

Articles on EU Magazines

Activity 2.2 - Media Relations and Publications
WP2 - Communication activities
SUSHI DROP project (ID 10046731)

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Abstract

SUSHI DROP Sustainable fiSHeries wIth DRONES data Processing is a project financed by European Union through the Interreg Italy-Croatia Programme. The project aims at enhancing knowledge on accurate and non-invasive methods for mapping the marine ecosystems of Adriatic Sea, in order to assess environmental status of habitats and fish stocks population as reliable and up-to-date information about the state of marine resources are essential to support sound management decisions.

The most important goal of SUSHI DROP is to better understand the sensitivity of the habitats to fishing pressures and to design and implement more effective marine management plans. SUSHI DROP evaluates the adoption of drones (UUVs - unmanned underwater vehicles) equipped with sensors to monitor physical, chemical and biological features. In particular, acoustical and optical technologies will be employed as a non-invasive mean to assess fish stocks population.

The findings of the opto-acoustic surveys will be compared with classical procedures based on fish sampling and to assess the accuracy in deriving single-species abundance indices (in numbers or weight) for direct input into stock assessments. The data gathered during the project will be collected in a Geographical Information System known as GIS.

It will serve as an open database for collecting, maintaining and sharing the scientific data acquired by the UUVs and as a useful resource in further research and preservation of the biodiversity of the Adriatic.

The partnership of the project has been able to pool all skills and competences of relevant institutions in order to achieve the set of project results, having the capacity to create strong links to target groups addressed by the project.

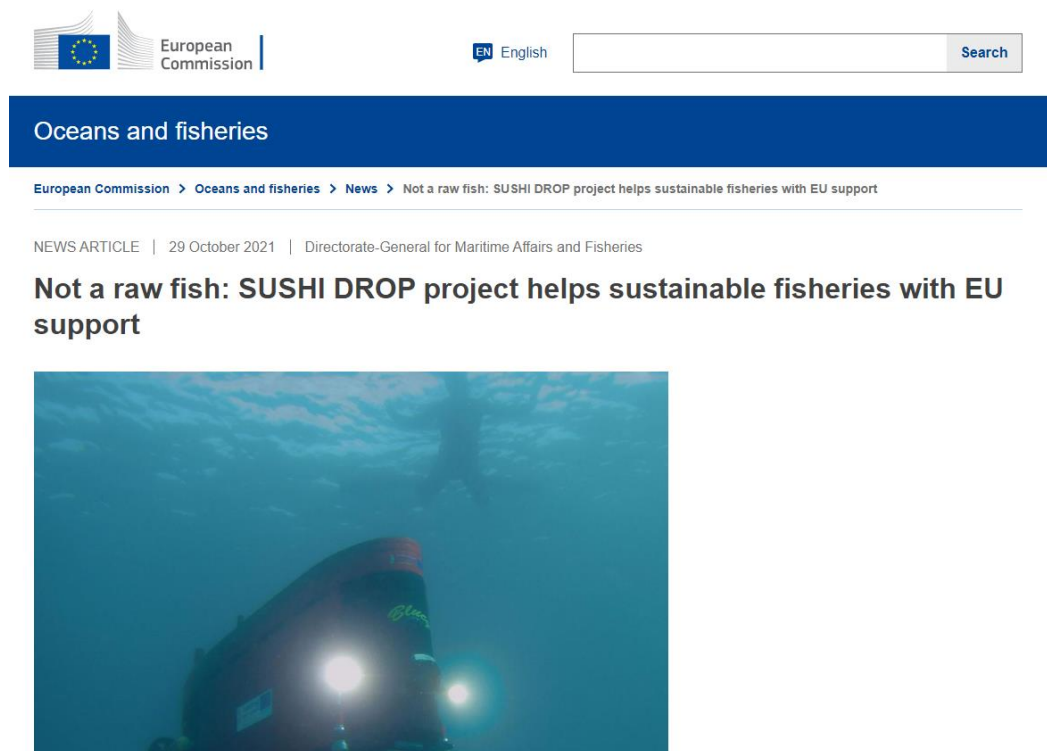
This document is the deliverable **D.2.2.4 – Articles on EU Magazines** which was aimed to promote the project at EU level on relevant EU magazines (online platform and networks) also including the online magazine of the DG MARE. Three articles were produced at EU level to promote the project results.

