th May 2022

2 informative events (Agios Nikolaos, Heraklion)

2 gastronomy events (Agios Nikolaos, Heraklion)

5 participant chefs









iSea focused in two areas of interest Crete in based their on abundance in invasive alien species and their potential as export centers.

The events were implemented in collaboration with the Municipality of

<u>Agios Nikolaos</u>, the Regional Unit of Lasithi, <u>Agios Nikolaos Port Fund</u> and the <u>Municipality of Heraklion</u>, in Agios Nikolaos and Heraklion respectively.

The informative events took place in the City Councils' conference room in Agios Nikolaos on the 13th May and at the Marina cafe-restaurant in Heraklion on the 14th May. In total 10 people attended the informative events, 4 fishers, including the president of the fishers' association of Agios Nikolaos, 2 municipality representatives, 1 representative from the fisheries department and 1 reporter.

The gastronomy events took place on the 13th of May in Agios Nikolaos and on the 15th of May in Heraklion. Both events were implemented in the central squares of the cities in order to maximize the reach of people attending. In total more than 130 people attended the events and tasted the recipes created by the restaurants we collaborated. In Agios Nikolaos the recipes were prepared from Ofou To Lo restaurant, Piato restaurant and Despina taverna whereas in Heraklion we collaborated with Giousouro restaurant and with Malena Hotel and Suites. In total 7 new recipes were created during the events in Crete.

Crete due to its abundance in alien species and the great consumer capacity, due to tourists and population density, has already created and established a market for specific alien species at a local scale, especially in the larger urban cities like Heraklion. For instance, blue crab (Portunus segnis) and lionfish (Pterois miles) can already be found in fish markets and restaurants, in very high prices, some of which the project has collaborated with. As a result, professionals and locals are already familiar with them.







However, at the Southern part of Crete where the abundance of alien species is higher, the local community is still facing difficulties in introducing them to the market. Only one hotel, namely Robinson Hotel in lerapetra, already buys lionfish from local professional fishers and has included them in their menu. Thus, our main goal was to establish a network of stable collaborators in order to expand the supply of alien species from Crete to a bigger scale.

Ionian islands



19th-26th May &19th December 2022

5 informative events (Corfu, Paxi, Zakynthos, Kefalonia, Ithaka, Lefkas)

4 gastronomy events (Corfu, Paxi, Zakynthos, Kefalonia)

7 participant chefs









It was the second year that the project visited the Ionian islands. In total 8 events took place in the islands of Corfu, Paxoi, Zakynthos and Kefalonia, one informative and one gastronomy in each island.

During the informative events, 51 people were informed about invasive alien species and discussions followed for the better management of their impacts in the aforementioned islands. Representatives of the fishing industry, restaurateurs, municipality, management units of protected areas, local journalists, local volunteer organizations, professors and students of environmental, food science and the technology departments of the Ionian University were present.

According to the discussions that followed the informative events, some alien species already entered the market, although the local production can support even higher demands by the catering industry. On the other hand, stakeholders from the catering community were skeptical about adding edible alien species to their menu, as consumers are not familiar with them. Thus, suggestions aiming to familiarize the consumers with the edible alien species and other responsible seafood choices were thoroughly discussed among the participants.

The gastronomy events took place in central squares and areas of high attendance in order to have maximum possible attendance of people. In total more than 450 people attended the events and were informed about the project, the alien species and the possibility to protect the marine environment through responsible seafood consumption. In addition, 7 restaurants and hotels created 11 different recipes using alien species.

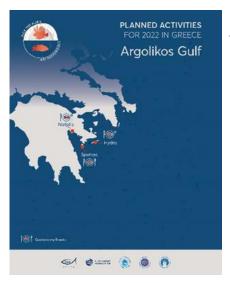
Finally, an online seminar focused on the presence of alien species in the Ionian Sea, their impacts on the fishing sector, the economy and human health, possible mitigation measures, the importance of apex predators and the establishment of the alliance was conducted in December with participants from Lefkas and Ithaka islands.







Argolic Gulf



22nd-25th June and 18th September 2022

3 informative events (Hydra-Spetses-Nafplio)

3 gastronomy events (Hydra-Spetses-Nafplio)

5 participant chefs



This year was the first time that the project implemented actions in the Argolic Gulf.

The events in Hydra were organized during the local celebrations of "Miaoulia", which are the largest annual event of the island. In Spetses, the events were held during and in collaboration with the

<u>Spetses Classic Yacht Regatta</u>, <u>the municipality of Spetses</u> and <u>Poseidonion Grand Hotel</u>, an annual sailing competition organized by the Yacht Club of Greece, attracting people from all around the world.

At Hydra, the informative event was held at the Chambers of Hydras City Council on the 22nd of June in collaboration with the municipality of Hydra, the municipal port fund of Hydra and Hydra Municipal Utility Enterprise.







Representatives from the fishing community, including the president of the fishers' association, the port authority, the municipality, and the fisheries department were present. In total 7 people attended the event and a thorough discussion with them followed after the presentation.

The gastronomy event took place at the port front of Hydra, namely such as "Kefaloskalo" on the 22nd of June. More than 100 people attended the event and tasted the recipes created by 3 local restaurants, , namely <u>Oraia Hydra</u>, <u>Taverna Gitonikon Hydra</u> and <u>Annita Hydra</u>, with the use of edible alien species, which were fished locally.

At Spetses, the informative event was conducted at Kapodistriaki Stegi of Spetses on the 25th of June. In total 13 people attended the event including representatives from the fishing industry, municipality and fisheries department.

The gastronomy event took place at Poseidon square, in front of the Poseidon Grand Hotel which is a landmark of Spetses, on the same day. More than 100 people got informed about the project, its aims and tasted the recipes prepared by the chef from <u>Orloff restaurant</u>.

According to the local stakeholders some edible alien species are consumed by the fishers, but the majority of them are discarded back to the sea, as they have no commercial value. Surprisingly, some of the locals had never tried invasive alien species before and were astonished by their taste once they did.

Restaurateurs on the other hand, were familiar with some of the species, especially spinefoots, but are sceptical to add them to their menus due to low consumption by their clients and increased working hours for the preparation of the dishes.









At Nafplio, the team of iSea was invited to participate in the 1st gastronomic and cultural event "Peloponnese Food **Stories** Stories of Flavours, People, Culture" in Tolo on the 16th of September, organized by Region of Peloponnese, the Municipality Nafplio, of the Chamber of Araolida, the Professional Association of Tolo and the Peloponnese Tourist Organization, Locals and tourists informed about the presence of alien species, their

impacts on the marine ecosystems, possible mitigation measures, environmentally responsible seafood consumption choices and relevant informative material was distributed to them.



Picture 3: Captions of the events held at Nafplio.

The informative event was conducted at the Old Parliament in Nafplio on the 18th of September and was attended by fishmongers and consumers, succeeded by the gastronomy event at Syntagma Square, the main square of Nafplio. The attendees had the chance to get informed about alien species and responsible seafood consumption choices and tasted 3 different recipes with lionfish and







Atlantic blue crabs as main ingredients, prepared by the <u>WILD DUCK- eat and drink Restaurant</u>. More than 120 people attended the event and tried the taste value of the invaders.

According to the local stakeholders in all areas, some edible alien species are consumed by the fishers, but the majority of them are discarded back to the sea, as they have no commercial value. Surprisingly, some of the locals had never tried invasive alien species before and were astonished by their taste once they did. Restaurateurs on the other hand, were familiar with some of the species, especially spinefoots and Atlantic blue crabs, but were skeptical to add them to their menus due to low demand by their clients and increased working hours for the preparation of the dishes.

Upon our events however and after communication with local fishers we were informed that lionfish and spinefoots are gradually being included in the local food supply chain at Spetses as a restaurant, namely To Nero tis Agapis, and a fishmonger have added them to their available products, always depending on the fishers catch due to weather, location, seasonality etc.

Blue Crab Festival



18th June 2022

Informative and gastronomy event

In collaboration with a food truck

More than 900 people joined









The Blue Crab Festival took place on the 18th of June to celebrate the "World Sustainable Gastronomy Day", at the beachfront Thessaloniki, in front of the White Tower. For the purposes of the event, recipes with Atlantic Blue crab were prepared by the food truck "Feed the Need".

