

Great schools of bluefin tuna and swordfish once filled Italian waters, migrating across the Mediterranean to spawn and feed. Coastal migrations would pass caves where Monk seals sheltered their pups and a variety of sharks and rays patrolled the deep straits. The Aeolian Islands and Sicily were surrounded by particularly productive waters, home to sperm whales, dolphins, loggerhead turtles, red grouper and huge squid.

However, the Italian seas are some of the most overfished in the world and are struggling to maintain healthy ecosystems under pressure from unsustainable tourism, lost carbon-rich seagrass meadows, invasive species and climate change. Blue Marine is working in the Aeolian Islands with the Sicily Environment Fund to establish an effective marine protected area and a low-impact, sustainable local fishery.

In 2021 Blue Marine worked with Regione Sicilia for the designation of new Natura 2000 Habitats Directives sites, directly protecting valuable Posidonia meadows and seamounts around the entire Aeolian archipelago. Ongoing work with small-scale fishermen promotes sustainable, responsible fishing to produce traceable, high-value and diverse seafood for local markets, proving that marine protection is both an environmental and economic solution.

Blue Marine is working in the Aeolian Islands with the Sicily Environment Fund to establish an effective marine protected area



INFORMATION:

BASELINE MONITORING

Posidonia monitoring summer schools

In 2019, Blue Marine partnered with the Anton Dohrn Zoological Station (SZN) of Naples to set up the first project to study Posidonia oceania seagrass around Salina Island. The aim of the study was to investigate the current state of the meadows and to identify both the most successful and most negatively impacted sites along the coast. Direct anchoring was shown to be just as damaging as was predicted; deep furrows in the sandy seabed where extensive seagrass meadows used to grow confirmed the years of negative human impact. Yet the outlook was not entirely bleak; other areas still house intact and flourishing meadows, characterised by dense mattes (solid root systems) and shoot leaves.

The results of the monitoring project were shown to locals and tourists during an open event in the main square of Santa Marina, spreading the word about the urgency in preserving local Posidonia meadows through an effective coastal management plan.

The aim of the study was to investigate the current state of the meadows and to identify both the most successful and most negatively impacted sites Thanks to close collaboration with the SZN, four international academic courses took place in 2021 and 2022 on the islands of Panarea and Salina. Thirty-six students from different universities were hosted and given the chance to improve their scientific research and diving skills through practical field experience and understanding of marine seagrass ecology and its resilience to climate change, enhancing their conservation career opportunities. The summer schools will be carried out by further partnerships with the Oceanographic Institute of Murcia, the National Institute of Oceanography and Experimental Geophysics, and the European Scientific Diving Panel.



PEOPLE: EDUCATION

Fishing and education

To help address the growing disconnect between young Italians and the older fishing community, fishermen who signed up to Blue Marine's Responsible Fishing Group were paid to take groups of local high school students out on their fishing boats to teach them about methods of sustainable fishing, the history and importance of small-scale fishing for communities, and the general life of an Aeolian fisherman.

The students were asked to fill out questionnaires about their experience and how it had changed (or not) their views on fishing and marine conservation. Results from the questionnaires were very positive. After the programme,

93 per cent of students think that creating MPAs is a good idea, 82 per cent are trying to use less plastic and 74 per cent want to learn more about the sea. Students were also taught about the importance of marine protection alongside sustainable fishing. Almost three times as many students said they knew 'a lot' about MPAs after taking this programme, compared to before.

41.7% of students said they would only eat sustainable fish

Aeolian fishermen take high school students out to sea



Pre and post marine course questionnaires

Blue Marine delivered a series of practical educational courses and events to groups of young Italians of a range of ages in the Aeolians. Each course had a different focus, including general marine biology and fisheries, MPAs, Posidonia oceania, sustainable consumption of fish and ecotourism. Online questionnaires were circulated both before and after the lessons to gauge changes in attitude, awareness, knowledge, and practical behaviours.