The SUSHI DROP articles published at EU level

The article on the DG MARE news section

The first EU level article has been published in October 2021. The article has been sent also directly to the newsletter subscribers of the DG MARE.

https://ec.europa.eu/oceans-and-fisheries/news/not-raw-fish-sushi-drop-project-helps-sustainable-fisheries-eu-support-2021-10-29_en



Ecosystems knowledge is essential to assess the state of marine resources, such as fish stocks, and underwater environment, thus enable sound decision- and policymaking. Meanwhile, traditional assessment technique, such as fish capture, can be extremely invasive, including a high risk of capturing many non-targeted organisms. The Italian-Croatian SUSHI DROP project aims to develop an accurate and non-invasive method for mapping of marine ecosystems, using an unmanned underwater vehicle or “UUV”.

We believe to know the Adriatic Sea. However, even in the most accurate surveys of the benthonic communities, sampling are collected every 10-15 km and the knowledge is necessarily limited and partial,

says Prof. Corrado Piccinetti – director of the Laboratory of Marine Biology in Fano (University of Bologna).

UUV technology has evolved over the last few years, from simple demonstrators developed by research institutes to commercial products. Today, it is possible to use UUVs in ecosystems monitoring, thanks to the improved capabilities of carrying out surveys without interfering with the seabed - and at reduced costs, compared to oceanographic vessels.

The UUV technology gives us the possibility to significantly increase this common knowledge, potentially mapping the whole Adriatic Sea without any impact on living organisms,

underlines Prof. Piccinetti

SUSHI DROP stands for “SUStainable fiSHeries wIth DROnes data Processing” (and is unrelated with the popular Japanese dish!). The EU-funded project is led by the University of Bologna in partnership with the Croatian Institute of Oceanography and Fisheries, the Marche Region - Fisheries Economy Department, the Fisheries Local Action Group Costa dei Trabocchi, the Association for Nature, Environment and Sustainable Development Sunce and the County of Split-Dalmatia. SUSHI DROP has developed a customized UUV (named “Blucy”), equipped with advanced instruments to implement a non-invasive environmental assessment of habitats, fish stocks population and, in general, monitoring biodiversity. So far, two missions have been conducted to confirm the capabilities and performance of “Blucy”, even in adverse marine and weather conditions. During these test runs, the researchers have collected biophysical data, videos and high-resolution images.

Thanks to the advanced technologies of the drone, such as the multibeam and high-resolution camera, it is possible to obtain a complete description of a given underwater area, from a morphological as well as a fauna point of view, highlighting benthic communities, fish and rock formations.

Moreover, the project is building a dedicated open-access database, to maintain and share the scientific data acquired by Blucy during scientific missions conducted in Croatian and Italian waters. The overall ambition is to combine the collected and georeferenced information gathered by the UUVs with information on fishing pressures to better understand the sensitivities of the habitats and to design and implement more effective marine management plans.

Through the INTERREG Italy-Croatia CBC Programme, the EU supports regional cooperation, and this project underpins the EU's commitment to preserve biodiversity and supports research, innovation and ocean science.

Did you like this story?

October is a very important month for biodiversity preservation, climate change remediation, marine research and sustainable blue economy. Find out more information on the latest EU action to face those global challenges, in the [Arctic](#) { EN | ... } and [elsewhere](#) and check out the October edition of [Euronews Ocean episode "Coral Reefs"](#). { EN | ... }

Keep informed about the project

Project website

<https://www.italy-croatia.eu/web/sushidrop>

Social media

- Facebook: <https://www.facebook.com/SushiDropItalyCroatia>
- Instagram: <https://www.instagram.com/sushi.drop.project/>
- LinkedIn: <https://www.linkedin.com/showcase/sushi-drop/>
- Twitter: <https://twitter.com/sushidroproje1?lang=en> { EN | ... }

Videos

- <https://www.youtube.com/channel/UC5E0Zi03omkWs4mo3B3G-CA>
- <https://www.youtube.com/watch?v=bYly7dYZOWw>

Details

Publication date	29 October 2021
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The article on DG REGIO Panorama magazine

The second EU level article has been published on the DG Region Panorama magazine that now has only this digital version and is available at the following link.

https://ec.europa.eu/regional_policy/en/newsroom/panorama/2021/10/29-10-2021-uncovering-the-mysteries-of-the-deep

The article has been sent also to the 35k subscribers of the Panorama newsletter.

Uncovering the mysteries of the deep

29/10/2021

PANORAMA

Stories from Regional and Urban Policy



[Green&Digital Europe](#)

The Interreg SUSHIDROP project – Sustainable fiSHeries with DRONES data Processing – is using underwater vehicles to explore the environmental status and biodiversity of the marine habitat.





