

NEWSLETTER



DIGI4ECO PROJECT: 2 YEARS OF ACHIEVEMENTS

The DIGI4ECO project has completed 24 months of impactful research and innovation, marking a period of significant achievements.



Over its first two years, DIGI4ECO has built a strong foundation of progress and collaboration. While the technical work packages continue to move forward toward ambitious goals, the outreach activities have played a key role in bringing the project's vision and achievements closer to a wider audience.

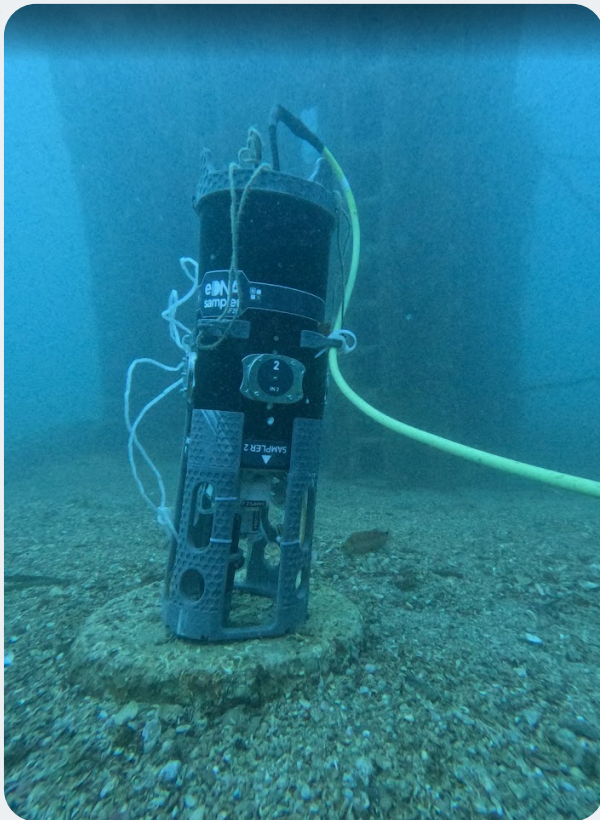


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SCIENTIFIC UPDATES

eDNA Sampling Successfully Tested at OBSEA Observatory!



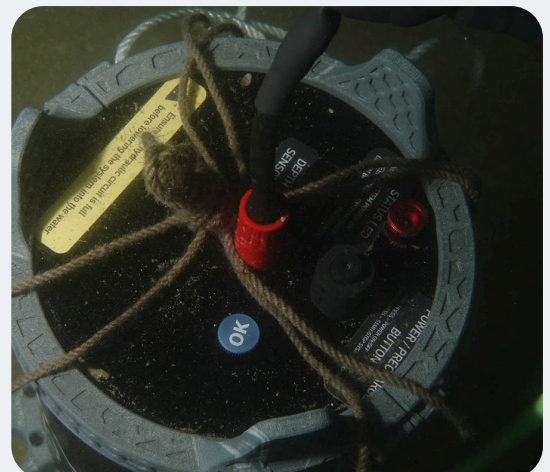
The eDNA sampler SF26 is an innovative technology developed through the iNEST project D4BLOND.

The system has been designed and built in collaboration with leading research and technology partners, including the Stazione Zoologica Anton Dohrn, the University of Bologna and 3DResearch.

The eDNA sampler represents a cutting-edge solution for monitoring marine biodiversity through environmental DNA (eDNA).

The eDNA Sampler SF26 has been successfully tested under real marine conditions at the OBSEA Observatory.

The system has now moved from demonstration to real-world application. During a dedicated field operation, the sampler successfully collected environmental DNA (eDNA) from the water column, confirming its capability to operate effectively in a live marine environment.

