REDRESS
RESTORING AND REBUILDING THE DEEP SEA

Restoration of deep-sea habitats to rebuild European Seas

REDRESS NEWSLETTER 3

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1 February 2024 – 31 January 2028
Coordinator: **Polytechnic University of Marche - Italy**

1 February 2025 – 31 July 2025

In this issue

REDRESS Annual Meeting in Crete, updates on restoration interventions, laboratory experiments, dissemination and outreach, new generation of researchers, forthcoming events...

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Editorial

Roberto Danovaro [UNIVPM]
REDRESS coordinator

These past six months, which began with the first Annual Meeting (3–4 March 2025) in Crete, have been particularly important as they marked the successful completion of a crucial phase of the project — the first 18 months. The Annual Meeting was well attended: all partners of the Consortium were present, accompanied by new talents and young scientists. We greatly benefited from the valuable contributions of the Advisory Board, as well as representatives from DG Research & Innovation and DG Environment, including our EU Project Officer, Victoria Beaz-Hidalgo. In my opinion, the meeting was extremely fruitful, featuring excellent discussions and debates on all open issues related to the project. The hospitality of our Greek colleagues — Nadia and Chris above all — was truly unforgettable. A particularly touching moment was the visit of Prof. Eleftheriou, former Director of the Institute of Marine Biology in Crete and my mentor since my PhD days there. With this *"amarcord"* — my personal *trip down memory lane* — in mind, I can only say that I am very satisfied with the scientific progress made by the project. All Work Package leaders and co-leaders have shown outstanding commitment and proactivity. This clearly reflects the enthusiasm we all share for the project's findings and upcoming results. We are now entering a **crucial phase** of the REDRESS project. Over the next 12 months, major efforts will be required: most oceanographic cruises will take place from this summer through early autumn and into next summer, to conduct restoration interventions and related monitoring in new Atlantic sites, as well as to revisit key areas in the Mediterranean Sea. I wish to express my **sincere gratitude** to the entire Consortium for its exceptional engagement in dissemination and communication activities — ensuring a strong presence in all relevant events and initiatives. During these six months, while traveling across Europe — from the Ocean Conference in Nice to the European Marine Biology Symposium in polar Norway — I felt once again how much still needs to be done, both within the scientific community and society at large, to better communicate the critical importance of **marine ecosystem restoration.** It is a challenging priority, but we are moving forward hand in hand with the **European Society for Ecological Restoration (SERE).** A final word of thanks goes to Cristina Gambi for her tireless dedication and sound management of the project.

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REDRESS Newsletter content

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REDRESS Objectives

The project "Restoration of deep-sea habitats to rebuild European Seas" (REDRESS) will conduct restoration actions in multiple deep-sea sites and previously neglected habitats, by providing solutions such as a roadmap for prioritization site selection (including habitat refugia), protocols on the best practices for restoration and monitoring the effects of actions, and by providing evidence of its cost-effectiveness and contribution to policy formulation. The project aims at reversing habitat degradation and biodiversity loss by actively restoring damaged deep-sea habitats and promoting passive recovery, developing an EU scalable plan, based on innovative or existing and tested solutions, and a process of commitments for deep-sea restoration within governance, financing systems and the public.

The ambition of REDRESS is to:

1. identify priority areas for deep-sea restoration to support future EU policies and investments (i.e., Biodiversity Strategy 2030 and European Mission "Restore our ocean and waters by 2030");
2. allow the replicability of the upscaling of marine restoration across the EU and beyond;
3. demonstrate the technological readiness for the upscaling of deep-sea ecosystem restoration;
4. implement low-cost monitoring systems to assess the success of deep-sea ecosystem restoration;
5. provide the tools needed to empower society and governance to support sustainable and effective marine restoration activities in the mid- and long-term.

REDRESS aims at obtaining, in a relatively short timescale (48 months), tangible results for deep-sea habitats (with long-term benefits) from diverse and innovative restoration actions that will provide a step change in our ability to restore biodiversity and ecosystem services in damaged European deep-sea ecosystems where a need to do so has been demonstrated. REDRESS therefore will demonstrate the possibility and sustainability of success of deep-sea ecosystem restoration and will provide public authorities with solutions to plan and upscale restoration interventions.

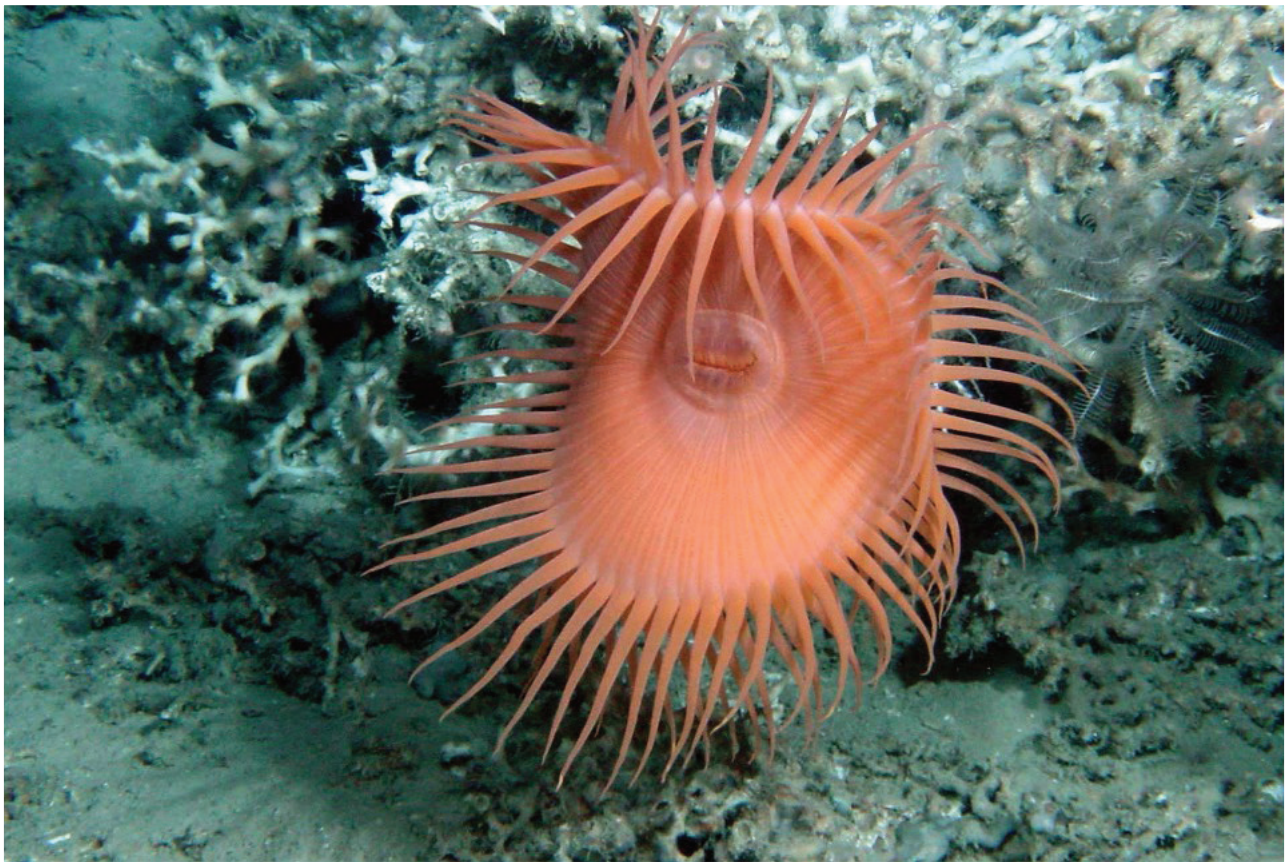

Fig.1

REDRESS 1st Annual Meeting

3-4 March 2025, Heraklion (Crete) - Greece

REDRESS Consortium

The first annual meeting was held in Heraklion from 3rd to 4th March 2025 under the organization of Nadia Papadopoulou and Chris Smith (HCMR). The meeting was very fruitful to update on the progress of the tasks of the project and to support the collaboration among partners to plan forthcoming field work activities along the EU Seas, the structure and the content of deliverables and milestones expected in the next few months. The meeting was organized to facilitate the interaction among WPs, with a joint session for the WP2 and WP3 on restoration interventions and monitoring to establish common approaches in the different case studies. Specific sections were also dedicated to the prioritization of the deep-sea areas (WP1) for restoration and to the evaluation of the socio-economic costs, benefits and financing linked to the deep-sea restoration interventions (WP4). The second day of the meeting was opened by the REDRESS Project Officer Victoria Beaz-Hidalgo (European Research Executive Agency, Unit REA.B3 - Biodiversity, Circular Economy and Environment) who presented the relevant updates on

a) 1st reporting period & review meeting preparations.
b) REDRESS in the EU & international policy context.
c) Marine biodiversity monitoring related developments.

REDRESS young researchers. ***Fig.1*** *AnnualMeeting*

d) Mission Ocean & Waters & DTO.
e) Bioagora marine cluster event.
f) Ocean Pact & other developments.
g) Social media policy.

During the meeting, REDRESS PhD students and PostDocs - early career researchers - presented their contributions and involvement to support the different WPs of the project (https://redress-project.eu/first-annual-meeting-crete-2025/).

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The annual meeting was followed by the WP5 workshop on Wednesday 5th March 2025 dedicated to update on the progress of the activities related to the governance structures and processes of the selected case studies of the project.

