NEWSLETTER

DIGI4ECO PROJECT: 1 YEAR OF SUCCESS

The DIGI4ECO project completed its first 12 months in March 2025, during which time it achieved notable progress in research and innovation.

Throughout the past year, DIGI4ECO has been making impressive progress. Our technical work packages have been advancing steadily, driving us closer to our ambitious goals with each milestone.

But it's not just about the technology —the project also made great headway in spreading the word, communicating project's objectives and highlights.

Funded by the European Union

DIGI4ECO has received funding from the European Union's Horizon Europe programme under grant agreement No 101112883.

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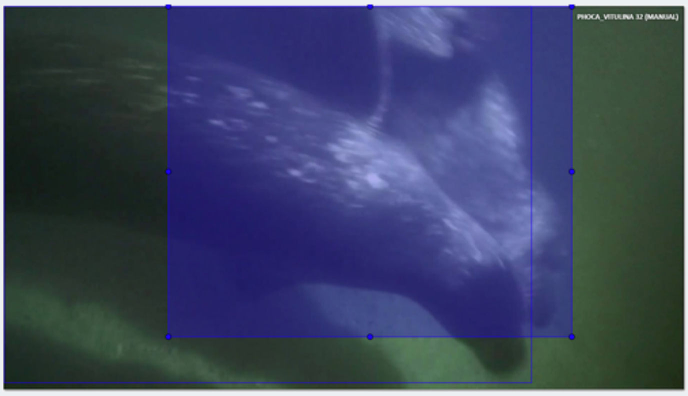
SCIENTIFIC UPDATES

Marine Institute advances biological groundwork for the Digital Twin of Galway Bay

Marine Institute scientist Marco Francescangeli and bursar student Eva Crosse have built an impressive catalogue of over 600 species-labelled images—laying the groundwork for deeper biological analysis and smart monitoring solutions.

They have combined data from SmartBay observatory in Galway Bay, the MINKA citizen science repository and videos recorded at the Galway aquarium.

This work will lay the foundation for training a "You Only Look Once" model to automatically detect and classify fish species as well as seals (*Phoca vitulina*) in the large video repository of SmartBay observatory, which is collecting 24/7 videos of the surrounding marine environment since 2016 with fixed cameras.



This will greatly advance DIGI4ECO's efforts to create a Digital Twin of the area, adding valuable biological information to complement existing environmental data.

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SCIENTIFIC UPDATES

GEOMAR Gears Up in Gullmars Fjord, Sweden – June 2025

The DIGI4ECO deployment is officially underway, as GEOMAR scientists made significant progress this June despite the challenging weather conditions.

Leveraging the opportunities provided by the concurrent Summer School held in the Kristineberg Marine Research institute, the team—comprised of Sascha Flögel, Ralf Schwarz, Marc Buss, Rink Teunis, and Morane Clavel-Henry—conducted a series of successful field tests in Gullmars Fjord.

Key milestones included the deployment and testing of the Fuel Cell Lander, as well as the operation of the MANSIO-VIATOR systems under real-world conditions, utilizing both acoustic and optical homing technologies. Additionally, a sensor-equipped SLM (Satellite Lander Module) Lander was deployed to collect ecological data for several days.