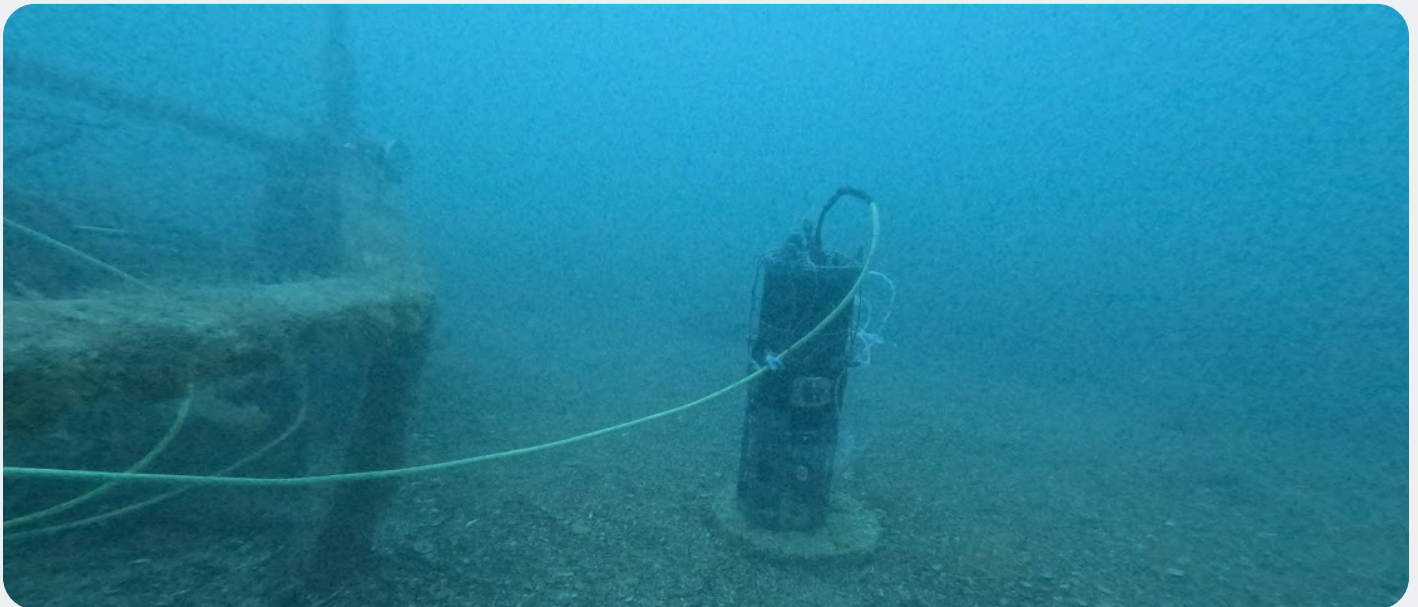


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SCIENTIFIC UPDATES

eDNA Sampling Successfully Tested at OBSEA Observatory!



The deployment at OBSEA marks a crucial step in validating the technology beyond controlled environments. The successful operation demonstrated:

- **Reliable performance in real sea conditions**
- **Effective and consistent collection of eDNA samples**
- **Strong potential for integration into existing marine observatory workflows**

Environmental DNA (eDNA) offers a powerful way to monitor marine biodiversity by detecting genetic material left behind by organisms in the water. By automating this process, the eDNA Sampler SF26 contributes to a more efficient, scalable, and data-driven approach to ecosystem monitoring.



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DISSEMINATION ACTIVITIES

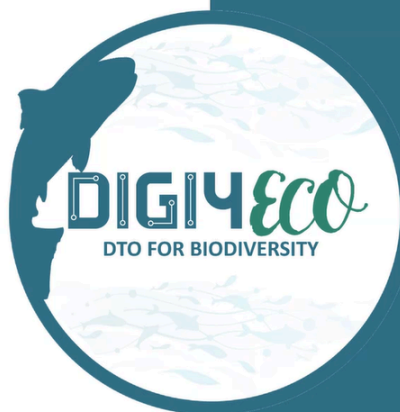
DIGI4ECO 2nd Info Day

The DIGI4ECO 2nd Info Day, held online on 23 March 2026, successfully brought together participants from across the research, policy and industry communities to explore the project's progress and early results.