▼ *Images of the WP5 workshop*

Fig.1

Restoration Interventions

Monitoring for cold-water coral restoration in NE Atlantic

Lisa Skein, Andrew Gates & Veerle Huvenne (NOC)

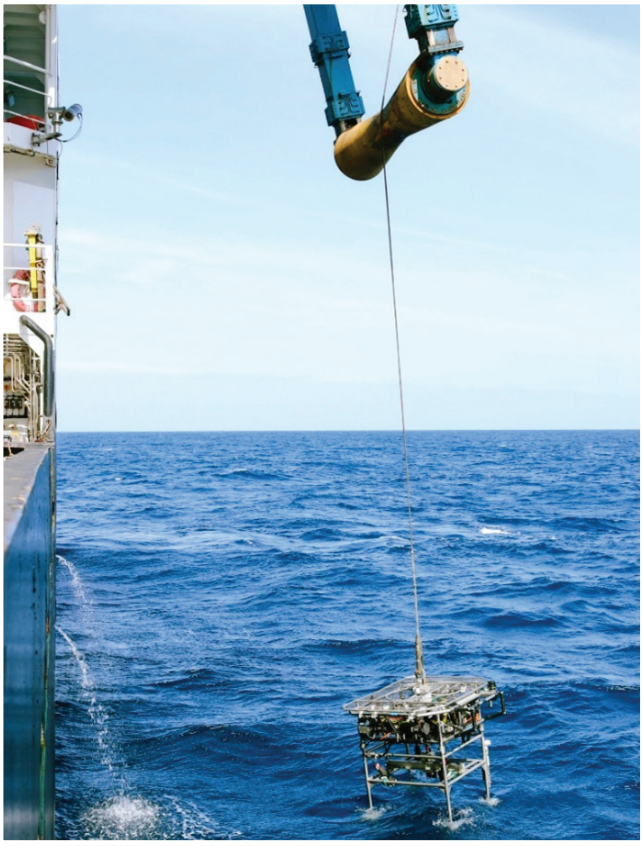
The REDRESS monitoring programme of restoration sites in The Canyons Marine Conservation Zone (MCZ) started with a recent research cruise aboard the RRS James Cook (JC278) (Fig. 1). With the help of the scientific and technical team on board, Lisa Skein and Andrew Gates, from the National Oceanography Centre's REDRESS team, used in situ video and still images to survey interfluve areas of the Whittard Canyon system within The Canyons MCZ, that have been selected for eco-reef deployment later in 2025 (Fig. 2). They also collected environmental measurements via CTD, including water samples for insights into carbonate chemistry at the sites. The aim of the wider expedition, which is part of the NERC AtlantiS programme, was to maintain observations of long-term change in the NE Atlantic in the Whittard Canyon and at the Porcupine Abyssal Plain Sustained Observatory. REDRESS restoration work aligns with these long-term observations, ensuring continuity of monitoring beyond the project duration (Fig. 3). The canyon interfluves above the Explorer and Dangaard branches of the Whittard Canyon system contain coral mounds that have been mapped in high-resolution by Autonomous Underwater Vehicles (AUV) during previous expeditions. Fishing, in particular bottom trawling, has historically taken place in this habitat, until a recent ban on trawling was implemented in 2022. Dating of coral fragments from this area revealed that live coral reefs were present on the interfluves until at least a few 100 years ago (Collart, T., PhD Thesis, 2019). This, in combination with the productive canyon waters and added protection through the trawling ban, makes it an ideal habitat for restoration efforts. The existing AUV-based maps were used to guide planning of the recent dives on JC278 (Fig. 4). The aim of the video surveys was to give an up-to-date perspective on the biodiversity in this

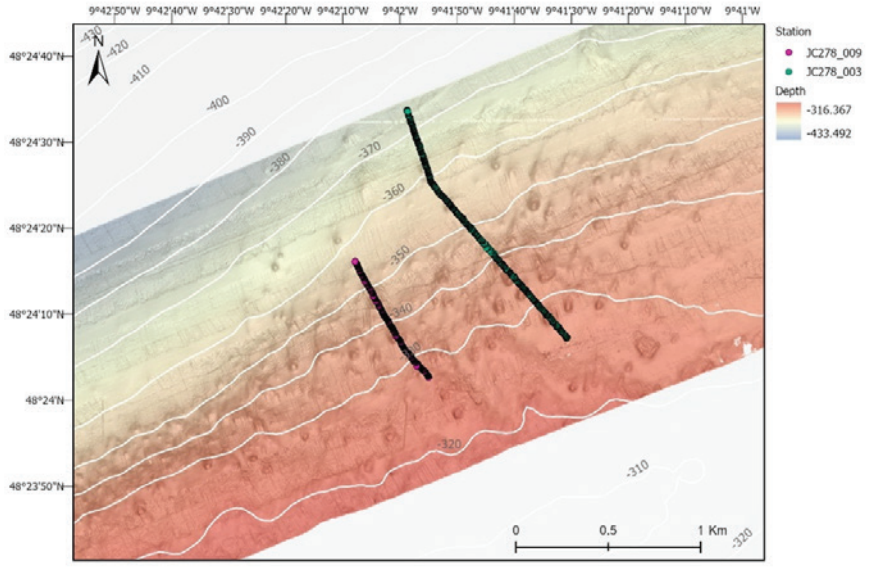
Fig.1 *High densities of crinoids observed during a recent expedition above the Dangaard branch of the Whittard Canyon system. © National Oceanography Centre.*

habitat before deployment of the REDRESS eco-reefs later in the year. This also presented an opportunity to re-survey a previous Remotely Operated Vehicle (ROV) transect done before the ban on trawling in 2018, to give some insight in the change in benthic communities since the trawl closure. The data still awaits formal analysis, but the initial impressions on board were of a very different benthic community, hosting thousands of suspension-feeding crinoids among numerous other species indicative of a highly productive habitat. These data will be used to help optimise the placement of the REDRESS eco-reefs due to be deployed when NOC revisits this site aboard the *RRS Discovery* in September this year. It also represents valuable data that can be used to investigate potential changes in the broader benthic community following eco-reef deployment, which is anticipated following the increase of three-dimensional habitat complexity that will be promoted by eco-reefs.

▼ *NOC REDRESS team Lisa Skein (right) and Andrew Gates (left) in front of the HyBIS vehicle shortly before deployment in the Whittard Canyon area to survey planned restoration sites.*

▼ *HyBIS camera system deployment at Whittard Canyon during a recent expedition.*





◀ *Example of imagery survey transects completed over coral mounds above the Explorer branch of the Whittard Canyon, within The Canyons Marine Conservation Zone, during the recent JC278 expedition. The bathymetry layer was compiled via AUV at a 5 m resolution during a 2022 expedition by NOC (JC237).*

Fig.1

Restoration Interventions

Zero-Emission Autonomous USV for Advanced Water Column Profiling

Elias Chatzidouros (ESI)

As part of its commitment to advancing ecosystem restoration and environmental monitoring, *Engitec Systems International (ESI)* has acquired a REAV-28 uncrewed surface vessel (USV) as a core infrastructure investment under the EU-funded REDRESS project. This action directly supports Subtask 3.2.2: Monitoring active restoration interventions at deep-sea octocoral and sponge habitats, with field operations to be conducted in the Catalan Sea (Spain). The battery-electric, zero-emission USV will be equipped with an advanced sensor payload for vertical profiling of the water column, including high-resolution measurements of temperature, salinity, Chlorophyll-a, conductivity, turbidity, and an underwater camera for video acquisition. This integrated system, currently developed by ESI, will enable autonomous sampling operations and repeatable data collection supporting the project's objectives around ecosystem health assessment and resilience building. The platform will also be equipped for night missions, extending its operational window and maximizing data collection during optimal environmental conditions. Beyond sensor integration, ESI will develop custom mission planning tools and autonomous navigation features to tailor the USV's performance to the scientific use cases of the project. This action contributes to REDRESS's goal of deploying innovative, scalable technologies for marine data collection, helping to fill critical knowledge gaps and inform science-based restoration strategies through high-quality, multi-parameter environmental datasets.

Fig.1 *ESI Technical Director Elias Chatzidouros and Research Engineer Elias Kotsidis during USV acceptance trials and training, Roadford Lake, West Devon, UK*

Restoration Interventions

Preparing a Restoration intervention in the Guilvinec Canyon

Ifremer and SU teams

Ifremer has received artificial reefs to be deployed during the REDECOR oceanographic cruise in August 2025. These structures will be deployed in the Guilvinec Canyon, Bay of Biscaye. Sorbonne University worked on an easy system to equip the artificial reefs of coral nubbins. Different ways for rapid and efficient coral mounting were tested. We also redesigned the coral growth experimental structures (RANCH) and an adaptation of the ARMS. All these crafts will be used and deployed during the next REDECOR cruise in August. The Guilvinec Canyon is located within the Natura 2000 area 'FR5302016 - Récifs du talus du Golfe de Gascogne', specifically in sub-zone D: Guilvinec and Odet Canyons. The area's managers have been informed of our upcoming intervention.