Although there was far more engagement with the pre course questionnaires as compared to those circulated afterwards, it was clear that participants gained value from each course. Many students said they went on to share what they'd learned with friends and family, or to make more conscious decisions regarding the size or species of fish they were eating. The majority reported having a newfound respect and appreciation for the Mediterranean environment around them. The results and report arising from these questionnaires, succeeded in securing further funding to run more education events in the future.

Local fishermen meeting



PEOPLE: COMMUNICATIONS

Fishermen interviews

Since the inception of Blue Marine's Aeolian fishermen engagement programme, fishermen have been interviewed on camera regarding their baseline satisfaction with their livelihoods, estimates of loss of fish stocks over time, the economics of small-scale fishing and their views on marine protection. The interviews were invaluable to

the eventual creation of films and media, as it was obvious that most fishermen supported the idea of MPAs and were open to speaking out in favour of greater protection. Their statements also guided initial development of responsible fishing codes of conduct; proving the measures weren't just a conservation ploy inflicted to hurt already suffering small-scale fishermen but were in reality a result of collaboration.

Dr Giulia Bernardi interviews local fishermen



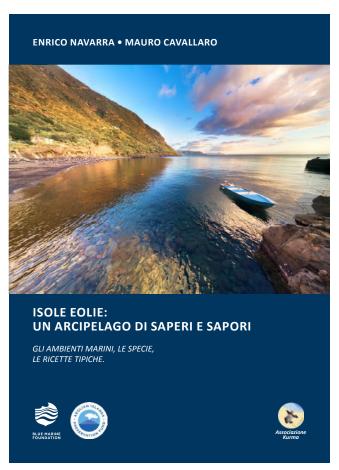
Aeolians Marine Life Book

What: An Aeolian marine life book with information on sustainable fish species, the best times of year to catch certain species (to allow them time to reproduce), minimum sizes of individuals, and innovative recipes to cook a diverse array of fish. It includes maps of the archipelago and highlights important habitats and sensitive marine areas.

Why: To raise both local and visitor awareness of the rich marine biodiversity around the Aeolian archipelago, as well as the numerous sustainable seafood options available as alternatives to overfished species such as grouper, tuna or swordfish. The book sought to help readers understand the importance of marine protection and of eating fish that is traceable and local.

Who: Written by local scientists and conservationists, with input from fishermen, restaurants and divers. Local businesses donated to the cost of creating the book, providing a good example of local buy in and co-financing.

Where: Over 5,000 copies of the book were distributed locally to restaurants, hotels, resorts, shops and information centres. Copies were published in both English and Italian and were sent abroad to supporters, NGOs and given out at Blue Marine events.



Marine Life Book

The book sought to help readers understand the importance of marine protection and of eating fish that is traceable and local.

Posidonia infographic

Blue Marine research and carbon teams worked together to create a detailed infographic regarding the ecology and value of Posidonia seagrass meadows in the Aeolians. The infographic poster illustrates all the main environmental and economic benefits of Posidonia habitats, as well as its key role in carbon sequestration, and the benefits it provides to fish stocks, water quality, coastal resilience and local biodiversity.

Fifty copies of the infographic posters were distributed around the main islands of Lipari, Vulcano and Salina at ports, ticket offices, main squares and marinas, with the intention of improving awareness of the hugely important habitat among marine stakeholders and recreational boaters.

Responsible Boating Code of Conduct

Alongside the poster a Responsible Boating leaflet was distributed in all boat rental centres around the archipelago to inform tourists and visitors to the islands of good boating practice. The leaflet included a code of conduct to reduce pollution, damage to habitats, and impacts on endangered species such as loggerhead turtles and sperm whales. It also encouraged visiting boaters to report any evidence of illegal activity out on the water, no matter how seemingly insignificant.