The coordinator and members from an Italy-Tunisia cross-

border project entitled "Biological invasion and fishing activity with the case study Blue crabs (BLEU-ADAPT), were invited and participated in the event. In the context of their visit, future collaborations in a Mediterranean level were discussed and best practices for the successful implementation of the project were exchanged.

More than 900 people, locals and tourists, attended the event and were informed about the project and the presence of alien species in the Mediterranean and the Greek seas, with emphasis on the Atlantic blue crabs.

The event was organized with the support of the <u>Municipality of Thessaloniki</u> and the <u>Ephorate of Antiquities of Thessaloniki</u> and local mayors and deputy mayors joined it.

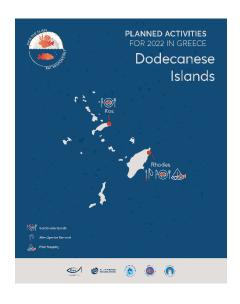
All of the attendees were positive in trying Atlantic Blue Crab recipes and were satisfied from their taste. Additionally, the majority of the attendees were surprised when they were informed about the negative effects of the blue crab and their abundance in Thermaikos Gulf and North Aegean Sea. Many of them asked for further information on their price and local suppliers. Furthermore, some of the attendees were familiar with the taste of the Atlantic blue crabs and they were really happy that this seafood gets the promotion it deserves.







Dodecanese islands



20th-23rd October 2022

2 informative events (Kos, Rhodes)

2 gastronomy events (Kos, Rhodes)

5 participant chefs

It was the first time that the project was implemented in the Dodecanese islands. The importance of this region lies to its geographical location and the proximity with the Suez Canal. Rhodes in particular, can be characterized as a corridor for Lessepsian species towards the Aegean Sea and can act as "warning bell" for the expansion of new species in the Greek seas.



The events in Kos were combined and occurred on the 20th of October. The informative event was held at the Historical and Folklore Museum of Kos and in







collaboration with the <u>Municipality of Kos</u>, the Office of Tourism Promotion and Development of the Municipality of Kos, the local <u>Gastronomy Club "Asklipios"</u> and the <u>Consumers Institute of the Southern Aegean INKA12</u>. The event was attended by the Vice Mayor along with other representatives of the municipality, local journalists, chefs, recreational fishers and the public.





The gastronomy event followed at Eleftherias Square at the center of Kos town. The participants had the to taste chance recipes with lionfish and spinefoots from the chefs of Albergo Gelsomino. the

Broadway Restaurant and the Gastronomy Club of Kos. In total 5 recipes were created for the The occasion. attendees were also informed about alien species with emphasis on their local presence, their **impacts** on the environment, human health and economy, possible ways of mitigating

the problems and ways of making our seafood diet more responsible. In total more than 100 people attended the event.









Second stop of the Dodecanese was Rhodes island. In Rhodes, the informative event was conducted on the 22nd of October at the conference room of the Semiramis City Hotel and was attended by representatives of the municipality, the Head of Marine Fisheries Department of the Regional Unit of South Aegean, environmental organizations like WWF, the Hellenic Center for Marine Research HCMR, the Consumers Institute of South Aegean, chefs, a diving center, the aquaculture industry and the public.







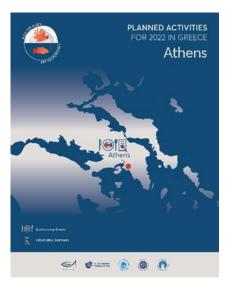




The gastronomy event was held at the beachfront of Madraki harbor the next day in collaboration with the <u>municipality of Rhodes</u> and the <u>Consumers Institute of the Southern Aegean INKA12</u>. More than 60 people attended the event and tried recipes prepared from the chefs of <u>Romeo Restaurant</u> and Semiramis City Hotel with basic ingredients lionfish and blue spotted cornetfish. In total 3 recipes were created and more than 60 people attended the event.

The local people and fishers of the Dodecanese islands are mostly familiar with alien species since, as mentioned before, in many cases the northern islands act as stepping-stones for the introduction of Lesepsian migrants in the Aegean. Therefore, they interact with them for longer periods. After discussions with locals, professional and recreational fishers but also during our visits in local open markets and traditional fish markets at the port front, we noted that some invasive species have already entered the local food supply chain. The species most widely consumed, although not from the majority of people, are spinefoots, lionfish and blue spotted cornetfish. Alien species like the red sea goatfish and big fin reef squid are usually sold in fish markets along with the respective native ones, i.e. red mullets, squids and cuttlefish.

Athens Online Event



The final event for the dissemination of the results was conducted online on the 31st of January. All the collaborators of the project were invited to participate and in total 39 people attended the event.

During the event, the evolution of the project and its aims through the year were presented and the main outcomes in numbers were shared (e.g., collaborating chefs and fishers, amount of alien species cooked, number of articles in the press etc.).

At the end of the event a draw was conducted to determine the winners of the prize, which was 2

dinners for 2 persons each, with main dish lionfish from the restaurant <u>Ε/Γ Ταξιδεύοντας</u> (Travelers' Choice 2022 on TripAdvisor). The winners of the prize can enjoy it between May and November, due to the availability of the fish.











Ατζέντα ομιλητών

Pick The Alien – 3 χρόνια προώθησης της κατανάλωσης θαλάσσιων ξενικών ειδών

Τρίτη 31 Ιανουαρίου

- **19:00 19:10** Καλωσόρισμα από iSea Blue Marine Foundation Ionian Environment Foundation – Argolic Environment Foundation – Cyclades Preservation Fund.
- 19:10 19:40 3 Χρόνια Pick The Alien -Παρουσίαση στόχων και αποτελεσμάτων
- 19:40 19:45 Ανθή Αρβανίτη Ιδιοκτήτρια Τουριστικού Αλιευτικού Πρεσβευτής
- Ρίck The Alien

 19:45 19:50 Άγγελος Σταυρόπουλος Διδάσκων για Social Media & Πολιτικές Επιστήμες Συνεργάτης σε Περιβαλλοντικές Καμπάνιες της Ε.Ε

 19:50 19:55 Γιώργος Τυρίκος Εργάς Ερασιτέχνης Αλιέας / Αρθρογράφος -
- Πρεσβευτής Pick The Alien
- 19:55 20:00 Jonathan The Cook Σεφ
 20:00 20:05 Κώστας Τριανταφύλλου PADI Regional Manager Ελλάδος
 20:05 20:30 Συζήτηση Ερωτήσεις









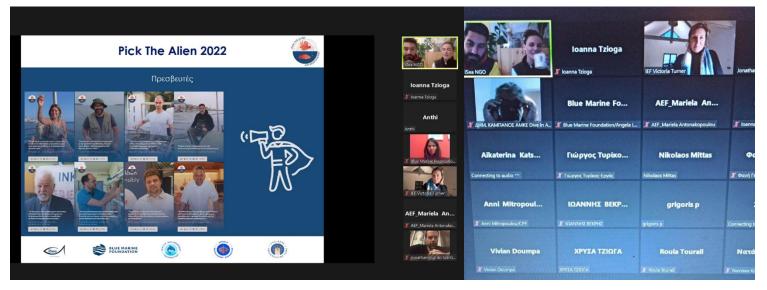


Online event invitation and agenda









Snapshot of the online event presentation and participants



Prior to the event, an appetizer with lionfish was delivered to the Deputy Minister of Environment and Energy, Mr. Giorgos Amiras. The recipe was prepared by the restaurant Ε/Γ Ταξιδεύοντας. The Deputy Minister on the same day made a post in his personal social network pages (Facebook, Instagram) with a reference to the project and thus boosting its publicity. More than 25 news agencies published information about the project along with the invitation for the online event.