The site is managed by the following entities:

- **National and European manager:** Ministère en charge de l'écologie, www.developpement-durable.gouv.fr;
- **Manager of the site:** DREAL Bretagne, www.bretagne.developpementdurable.gouv.fr;
- **National Technical and Scientific Manager:** MNHN - Service du Patrimoine Naturel: www.mnhn.fr; www.spn.mnhn.fr

These entities have been contacted, and the required forms have been completed and submitted:

- **CERFA No. 14734*04** – Environmental Evaluation: Demande d'examen au cas par cas préalable à la réalisation éventuelle d'une évaluation environnementale
- **Simplified Natura 2000 Impact Assessment Form"**

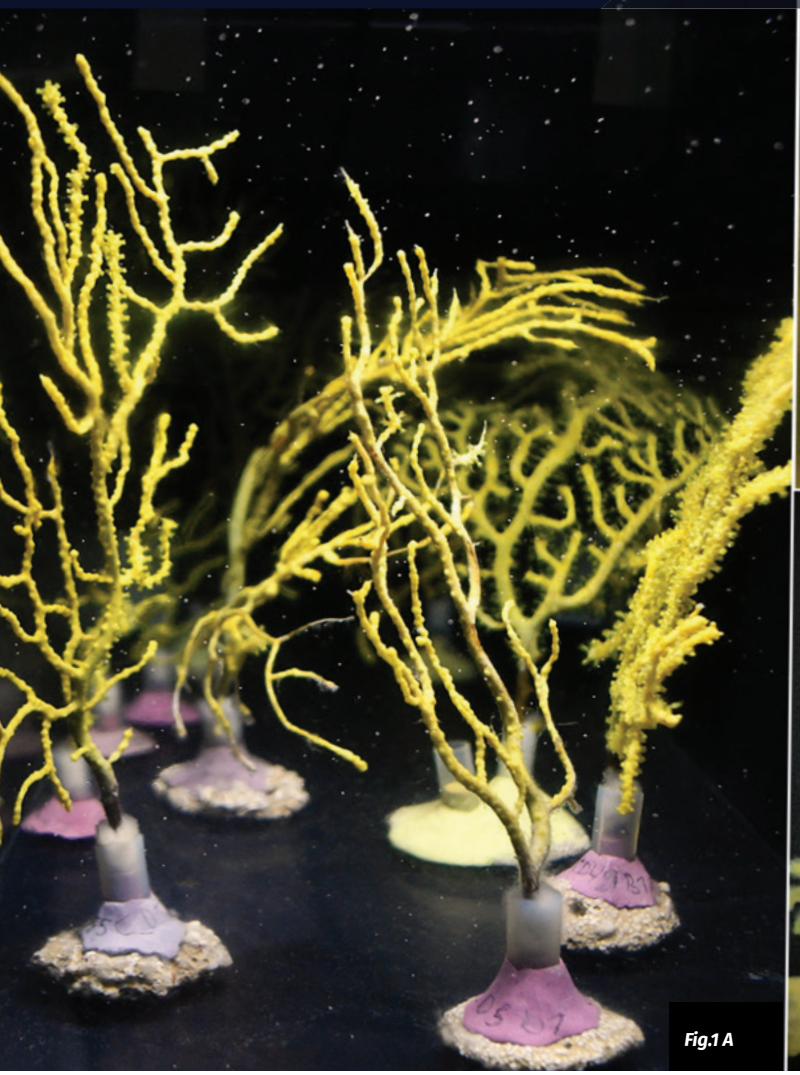


Fig.1 A

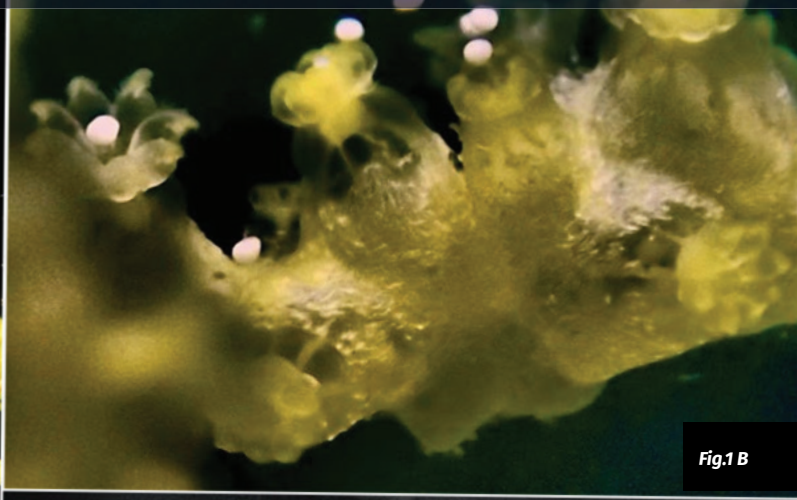


Fig.1 B

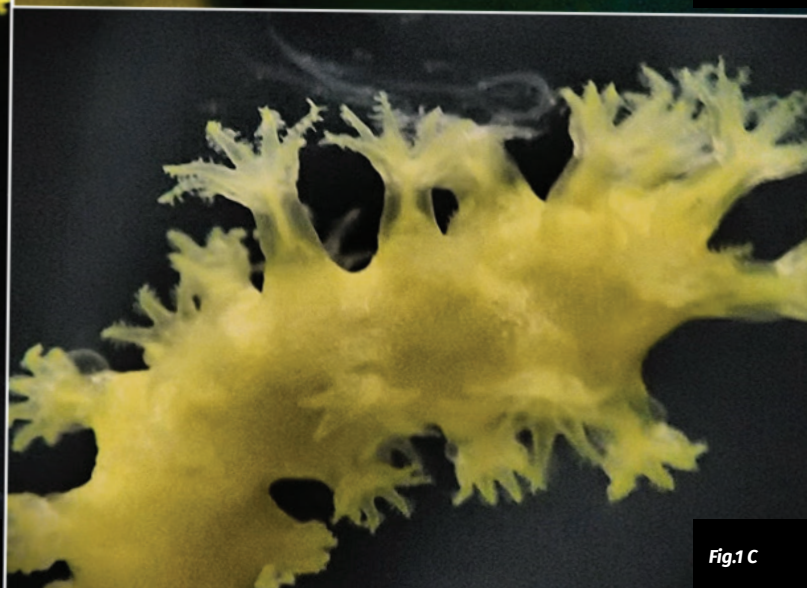


Fig.1 C

Laboratory experiments

Restoration of deep-sea corals from nubbins?

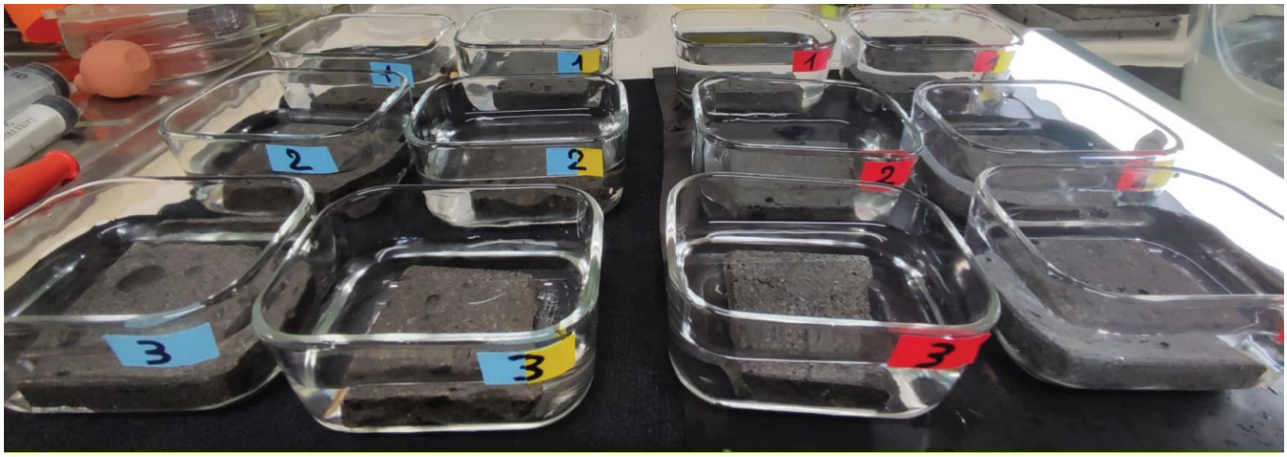
UAc and IMAR teams

The UAc and IMAR teams have been actively developing methodologies for the restoration of degraded coral gardens in the Azores. These efforts include transplantation techniques using adult coral colonies, as well as approaches based on sexual reproduction in aquaria, with the rearing of larvae and juvenile recruits for subsequent deployment in the natural environment. Last December, a big spawning event of the cold-water coral species *Dentomuricea aff.* meteor occurred at the DeepSeaLab facilities, with more than 20 000 oocytes released (Fig. 1). This exceptional event provided PhD students Anaïs Sire de Vilar and Gal·la Edery with the unique opportunity to carry out various experiments and monitor the development of the coral nubbins. Their goal was to improve our understanding of the early life stages of deep-sea corals, including their growth, their nutritional needs, and their responses to combined environmental stressors. Anaïs Sire de Vilar conducted an experiment exposing coral larvae to environmental conditions simulating future ocean warming and acidification, as projected under the IPCC RCP 8.5 scenario. She monitored larval settlement, metamorphosis into healthy (or abnormal) polyps, and survival for a six-months period. A total of 1320 larvae, seven-days old initially reared at 14°C, were used. The larvae were then exposed to the different treatments of acidification (pH 8.1, 7.8) and temperature (14°C, 19°C) and provided with a flat piece of basalt substrate for settlement (Fig. 2). For the first six weeks, the larvae were kept undisturbed in sealed containers with a mesh allowing water exchange with the treatment-specific aquaria. Following this period, food sources were provided daily to support polyp development. Monitoring continued at regular intervals of 6 to 12 weeks until the end of the six-month trial. Preliminary results indicate a negative impact of