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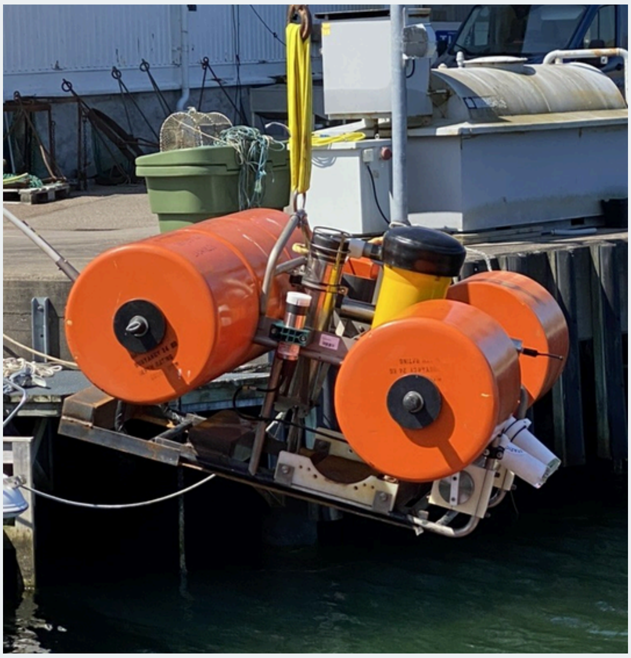
Environmental DNA (eDNA) samples were gathered both prior to and following lander deployments, while larval sampling was performed at multiple locations, both within and outside the primary test site. Thanks to GEOMAR flexible funds for postdoctoral activities.



These activities directly support DIGI4ECO's main objective: to develop a high-resolution, multi-dimensional understanding of marine ecosystems through the integration of spatial, environmental, molecular, and biological data.

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DISSEMINATION ACTIVITIES

Seminar in the School of Data Science of Chinese University of Hong Kong（CUHK)

“Localize and Track Underwater Objects: From Autonomous Vehicles to Marine Animals”

19 February 2025

Shenzhen, China

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DISSEMINATION ACTIVITIES

Bilateral meeting with the Barcelona Supercomputing Centre (BSC)

17 February 2025

Barcelona, Spain.

DIGI4ECO was presented at the MSc course BLOC-512DL "Blockchain Systems and Architectures" , at the University of Nicosia

March 2025

Nicosia, Cyprus

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DTO FOR BIODIVERSITY

DISSEMINATION ACTIVITIES

Marine Institute Showcased DIGI4ECO at European Maritime Day 2025

21-23 May 2025 **Cork, Irelland**

UNITED NATIONS OCEAN CONFERENCE!

4-6 June 2025 **Nice, France**

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DIGI4ECO
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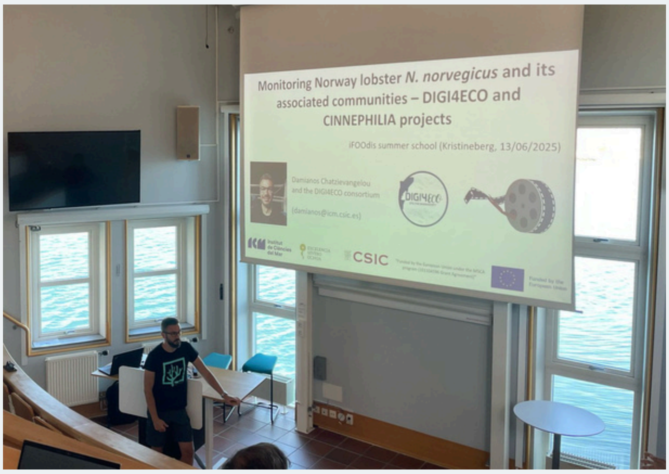
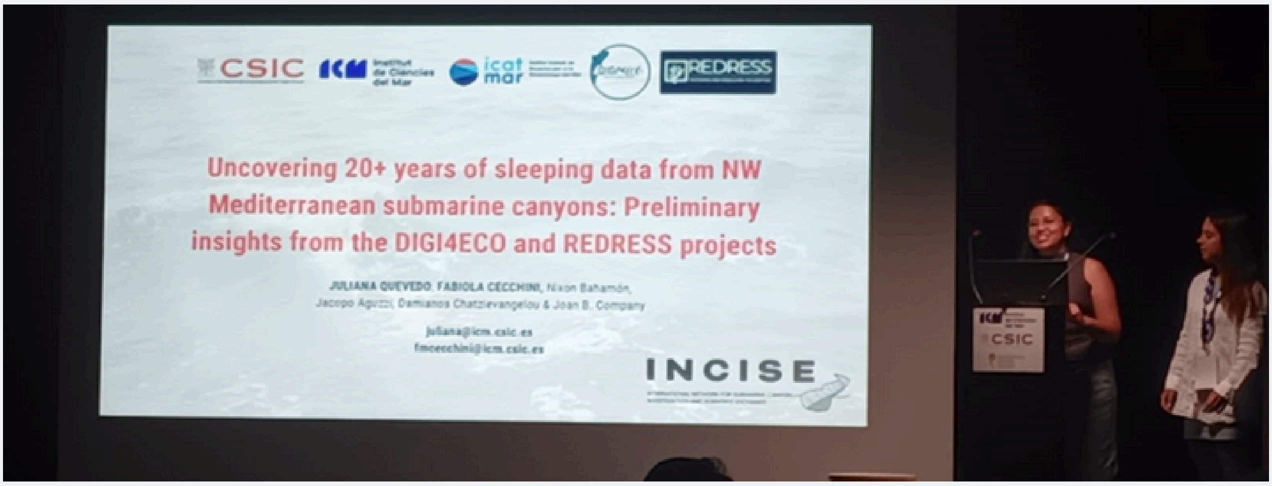
DISSEMINATION ACTIVITIES