Pilot Lionfish Traps



Thirty six lionfish traps were constructed and are being tested in the islands of Amorgos, Rhodes and Crete and deployed in collaboration with professional fishers. Trap construction was based on the "Gittings lionfish traps" blueprints and they will be used in a seasonal basis, with multiple samplings per season in each area. When

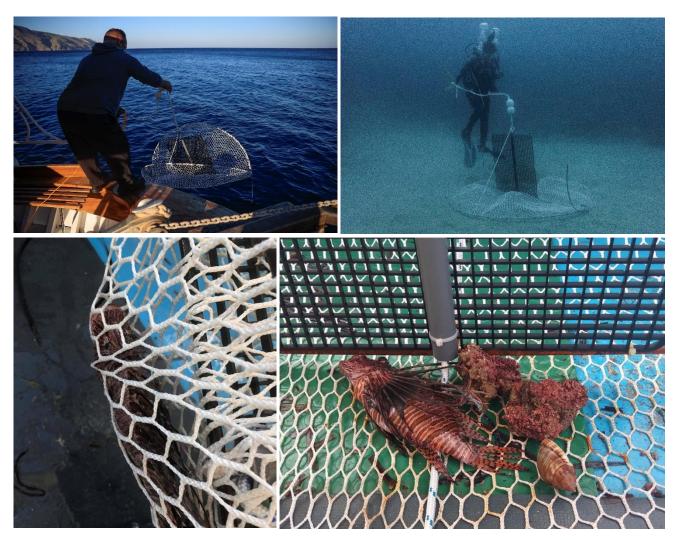
the traps are collected, the fishers report to us their catches through an online logbook form (i.e. depth/duration of deployment, number and species of fish caught etc.)

According to the Regulation (EU) 2019/1241, article 25 and the Presidential Decrees of 66/1981 (A'23) amendment (A'43) and 576/1980 (A'157) referring to fishing activities for research purposes and pilot use of fishing equipment from a flag-member state of the Mediterranean, a license was obligatory from the corresponding Decentralized Administrations in Greece and the European Commission. The request for the permit was submitted from the Department of Animal Production, Fisheries and Aquaculture of the University of Patras to the Decentralized Administrations of the Aegean (Cyclades and Dodecanese islands) and Crete (Agios Nikolaos and Heraklion). In the aforementioned request, the purpose of deployment and methods that are used were described in detail.









The deployment of the traps commenced on the 5th of November in Agios Nikolaos, Crete and a few days later in Aigiali, Amorgos and will continue until 28th of September 2023 in all areas of interest. However, the winter weather conditions do not facilitate the deployment of the traps in a regular basis while lionfish population density has already dropped. During the wintertime, lionfish drop their metabolic rate and are less active, while it is possible to move in deeper waters. Despite that, in Amorgos the traps successfully caught two lionfish so far whilst none has been caught in Crete or Rhodes.







Informative signs

The content of the informative signs that were placed in ports in the islands of Amorgos, Santorini, Paros, Kos, Rhodes, Agios Nikolaos and Heraklion was decided based on the most common marine alien species that someone could encounter in each area, along with specific information for them.

All the species were presented by real photos and the signs were placed in collaboration with the port authorities of every region or the marinas authorities and their respective logos were included on the signs.

LOCATION	PRESENT ALIEN SPECIES		
Amorgos, Paros,	 Pterois miles Sargocentron rubrum Lagocephalus sceleratus Lagocephalus suezensis Lagocephalus guentheri 	 Parupeneus forskalli Torquigener	 Siganus luridus Rhopilema nomadica Diadema setosum Sphoeroides
Santorini		flavimaculosus Sepioteuthis lessoniana Fistularia commersonii Siganus rivulatus	pachygaster
Kos, Rhodos	 Pterois miles Sargocentron rubrum Portunus segnis Lagocephalus guentheri Lagocephalus sceleratus Lagocephalus suezensis Parupeneus forskalli 	 Torquigener flavimaculosus Sepioteuthis lessoniana Fistularia commersonii Plotosus lineatus Siganus rivulatus Siganus luridus 	 Rhopilema nomadica Diadema setosum Callinectes sapidus Sphoeroides pachygaster
Agios Nikolaos,	 Pterois miles Sargocentron rubrum Portunus segnis Lagocephalus guentheri Lagocephalus sceleratus Lagocephalus suezensis Parupeneus forskalli 	 Torquigener	 Rhopilema nomadica Diadema setosum Callinectes sapidus Sphoeroides
Heraklion		flavimaculosus Sepioteuthis lessoniana Fistularia commersonii Plotosus lineatus Siganus rivulatus Siganus luridus	pachygaster

Table 1: Table of alien species presented in the informative signs in each region









Picture 3: Informative signs of Cyclades, Dodecanese and Crete.

Alliance

The aim of the Alliance was to develop a Responsible Seafood Alliance Scheme that will result in a label provided to businesses contributing to the exploitation and promotion of edible IAS as well as the replacement and avoidance of apex predators.

During 2022 preparatory actions in order to set the context of the Alliance among the stakeholders of the seafood market chain were conducted. All the stakeholder targeted groups were mapped and the criteria for the alliance's members were decided. In all areas were actions were implemented, local stakeholders were informed about the alliance and the upcoming seminars.

The targeted stakeholder groups follow:

- Professional fishers
- Recreational fishers
- Fishmongers
- Fishing tackle stores
- Seafood processing companies
- Restaurants
- Chefs
- Hotels







Since iSea is not an audit authority responsible to control whether the alliance members act towards the protection of the marine environment, as criteria for entering and remaining a member of the alliance was set the attendance at educational seminars. The seminars will include manifold topics towards the protection of the marine environment starting with the promotion of targeting invasive alien species and the exclusion of targeting apex predators. They will also include: catch and release practices, fishing gear selection, activities' impact on Marine Protected Areas, anchorage impact on habitats, minimum permitted catch sizes of fish, proposed seasons for different species consumption, protected species and the legal framework on different relevant issues.

The seminars will be conducted through an online MOOC (Massive Open Online Courses) platform. The platform will contain courses that someone will have to follow and successfully pass some "exams" to join the alliance. The attendees that will succeed in the "exams" will get a certificate and will join the interactive map of the project.

Alien species removals



Alien species removal events were organized in October and early November in order to achieve higher participation from local recreational fishers. All the local authorities were informed about the actions in order to fully comply with the relevant legislation. To implement the actions in collaboration with the local authorities, a specific license needed to be given by the

fisheries department of the Regional Management of Southern Aegean and the local fisheries department of Paros, Rhodos and Crete. Unfortunately, the actions were considered a sport event, which only official sport fishing associations can implement. In order to overcome this, we decided to implement the events as awareness events for recreational fishers and invite them individually.

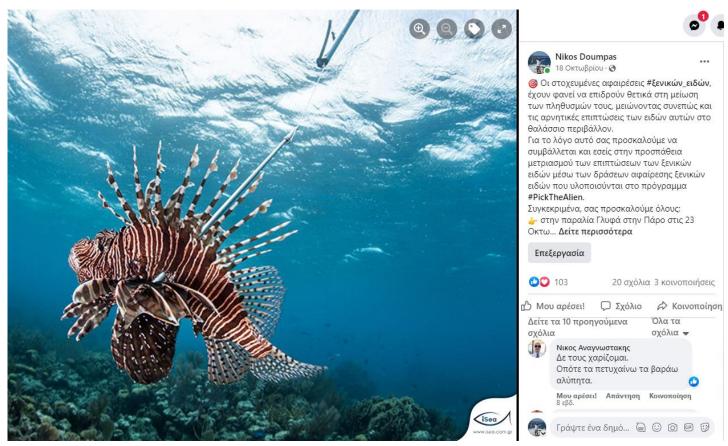
Despite our constant efforts in communication with possible participants to the events, i.e. recreational fishing and spearfishing pages in social media, diving centers, the National Federation of Recreational Fishing Association, personal contacts etc., the was very low to no attendance. In Crete for instance, the







weather forecast for the day of the contest discouraged the spearfishers from joining the event. On the other hand, in Paros, due to great weather conditions, after many days of bad weather, the recreational fishers decided not to join the removals but to go practice their hobby to another region.



Picture 4: Although the Facebook post had a great reach and participation of the public, the participation in the events was low









Picture 5: Alien species removal action in Rhodes

Supply chain models

Through the collection of valuable information in each area of interest, one supply chain model will be created concerning the supply of edible alien species at a local and a national level. The model will identify all the types of key stakeholders (fishers, fishmongers, restaurateurs etc.), providing insights on how edible invasive species can successfully enter the market. The different constraints that occur in the supply chain per species and area of interest will be also identified.