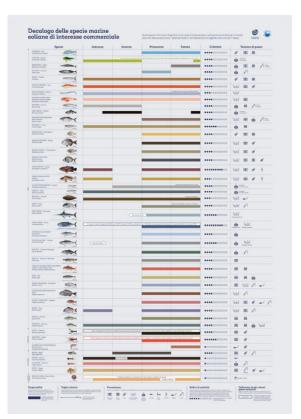
Responsible Boating leaflet



Sustainable seafood calendar

Blue Marine developed a calendar showing all commonly consumed Aeolian seafood species, for display as a poster or leaflet. The calendar has images of 44 species, alongside both Latin and common names, and size limits for each. Under each image is the season when these species should be consumed, its level of sustainability/endangerment, and the best fishing method for catching them (long-lines, static nets, pots etc.).

The calendar is displayed in hotels, restaurants, fish markets, harbours, shops and marinas and continues to be an excellent asset. It served well during a culinary event held at local resort, Capo Faro, where examples of unusual, sustainable, local fish were served to members of the whole community.



Sustainable seafood calendar

360 VR film

Blue Marine commissioned a film using state of the art 360 degree underwater and above water cameras. The concept was that the underwater VR experience could be taken around the world where anyone with a headset could dive over Aeolian seamounts, through schools of fish, or over Posidonia meadows. The footage was narrated by a local marine biologist, passionate about protecting the Aeolian sea.

Despite being quite complex to produce, the film has proved extremely useful; Blue Marine used the film at a fundraising event to great success, engaging potential donors with the underwater areas their funding might protect. It has also been viewed at an event at the Ministry of Environment in Rome, urging politicians to designate protection.

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PEOPLE:

KNOWLEDGE EXCHANGES

Aeolians/UK Fisheries Information Exchange

Blue Marine's collaboration with the fishermen of Lyme Bay represented an industry-first success at showing how well conservationists and fishermen can work together when all parties are prepared to listen and engage. The Lyme Bay model proves that even while fishing sensitively, catches and profits can be increased, infrastructure can be improved, and the marine environment can recover. All these benefits are certainly not easily achieved, and the creation of the Lyme Bay Reserve could hardly be described as plain sailing from the offset, yet the fact that the number of species found inside the reserve is more than four times greater than the numbers found outside, shows the undisputable success of the model.

Aeolian/Lyme Bay Fisheries exchange 2019





Gavin Ziemann, a local fisherman from Lyme Bay visited the Aeolians in 2018 to present some of his new practices and upon hearing of these incredible stories of species recovery and fishing success, other communities of small-scale fishermen in the Mediterranean decided they wanted to learn more. In 2019, Blue Marine brought artisanal fishermen from six sites across the Mediterranean to Lyme Bay for a knowledge and information exchange event. Many of the visiting fishers had never left their local island groups, let alone set foot on an aeroplane, yet reports of such plentiful fishing had to be seen first-hand.

The visit saw explanations of voluntary codes of conduct - how they work and why they're beneficial to fishermen and conservationists, examples of infrastructure such as ice machines and insulated boxes to reward fishers for their collaboration, and discussions of the various damaging factors each group was having to contend with. It ended in turn with high understanding and spirits; the Lyme Bay fishermen felt proud to have passed on some of their expertise, and those from the Mediterranean looked forward to the day when their own nets might be overflowing, and their seas vibrant and full of life once again.

ECONOMICS/FINANCING: GENERATING REVENUE FOR SUSTAINABLY MANAGED FISHERIES

Aeolians/Turkey: Fishing tourism

Fishing tourism, or 'Pesca Tourismo' as it's known in Italy where it is common practice among small-scale fishermen during the summer season, is a way for fishermen to fish less while still earning money. Tourists join fishing trips where they help with the daily catch, learn about artisanal fishing and usually BBQ something they've caught before returning to shore. There is however, a certain amount of investment needed to convert boats so that they can safely accommodate tourists while maintaining their function as fishing boats. In Turkey, the first fisherman is preparing his boat for this diversification of his livelihood as a fisherman. A local NGO is assisting with costs and using this as an exemplary model for others to do the same: increasing profit while engaging visitors with sustainable fishing.