iFOODis Project's Summer School



13 June 2025 **Fiskebäckskil, Sweden**

INCISE 2025 Conference



16-19 June 2025 **Barcelona, Spain**

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JOURNAL PUBLICATIONS

Published as a conference paper at ICLR 2025

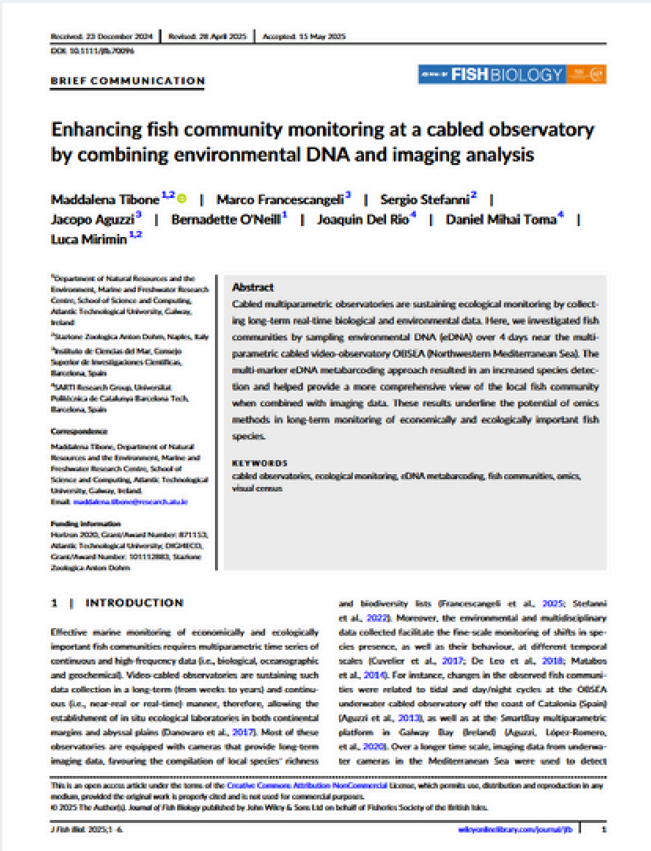
SIMPLIFYING DEEP TEMPORAL DIFFERENCE LEARNING

“**Enhancing fish community monitoring at a cabled observatory by combining environmental DNA and imaging analysis**”

DOI: https://doi.org/10.3390/computers13120329

“**Simplifying Deep Temporal Difference Learning.**” ***The Thirteenth International Conference on Learning Representations (ICLR)***