Digital Twin-sustained 4D
ecological monitoring of
restoration in fishery depleted
areas
(DIGI4ECO; GA 101112883)

2nd Info-Day

23 of March 2026, Online



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DISSEMINATION ACTIVITIES

DIGI4ECO 2nd Info Day

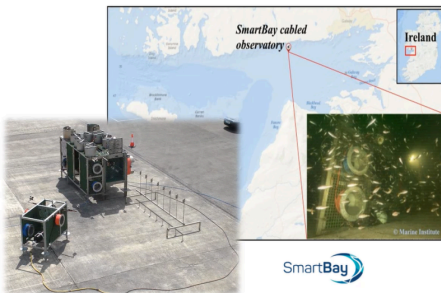
During the Info Day, project partners came together to share the latest updates on DIGI4ECO's objectives, approach, and progress so far. The session provided a comprehensive overview of the work carried out across key technical areas, including:

- Data collection efforts across the project's demo sites
- Advanced data treatment and processing methodologies
- Integration of technologies supporting ocean monitoring and analysis

SmartBay: Species Detection Model for Smart Marine Ecosystem Monitoring

The SmartBay Observatory

- The SmartBay observatory is installed on the seafloor (depth 25m) 1.5km off the coast in Galway Bay on the west coast of Ireland
- In operation since 2015 (Marine Institute)
- The observatory operates a **core suite of sensors** which measure several Essential Ocean Variables (EOVs)
- A **fibre optic cable** connects SmartBay back to the town of Spiddal to retrieve continuous, real-time data
- Test site for emerging marine technologies with EMSO ERIC (The European Multidisciplinary Seafloor and water column Observatory) -> access for scientists across Europe



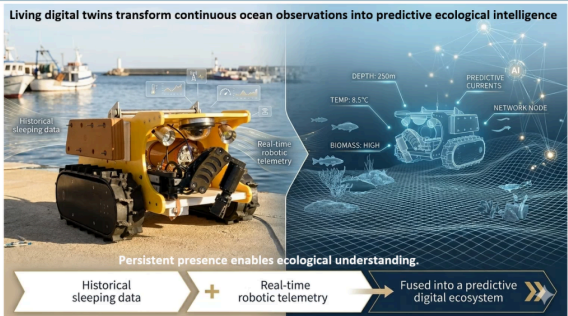
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them. 23 March 2026 • 2. Digi4Eco Info Day • online

A key highlight of the event was the presentation of the project's core technologies, showcasing:

- Innovative data processing tools
- Monitoring systems for marine environments
- Integrated solutions contributing to the development of the Digital Twin of the Ocean

From episodic missions → permanent robotic presence

Living digital twins transform continuous ocean observations into predictive ecological intelligence



Persistent presence enables ecological understanding.

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DISSEMINATION ACTIVITIES

DIGI4ECO at Digital Ocean Forum 2025!

The Digital Ocean Forum 2025 was an event to share the advances of the European Digital Twin Ocean platform and to further co-design it. This event brought together many EU Horizon Europe project leaders, experts and stakeholders in the co-design and co-creation of the European Digital Twin Ocean in the frame of the EDITO project.



Representing DIGI4ECO, Morane Henry from GEOMAR followed the latest European developments on Digital Twin Oceans (DTOs) and actively engaged with the community by:

- Networking with students, coordinators, and collaborators aligned with the project.
- Participating in two dedicated workshops on Data and Models, contributing insights and engaging in discussions with session chairs and participants.

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DISSEMINATION ACTIVITIES

DIGI4ECO Technologies Featured on Spanish TV!