Aeolians: Responsible fishing group and label

In 2016, Blue Marine decided to export the 'Lyme Bay' responsible fishing model to the Aeolian Islands. The project aimed to work with Aeolian fishermen by together creating voluntary codes of conduct which would set out best practices for fishing sustainably.

The first step of the project was to hire a local coordinator on behalf of Blue Marine, to start forging relationships and building rapport with each fisherman, before beginning to organise meetings for open debates. There was scepticism that self-regulation of their fishing efforts would not bring any real improvement to local fish stocks; there weren't any preexisting MPAs in the area, so naturally, many Aeolian fishermen were dubious about the benefits of self-imposed restrictions. Despite initial hesitancy, and numerous discussions later, a handful of fishermen agreed that selfregulation could be the first step towards mutual benefits for themselves and the fish in the long term, particularly for juvenile stocks and future generations.

The fishermen of Stromboli and Salina Islands signed up to responsible fishing 'codes of conduct', voluntarily reducing their gear and fishing pressure, in return for insulated fish boxes and ice machines to improve the quality and value of their catch. Blue Marine hopes that these coastal communities will see the value of marine protection for both fishing and tourism and push for the authorities to protect their precious marine resources. So far, 90 per cent of fishermen have signed up.

90% have signed up so far - Where does the fish on my plate come from?
- Is it the best season to eat this fish? - Is the fish a suitable size to eat? The Aeolian Responsible fishermen from Salina and Stromboli have signed up to a voluntary responsible fishing code of conduct, in order to promote low-impact fishing and to respect the natural life cycles of local fish species. insulated boxes have been provided to keep fish fresh, improve quality and add value. ice machines in Salina and Stromboli are to be installed to improve quality of catch in hot Aeolian weather. HOW CAN YOU SUPPORT Responsible Fishing? Our awareness of what we eat promotes sustainability: Ask for locally caught fish Encourage the sale of locally caught fish in restaurants HELP RESTORE THE ARTISANAL AEOLIAN FISHERY Know where your fish comes from. Knowledge is power! supported by Bla

of fishermen





Aeolian fisherman

The creation of the Responsible Fishing Group (RFG) was an important factor in unifying all members under one common belief and forging a new local identity for the group. A responsible fishing logo was created for them, so that consumers might easily identify those following sustainable fishing practices when at market.

The second stage of the project involved the principles of incentive and reward. Blue Marine donated around 75 insulated fish boxes (of varying sizes) and three ice machines to fishermen from the RFG, to help improve the quality of their daily catch, as well as to encourage local support of small-scale fisheries. Each box was labelled with the RFG logo and a boat registration number, to further help identify the provenance and traceability of each catch.





Aeolian fishermen with ice boxes

The duties and co-financing for managing the use of the ice machines vary from site to site, but generally the fishermen have to cover the yearly maintenance, while Blue Marine finances the starting installation and annual insurance. The supply services of the ice machines (water and electricity) are managed by Blue Marine and local municipalities/private owners. A detailed MoU has been written and signed by all the parties involved, in order to ensure the machines can be maintained in good working order and when funding from Blue Marine comes to an end, costs will be covered through direct fishermen contributions.

Despite reading like a win-win situation for the fishermen and conservationists, working with people so used to their decades-old traditions and fishing practices could never be without disagreement. Inevitable dispute occurred when one small group of fishermen decided they wanted to leave the RFG but keep access to the ice machine and fish boxes. The group was also openly very critical when Blue Marine started to speak out about MPAs as a necessary step in safeguarding local fish stocks in the long term. Unfortunately, in this case, negotiations with the group failed, and the resources were returned and repurposed to another group of (RFG positive) fishermen. Although disappointing, setbacks like this are unavoidable; especially when some fishermen approach the RFG only for the positive return (fish tubes, ice machines, involvement in small-scale fishery meetings, education courses), but without any real interest in investing in a marine biodiversity project.

Today, the project includes ten people in Stromboli (almost all fishers) and 13 in Salina, including two women. Although the total number of members is less than before (23 against the initial 33), the group is more solid and unite in their mission.