Fig.1 *Reproductive behavior of Dentomuricea aff. meteor in the aquarium. (A) female colonies during spawning, (B) female polyps releasing eggs, (C) male polyps releasing sperm*

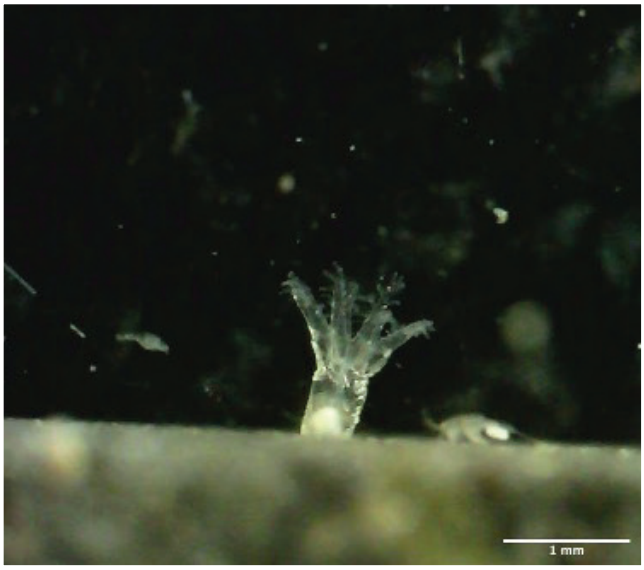
the highest temperature treatment (19°C), including increased mortality and polyp malformation, particularly after 12 weeks of exposure. No significant differences were observed between pH treatments. Gal·la Edery (UAc) facilitated larval settlement by providing basalt substrates. Following successful metamorphosis into feeding polyps, she initiated an experimental trial to evaluate optimal nutritional conditions for enhancing survival and growth rates. The experimental design compared two food source treatments: live rotifers versus a frozen food mixture. Monthly monitoring over a six-month period revealed progressive development. During the first month, nubbins developed the first sclerites and recent observations documented the development of natural tissue yellow pigmentation in some nubbins (Fig. 3). The next phase of research involves field deployment at the Condor Seamount. In collaboration with the NIOZ team, settlement plates will be mounted on specialized landers this September. These experimental units will remain submerged for approximately one year before retrieval, enabling subsequent analysis of polyp development under natural conditions. These studies will significantly advance our understanding of the poorly known early life-history traits of cold-water corals, while critically assessing their restoration potential under projected ocean conditions. They will also provide essential baseline data to inform conservation strategies and habitat restoration efforts in vulnerable deep-sea ecosystems. Given the increasing pressures facing cold-water corals and their ecological significance, it is more urgent than ever to understand their potential for adaptation in a changing ocean, as well as their role in species dispersal, population connectivity, and long-term ecosystem resilience.

▼ *Containers set-up used to test the effects of ocean warming and acidification on young deep-sea coral recruits. Each container included a basalt substrate to promote larval settlement, and all were kept in temperature- and pH-controlled aquaria.*



▼ *Six months old polyp nubbins of Dentomuricea aff. meteor showing sclerites and natural yellow pigmentation. A) nubbins feed with a supplementary food and pH-controlled aquaria.*

▼ *Six months old polyp nubbins of Dentomuricea aff. meteor showing sclerites and natural yellow pigmentation. B) nubbins no feed. and pH-controlled aquaria.*



Deep-Sea Restoration: Insights from REDRESS Practitioner Survey

Shedding light on best practices

Sahar Stevenson-Jones (SERE)

A new report led by the Society for Ecological Restoration, Europe for the REDRESS project brings together valuable insights from Deep-Sea Restoration (DSR) practitioners, shedding light on best practices in planning, monitoring, financing, and governance of restoration efforts.

Clear Planning and Measurable Goals Are Key. Survey respondents agreed: success starts with strong foundations. Defining clear goals, objectives, and measurable indicators early on is essential for adaptive management and effective monitoring. While many protocols for DSR are still evolving, co-designed approaches and shared learning are helping to bridge the gap.

Long-Term Thinking for Lasting Impact. Given the long recovery times of deep-sea ecosystems, practitioners stressed the importance of sustainable, long-term funding. Integrating diverse funding streams and including monitoring costs from the beginning can make a significant difference. Involving stakeholders early in the process also builds trust and helps ensure financial continuity.

Guiding Restoration Without Pristine References. In the absence of pristine reference ecosystems, proxy sites are being used to set meaningful restoration targets—an approach that's gaining support among practitioners.

Bridging Knowledge Gaps. The survey revealed limited familiarity with key global frameworks like the Biodiversity Finance Framework and Biodiversity Beyond National Jurisdiction (BBNJ). This highlights the need for targeted training and capacity-building to ensure practitioners are equipped to navigate international policies' landscapes.

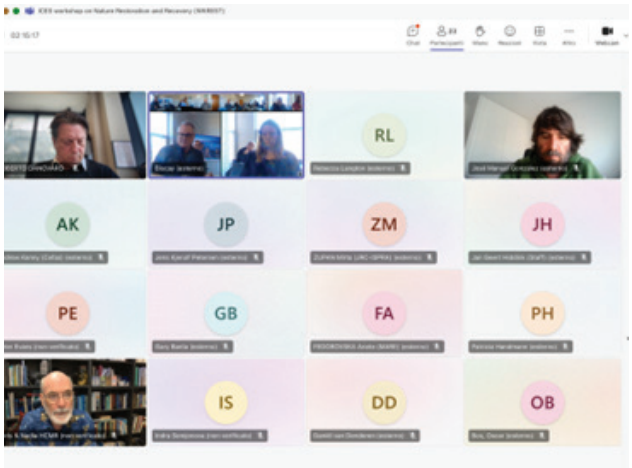
Looking Ahead. Practitioners are eager to play an active role in shaping restoration under emerging regulations such as the Nature Restoration Regulation. They also advocate for the designation of Marine Protected Areas to support deep-sea recovery and emphasize the importance of knowledge sharing to inform policy.

The report has identified 10 key recommendations. These findings mark an important step toward building a resilient, inclusive foundation for future deep-sea restoration efforts.

REDRESS and SERE

REDRESS leading the SERE Marine Restoration Working Group

The European Society of Ecological Restoration (SERE) has created a **Marine Restoration Working Group** to define the baselines and guidelines for marine ecosystem restoration in Europe and support the action of all countries in the execution of the Nature Restoration Regulation, particularly for the application of the Article 5. Experts, scientists (from several EU projects as REDRESS, CLIMAREST & DIGI4ECO), practitioners, economists and policymakers lead by Roberto Danovaro, coordinator of the Project REDRESS, are working together to share their experience in marine ecosystem restoration. On June 17th, 2025, a workshop was organized to define the contents of the Marine Restoration Guidelines that are in progress.



REDRESS at International Conferences

Cluster event in Brussels (Belgium)

Cristina Gambi (UNIVPM)

The European Research Executive Agency (REA) hosted the joint cluster event **"Restore & Protect Marine Biodiversity and Reducing bycatch"** in Brussels on March 13 and 14, 2025. The meeting was organized by the European Commission (DG RTD, DG Mare, DG Env & Rea), BioAgora, Eklipse, HIFMB and B-Useful. Cristina Gambi on behalf of REDRESS consortium was invited to be part of the knowledge exchange network for marine biodiversity. More than 50 people belonging to the invited project coordinators, members of the EU DG and Rea and other external observers participated in this meeting. The objectives of the Cluster of EC funded projects are to

1. bring together representatives of the selected H2020 and Horizon Europe funded projects focusing on the topic of the restoration and protection of marine and coastal biodiversity and reducing bycatch;
2. join and be part of the topical reactive network of the Marine Demonstration case for the Science Service for Biodiversity and support the identification of policy needs and bridging of knowledge gaps, and
3. discuss how actions will take place in the future to maximize the impact of the selected projects on EU policies and feed the European biodiversity knowledge framework.

The meeting provided an important overview of the potential synergies and common areas of work, and facilitated the exchanges and interactions between the projects, policy-makers and other relevant initiatives in marine ecosystems under the umbrella of BioAgora (https://bioagora.eu/).

REDRESS at International Conferences

European Maritime Day 2025 in Cork (Ireland)

Helena Vieira (UAVEIRO) and Stephen Hynes (UNIVERISTY OF GALWAY)

The European Maritime Day 2025 took place in Cork, Ireland, on the 21-23 May 2025. The conference was organized by the European Commission, the Cork City Council and the Irish ministry Department of Environment, Climate and Communications (https://maritime-forum.ec.europa.eu/theme/governance/european-maritime-day_en). Helena Vieira and Stephen Hynes participated in different sections *"to pay tribute to "maritime Europe" and put all maritime sectors and activities in the spotlight to help European citizens realize the real outreach and variety of sea-related activities going on in Europe and provoke reflection on the crucial role the seas play in our everyday life"*. EMD is the place where "ocean leaders meet" and where top-level objectives and political initiatives are discussed such as the recent European Oceans Pact which aims to promote sustainable ocean management and ensure the health, resilience, and productivity of the oceans. EMD 2025 focused on fisheries and ocean dialogues and a range of issues concerning blue economy sectors, the marine environment and blue enablers. This event was also highly relevant for discussing marine restoration policy issues with international experts and decision-makers and for presenting REDRESS and other ongoing projects. REDRESS outputs were also presented during the high-level panel on SBEP Blue Economy for the All Atlantic Workshop https://www.b2match.com/e/european-maritime-day-2025/sessions/c2Vzc2lvbjoxOTA2MTI= where Helena Vieira was among the panelists of this round table.

