

# Report of the 2nd Cross-border exchange of experiences in Croatia

---

Draft Version of 7<sup>th</sup> April 2023

Deliverable Number D.5.1.5

|                     |   |
|---------------------|---|
| Project Acronym     | ARGOS   |
| Project ID Number   | 10255153  |
| Project Title       | Shared Governance of Sustainable Fisheries and Aquaculture Activities as Leverage to Protect Marine Resources in the Adriatic Sea |
| Priority Axis       | 3 - Environment and cultural heritage   |
| Specific objective  | 3.2 - Contribute to protect and restore biodiversity  |
| Work Package Number | WP5   |
| Work Package Title  | Sectorial know-how development and pilot project implementation   |
| Activity Number     | 5.1   |
| Activity Title      | Network for the training and education of operators towards environmental sustainability  |
| Partner in Charge   | PP8 – Zadar County  |
| Partners involved   | PP9, PP10 and P13   |
| URL                 | <a href="https://www.italy-croatia.eu/web/argos">https://www.italy-croatia.eu/web/argos</a>                                       |
| Status              | Draft version   |
| Distribution        | Confidential  |
| Date                | 7 April 2023  |

|                    |   |
|--------------------|---|
| <b>Report</b>      | 2 <sup>nd</sup> cross-border exchange of experiences in Croatia   |
| <b>Description</b> | Report of the 2 <sup>nd</sup> cross-border exchange of experiences between Croatian and Italian operators, aimed at disseminating results obtained with pilot actions (act. 5.2 and 5.3) and hence improving the sectoral capacities of Italian and Croatian stakeholders |
| <b>Version</b>     | V.0 Draft   |
| <b>Author</b>      | Zadar County_PP8, Public Institution development Agency of Šibenik Knin County_PP9, Public Institution RERA S.D. for Coordination and Development of Split Dalmatia County_PP10 and Institute of Oceanography and Fisheries_PP13  |

## TABLE OF CONTENTS

|  |    |
|--|----|
| 1. INTRODUCTION.....   | 4  |
| 2. THE CROSS-BORDER EXCHANGE OF EXPERIENCES IN ZADAR.....    | 7  |
| 3. THE CROSS-BORDER EXCHANGE OF EXPERIENCES IN ŠIBENIK ..... | 10 |
| 4. THE CROSS-BORDER EXCHANGE OF EXPERIENCES IN SPLIT.....    | 11 |
| 5. PARTICIPANTS IN NUMBERS .....                             | 14 |
| 6. ANNEXES.....  | 14 |

## 1. INTRODUCTION

The ARGOS project WP5 “Sectorial know-how development and pilot project implementation” aims at improving the sectorial capacities and know-how to change the behaviours of the Italian and Croatian fisheries and aquaculture operators towards shared environmental sustainability and responsible actions. Under this WP, the Act.5.1 “Network for the training and education of operators towards environmental sustainability” is oriented to establish a cross-border network as a framework to test training and education activities oriented to operators towards the adoption of responsible behaviours and to share the common Adriatic good practices. Within this framework, the Act.5.1 foresees:

- (D.5.1.4) [N.2 cross-border training labs](#) aimed at improving the sectorial capacities and know-how to change the behaviours of Adriatic partnership area fishery and aquaculture operators towards shared environmental sustainability along the whole chain of fish products;
- (D.5.1.5) [N.2 cross-border exchanges of experiences](#) between Croatian and Italian operators, aimed at disseminating results obtained with pilot actions (act. 5.2 and 5.3) and hence improving the sectorial capacities of Italian and Croatian stakeholders

The second cross-border exchange of experiences for Italian and Croatian fishermen and aquaculture operators have been organized in Zadar, Šibenik and Split from 14th to 16th March 2023.

The organization of the first cross-border exchange in Croatia required a set of preliminary activities that were coordinated by the PP10 Public Institution RERA S.D. for Coordination and Development of Split Dalmatia County in cooperation with PP13 Institute of Oceanography and Fisheries, PP8 Zadar County, PP9 Public Institution development Agency of Šibenik Knin County and with the contribution and involvement of all the project partners.

Public Institution RERA S.D. prepared and shared with the partnership a background document outlining the activity goals, the ARGOS partners roles in the activity, a first draft of the 2<sup>nd</sup> exchange programme. It also included the cross-border training labs guidelines since the workshop are integral part of the exchange.

The document was presented, discussed and approved at the 7<sup>th</sup> Steering Committee meeting (22-23 February 2023).