The Aeolian RFG sponsors all local Blue Marine education initiatives:

- Four secondary school courses on marine biology and fisheries
- Education courses in all Aeolian primary schools, explaining how to interact with marine turtles in trouble and provide aid while nesting on beaches
- The creation of a children's guidebook about the sea and the threats it faces (climate change, invasive species, damage to habitats)
- Four summer school courses for university graduates focussing on underwater monitoring techniques for Posidonia oceania meadows

In 2022, the RFG supported the 'Forgotten Fish' project, aiming to:

- Promote a new fish supply chain out of the Aeolian archipelago based on sustainable fishing practices
- Encourage consumers and chefs to choose sustainable fish by promoting species which have excellent nutritional properties and tastes, despite not being regularly served
- Give new trade opportunities to the responsible Aeolian small-scale fishing economy during the winter season.

A total of about 30 fishermen and 10 restaurants are participating This Aeolian responsible fishing scheme has been exported to two other Italian MPAs: Torre Guaceto in Apulia, and Isole Egadi, Sicily. In the former, local fishermen have improved their methods thanks to adoption of voluntary codes of conduct. Insulated fish tubes and 11 fish benches for direct selling have been distributed; the benches are equipped with information panels and QR codes offering consumers data like the fishing zones, date of catch, fish species, equipment used etc. The MPA currently has ten individuals authorised to fish inside the area. In Egadi MPA, fishermen are also committed to codes of conduct, and have their own 'Sustainable Fishery Label' which involves local stakeholders (restaurant owners and chefs) and the public. A total of about 30 fishermen and 10 restaurants are participating in the project.





MANAGEMENT: FISHERIES MANAGEMENT

Salina MPA Committee

In 2019, Blue Marine facilitated the formation of Salina's MPA Committee; a local movement which now boasts around 70 members, and an inner directional group of 13 of these members (one representative from each group of stakeholders: fishermen, boat rental companies, restaurants, hotels etc.).

As part of the initial stages of creating this committee, Giulia Bernardi (Blue Marine's Senior Italy Projects Manager) spent time in Salina, conducting presentations about the functions and benefits of MPAs, particularly what one could look like surrounding Salina, and initiating dialogue with local stakeholders to gauge the level of interest on the island. Once it became apparent there was enough interest to make the idea viable and even successful, Giulia began to look for the right people to form a directional body for the committee.

It is important to note that the whole reason and function for the group's existence was for it to be a local movement, where stakeholders joined voluntarily because they were excited by what an MPA could offer, not because they were being coerced by an external body. Locals were also provided with examples of where MPAs haven't worked or been effective, as well as instances where they have, in order to prove the importance of proper management and enforcement of any future MPA

in Salina. Equally, those who were adamantly against the formation of an MPA are engaged in dialogue, as much, if not more than those who are already in favour.

Blue Marine is now helping the committee in finalising a socioeconomic report which has been enriched by Giulia's interviews with and questionnaires for all types of stakeholders. This is a mandatory final step in drafting an MPA designation and will be sent to policymakers in Rome. An abstract of the technical report will then be obtained, and Salina's three mayors will gather with the committee to discuss the next steps.

Two or three years ago, the topic of MPAs was a real taboo in Salina, and now everyone connected to the marine environment is talking about it. This can only be a positive. The MPA Committee creates a bridge between Blue Marine and local stakeholders, and in turn, local policymakers.



Group onboard boat

MANAGEMENT: ENVIRONMENTAL IMPROVEMENT

Removal of ghost nets

Ghost nets are a significant threat with approximately 640,000 tonnes of abandoned gear every year. As well as continuing to catch and trap fish, ghost nets act as suspended undetectable killers to turtles, dolphins and porpoises, sharks, seals and seabirds among others, who cannot use sight or sonar to avoid them. They cause injuries, restrict movement, and prevent mammals and birds from rising to the surface for air, thus quickly drowning them. Considering that one net is designed with a surface area to catch hundreds of animals, the magnitude of this problem is obvious. Even the sea floor can't escape; coral reefs suffer breakages, are blocked from absorbing sunlight and are subject to any diseases the nets carry in their fabric. Finally, nets are usually made of nylon which can last for centuries- never quite going away, but sometimes breaking down into equally harmful microplastics, which in turn become more difficult to recover. It's no wonder there are countless NGO projects and independent organisations tackling ghost gear all over the world.