REDRESS at International Conferences

One Ocean Science and UN Ocean Conference 2025 (Nice, France)

Cristina Gambi (UNIVPM)

Nice has been the capital of the Ocean Science for two weeks, this June 2025. The One Ocean Science week (https://one-ocean-science-2025.org/) anticipated the 2025 UN Ocean Conference (https://sdgs.un.org/conferences/ocean2025). Over 2,000 scientists from around the world participated in the extensive program of the One Ocean Science. The Congress featured a mix of plenary sessions and keynote speeches, alongside parallel oral and poster presentations. To enhance interactions between science and society, action and policy, and engaging civil society more broadly, panels and roundtables were arranged on the theme **"Protection and restoration of marine and coastal ecosystems to ensure sustainable and equitable management"**. Roberto Danovaro (UNIVPM) joined the session "On a Mission to Restore the Ocean and Waters", which focused on how research and innovation can accelerate ocean protection and restoration, support global biodiversity goals, and strengthen the resilience of marine communities (https://meetingorganizer.copernicus.org/OOS2025/session/54761). During the roundtable with scientists, policymakers and stakeholders, Roberto Danovaro discussed important initiatives for protecting and restoring marine biodiversity and ecosystems under the EU Mission Restore our Ocean and Waters. This event was a great opportunity to present the progress and experience achieved in the ongoing REDRESS and CLIMAREST projects to the international audience.

REDRESS at International Conferences

MARE2025 Conference, Amsterdam (the Netherlands)

Nadia Papadopoulou (HCMR), Chris Smith (HCMR/SERE) and Johanna Buerkert (WU)

As part of Theme 3 "*Transformations for Ocean Governance*", the REDRESS project organized a panel titled "*All hands-on deck: Transformations in the governance of deep-sea restoration activities*". Nadia Papadopoulou (HCMR) presented the REDRESS project to the audience and provided an overview of marine governance arrangement theory and the goals of WP5 in the context of the Nature Restoration Law. Chris Smith (HCMR/SERE) then introduced the deep sea as a new frontier. His presentation, developed together with Sahar Stevenson-Jones and Boris Barov from SERE, gave an overview of SERE's work in relation to restoration and introduced the audience to restoration standards and principles applicable to deep-sea restoration. Johanna Buerkert (WU) followed with an overview of the Dohrn Canyon restoration case, another multi author work, presenting first findings from the case-based governance arrangement analysis done as part of Task 5.1. The final presentation by Elisa Cavallin with An Cliquet as co-author (Ghent University, SERE legal team), contextualized the EU Nature Restoration Law within the existing legal context, highlighting the advancements that this new framework will bring. The panel concluded with a lively audience discussion. The conference also provided the ideal setting to link up with other EU Horizon projects focusing on governance of the marine space, such as the CROSSGOV and the PERMAGOV projects, and to engage with the ongoing conservation and restoration work on both coastal and deep-sea ecosystems, such as in the CLIMAREST and DEEPREST projects.

REDRESS at International Conferences

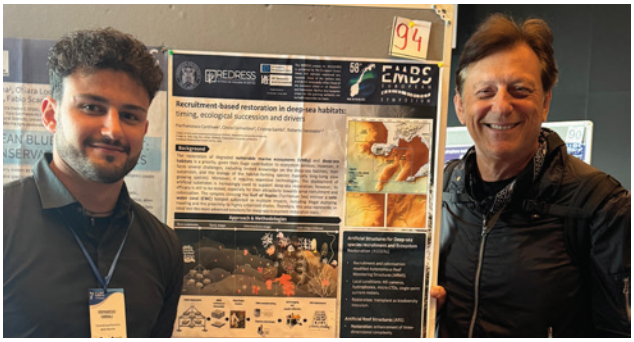
58th European Marine Biology Symposium, Bodo (Norway)

UNIVPM team

The 58th European Marine Biology Symposium (https://www.embs-symposium.com/) was held in Bodø, Norway, from 6 to 9 July 2025. The conference was coordinated by EMBS President Mark Costello and hosted by Nord University, in collaboration with the EuroMarine Network. The conference proved to be an excellent opportunity to bring together several leaders of Horizon Europe projects in the field of marine life sciences (including Marine Protected Areas, Maritime Spatial Planning, and Ecological Restoration) to inform the community about progress made and plans. The EMBS attracts marine scientists from around the world, offering a platform to discuss critical topics and exchange ideas in a welcoming and collaborative atmosphere. The main objectives of the EMBS are:

- Bringing marine biologists together in an informal and international setting
- Promoting marine science through lectures, presentations, roundtables, and poster sessions on carefully selected topics
- Raising awareness of marine biology and the crucial role that healthy seas and oceans play in society
- Promoting networking, international collaboration, and dissemination of research data.

During the conference, the UNIVPM team presented a contribution on the restoration intervention carried out in the Mediterranean Sea as part of WP2 REDRESS, Task 2.1: *Restoration of deep-sea cold-water coral reefs affected by bottom trawling*. The poster session was an excellent opportunity to present part of the work done by Pierfrancesco Cardinale during his doctoral thesis.



EUDI Show

EUDI2025, Bologna (Italy)

UNIVPM team

The EUDI Show 2025 has been held at Bologna from February 21 to 23, 2025. It is the most important European trade fair dedicated to the world of diving. FIPSAS (Italian Federation of Underwater Activities) will have a booth and will organize several events, including the roundtable discussion "**Spearfishing: Pros and Cons**" on February 22 at which Roberto Danovaro coordinator of the REDRESS project participated to sustain the critical role of deep-sea ecosystems and their restoration in sustaining the global fisheries and biodiversity. The UNIVPM stand at EUDI presented the posters illustrating the REDRESS project.


FIPSAS
ITALIA
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3UDI
EUDI SHOW 2025
Fiera di Bologna | Padiglione 30
Palco Maiorca
sabato 22 Febbraio
dalle ore 14:00 alle ore 15:00
Moderatore: UMBERTO PELIZZARI
Relatori:
Prof. CARLO ALLEGRINI
Responsabile Settore Attività Subacquee e Nuoto Pinnato FIPSAS
Sen. CLAUDIO BARBARO
Sottosegretario di Stato al Ministero dell'Ambiente e della Sicurezza Energetica
Sen. PATRIZIO GIACOMO LA PIETRA
Sottosegretario di Stato al Ministero dell'Agricoltura, della Sovranità Alimentare e delle Foreste
Dott. ALESSANDRO CONGEDO
Referente Nazionale Pesca in Apnea FIPSAS
Prof. ROBERTO DANOVARO
Docente di Restauro degli Ecosistemi Marini all'Università Politecnica delle Marche
Dott. ANDREA MORELLO
Presidente Sea Shepherd Italia
Dott. VALERIO SBRAGAGLIA
Ricercatore del Consiglio Nazionale di Ricerca Spagnolo
Prof. ANTONIO TERLIZZI
Direttore del Dipartimento di Ecologia Marina Integrata della Stazione Zoologica Anton Dohrn
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REDRESS and young scientists' education

Margalef Colloquia, Barcelona (Spain)

UNIVPM, CSIC and SERE

On March 19-20, the 2025 Edition of the Margalef Colloquia was held in Barcelona. This edition was entitled: "Fundamentals of ecology for conservation and restoration of marine systems". Here the Link to the Colloquia: https://ramonmargalefcolloquia.com/

Together with Roberto Danovaro (REDRESS coordinator), many other partners of the REDRESS consortium were present: Jordi Cortina (SERE), Jordi Grinyò (course coordinator) and Jacopo Aguzzi (CSIC).

Course coordinator

Jordi Grinyó

Organizing and scientific comittee

Jordi Grinyó
Marta Ribes
Célia Marrasé
Stefano Marinelli
Caterina R. Giner

Speakers

Topic 1: **Marine ecosystem functioning**
Domenico D'Alelio
Luis Cardona

Topic 2: **External energy, ecosystem dynamics and biogeochemical cycles**
Francisco Lloret
Javier Franco
Marta Ribes

Topic 3: **Tipping points and shifting baselines. Networks & connectivity**
Blai Vidiella
Anna Metaxas
Jean Baptiste Ledoux

Topic 4: **Does conservation require restoration? Is restoration feasible?**
Jordi Cortina-Segarra
Roberto Danovaro
Emma Cebrián