It included the following information:

**Date and venue of the 2<sup>nd</sup> cross-border exchange:** Zadar, Šibenik and Split, 14th to 16th March 2023.

**Partner's role and involvement:** the organization of the 2<sup>nd</sup> exchange required a high level of involvement of all the ARGOS partners.

PP10 Public Institution RERA S.D. for Coordination and Development of Split Dalmatia County, PP13 Institute of Oceanography and Fisheries, PP8 Zadar County and PP9 Public Institution development Agency of Šibenik Knin County were responsible for planning and organizing study visits and cross-border training labs for fisheries and aquaculture operators in Zadar, Šibenik and Split.

The “hosting partners” PP8, PP9, PP10 and PP13 were responsible for:

- the organization of the study visits and workshops at their county level;
- covering the costs for joint meals in Zadar, Šibenik and Split, translations and local transfers in the period from 14th to 16th March 2023;
- covering the costs for travel and accommodations costs of their participants (external expertise and services for operators, Travel & Accommodation for PP's staff members)
- the involvement of their local fisheries and aquaculture operators in the exchange organization and participation.

Partners from the other project territories acted as “hosting partners” and were responsible for:

- the involvement and engagement of their regional/local fisheries and aquaculture operators in the exchange
- covering the costs for travel and accommodations costs of their participants (external expertise and services for operators, Travel & Accommodation for PP's staff members)

**Identification and engagement of the target group:** the cross-border exchange target group was represented by the operators of the fisheries and aquaculture sectors from the following project areas:

- Italy: Friuli-Venezia Giulia, Emilia-Romagna, Marche, Molise, Apulia
- Croatia: Region of Istra, Primorje and Gorski Kotar County, Zadar County, Šibenik-Knin County, Split- Dalmatia County, Dubrovnik Neretva County

Unlike the first cross-border, for this second cross-border project representatives agreed that there is no specific number of participants in the exchange.

The ARGOS partners were highly involved in the identification and engagement of their local operators.

Stakeholder template was prepared by PP10 Public Institution RERA S.D. for Coordination and Development of Split Dalmatia County and shared within the partnership to facilitate the potential participants identification and categorization.

The stakeholder template included the following information:

- Name, surname and contacts of stakeholder
- Stakeholder category: SSF fishermen, Producers organization, Business support organization (Fisheries), Fishermen Associations and/or Consortium, Aquaculture operator, Business support organization (Aquaculture), Aquaculture Associations and/or Consortium, ARGOS project partner, ARGOS AAC member
- Information on the stakeholder arrival and diet

**Coordination and activity follow-up:** a steady communication flow was established between the partners to exchange information, progresses, background materials and organizational details. Coordination meetings were arranged to the purpose between the hosting partners and the sending partners. Contribution to the ARGOS social media and web page were prepared and posted by projects partners to disseminate the exchange activities to a wider target group.



## 2. THE CROSS-BORDER EXCHANGE OF EXPERIENCES IN ZADAR

Second cross-border exchange of experiences started in Zadar on March 14<sup>th</sup>, 2023 in Development and Education Center Poličnik, where Zadar County\_PP8 placed its equipment purchased through the ARGOS project.

Zadar County is one of the project partner and within WP5 *Sectorial know-how development and pilot project implementation* Zadar County procured the equipment for shellfish recirculation in aquaculture worth 150.000,00 EUR. The equipment consists of a Bioreactor for the cultivation of unicellular algae and Equipment for an experimental hatchery and experimental cultivation of shellfish in recirculation with a device for filtration, biofiltration and water sterilization.



In addition to the procurement of equipment, the conditioning of shellfish for spawning, spawning of shellfish and rearing of larvae and juveniles will be carried out until plantation for breeding at sea.