In the Aeolians, bottlenose dolphins, loggerhead turtles, sperm whales and dusky grouper have all been found entangled in ghost nets off the coasts of the islands. In October 2018, two diving missions in collaboration with the Healthy Seas initiative, the Ghost Fishing Foundation, the Aeolian Islands Preservation Fund, the local coastguard, diving centres and fishermen collected approximately 20 tonnes of ghost nets (mostly lightweight gill nets and long-lines), and rescued numerous starfish, sea urchins, rock crabs, sea cucumbers and juvenile fish in the process.

A further trip that month, with the intention of recovering a huge fish farm net which had been blown out to sea ten years previously, succeeded in bringing the enormous three tonne net (long lines weighed an extra ton) to shore. All the recovered nets have been recycled and combined with other nylon waste materials to create ECONYL® regenerated nylon. This new sustainable raw material is used by environmentally conscious manufacturers to create socks, sportswear, swimwear, carpets and more.

Blue Marine also cooperated with local fishermen from the group, 'Aeolian Islands Responsible Fishing', who delivered their own old fishing nets to have them transformed into ECONYL® regenerated nylon.

Lost or abandoned fishing gear is a huge problem in all the world's oceans, and this project was a valuable opportunity to actively involve the local community, divers, fishermen, children and authorities in the protection of their sea.



Aeolians campaign against single—use plastic

Compactor machines for plastic bottles and drinking fountains

Eco-compactors have been delivered to four different islands as a result of the #EmergenSea campaign with Marevivo NGO. The deliveries were made to key areas such as schools and markets, which are able to collect and recycle hundreds of thousands of plastic bottles. Locals are incentivised to drop off their plastic by the offer of rewards and discounts at local markets or bars who have joined the initiative.

In Lipari, 50,000 plastic bottles have been recycled in the first three months of the initiative, and alternative reusable bottles have been donated to children to raise awareness of the need to reduce plastic consumption; two primary schools are now entirely plastic free as a result of these bottles and new drinking fountains. All this is promoted under the 'Plastic Free Schools for a Sustainable Future' project, which is ongoing in Aeolian primary schools and has already succeeded in seeing single-use plastic banned on-site.

50,000 plastic bottles have

been recycled in Lipari

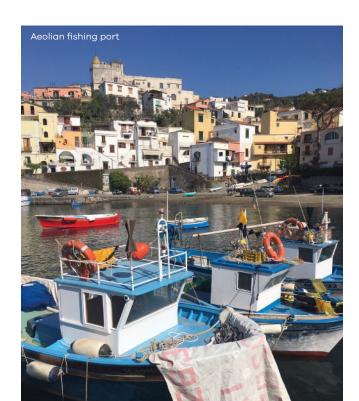
10,000 reusable shopping bags have been donated

Plastic free bags

Marine species, including sea turtles, regularly mistake plastic bags for food, with the high risk of being entangled or suffocated. To this end, the 'Plastic free bag' campaign has been launched in Salina in collaboration with the municipalities of the island, with the aim of drastically reducing the distribution and consumption of single-use plastic bags. 10,000 reusable shopping bags have already been donated to the island's twenty food sites and markets.

Posters have been distributed in local markets encouraging consumers to stop using plastic bags while promoting the reusable blue bags. The aim in the long term is to drive local community and administration towards sustainability, ensuring that the EU recommendations on single use plastic are implemented.

The project was born with the desire to raise awareness and discourage the consumption of disposable plastic bags by offering a simple alternative, and combining an awareness-raising activity with a concrete action to contrast pollution.







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