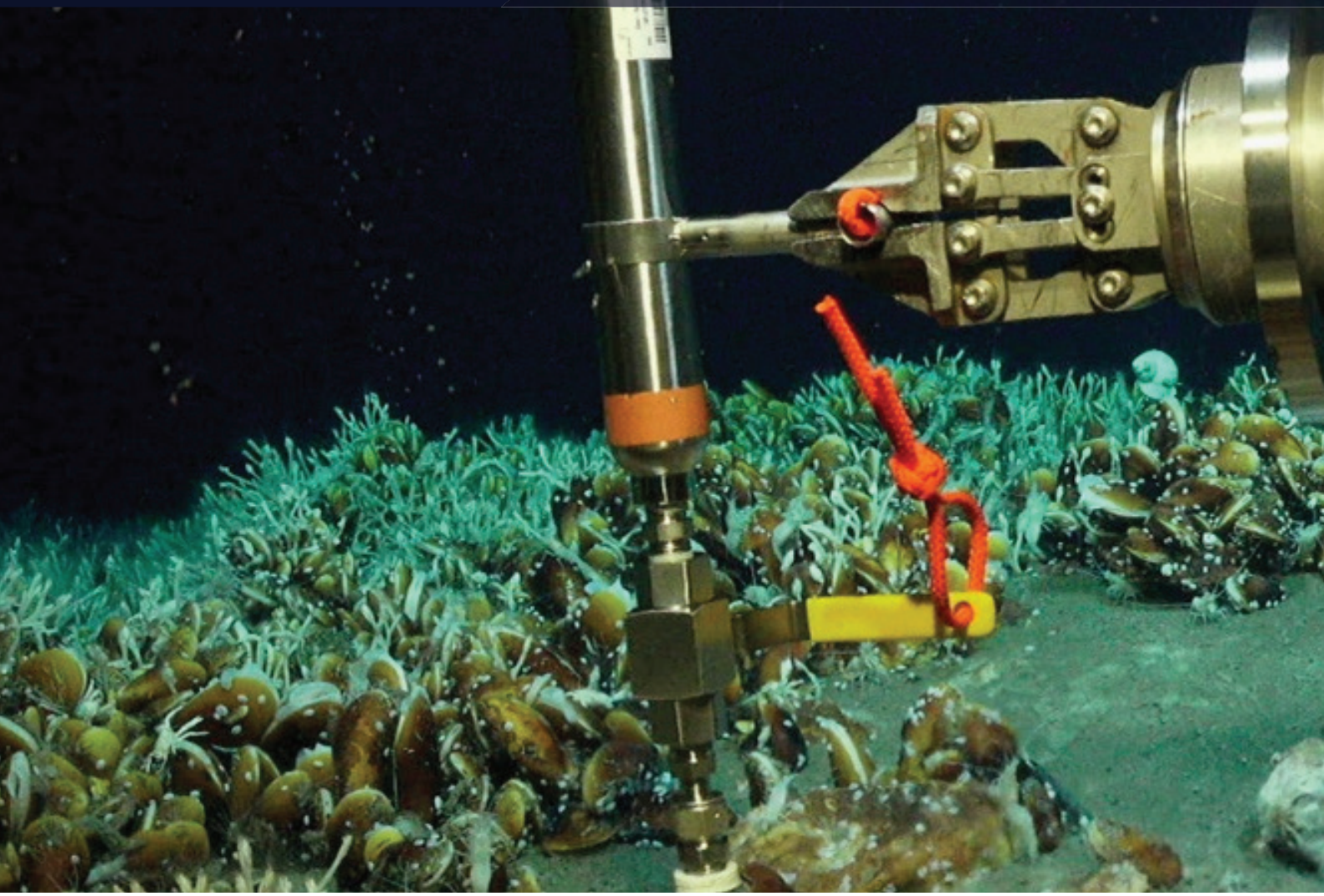
Topic 5: **Technical advances in Marine Restoration**
Albert Forés
Jacobo Aguzzi
Blai Vidiella

REDRESS and young scientists' education

MASTER Students field work in the Ionian Sea (Italy)

UNIVPM team

Master students of the Marine Biology and of the Marine Restoration courses at UNIVPM during a seminar before a field work in the Ionian Sea.



REDRESS contributing to the last Science Brief by European Marine Board

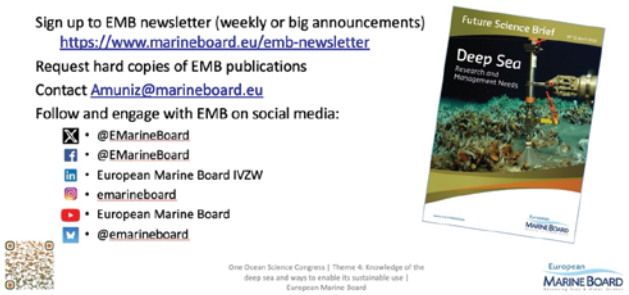
EMB Future Science brief n° 12 - April 2025

The European Marine Board (EMB), has published Future Science Brief (FSB) No. 12, entitled *"Deep Sea & Ocean Health"*, which highlights the vital importance of deep-sea ecosystems, the threats they face, and the need for stronger research and management. This document was launched on April 12, 2025. The document included also the relevance of deep-sea ecosystem restoration to contribute to the future of these ecosystems. Here below a brief outline of the contents:

Deep Sea and Ocean Health: Despite significant research in recent years, the deep sea remains the largest (>1.2 billion km^3) and least well-explored global region. The deep sea is a critical part of the wider Ocean-climate-biodiversity nexus and plays a key role in the processes that are critical for supporting life on Earth. It also contains resources that are of interested to various (Blue Economy) sectors and industries, such as fisheries, biotechnology, energy, and mineral resources.

Output EMB Future Science Brief No. 12 'Deep Sea Research and Management Needs' (April 2025)

News article on the launch of the Future Science Brief (April 2025) The document was published on 11 April 2025 in a dedicated webinar. More information here.

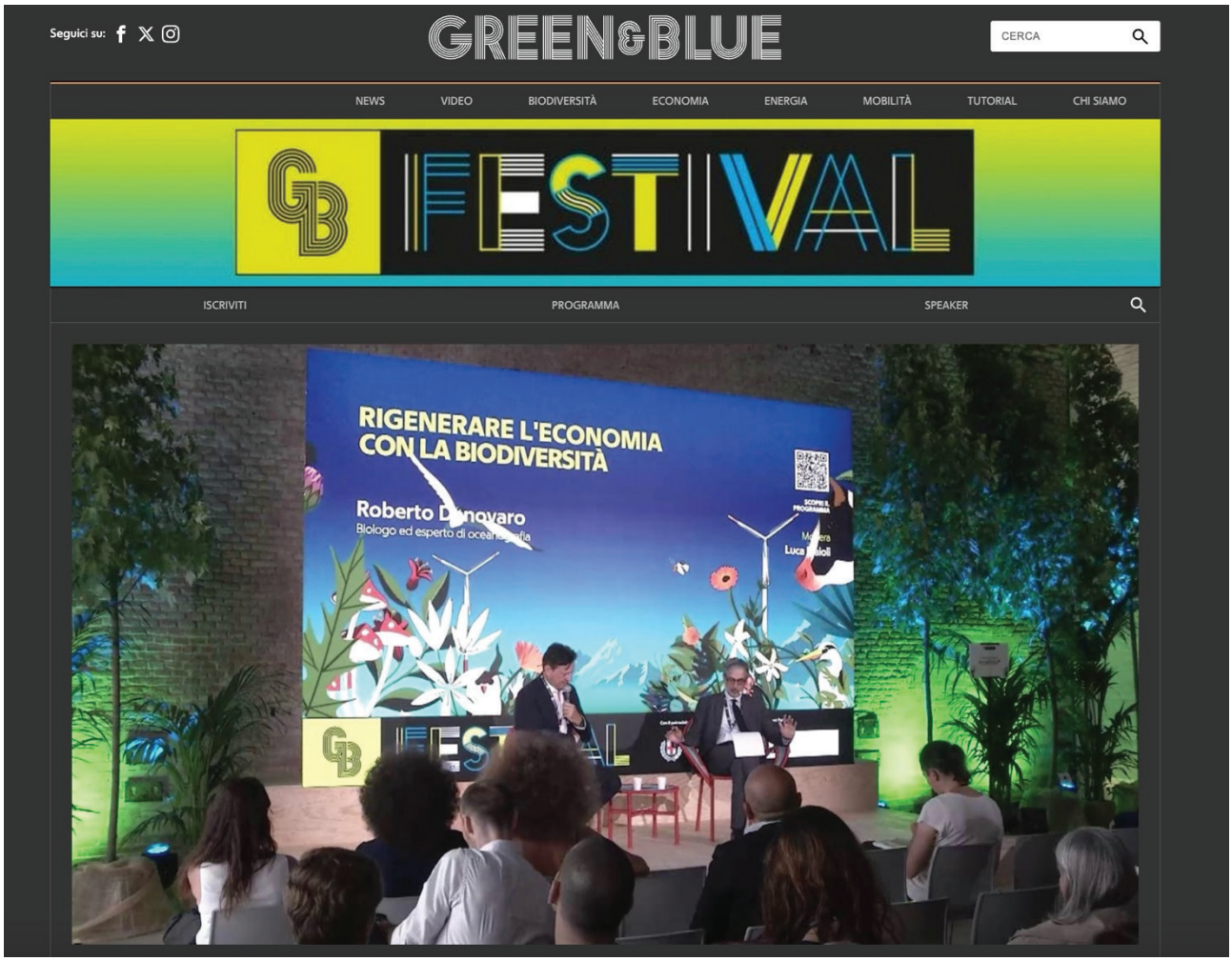


◀ *The redress presentation at EMB within the frame of the initiatives to launch the policy brief is available on YouTube here: https://youtu.be/vHlAlb4ZmfM and REDRESS website: https://redress-project.eu/webinar/*

REDRESS AND THE MEDIA

Green & Blue colloquia of Repubblica

Roberto Danovaro, biologist and oceanography expert, guest speaker at the G&B Festival 2025 in Milan. "*We must restore the 30% of the habitats we have destroyed in recent years, as established by the Nature Restoration Law*," explains Professor Danovaro, emphasizing the importance of the seas, which cover 70% of the Earth's surface. "*The European Union has just approved the Ocean Pact, a global strategy that places this resource at the centre of the future, the economy, and geopolitics*". Interview with Luca Fraioli.