A large-scale underwater robot developed by the SARTI technological research group at UPC Vilanova—one of DIGI4ECO's key partners—was recently showcased on Spanish TV, on Canal Blau. The feature highlighted how the robot is being tested in the waters of the Port of Vilanova as part of ongoing technological developments within the project.



The robot is equipped with cameras for observing marine species, a variety of biogeochemical sensors, and a robotic arm for collecting samples. These capabilities support one of DIGI4ECO's core ambitions: the creation of a digital twin of the Vilanova coastline, enabling more accurate characterisation of marine ecosystems, monitoring of predator communities, and improved understanding of ecological interactions.



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STRENGTHENING SYNERGIES!

DIGI4ECO was presented at SUNBIO's 1st Workshop!

The first SUNBIO Workshop, titled ***"Sustainable Wave Energy Harvesting and Marine Habitat Restoration Integrated with Marine Robotic Systems"*** was successfully held on 18 November 2025.

Bringing together leading experts in marine science, renewable energy, and ecosystem restoration, the event highlighted the synergy between technological innovation and environmental sustainability.



During the workshop, DIGI4ECO Coordinator (ICM-CSIC) gave a presentation to introduce DIGI4ECO Project to participants. The event offered an excellent opportunity to foster synergies between European research initiatives, exchange knowledge on innovative marine monitoring tools, and strengthen collaboration across projects working towards ocean sustainability.

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STRENGTHENING SYNERGIES!

Seafood Sustainability Workshop!

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STRENGTHENING SYNERGIES!

EMSO ERIC: Joint Press Release



Institut
de Ciències
del Mar



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH



Foras na Mara
Marine Institute

PRESS RELEASE

Ocean, between digitalization and sustainability: a new operational strategy for "tailored" marine monitoring

An international study, published in the journal Ecological Informatics, proposes a new operational strategy for the Digital Twin of the Ocean, making the observation and management of the Blue Planet more targeted, efficient, and proactive.

DECEMBER 18th, 2025 - The Digital Twin of the Ocean (DTO), the virtualization of a specific marine area designed to provide a better understanding of the current state of the marine environment and the impact of socio-economic activities to scientists, citizens, and decision-makers, is now a consolidated strategic priority, confirmed by the European Commission's investments in projects and initiatives focused on DTO progress under the EU Mission [Restore our Ocean and Waters](#), and central to the attention of the recent Digital Ocean Forum, held in Brussels on November 27-28, 2025.

A strategic study, resulting from an international European collaboration and published in the journal *Ecological Informatics*, proposes an operational solution aimed at elevating the DTO to an active and adaptive monitoring system. The study highlights how the different data collected from the marine environment by a network of autonomous mobile and fixed robotic platforms. The project provides valuable tools to researchers to optimize at-sea sampling studies, "directioning" underwater exploration and monitoring robots at specific points and times useful for maximizing research effectiveness and understanding ecological links in areas of particular interest (e.g., the restoration of fishery depilated areas).

"The Digital Twin of the Ocean aims to bring together a whole heterogeneous category of data that are currently independently compartmentalized and sometimes not fully exploited. We are talking about data of any nature: environmental, citizen data such as observations, data derived from fishing, or scientific data from oceanographic campaigns. All these multiparametric data coming from a specific region of the sea or ocean are aggregated in a spatio-temporal 'matrix', completed with data origins' labels (i.e., metadata) for generating platform and sensor, as well as latitude, longitude, depth, and synchronized, or 'aligned' in time (what is defined in the study as a Data Bubble, editor's note). Adopting this analytical methodology, we can precisely track how crucial elements of the marine ecosystem (e.g., species) evolve their descriptive parameters (e.g., abundance and biomass) in relation to other factors (e.g., oceanographic and meteorological variables), studying their temporal co-

A joint press release recently published by EMSO ERIC (European Multidisciplinary Seafloor and Water Column Observatory – European Research Infrastructure Consortium) highlights a new international scientific study advancing the development of the Digital Twin of the Ocean (DTO).