Reliable and up-to-date information on the state of marine resources is essential to support sound management decisions for the protection of ecologically important areas. However, conventional fish-capture techniques are extremely invasive in the ecosystem they are monitoring as the capture of many non-targeted organisms can be unacceptably high. Thus, there is an urgent need to develop accurate and non-invasive methods for mapping marine ecosystems to determine their condition, extent and location. Both the [EUSAIR Action Plan](#) and the [BLUEMED Strategic Research and Innovation Agenda](#) highlight the urgency for such an initiative.

Within this context, the adoption of unmanned underwater vehicles (UUVs) equipped with sensors to monitor physical, chemical and biological features may compensate for current deficiencies in marine data.

UUV technology has evolved over the last few years, from simple demonstrators developed by research institutes to commercial products. The emergence of applications in ecosystem monitoring is due to the ability of UUVs to carry out surveys without interfering with the seabed and at lower costs than those incurred when using oceanographic vessels.



Under the Interreg Italy-Croatia 2014-2020 Programme, the SUSHIDROP project has developed and equipped with advanced instrumentation a customised UUV known as 'Blucy'. Its aim is to implement a non-invasive approach to assessing the environmental status of marine habitats, the population of fish stocks and, in general, to monitor the biodiversity.

In addition, a dedicated open-access database system is currently being built to maintain and share the scientific data acquired by Blucy during scientific missions conducted in both Croatian and Italian waters. The project's final objective is to combine the georeferenced information gathered by the UUVs with that related to the spatial extent and patchiness of fishing pressures to better understand the habitats' sensitivity to such pressures and to design and implement more effective marine management plans.



FIND OUT MORE

<https://www.italy-croatia.eu/web/sushidrop>

Facebook: [@SushiDropItalyCroatia](#)

Instagram: [sushi.drop.project](#)

LinkedIn: [SUSHI DROP Project - Interreg Italy Croatia](#)

Twitter: Sushi drop project [@sushidroproje1](#)

YouTube: <https://www.youtube.com/channel/UC5E0Zi03omkWs4mo3B3G-CA>

Contact: Luca De Marchi, University of Bologna: l.demarchi@unibo.it

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The article on the Eurofish magazine

The third article at EU level has been published on **the Eurofish Magazine Issue 6 2021 (November / December 2021)**. Two entire pages were dedicated to the project achievements and results, to the most interesting challenges faced for the marine biodiversity and to the potentialities offered by the underwater drone developed.

The articles is available at the following link where also the pdf version could be downloaded

<https://www.eurofishmagazine.com/magazine-issues/current-issue>

[PROJECTS]

SUSHI DROP—an interreg project with Italy and Croatia to map marine ecosystems in the Adriatic

A non-invasive way of collecting data

The memorably named SUSHI DROP (Sustainable fiSHeries with DRones data Processing) project has developed an unmanned underwater vehicle to study marine ecosystems in the Adriatic for the benefit of scientific organisations, NGOs, policymakers and others with an interest in the blue economy.

The Adriatic Sea is characterised by high productivity and biodiversity. It plays host to habitats that require ad-hoc conservation and management measures that take into consideration the numerous human activities concentrated there. Reliable and up-to-date information about the state of marine resources is essential to make sound management decisions for the protection of ecologically important areas. Fishing activities can be extremely invasive for the ecosystem in which they take place: the capture of non-targeted organisms can be too high to be acceptable. Thus, as highlighted in the EUSAIR Action Plan and in the Strategic Research and Innovation Agenda of the BLUEMED Initiative, there is an urgent need to develop accurate and non-invasive methods of mapping marine ecosystems to establish their condition, extent, and location.

The capabilities of underwater drones have increased rapidly in recent years

Using unmanned underwater vehicles (UUVs) equipped with sensors to monitor physical, chemical, and biological features may offer a way to gather information from areas where data are lacking. UUV technology has evolved over the last few years from simple demonstration models developed by research institutes to commercial



Missions both in Croatian and Italian waters have confirmed the vehicle's capabilities even under adverse conditions.

products. Applications in ecosystem monitoring are emerging thanks to the capabilities offered by UUVs of carrying out surveys without interfering with the seabed and at reduced costs compared with the use of oceanographic vessels.

Within the Interreg project SUSHI DROP, a customized UUV (named "Blucy") was developed and equipped with advanced instrumentation to assess, non-invasively, the environmental status of habitats, fish populations, and to monitor biodiversity. The challenge was to improve knowledge of the

seabed and of benthic communities to correctly evaluate and manage the pressure and impact of human activities on these key environmental components of marine ecosystem. The information collected enables the implementation of the most suitable conservation measures also considering the transboundary implications.