REDRESS AND THE MEDIA

REDRESS at the Festival of Sustainability, 7-23 May 2005

"Restoration is an investment and not a cost"

REDRESS AND THE MEDIA

REDRESS presents the new book entitled "Restoring Nature" by Roberto Danovaro

Date: April 27, 2025

Restoring Nature. *How to Face the Greatest Challenge of the Century,*

by Roberto Danovaro,

Edizioni Ambiente 2025, pp. 232

Just released in bookstores in April by Edizioni Ambiente, this crucially important volume is rapidly attracting public attention. The prestigious "La Lettura" showcase in Corriere della Sera (April 27, 2025), with an illuminating introduction by Telmo Pievani, confirms its impact and cultural relevance.

REDRESS AND THE MEDIA

REDRESS and the international biodiversity day (May 22, 2025)

Several national media reported the interviews of the REDRESS coordinator, Roberto Danovaro illustrating the critical role of deep-sea biodiversity and the crucial important of the restoration of deep-sea habitats

Presenting the project REDRESS at the National television: GEO a daily programme dedicated to Nature.


Rai 3 HD
REDRESS
[geo]
Mari e oceani: il restauro degli ambienti profondi


Rai 3 HD
PETROLIO
QUESTA SERA ORE 21.20
[geo]
Ripristino ecologico della natura

A WINDOW ON YOUNG REDRESS RESEARCHERS

Johanna Sophie Buerkert

REDRESS postdoc at Wageningen University.

From June 1-6, 2025, I attended the training school on ***Governance of the Blue Economy*** in the Limfjord (Denmark), organized by the COST Action RethinkBlue (https://rethinkblue.eu). Combining theory with practice, the school was held on the sailing vessel LOA, which docked at various locations across the Limfjord. Throughout the different stops, the participants from different countries interacted with and learned from different stakeholders located in the area, including shellfish farmers, companies responsible for laying of underwater cables, and local ports. Back on the ship, the participants engaged with different governance theories, including the governance arrangement theory, which will also be used in REDRESS WP5 work looking at Governance structures and processes to support deep-sea restoration interventions across European Seas. They further learned about the integration of local communities into coastal governance processes, and fisheries management. An interesting week with plenty of discussion and connections between deep-sea restoration and other areas of research.

Pierfrancesco Cardinale

PhD student at Polytechnic University of Marche

58th European Marine Biology Symposium, Bodo (Norway)- July, 6-9, 2025 (https://www.embs-symposium.com/). This was my first experience at an international conference on Marine Biology. The EMBS2025 was very interesting and rich in discussion (5 keynote speakers; more than 70 oral presentations and ca 100 posters) on a wide range of topics: pelagic and benthic ecosystems, coastal and offshore, oceanography and chemistry and biology, from microbes to megafauna, although with a noticeable increase in presentations related to climate change and marine restoration and protection. During the poster session, I have presented a part of my PhD thesis on the ongoing restoration activities carried out in the Dohrn Canyon (Tyrrhenian Sea, Mediterranean). A highly successful conference attended by over 240 participants from 29 countries, including Australia, Canada, China, Japan, Malaysia, Taiwan, the United Arab Emirates, UK and USA.

A WINDOW ON YOUNG REDRESS RESEARCHERS

Laura Trovão

PhD student at UAveiro

CONGRATULATIONS!

Between the 16th and 18th of July, the University of Aveiro organized the Research Summit 2025, a conference that aims to promote an open debate among the research community at the University.

During the event, I presented a contribution titled "*Valuation of deep-sea ecosystem services – an overview*", which was met with great interest from attendees and fellow experts in the field.

The presentation was recognized for its originality, clarity, and scientific impact, earning the **Best Communication Award** - science field of the conference. This achievement highlights the relevance and quality of the work being developed within REDRESS WP4 and contributes to its growing visibility in the international research community.

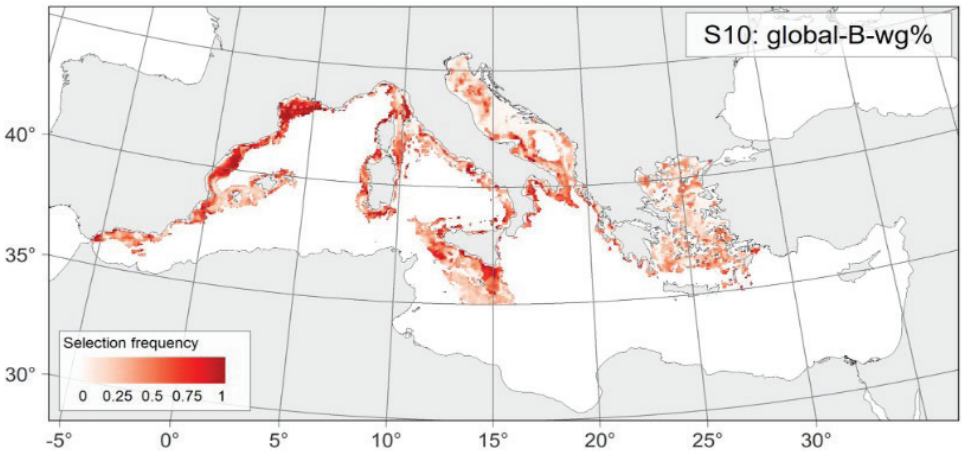
A WINDOW ON YOUNG REDRESS RESEARCHERS

Millot Jade

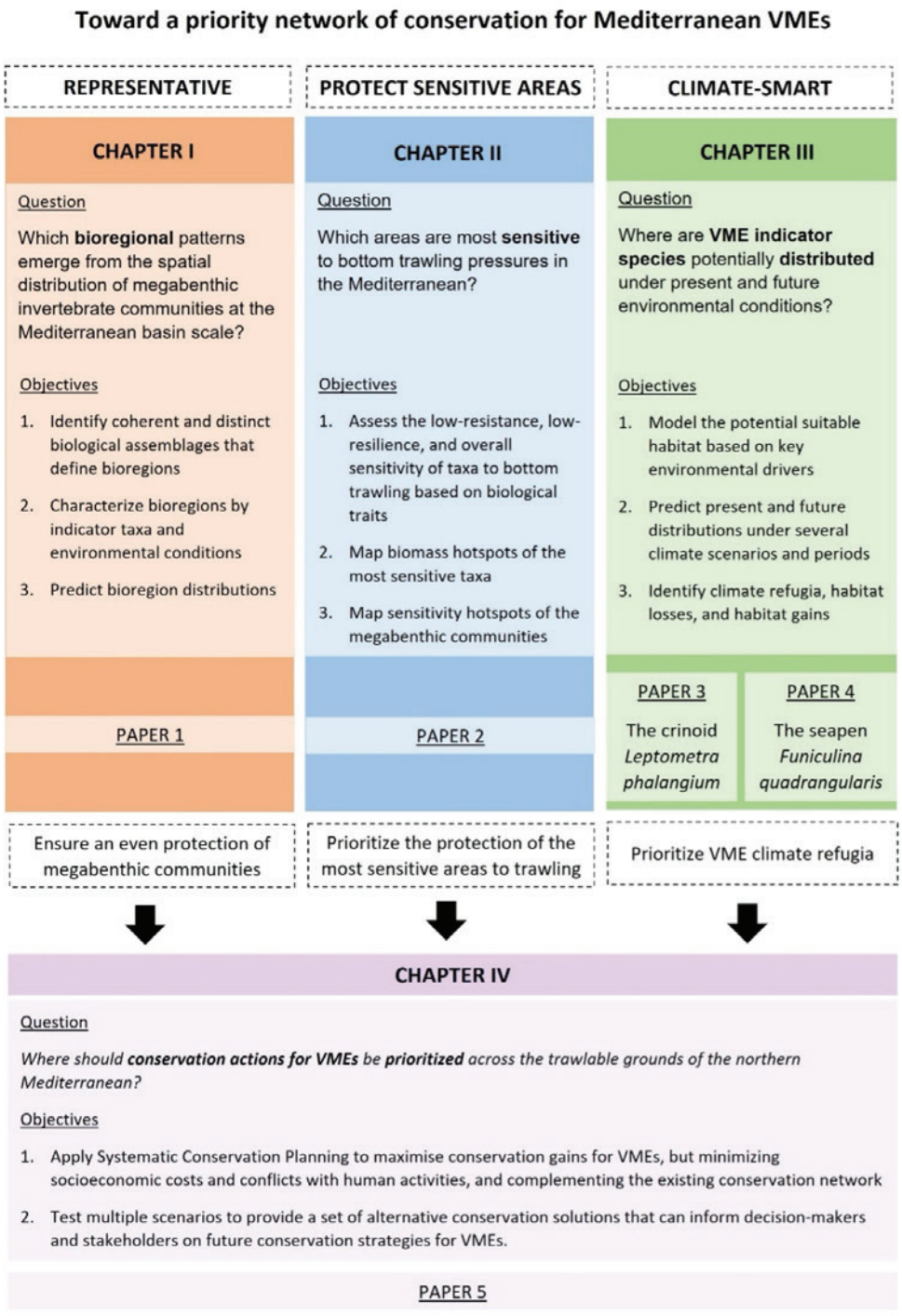
PhD student at Ifremer

During the last six months, I have written and submitted my thesis manuscript on "***Vulnerable Marine Ecosystems Conservation and Spatial Planning in the Mediterranean***" While the first part of my PhD focused on generating new spatial information on the distribution of megabenthic communities inhabiting trawlable soft bottoms in the Mediterranean, the final part aimed to integrate this information into a systematic conservation planning framework. This framework aimed to identify priority areas for the protection of VMEs on soft-bottom habitats in the Northern Mediterranean. The bioregions of megabenthic invertebrates were used to ensure the representativity of distinct communities within the conservation network; hotspots of sensitive species helped target key areas for protection; and climate refugia identified for VME indicator species contributed to designing a network that supports ecosystem persistence under climate change. Several conservation scenarios were tested, incorporating varying levels of costs and constraints, particularly those related to bottom trawling, the development of offshore wind farms, and complementarity with the existing network of conservation areas. The different spatial solutions proposed aim to inform stakeholder discussions and support decision-making processes for establishing new fishing restrictions or closure zones. This work was carried out using the *Prioritizr* spatial prioritization tool, which provides the advantage of identifying optimal solutions. The entire study is structured as a scientific article and is intended for submission to a peer-reviewed journal. Because these results are not yet published, they cannot be shared at this time. Here is the map for the more constrained scenario, which achieved conservation targets weighted according to the conservation priority of each biological feature, while minimizing costs associated with bottom trawling and offshore wind farm development, and complementing the existing MPA-FRA network. These results have not yet been peer-reviewed.