DOI: https://doi.org/10.1016/j.marpolbul.2024.117262



BRIEF COMMUNICATION

Enhancing fish community monitoring at a cabled observatory by combining environmental DNA and imaging analysis

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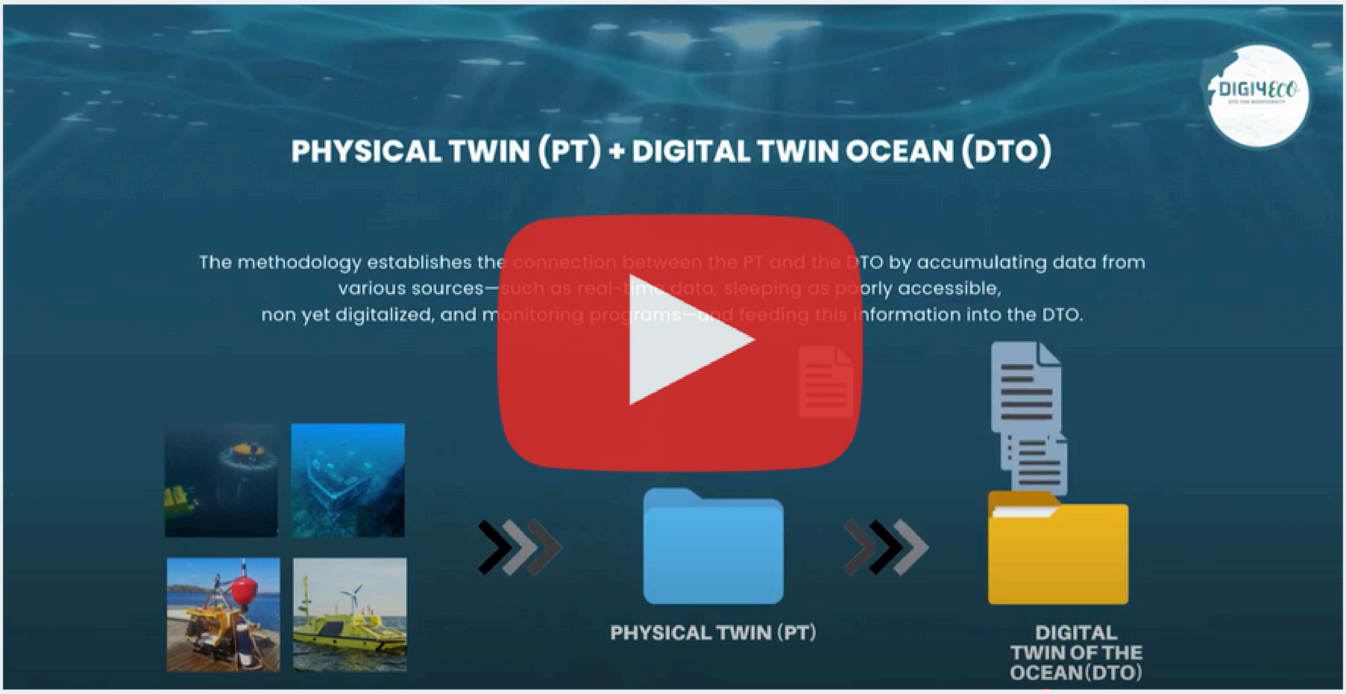
DIGI4ECO OFFICIAL VIDEO IS OUT - WATCH NOW!



DIGI4ECO released its official video.

In just a few minutes, the video introduces the project's main goals and explains the specifications of the PTO-DTO architecture and different work aspects in relation to data elaboration.

WATCH THE VIDEO

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CLUSTERING ACTIVITIES

DIGI4ECO is part of the Marine Shield Cluster!

The Marine Shield Cluster is a powerful alliance of EU-funded projects dedicated to combating water pollution. The cluster focuses on focus on three core pillars:

- advanced monitoring
- effective prevention
- innovative remediation.

The cluster is coordinated by iMERMAID project

Funded by the European Union

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OUR TEAM

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