Through the supply chain modelling, a technical report will be produced and two case studies for the species of Atlantic blue crab (Callinectes sapidus) and lionfish (Pterois miles) will be provided.

The two case studies refer to the perception of consumers regarding the consumption of lionfish in Crete and Atlantic blue crab in Thessaloniki. The survey was conducted through online google forms and in person questionnaires. The







link of the questionnaires was shared to social media pages and collaborators in order to further disseminate it and have a wider and less biased sampling pool.

Additionally, communication with seafood wholesale companies, seafood processing companies and supermarket chains, to investigate their possible involvement in the supply chain and set the baseline to further promote the consumption of edible alien species and make them more accessible to the consumers was implemented. After the introductory contact with TRATA and MOLOS, two of the major seafood processing companies in Greece, we have seen that both companies are very interested in inserting a new product into their available variety. As these are time-consuming processes, we are in constant communication with them in order to understand the exact procedure of a new processed product in order to enter the supply chain. The species that are most interested for them are the Atlantic blue crab and lionfish.

We have already contacted professional fishers that can supply us with the aforementioned species in order to forward them to the companies for the trial processes to start.

Communication

1st step: In total 115 posts were published in all the social media of iSea (Facebook, Instagram, Twitter) (Table 2, Table 3, Table 4), 9 Press Releases were sent to local and national news offices, and they were shared by news blogs and sites (Table 5), and 10 interviews were given to local radio and television stations. Additionally, many chefs and fishers have tagged iSea as they are preparing dishes or fishing alien species (Picture 7).

Also, the recipes eBook will be updated with 20 new recipes. Finally, during the gastronomy events, we had also a guestbook where all the attendees could write down their impressions (Picture 6). Some of the quotes they have written are the following:

"Really good initiative! I 'll tell everybody to ask for lionfish and blue crab. Stay fishy." Colette, Townsville, Australia

"Excellent movement. Nice initiative to inform the local society in a directly and simple way. Nice flavors!! A good opportunity to include them in our diet" Anastasia, Greece

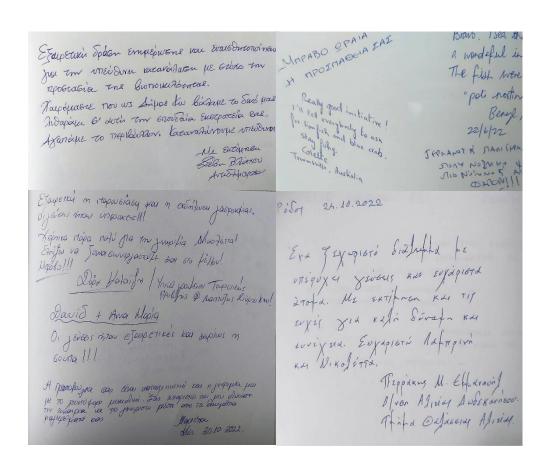






"Excellent informative and awareness action for responsible seafood consumption, aiming at the protection of biodiversity. We are very glad that as Municipality of Kos we contributed in this important campaign. We love the environment. We consume responsible." Sevi Vlachou, Vice Mayor, Kos

"Congratulations for your action, delicious treats. We will start preferring this special fish!" Unknown, Rhodes



Picture 6: The attendees of the gastronomy events were writing down their impressions on the project and alien species taste value in a dedicated book.









Picture 7: Some of the tags of iSea from chefs and people that fished and/or prepared dishes with alien species.

Post code	Date	Reach
Post 1	05/04/2022	11,769
Post 2	08/04/2022	16,155
Post 3	13/04/2022	6,399
Post 4	15/04/2022	6,957
Post 5	19/04/2022	8,823
Post 6	28/04/2022	2,376
Post 7	05/05/2022	3,067
Post 8	10/05/2022	9,225
Post 9	17/05/2022	5,285
Post 10	20/05/2022	16,283
Post 11	03/06/2022	12,320
Post 12	17/06/2022	3,145
Post 13	20/06/2022	3,206
Post 14	23/06/2022	3,264
Post 15	8/7/2022	39,839
Post 16	18/7/2022	3,250
Post 17	16/9/2022	5,258
Post 18	21/9/2022	2,559







Post 19	17/10/2022	10,363
Post 20	21/10/2022	2,900
Post 21	26/10/2022	4,082
Post 22	02/11/2022	1,599
Post 23	09/11/2022	10,091
Post 24	11/11/2022	5,164
Post 25	16/11/2022	3,216
Post 26	18/11/2022	6,476
Post 27	22/11/2022	9,615
Post 28	01/12/2022	3,840
Post 29	07/12/2022	9,460
Post 30	14/12/2022	2,389
Post 31	21/12/2022	3,264

Table 2 Posts on Facebook

Post code	Date	Reach
Post 1	5/4/2022	498
Post 2	8/4/2022	555
Post 3	13/4/2022	654
Post 4	15/4/2022	630
Post 5	18/4/2022	681
Post 6	28/4/2022	628
Post 7	4/5/2022	571
Post 8	10/5/2022	975
Post 9	17/5/2022	488
Post 10	20/5/2022	486
Post 11	3/6/2022	717
Post 12	17/6/2022	497
Post 13	20/6/2022	616
Post 14	23/6/2022	601
Post 15	8/7/2022	518
Post 16	18/7/2022	229
Post 17	16/9/2022	714
Post 18	21/9/2022	343
Post 19	17/10/2022	531
Post 20	20/10/2022	1103
Post 21	21/10/2022	573
Post 22	27/10/2022	608
Post 23	2/11/2022	444
Post 24	5/11/2022	494







Post 25	9/11/2022	470
Post 26	11/11/2022	441
Post 27	16/11/2022	449
Post 28	18/11/2022	517
Post 29	22/11/2022	497
Post 30	30/11/2022	377
Post 31	07/12/2022	290
Post 32	14/12/2022	281

Table 3: Posts on Instagram

Post 1 5/4/20 Post 2 8/4/20 Post 3 12/4/20 Post 4 13/4/20 Post 5 13/4/20 Post 6 14/4/20 Post 7 15/4/20 Post 8 16/4/20 Post 9 16/4/20	022 784 022 611 022 418 022 156 022 111 022 225 022 185 022 186
Post 3 12/4/20 Post 4 13/4/20 Post 5 13/4/20 Post 6 14/4/20 Post 7 15/4/20 Post 8 16/4/20	022 611 022 418 022 156 022 111 022 225 022 185 022 186
Post 4 13/4/20 Post 5 13/4/20 Post 6 14/4/20 Post 7 15/4/20 Post 8 16/4/20	022 418 022 156 022 111 022 225 022 185 022 186
Post 5 13/4/20 Post 6 14/4/20 Post 7 15/4/20 Post 8 16/4/20	022 156 022 111 022 225 022 185 022 186
Post 6 14/4/20 Post 7 15/4/20 Post 8 16/4/20	022 111 022 225 022 185 022 186
Post 7 15/4/20 Post 8 16/4/20	022 225 022 185 022 186
Post 8 16/4/20	022 185 022 186
	022 186
Post 9 16/4/20	
	022 160
Post 10 16/4/20	100
Post 11 17/4/20	022 249
Post 12 17/4/20	022 175
Post 13 17/4/20	022 204
Post 14 17/4/20	022 1.27
Post 15 18/4/20	022 184
Post 16 19/4/20	022 830
Post 17 19/4/20	022 570
Post 18 28/4/20	022 257
Post 19 30/4/20	022 447
Post 20 4/5/20	022 209
Post 21 5/5/20	022 129
Post 22 5/5/20	022 695
Post 23 9/5/20	022 427
Post 24 10/5/20	022 163
Post 25 10/5/20	022 314
Post 26 13/5/20	022 125
Post 27 13/5/20	022 130