▼ *Map of PU selection frequency for the management scenario accounting for a global cost of conservation and human activities.*



Below is the conceptual representation of my thesis manuscript:



PUBLICATIONS

- Danovaro R, Aronson J, Bianchelli S, Boström C, Chen W, Cimino R, Corinaldesi C, Cortina-Segarra J, D'Ambrosio P, Gambi C, Garrabou J, Giorgetti A, Grehan A, Hannachi A, Mangialajo L, Morato T, Orfanidis S, Papadopoulou N, Ramirez-Llodra E, Smith CJ, Snelgrove P, van de Koppel J, van Tatenhove J, Fraschetti S (2025). Assessing the success of marine ecosystem restoration using meta-analysis. **Nature Communications**, 16 (3062).
- Bahamon N, Navarro J, Aguzzi J, Grinyo J, Garcia JA, PuigdeFàbregas J, Tuck I, Company JB (2025). Animal releasing devices for deep-sea ecological studies. **Restoration Ecology**, 33(5): e70070.
- Danovaro R, Bianchelli S, Brambilla P, Brussa G, Corinaldesi C, Del Borghi A, Dell'Anno A, Fraschetti S, Greco S, Grosso M, Nepote E, Rigamonti L, Boero F (2024). Making eco-sustainable floating offshore wind farms: Siting, mitigations, and compensations. **Renewable and Sustainable Energy Reviews**, 197, 114386.
- Fabri M-C, Dreidemy J, Estournel C, Vaz S, Michez N, Puig P, Lartaud F (2025). Mapping and Conservation of Cold-Water Corals in the Lacaze-Duthiers Canyon for Transboundary Management. **Mediterranean Marine Science**, 26(2), 349-369.
- Ortenzi L, Aguzzi J, Costa C, Marini S, D'Agostino D, Thomsen L, De Leo F, Chatzievangelou D (2024). Automated species classification and counting by deep-sea mobile crawler platforms using YOLO. **Ecological Informatics**, 82, 102788.
- Aguzzi J, Thomsen L, Flögel S, Robinson NJ, Picardi G, Chatzievangelou D, Bahamon N, Stefanni S, Grinyó J, Fanelli E, Corinaldesi C, Del Rio Fernandez J, Calisti M, Mienis F, Chatzidouros E, Costa C, Violino S, Tangherlini M, Danovaro R (2024). New Technologies for Monitoring and Upscaling Marine Ecosystem Restoration in Deep-Sea Environments. **Engineering**, 34, 195-211.

REDRESS publications are stored in the project Zenodo repository and OpenAIRE

FORTHCOMING EVENTS

> **ICES Annual Science Conference 2025**
Klaipėda University, Lithuania, 15-18 September 2025.
https://www.ices.dk/events/asc/2025/Pages/Theme-sessions.aspx

> **SER2025 Conference in Denver (Colorado)**
*Symposium on **New Frontiers in marine ecosystem restoration**, 4 October 2025, 10.30-12.30*

> **SERE2026 Conference in Brest (France)**
From August 24th - 26th, 2026 in Brest, France

*The **University of Brest**, in collaboration with the French Ecological Restoration Network (REVER) and the European Chapter of the Society for Ecological Restoration (SER-Europe) are proud to host the 15th European Conference on Ecological Restoration (SERE2026) from August 24th - 26th, 2026 in Brest, France.*
*The **Laboratoire Géoarchitecture** (UoB), a leader in restoration ecology since the early 2000s, will organise the event, bringing together experts from academia, policy and practice. The conference will be a key platform to take stock of the National Restoration Plans required in 2026 by the EU Nature Restoration Regulation.*
Why should you attend?
- explore strategies for restoring wetland, forest, agroecosystem, urban and marine habitats;
- connect with leading researchers, practitioners and policymakers;
- engage in discussions on the socioeconomic and political aspects of ecological restoration
SERE2026 offers a critical opportunity to exchange ideas and shape the future of restoration efforts across Europe. Join us in Brest and be part of the conversation! Stay tuned for programme details and registration updates.

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REDRESS Consortium

REDRESS brings scientists and top experts from different disciplines together with SMEs in a large multi-disciplinary Consortium of 26 partners (including 1 affiliated entity and 4 associated partners) from 15 countries with skills in marine restoration ecology, marine biology, marine spatial planning, modelling, computer and data science, marine technologies, economy, governance, socioeconomics, and human sciences with special attention on knowledge transfer, dissemination and communication.

1. Università Politecnica Delle Marche (UNIVPM) - Italy *https://www.univpm.it/*
2. Agencia Estatal Consejo Superior De Investigaciones Cientificas (CSIC) - Spain *https://www.csic.es/*
3. Institut Français De Recherche Pour L'exploitation De La Mer (IFREMER) - France *https://www.ifremer.fr/*
4. Helmholtz-Zentrum Fur Ozeanforschung Kiel (GEOMAR) - Germany *https://www.geomar.de/*
5. Stichting Nederlandse Wetenschappelijk Onderzoek Instituten (NWO-I) - Netherlands *https://www.nioz.nl/*
6. Hellenic Centre For Marine Research (HCMR) - Greece *https://www.hcmr.gr/*
7. University Of Galway (NUI GALWAY) - Ireland *https://www.universityofgalway.ie/*
8. Universidade De Aveiro (Uaveiro) - Portugal *https://www.ua.pt/*
9. Goeteborgs Universitet (UGOT) - Sweden *https://www.gu.se/*
10. University Of Haifa (UH) - Israel *https://www.haifa.ac.il/*
11. Hafrannsoknastofnun, Rannsokna- Og Radgjafarstofnun Hafs Og Vatna (MFRI) - Island *https://www.hafogvatn.is/*
12. Consiglio Nazionale Delle Ricerche (CNR) - Italy *https://www.cnr.it/*
13. Sorbonne Université (SU) - France *https://www.sorbonne-universite.fr/*
14. Stazione Zoologica Anthon Dohrn (SZN) - Italy *https://www.szn.it/*
15. Engitec Systems International Limited (ESI) - Cyprus https://esi-ltd.eu/

16. DEESS (DEESS) - France *https://www.deess.eu/*
17. ECOREACH SRL (ECOREACH) - Italy *https://www.ecoreach.it/*
18. European Chapter Of The Society For Ecological Restoration Ser International (SERE) - Belgium *https://chapter.ser.org/*
19. Israel Oceanographic And Limnological Research Limited (IOLR) - Israel *https://www.ocean.org.il/*
20. Wageningen University (WU) - Netherlands *https://www.wur.nl/*
21. Universidade Dos Acores (Uac) - Portugal *https://www.uac.pt/*

21.1. IMAR- Insituto Do Mar (IMAR) - Portugal *https://imar.org.pt/en/about-us/*

22. National Oceanography Centre (NOC) - United Kingdom https://noc.ac.uk/
23. The University of Edinburgh (UEDIN) - United Kingdom *https://www.ed.ac.uk/*
24. Plymouth Marine Laboratory Limited (PML) - United Kingdom *https://www.pml.ac.uk/*
25. Deep-Sea Biology Society (DSBS) - United Kingdom *https://dsbsoc.org/*
26. REVOcean (REVOCEAN) - Norway *https://www.revocean.org/*

REDRESS Management Office

Roberto Danovaro [UNIVPM]
REDRESS coordinator

Cristina Gambi [UNIVPM]
Scientific Project Manager

Silvia Gallegati [UNIVPM]
Project Manager Assistant

REDRESS Advisory Board

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[Joint Research Center]

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[University of Barcelona]

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[Scottish Association for Marine Science]

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[OSPAR]

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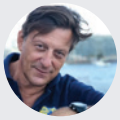
[Memorial University of Newfoundland]

REDRESS Steering Committee

COORDINATOR	 **Roberto anovaro** [UNIVPM]	
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REDRESS
RESTORING AND REBUILDING THE DEEP SEA

HORIZON-CL6-2023-BIODIV-01-6
REDRESS project: N. 101135492
01.02.2024 - 31.01.2028

www.redress-project.eu

Co-funded by the European Union

UK Research and Innovation

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