DIGI4ECO partners ICM-CSIC, Universitat Politècnica de Catalunya (UPC), and the Marine Institute (MI) play a key role in advancing and supporting this initiative.

The full joint press release is available on the [EMSO ERIC website](#).



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STRENGTHENING SYNERGIES!

DIGI4ECO & SMART-ME: Strengthening Synergies in Marine Research

On 9 February 2026, the DIGI4ECO project was presented during a scientific conference held within the **“Science Mondays 2026 – Research projects to improve our society”** cycle.



The session featured a presentation of the SMART-ME project, a research initiative focused on the use of underwater observation systems,

oceanographic sensors, and artificial intelligence to monitor the recovery of seabeds affected by human activities.

During the conference, DIGI4ECO was introduced as a complementary European initiative advancing digital technologies for marine ecosystem monitoring and protection. The presentation emphasised the project's work on digital twins, robotics, and data-driven approaches .

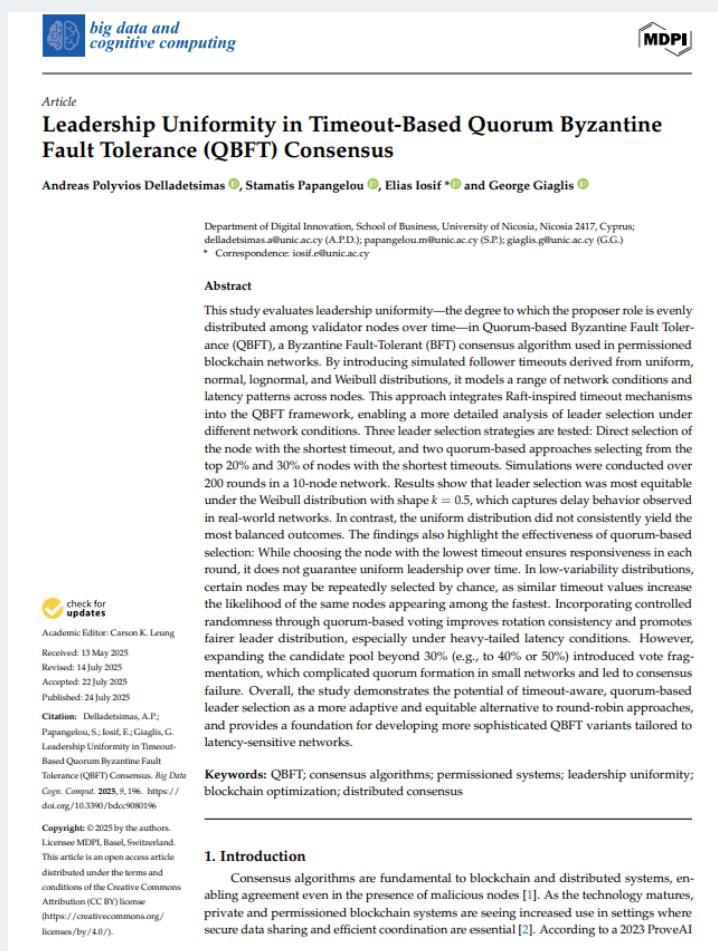
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JOURNAL PUBLICATIONS

""Tidally modulated burrow emergence rhythms of *Nephrops norvegicus*"

DOI: <https://doi.org/10.1093/icesjms/fsaf205>



Partners: ICM-CSIC & Marine Institute



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WANT TO LEARN MORE ABOUT DIGI4ECO? MEET DIGI4ECO'S COORDINATOR!

What's driving DIGI4ECO forward? In this short interview, Jacopo Aguzzi shares his perspective on the project's journey so far, reflecting on key achievements from the first two years and the vision guiding the next steps.



In this interview, you'll discover:

- The ambition behind the Digital Twin of the Ocean
- Highlights from the project's progress
- What's coming next for DIGI4ECO

[WATCH THE VIDEO](#)



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OUR TEAM



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