Post 28	13/5/2022	87
Post 29	15/5/2022	366
Post 30	15/5/2022	402
Post 31	17/5/2022	195
Post 32	17/5/2022	114
Post 33	20/5/2022	229
Post 34	3/6/2022	191
Post 35	20/6/2022	243
Post 36	23/6/2022	536
Post 37	8/7/2022	305
Post 38	18/7/2022	237
Post 39	16/9/2022	227
Post 40	21/9/2022	179
Post 41	20/10/2022	534
Post 42	21/10/2022	1,385
Post 43	27/10/2022	937
Post 44	02/11/2022	162
Post 45	09/11/2022	188
Post 46	11/11/2022	630
Post 47	16/11/2022	262
Post 48	18/11/2022	145
Post 49	22/11/2022	480
Post 50	30/11/2022	271
Post 51	07/12/2022	241
Post 52	14/12/2022	334

Table 4: Posts on Twitter

News Office	Region	Link	Date
Vories Sporades	Sporades	<u>Link</u>	5/4/2022
Paros News	Cyclades	<u>Link</u>	5/4/2022
Koini Gnomi	Cyclades	<u>Link</u>	6/4/2022
Nea tis Santorinis	Cyclades	<u>Link</u>	11/4/2022
Municipality of Amorgos	Cyclades	<u>Link</u>	13/4/2022
Naxos Press	Cyclades	<u>Link</u>	14/4/2022
Naxos Times	Cyclades	<u>Link</u>	14/4/2022
Cyclades Voice	Cyclades	<u>Link</u>	14/4/2022
Cyclades24News	Cyclades	<u>Link</u>	14/4/2022
Green Agenda	National	<u>Link</u>	18/4/2022
Voria.gr	National	<u>Link</u>	18/4/2022







V all 1	EATRE	1 to 1.	07/4/0000
Kanali 1	Athens	<u>Link</u>	27/4/2022
Proto Thema	Athens	Link	28/4/2022
104FM	Crete	<u>Link</u>	10/5/2022
Municipality of Agios Nikolaos	Crete	<u>Link</u>	10/5/2022
Fonien.gr	Crete	<u>Link</u>	11/5/2022
Anatoli online	Crete	<u>Link</u>	11/5/2022
Lato News	Crete	<u>Link</u>	12/5/2022
Anatoli online	Crete	<u>Link</u>	15/5/2022
Efimerida Anatoli	Crete	Link	15/5/2022
Enimerosi	Ionian Sea	<u>Link</u>	17/5/2022
Corfu Press	Ionian Sea	<u>Link</u>	18/5/2022
CorfuLand	Ionian Sea	<u>Link</u>	18/5/2022
Kefalonia Life	Ionian Sea	<u>Link</u>	18/5/2022
ImeraZante	Ionian Sea	<u>Link</u>	18/5/2022
eKefalonia	Ionian Sea	<u>Link</u>	18/5/2022
KerkyraSimera	Ionian Sea	<u>Link</u>	19/5/2022
ZanteTimes	Ionian Sea	<u>Link</u>	23/5/2022
Department of Food Science and	Ionian Sea	<u>Link</u>	25/5/2022
Technology			
eKefalonia	Ionian Sea	<u>Link</u>	27/5/2022
Argolikes Eidiseis	Argolic Gulf	<u>Link 1</u>	20/6/2022
H Foni tis Hydras	Argolic Gulf	Link 2	20/6/2022
Hydra Municipality	Argolic Gulf	Link 3	20/6/2022
Arena News	Argolic Gulf	Link 6	20/6/2022
SaronicMagazine	Argolic Gulf	Link 8	20/6/2022
Hydra Island	Argolic Gulf	Link 9	20/6/2022
GRTimes	Argolic Gulf	Link 4	21/6/2022
Taxidromos.gr	Argolic Gulf	Link 5	21/6/2022
NewsBase	Argolic Gulf	Link 7	21/6/2022
Kathimerini	National	<u>Link</u>	12/7/2022
Argolikes Eidiseis	Argolic Gulf	<u>Link</u>	13/9/2022
Anagnostis	Argolic Gulf	<u>Link</u>	13/9/2022
Nafplio24.gr	Argolic Gulf	<u>Link</u>	14/9/2022
Argolidatv.gr	Argolic Gulf	<u>Link</u>	14/9/2022
Argolida Magazine	Argolic Gulf	<u>Link</u>	15/9/2022
Municipal Organization for Culture-	Argolic Gulf	<u>Link</u>	15/9/2022
Environment-Sports-DOPPAT			
Anagnostis	Argolic Gulf	<u>Link</u>	18/9/2022
Argolikes Eidiseis	Argolic Gulf	<u>Link</u>	21/9/2022
Nafplio24.gr	Argolic Gulf	<u>Link</u>	22/9/2022
Anagnostis	Argolic Gulf	<u>Link</u>	22/9/2022
Dimokratiki	Dodecanese	<u>Link</u>	17/10/2022
To Vima tis Ko	Dodecanese	<u>Link</u>	17/10/2022







	EAL		
Proodos	Dodecanese	<u>Link</u>	17/10/2022
Proti Ekdosi	Dodecanese	<u>Link</u>	17/10/2022
Sky Rodos	Dodecanese	<u>Link</u>	17/10/2022
Real Voice News	Dodecanese	<u>Link</u>	18/10/2022
Kosnews2	Dodecanese	<u>Link</u>	20/10/2022
Kos Tv	Dodecanese	<u>Link</u>	20/10/2022
Ekfrasi97	Dodecanese	<u>Link</u>	21/10/2022
Rhodes	Dodecanese	<u>Link</u>	22/10/2022
Nea Santorinis	Cyclades	<u>Link</u>	15/10/2022
Cyclades Voice	Cyclades	<u>Link</u>	17/10/2022
Atlantea	Cyclades	<u>Link</u>	17/10/2022
Santonews	Cyclades	<u>Link</u>	20/10/2022
Koini Gnomi	Cyclades	<u>Link</u>	21/10/2022
Serifos	Cyclades	<u>Link</u>	21/10/2022
Tetarto Press	National	<u>Link</u>	19/01/2023
Sporades News	Sporades	<u>Link</u>	28/01/2023
Thrakiki Agora	Thrace	<u>Link</u>	30/01/2023
APE-MPE (AMNA)	National	<u>Link</u>	31/01/2023
CNN Greece	National	<u>Link</u>	31/01/2023
iefimerida	National	<u>Link</u>	31/01/2023
ERT News	National	<u>Link</u>	31/01/2023
News.gr	National	<u>Link</u>	31/01/2023
Proto Thema	National	<u>Link</u>	31/01/2023
Skai	National	<u>Link</u>	31/01/2023
msn	National	<u>Link</u>	31/01/2023
Mainly News	National	<u>Link</u>	31/01/2023
Simple Radio	National	<u>Link</u>	31/01/2023
Sepe	National	<u>Link</u>	31/01/2023
Karfitsa.gr	National	<u>Link</u>	31/01/2023
Feeder.gr	National	<u>Link</u>	31/01/2023
Money Review	National	<u>Link</u>	31/01/2023
We24	National	<u>Link</u>	31/01/2023
Thesstoday	Thessaloniki	<u>Link</u>	31/01/2023
Makedonia	Thessaloniki	<u>Link</u>	31/01/2023
Haniotika Nea	Crete	<u>Link</u>	31/01/2023
Energy World	National	<u>Link</u>	01/02/2023
Mixani Tou Xronou	National	<u>Link</u>	01/02/2023
Dimoprasion	National	<u>Link</u>	01/02/2023
Voria	Thessaloniki	<u>Link</u>	01/02/2023
Cyclades Open	Cyclades	<u>Link</u>	01/02/2023
Rodos Report	Dodecanese	<u>Link</u>	02/02/2023
Cibum	National	<u>Link</u>	03/02/2023

Table 5: Articles in press.







2nd step: Regarding the second step of the communication plan and the representatives of different key stakeholders to act as ambassadors of the project, the people selected follow: Kostas Aggelopoulos and Alexandros Untila were the representatives from the side of the chefs community, Dr. Stelios Katsanevakis from the side of the scientific community, Georgios Tyrikos Ergas from the side of the recreational fishers community, Apostolos Elissaios from the side of small-scale fishers community, Apostolis Chartabilas from the side of the fishmongers community, Nikolaos Mittas (president of New Consumers Institute of Greece) from the side of the consumers community and Anthi Arvaniti from the side of the fishing tourism sector. The campaign launched on November, however, there has been increased interest from old and new partners in becoming ambassadors of the project, as they are interested in further supporting its cause, so there may be more to come and represent different sectors or ways of tackling the issue of alien species.