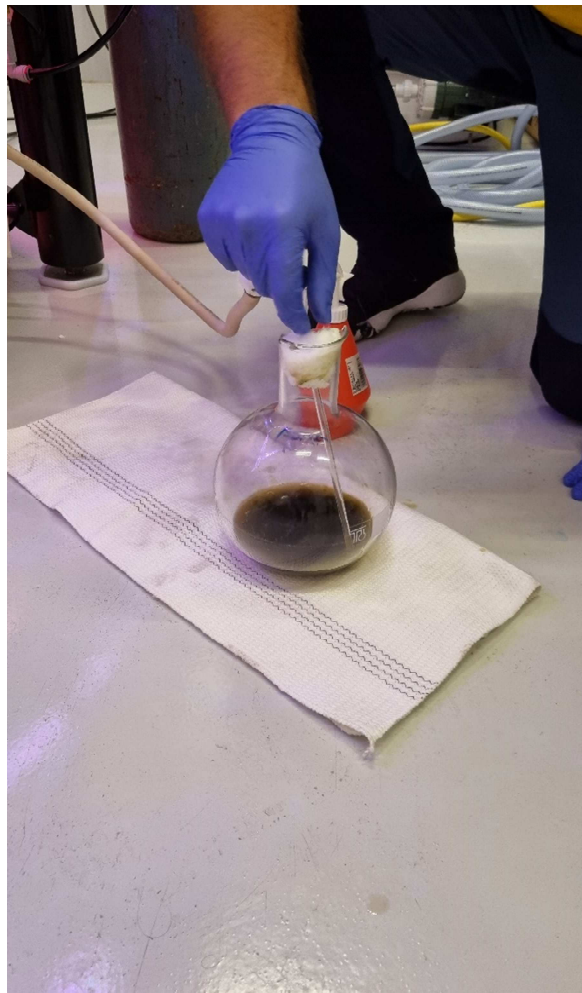
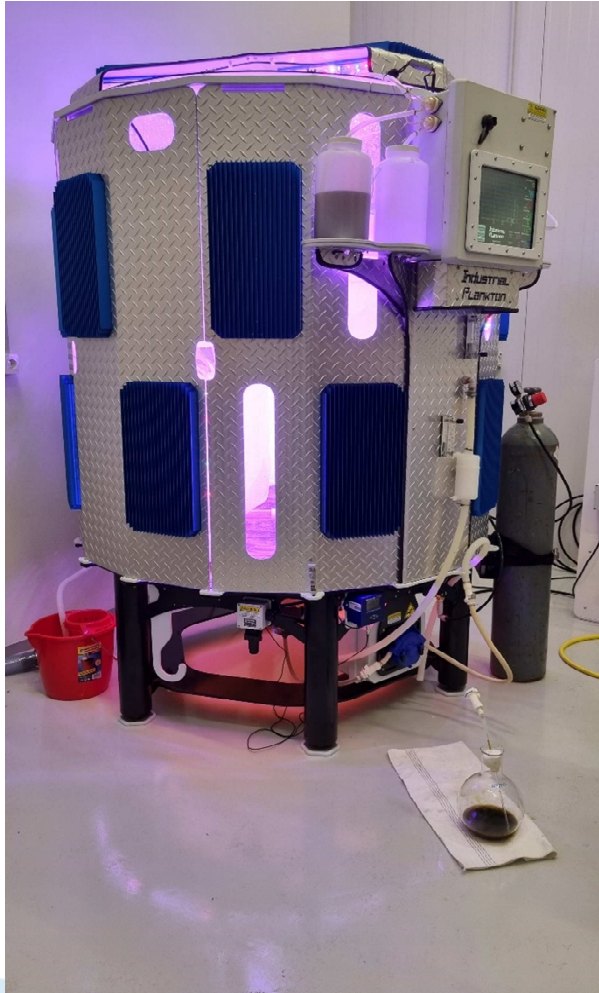
The use of recirculation technology is foreseen with the aim of avoiding the risk of contamination, creating breeding conditions for selected species and the possibility of spawning and raising shellfish throughout the year.

In contrast to the marine fish, the cultivation of shellfish in the Adriatic Sea is based on the collection of seeds in nature.

Spawning of bivalve molluscs under controlled conditions is one of the possible answers to the challenges of changes in the environment, due to which the continuity and quantity of necessary seed for the production of bivalve molluscs is threatened.

Obtaining seeds from distant growing areas carries risks of biosecurity and the introduction of invasive species.

In this sense ARGOS project is used for equipping of breeding recirculation systems for the cultivation of bivalves. The equipment that was acquired for the cultivation system in Zadar County has been put into operation and conditioning of Mediterranean scallop is in progress.





This bivalve inhabits relatively isolated areas in Zadar County, which are part of the Natura 2000 network, and there is interest in mastering cultivation technology. Aquaculture operators and partners in the project had an insight into the experiment, which is being carried out by the University of Zadar as part of this project.