Multidisciplinary team executes the project

The SUSHI DROP team comprises researchers with different specialisations to better understand and address the challenges raised by this complex project. The University of Bologna coordinates the project with the participation of researchers from different



[PROJECTS]



The drone is a smart system consisting of a multitude of components and subsystems to handle specific activities.

departments (Department of Civil, Chemical, Environmental and Materials Engineering, Laboratory of Marine Biology and Fishery located in Fano, Department of Electrical, Electronic, and Information Engineering). The scientific activities are implemented jointly with the Institute of Oceanography and Fisheries (IOF) in Split. Other partners are: Marche Region (Fisheries Economy Unit), Split and Dalmatia county, Fisheries Local Action Group Costa dei Trabocchi and the Association for Nature, Environment and Sustainable Development Sunce.

The project objectives include:

- Development of an underwater unmanned vehicle (UUV) for biodiversity monitoring. The first step was the development of an unmanned underwater vehicle customised and equipped with acoustic and optical sensors to assess the environmental status of the habitat, the population of the different stocks, and to monitor the biodiversity of marine ecosystems.
- Monitoring the biodiversity of the relevant ecosystems. Testing the potential of the UUV to characterise the

biodiversity of ecosystems through large-scale scientific surveys. Upon completion of the project, the information collected provided a foundation for articulating protection measures for the ecosystems.

- Implementation of a data-rich and open access geographic information system (GIS) Creation of an open access database that provides researchers, NGOs, the institutions involved in the blue economy sector, and policy makers with the data collected during the UUV monitoring programmes and the fish stock abundance indices.

The vehicle is highly versatile in its capabilities

With a weight of 205 kg and an operational depth of 150 m (max. 300 m) the UUV can conduct an 8-hour long mission. It is equipped with instruments to measure salinity, temperature, pressure, and sound velocity and has cameras to take videos and stills. The craft is steered with four horizontal and two vertical thrusters and can be controlled remotely or operate autonomously. Two missions have been conducted in Italian and Croatian waters to

confirm the capabilities and performance of the vehicle even in adverse conditions. During these tests, the researchers accumulated biophysical data, videos, and high-resolution images captured by the equipment mounted on the vehicle. The sophisticated components the drone is equipped with, such as the multi-beam and high-resolution camera, provide a complete description of the area of interest both from a morphological and a fauna point of view by highlighting benthic communities, fish, and rock formations.

During the scientific mission, the navigation tools were fine-tuned, including the underwater acoustic positioning system (USBL), which allows real-time georeferencing of the drone and of the data collected. These data are of paramount importance for establishing the open access databases to maintain and share the scientific data acquired by Blucy. So far, the drone has observed populations of bryozoans, gorgonians, sponges, and corals and has also monitored farmed mussels growing in the water. Among the species spotted was *Leptogorgia sarmentosa*, an arborescent gorgonia, whose colour can vary from white to red. It thrives in murky water, rich in nutrients, and exposed to currents. It prefers muddy or rocky seabeds between 6 and 300 m in depth. Another organism seen was *Schizo-*

porella errata, a bryozoan that forms massive colonies of different shapes, depending on the interactions with other organisms and on hydrodynamic conditions. The colour is typically brick-red with orange growth margins. During the sampling in the area of the south pier of the port of Ortona, at a depth of 7 meters, various species of sessile organisms were identified. In the Abruzzo region, one day was dedicated to monitoring a mussel breeding farm located near the coast of the city of Vasto. During the survey rows of mussel were inspected using optical instruments. The farmed mussels, *Mytilus galloprovincialis*, attract several pelagic fishes such as seabass and seabream to their surroundings.

Data collected by the drone will be available to all

All the data collected and analysed will be published in the geodatabase format on a GIS (geographic information system) platform and will be freely available to scientists, researchers, NGOs, and other organisations and institutions dealing with the blue economy. These data will allow a deeper level of knowledge of the seabed both from the morphological and marine biodiversity point of view and will contribute to improving related policies aimed at preserving the marine environment.

Project: SUSHI DROP

Full name: Sustainable fISHeries with DRONES data Processing

Framework: Italy Croatia cross-border cooperation programme

Value: EUR1.71m (EUR1.46m European Regional Development Fund + EURO.26m national cofinancing)

Start: 1 January 2019

End: 31 December 2021

Coordinator: Luca De Marchi, Department of Electrical, Electronic,

and Information Engineering, University of Bologna

Other partners: Institute of Oceanography and Fisheries, Croatia; Fisheries Economy Department, Marche Region, Italy; Fisheries Local Action Group Costa dei Trabocchi, Italy; Association for Nature, Environment and Sustainable Development Sunce, Croatia; County of Split-Dalmatia, Croatia