3rd step: In this step of the campaign, we aimed to familiarize the public with the "view" of the alien species in three different environments, the sea, the market, and the restaurant. For this purpose, the campaign matched edible alien species with some very well-known native species which consumption is not considered as responsible for different reasons and promoted their replacement with invasive alien species. You can find the matches of the species in the following table (Table 8). Additionally, a responsible seafood consumption guide in both Greek







and English was created and distributed among targeted stakeholders and the public (Picture 8).



Picture 8: The responsible seafood consumption guide







Alien Species	Marine Environment	Fish Market Environment	Restaurant environment
Lionfish (Pterois miles)	Groupers (Epinephelus sp)	Scorpionfish (Scorpaena sp)	Groupers (Epinephelus sp)
Blue crab (Callinectes sapidus & Portunus segnis	Native crabs	Octopus (Octopus vulgaris)	Lobster (Palinurus elephas)
Red sea goatfish (Parupeneus forsskali)	Surmullet (Mullus surmuletus)	Red mullet (Mullus barbatus)	Surmullet (Mullus surmuletus)
Trumpetfish (Fistularia commersonii)	Seabass (Dicentrarchus Iabrax)	Needlefish (Belone sp.)	European eel (Anguilla anguilla)
Spinefoots (Siganus sp.)	Salema porgy (Sarpa salpa)	Annular seabream (Diplodus annularis)	White seabream (Diplodus sargus)

Table 6: Alien species matches with native species for the 3rd step of the campaign

Map Satellite | Map | Satellite | Fishmonger, Sea Fish Agia Kyriaki | Lochagou Spiridonos Vlaikou, Corfu Open Air Market, 49100 | Telephone: 694 371 0430 | Species: Atlantic blue crab ("upon communication) | Raterini Kortepiun | Coenza | Lamizia | Crotone | Terms of Use | Report a map error | Coogle | Terms of Use | Report a map error | Repor

Picture 9: Interactive map with restaurants, fishers, fishmongers throughout Greece for edible alien species

Another major step for the communication campaign was the creation of an interactive map, where the consumers can discover restaurants, fishers and fishmongers throughout Greece that sell edible alien species according of course with their availability. All stakeholders that have been included in the map have been contacted personally in order to disclose their personal data (i.e., phone number).







Next steps

The interactive map will continue to get updated regularly with new restaurants, fishers and fishmongers who promote and sell edible alien species.

Lionfish trap testing and regular communication with the fishers that deploy them will continue until the end of September 2023 with possible extension for a longer period. The logbooks that they complete will be collected in regular intervals.

Regarding the informative signs, the exact position where they will be placed has been decided in collaboration with the local authorities and the requests for the permits of the signs were sent to all the involved stakeholder (coast guard, port funds, municipalities, antiquities and cultural heritage departments). At the moment the requests for Agios Nikolaos, Paros and Santorini are approved, while the requests for Heraklion, Rhodos, Kos and Amorgos are pending.

The 3rd step of the communications campaign, i.e., the familiarization of the consumers with edible alien species through the different steps of the supply chain, will launch later in the season in order to coincide with major celebration/festivals (e.g. Christian season of fasting) and to be more close in the summer period that seafood consumption is higher.

For the two case studies, the questionnaires regarding the perception of consumers, on Atlantic blue crab consumption in Thessaloniki and on lionfish consumption in Crete, have been completed and the relevant case studies are drafted.

For the supply chain model, the relevant questionnaires regarding the understanding of the market and trade of edible marine alien species in Greece and possible empowerment of the market is still undergoing. We have been in constant communication with representatives of the seafood market in order to complete the questionnaires created for the purpose.

Regarding the publication on the results of the pilot use of lionfish traps, their testing needs to be completed first in order to have the necessary data for the analysis.

Regarding the publication on the perception of fishers in relation to nonindigenous species, the relevant questionnaires have been completed and the paper is drafted.









Picture 10: Lionfish sold in a fish market in Crete

Constrains

The main constrains faced during the project were the following

- The organization of the gastronomy events was more challenging than expected taking into account that May and June are already in the pick of the tourism season in the places that the actions were implemented, which is a recurring issue from previous years. The availability of chefs and restaurants but also the reduced personnel in general (a problem that the tourism industry is currently facing in Greece) for the conduction of gastronomy events was very low, due to unexpected increased touristic activity. To face the issue:
 - (i) the project team communicated with all the collaborating restaurants/chefs from previous years, but also the majority of restaurants, taverns, catering businesses and hotels of the areas of interest,
 - (ii) some of the actions were moved later in the season when the tourism activities will be lower. However, the positive outcome from this constrain is that a mapping of restaurants/chefs willing to get more informed or participate in another action later in the season was achieved and can be an advantage while establishing the alliance.







- The difficulty in providing edible alien species to the chefs especially early in the season (i.e. April-May). Finding the species locally was very hard, due to the bad weather conditions and the low water temperatures of this year and thus, the targeted alien species, such as spinefoots and lionfish were not found in shallow and/or coastal waters. However, with constant communication with local fishers and their associations and the capability of storing quantities of fish we managed to overcome this issue.
- An unexpected constraint was the license required for the deployment and testing of the lionfish traps. However, the request has already been issued to the relevant authorities and the traps got the required licenses. All the other necessary processes required for this action have already been carried out.
- In some areas despite the systematic efforts and the personal contacts to attract them, very few or no representatives from the fishing or the catering community attended to the seminar. To cope with this issue, the project team contacted and informed the relevant associations and their representatives. As a result, many of them manage to attend the gastronomy events which are more attractive, tasted the recipes and got informed about the project and the issue of invasive alien species. In all such cases, visits in the ports, the fish markets, the restaurants and other places where targeted stakeholders usually gather followed to ensure that all stakeholders were informed about the project and its actions.
- For the removal of alien species actions, we faced many difficulties in attracting participants for the events, but also getting the necessary licenses from the coastguard and the local fisheries departments. Due to the existing legislation, organized actions with recreational fishers, are considered sport fishing events. For these kinds of events, only a sports fishing association can request from the fisheries departments and can get the permit to implement them. In order to overcome this issue, we implemented the events, as awareness events targeted to recreational fishers. Regarding the low participation of recreational fishers, in some instances, like Crete, the weather forecast may have affected their will to participate.







Conclusions

During the events and our discussions with the attendees, many common misconceptions among the professionals were revealed. For example, the strong belief that the toxic *Lagocephalus spp* can be consumed as fugu dish is still promoted among different professional, but also the Mass Media and the Press.

On the other hand, the local community showed a great interest on alien species, looking for possible opportunities to find them in their local markets. In addition, in some cases the local community was aware about the existence of invasive alien species, but only positive to taste them after being informed about the species.

In addition, in some cases, there are restaurants searching for edible alien species, but due to the lack of communication between the different sectors, they are not aware that local fishers catch them. As a result, local fishers, avoid and discard the edible alien species, considering them a bad catch, or self-consume them.

Furthermore, it was not before the events when different professionals were informed and realized that some species that they target or serve, such as groupers and snappers, are threatened, but of high ecological value and should be protected.









Most of the professionals (fishers and chefs) were skeptical towards spinefoots, which they avoid due to the timeconsuming procedure to either remove them from their nets or cook them. In some cases, fishers have even increased the nets "eyes" in order to avoid catching them. An interesting idea that came

up during the discussions of the informative events was to connect the fishers with a profitable market opportunity for exporting them. However, in areas where the export of spinefoots overseas (i.e. Cyprus) was already tested did not thrive as it was not economically viable and advantageous for the local fishers. Therefore, our main focus shifted more towards the development of a domestic market, from areas with high alien species population density towards major consumer centers.

It has been evident that in areas where alien species are present for a longer period of time, like Rhodes, Kos and Crete islands, they have gradually entered the local markets, even though with no major consumer interest. In addition, local people are still skeptical and under informed about their presence and effects on the environment, the economy and human health.

Since the beginning of the project we were contacted, either directly or via social platforms, from people such as consumers, chefs and restaurant owners that have exhibited a great interest for the implementation of relevant actions in their regions in order to get informed about invasive alien species and responsible consumption of seafood but also try the taste value of the invaders.









Picture 11: People gathered to taste edible alien species in Athens gastronomy event

Financial report

Regarding the expenses of the project, the following table shows the costs incurred in the implementation of the actions until now. Budgetary expenses included the informative and gastronomic events, sustenance expenses, communication campaign, graphics design, lionfish trap construction, the Blue Crab Festival in Thessaloniki, the online event in Athens and project management. For all expenses, as described in the table below, all relevant receipts and invoices are available on request.

Type of Cost	Date	Expenses	Type in Budget
Trap materials	23/03/2022	10.01	Trap Construction
Trap materials	23/03/2022	833.28	Trap Construction
Equipment	29/03/2022	37.20	Equipment and Consumables
Trap materials	30/03/2022	1,000.00	Trap Construction
Advertisement	06/04/2022	6.57	Communication Campaign
Graphic designer	06/04/2022	1,015.50	Communication Campaign
Graphic (prints)	12/04/2022	47.12	Equipment and Consumables
Sustenance	12/04/2022	43.00	Travel
Trap materials	12/04/2022	306.78	Trap Construction
Graphic (banner)	12/04/2022	62.00	Equipment and Consumables
Consumables	13/04/2022	36.18	Equipment and Consumables
Sustenance	14/04/2022	45.50	Travel







		EATRO	
Sustenance	14/04/2022	45.50	Travel
Sustenance	14/04/2022	11.94	Travel (taxi)
Sustenance	14/04/2022	12.70	Subsistence
Sustenance	14/04/2022	12.86	Travel (taxi)
Sustenance	14/04/2022	3.20	Subsistence
Sustenance	14/04/2022	1.50	Subsistence
Sustenance	14/04/2022	1.20	Subsistence
Sustenance	14/04/2022	33.56	Subsistence
Consumables (crabs)	14/04/2022	35.56	Equipment and Consumables
Sustenance	14/04/2022	17.30	Subsistence
Sustenance	14/04/2022	3.40	Subsistence
Sustenance	15/04/2022	50.00	Accommodation
Equipment	16/04/2022	16.10	Equipment and Consumables
Equipment	16/04/2022	1.00	Equipment and Consumables
Equipment	16/04/2022	45.53	Equipment and Consumables
Equipment	16/04/2022	20.00	Equipment and Consumables
Sustenance	17/04/2022	11.00	Subsistence
Sustenance	17/04/2022	45.00	Subsistence
Sustenance	17/04/2022	32.00	Subsistence
Sustenance	17/04/2022	202.00	Accommodation
Sustenance	18/04/2022	45.50	Travel
Sustenance	18/04/2022	45.50	Travel
Sustenance	18/04/2022	2.40	Travel
Sustenance	18/04/2022	43.00	Travel
Sustenance	18/04/2022	43.00	Travel
Sustenance	18/04/2022	6.05	Subsistence
Sustenance	18/04/2022	4.80	Subsistence
Sustenance	18/04/2022	8.10	Subsistence
Sustenance	18/04/2022	7.20	Subsistence
Car rent	21/04/2022	60.14	Travel
Sustenance	28/04/2022	42.00	Travel
Sustenance	28/04/2022	37.80	Travel
Consumables (crabs)	29/04/2022	45.20	Equipment and Consumables
Transfer (crabs)	29/04/2022	15.00	Equipment and Consumables
Sustenance	30/04/2022	3.20	Subsistence
Sustenance	30/04/2022	10.00	Subsistence
Sustenance	04/05/2022	154.14	Travel
Trap ironwork	04/05/2022	2,232.00	Trap Construction
Multimedia designer	04/05/2022	499.99	External Collaborator
Advertisement	06/05/2022	43.43	Communication Campaign
Sustenance	10/05/2022	4.30	Travel
Graphic (prints)	11/05/2022	42.84	Equipment and Consumables
Sustenance	12/05/2022	29.00	Subsistence







C l	10/05/0000	EA) 6	C. de siet e e e
Sustenance	12/05/2022	4.80	Subsistence
Sustenance	12/05/2022	19.00	Subsistence
Sustenance	12/05/2022	12.50	Subsistence
Sustenance	12/05/2022	6.19	Subsistence
Sustenance	12/05/2022	30.40	Accommodation
Sustenance	12/05/2022	0.50	Accommodation
Equipment	12/05/2022	28.76	Equipment and Consumables
Sustenance	13/05/2022	3.00	Subsistence
Sustenance	13/05/2022	11.00	Subsistence
Sustenance	13/05/2022	11.40	Subsistence
Sustenance	13/05/2022	3.00	Subsistence
Catering	14/05/2022	20.00	Event Venues
Sustenance	14/05/2022	23.00	Subsistence
Sustenance	14/05/2022	50.00	Travel
Sustenance	14/05/2022	70.00	Accommodation
Sustenance	14/05/2022	1.00	Accommodation
Equipment	14/05/2022	37.05	Equipment and Consumables
Sustenance	15/05/2022	3.20	Subsistence
Sustenance	15/05/2022	119.18	Travel
Sustenance	15/05/2022	3.50	Subsistence
Sustenance	15/05/2022	70.40	Accommodation
Sustenance	15/05/2022	1.00	Accommodation
Rental	16/05/2022	100.00	Event Venues
Car rent	16/05/2022	84.78	Travel
Graphic designer	23/05/2022	1,354.00	Communication Campaign
Trap materials	26/05/2022	79.86	Trap Construction
Tolls	07/06/2022	2.20	Blue Crab Food Festival
Tolls	07/06/2022	2.20	Blue Crab Food Festival
Tolls	07/06/2022	1.20	Blue Crab Food Festival
Tolls	07/06/2022	0.50	Blue Crab Food Festival
Tolls	07/06/2022	1.20	Blue Crab Food Festival
Consumables (crabs)	07/06/2022	565.00	Blue Crab Food Festival
Transfer (crabs)	07/06/2022	43.65	Blue Crab Food Festival
Parking	13/06/2022	4.00	Blue Crab Food Festival
Car wash	14/06/2022	6.00	Blue Crab Food Festival
Graphic (prints)	16/06/2022	104.16	Equipment and Consumables
Food truck rental	17/06/2022	2,700.00	Blue Crab Food Festival
Tolls	17/06/2022	0.30	Blue Crab Food Festival
Sustenance	17/06/2022	59.90	Blue Crab Food Festival
Equipment	17/06/2022	49.99	Equipment and Consumables
Sustenance	18/06/2022	30.00	Blue Crab Food Festival
Sustenance	19/06/2022	43.50	Blue Crab Food Festival
Car park	19/06/2022	4.00	Blue Crab Food Festival







		EATRO	
Car charge	20/06/2022	11.12	Blue Crab Food Festival
Car wash	20/06/2022	10.00	Blue Crab Food Festival
Consumables	20/06/2022	13.88	Blue Crab Food Festival
Sustenance	21/06/2022	4.80	Blue Crab Food Festival
Sustenance	21/06/2022	169.30	Blue Crab Food Festival
Equipment	21/06/2022	5.60	Equipment and Consumables
Car charge	21/06/2022	10.00	Blue Crab Food Festival
Equipment	22/06/2022	4.60	Blue Crab Food Festival
Car charge	22/06/2022	10.54	Blue Crab Food Festival
Car fuel	22/06/2022	40.00	Blue Crab Food Festival
Consumables (fish)	25/06/2022	200.00	Equipment and Consumables
Photographer (40%)	30/06/2022	200.00	Communication campaign
Equipment	11/07/2022	6.25	Equipment and Consumables
Sustenance	13/07/2022	35.33	Travel (taxi)
Equipment transfer	13/07/2022	25.00	Equipment and Consumables
Photographer (50%)	31/07/2022	250.00	Communication Campaign
Consumables (crabs)	10/08/2022	175.15	Equipment and Consumables
Equipment	11/08/2022	26.04	Equipment and Consumables
Photographer	25/08/2022	234.00	Communication campaign
Multimedia designer	05 100 10000	250.00	-
(50%)	05/09/2022	250.00	External collaborator
Equipment	05/09/2022	74.00	Equipment and Consumables
Equipment	06/09/2022	37.20	Equipment and Consumables
Equipment	26/09/2022	5.50	Equipment and Consumables
Trap Transfer	29/09/2022	1,612.00	Trap Construction
Photographer (50%)	30/09/2022	250.00	Communication Campaign
Equipment	11/10/2022	42.99	Equipment and Consumables
Sustenance	12/10/2022	21.00	Travel
Sustenance	12/10/2022	116.08	Travel
Sustenance	12/10/2022	126.08	Travel
Sustenance	12/10/2022	104.57	Travel
Sustenance	12/10/2022	81.57	Travel
Sustenance	12/10/2022	316.58	Travel
Equipment transfer	13/10/2022	26.41	Equipment and Consumables
Consumables (fish)	13/10/2022	121.99	Equipment and Consumables
Scale	13/10/2022	4.50	Equipment and Consumables
Graphic (banner)	14/10/2022	40.92	Equipment and Consumables
Consumables	14/10/2022	53.48	Equipment and Consumables
Sustenance	17/10/2022	5.40	Subsistence
Sustenance	17/10/2022	19.00	Subsistence
Sustenance	17/10/2022	13.90	Subsistence
Sustenance	17/10/2022	1.40	Subsistence
Car rent	18/10/2022	100.00	Travel
		I	I







		EATRO	
Sustenance	18/10/2022	2.00	Subsistence
Sustenance	18/10/2022	10.00	Subsistence
Sustenance	18/10/2022	12.00	Subsistence
Sustenance	18/10/2022	13.80	Subsistence
Sustenance	19/10/2022	47.00	Travel
Sustenance	19/10/2022	19.00	Subsistence
Sustenance	19/10/2022	31.00	Subsistence
Sustenance	19/10/2022	3.00	Subsistence
Car fuel	19/10/2022	20.00	Travel
Sustenance	19/10/2022	10.50	Subsistence
Sustenance	19/10/2022	29.70	Subsistence
Sustenance	20/10/2022	32.70	Subsistence
Sustenance	20/10/2022	2.00	Subsistence
Sustenance	20/10/2022	4.30	Subsistence
Sustenance	20/10/2022	8.00	Subsistence
Sustenance	20/10/2022	12.00	Subsistence
Sustenance	21/10/2022	10.37	Travel (taxi)
Sustenance	21/10/2022	30.00	Subsistence
Sustenance	21/10/2022	2.00	Subsistence
Web developer	21/10/2022	315.00	Communication Campaign
Car fuel	21/10/2022	20.00	Travel
Car fuel	21/10/2022	10.00	Travel
Sustenance	21/10/2022	43.80	Subsistence
Sustenance	21/10/2022	25.90	Subsistence
Sustenance	21/10/2022	162.00	Accommodation
Sustenance	21/10/2022	2.00	Accommodation
Graphic (prints)	21/10/2022	107.73	Equipment and Consumables
Sustenance	22/10/2022	11.20	Subsistence
Consumables	22/10/2022	1.80	Equipment and Consumables
Sustenance	22/10/2022	6.60	Subsistence
Sustenance	22/10/2022	15.60	Subsistence
Sustenance	22/10/2022	6.00	Subsistence
Sustenance	22/10/2022	6.00	Subsistence
Sustenance	22/10/2022	6.00	Subsistence
Car fuel	22/10/2022	20.00	Travel
Sustenance	22/10/2022	18.00	Subsistence
Sustenance	22/10/2022	105.00	Subsistence
Sustenance	22/10/2022	120.00	Accommodation
Sustenance	22/10/2022	1.50	Accommodation
Sustenance	23/10/2022	17.10	Subsistence
Sustenance	23/10/2022	11.70	Subsistence
Sustenance	23/10/2022	3.80	Subsistence
Sustenance	23/10/2022	18.80	Subsistence







		EAT	1
Sustenance	23/10/2022	1.00	Subsistence
Sustenance	23/10/2022	76.00	Accommodation
Consumables (fish)	23/10/2022	150.00	Equipment and Consumables
Sustenance	24/10/2022	130.98	Accommodation
Sustenance	24/10/2022	9.00	Accommodation
Car rent	24/10/2022	59.99	Travel
Sustenance	24/10/2022	4.10	Subsistence
Car fuel	24/10/2022	12.01	Travel
Sustenance	25/10/2022	4.30	Subsistence
Sustenance	02/11/2022	46.95	Travel
Sustenance	02/11/2022	61.12	Travel
Sustenance	02/11/2022	201.87	Travel
Sustenance	02/11/2022	72.57	Travel
Sustenance	03/11/2022	14.99	Subsistence
Equipment transfer	04/11/2022	49.60	Equipment and Consumables
Sustenance	04/11/2022	45.10	Subsistence
Sustenance	05/11/2022	14.80	Subsistence
Sustenance	05/11/2022	2.20	Subsistence
Sustenance	05/11/2022	54.70	Subsistence
Car fuel	06/11/2022	20.00	Travel
Sustenance	06/11/2022	26.50	Subsistence
Sustenance	06/11/2022	1.20	Subsistence
Sustenance	06/11/2022	3.80	Subsistence
Sustenance	06/11/2022	5.00	Subsistence
Sustenance	06/11/2022	15.50	Subsistence
Sustenance	06/11/2022	2.50	Subsistence
Sustenance	06/11/2022	17.70	Subsistence
Car fuel	07/11/2022	10.00	Travel
Lawyer	07/11/2022	458.80	External collaborator
University of Patras	07/11/2022	1,860.00	External collaborator
Car park	09/11/2022	4.30	Meeting with fish processing companies
Car park	09/11/2022	5.00	Meeting with fish processing companies
Car park	28/11/2022	5.00	Travel
Photographer (50%)	30/11/2022	250.00	Communication campaign
Photographer (50%)	30/12/2022	250.00	Communication campaign
Sustenance	27/01/2023	43.00	Travel
Sustenance	27/01/2023	2.20	Subsistence
Sustenance	28/01/2023	2.30	Travel
Sustenance	28/01/2023	1.20	Subsistence
Sustenance	28/01/2023	2.00	Subsistence
Sustenance	28/01/2023	1.89	Subsistence
		1	1 233333







Sustananaa	20/01/2022	7 20	Subsistance
Sustenance	29/01/2023	7.30	Subsistence
Sustenance	29/01/2023	16.90	Subsistence
Car fuel	30/01/2023	95.03	Travel
Sustenance	30/01/2023	3.30	Tolls
Sustenance	30/01/2023	3.90	Tolls
Sustenance	30/01/2023	0.50	Tolls
Sustenance	30/01/2023	1.20	Tolls
Sustenance	30/01/2023	2.20	Tolls
Sustenance	30/01/2023	3.20	Tolls
Sustenance	30/01/2023	4.00	Tolls
Sustenance	30/01/2023	2.50	Tolls
Sustenance	30/01/2023	3.50	Tolls
Sustenance	30/01/2023	1.90	Tolls
Sustenance	30/01/2023	3.85	Tolls
Sustenance	30/01/2023	1.80	Tolls
Sustenance	31/01/2023	3.80	Subsistence
Sustenance	31/01/2023	2.60	Subsistence
Car fuel	31/01/2023	50.00	Travel
Car fuel	31/01/2023	20.00	Travel
Sustenance	31/01/2023	1.90	Tolls
Sustenance	31/01/2023	3.90	Tolls
Sustenance	31/01/2023	3.30	Tolls
Sustenance	31/01/2023	3.85	Tolls
Sustenance	31/01/2023	2.80	Tolls
Sustenance	31/01/2023	1.80	Tolls
Sustenance	31/01/2023	2.80	Tolls
Sustenance	01/02/2023	2.50	Tolls
Sustenance	01/02/2023	3.00	Tolls
Sustenance	01/02/2023	2.20	Tolls
Sustenance	01/02/2023	4.00	Tolls
Sustenance	01/02/2023	3.50	Tolls
Sustenance	01/02/2023	1.20	Tolls
Car fuel	01/02/2023	20.00	Travel
Car fuel	01/02/2023	20.00	Travel
Graphic designer	31/12/2022	1,015.50	Communication campaign
Project Management	March-May&July- December	23,395.23	Human resources
Overhead		5,200.00	
TOTAL		53,359.61	