The University of Zadar launched a recirculation system for shellfish and began the implementation of experimental cultivation of shellfish in recirculation, which consists of the following experimental units:

1. Collection of organisms - shellfish (in the area of Novigrad Sea - Podvelebit Channel) of sufficient size, capable of reproduction (oysters and scallops, approximately 10 kg per species) and that they are kept at one of the farms in the mentioned breeding areas;
2. Carrying out experimental breeding in autumn by growing phytoplankton in the reactor, placing bivalves in rearing/conditioning for spawning in recirculation system, testing the efficiency of keeping/breeding shellfish in recirculation and establish conditions that favor gonad maturation and shellfish spawning. If the spawning is successful, the cultivation of shellfish larvae should be started, if the larvae survive to metamorphosis, the breeding of fry (spawn) should be started until they are accepted on the substrate, If acceptance is successful on the substrate, start trial breeding of accepted bivalves in the breeding zone based on a partnership agreement with an authorized breeder;
3. Repeat the autumn experimental breeding in the spring.



During the visit, experiences between partners were exchanged, and the operators got an insight into new possibilities that need to be developed to meet future challenges.

<https://we.tl/t-GOLltgKKVZ>

### 3. THE CROSS-BORDER EXCHANGE OF EXPERIENCES IN ŠIBENIK

As part of the Argos project, specific equipment and field (on sea) devices for environmental monitoring and quality control was acquired: microscope, aquatic laboratory kit, laboratory dishes, dissolved oxygen ph and CO2 meters, salinity refractometer, mobile balance, mobile hanging scale, sechi disc ect.

The most important part of the equipment for researching: ROV - research underwater robot, Algal Bioreactor for the cultivation of single-celled algae and RAS - system for filtration and recirculation will be put into operation by performing experimental tests in the next few weeks.





#### 4. THE CROSS-BORDER EXCHANGE OF EXPERIENCES IN SPLIT

Last day of the second cross-border exchange of experience was organized in Split, by Institute of oceanography and fisheries.

Institute of oceanography and fisheries showed the old building that was renovated and converted into Center for advance research in field of fisheries and control of quality of sea products through the ARGOS project. In the future, the mentioned Center will be a key place in the Republic of Croatia where processing of biological material, data analysis and scientific interpretation will be carried out. Likewise, the Center will be a place for joint cooperation with other institutions in the Adriatic, as well as a place for education and exchange of experiences between scientists, fishermen and the administration.

The premises and equipment of this Center will serve IOF scientists for the implementation of future national and international projects aimed for the establishment of sustainable fisheries and the protection of marine ecosystem.

The main objectives of the establishment of this Center are:

- increasing the spatial capacities necessary for performing modern scientific research in the field of fisheries and mariculture,
- acquisition of modern scientific equipment for laboratory analysis,
- improvement of international scientific cooperation with the aim of exchanging data, knowledge, methodologies and experiences among scientists dealing with fisheries, mariculture and the protection of the Adriatic Sea,
- Improving existing and developing new research methodologies in the field of fisheries and mariculture,



- provision of informative and educational activities with the aim of informing stakeholders about the activities that take place within the Center, as well as specific education in the field of fisheries, mariculture, quality control of sea products and protection of the marine ecosystem.



Inside the building the Institute built 7 new laboratories:

**Laboratory for demersal fisheries** - for analysis of samples collected in bottom trawl, beam trawl, traps and longlines fisheries. Likewise, samples from the MEDITS and SOLEMON scientific expeditions will be analyzed in this Laboratory.

**Laboratory for small pelagic fisheries** – serves for laboratory analyses of samples that are collected from purse seiners fisheries, as well as from scientific survey MEDIAS.

**Laboratory for coastal fisheries** – dealing with analysis of samples collected from small scale coastal fisheries.

**Laboratory for sclerochronology** - is set up for state of the art sclerochronology research of marine organisms – that is an analysis of structural changes in hard parts of marine organisms, including bivalve shells and fish otoliths. Application of sclerochronological methods enables analysis of growth and age, as well as precise analysis of growth increments widths and construction of growth chronologies.

**Laboratory of plankton and shellfish toxicity** - has refurbished the laboratory premises to accommodate the marine biotoxins analyses, as this laboratory is a National Reference Laboratory in the field of marine biotoxins and it participates in the official controls of shellfish for human consumption harvested from farms and fishing areas in the Adriatic Sea.

**Laboratory for molecular research of marine organisms** - which will enable molecular analysis to be carried out in order to assess the eco-biological status of marine resources.



**Laboratory for histological analysis** – which will enable assessing the health status of marine organisms, impact of novel diet formulation on farmed fish and most importantly studying the reproductive biology of target fisheries species for their better management.



In these laboratories, all participants were briefly demonstrated which exact research is carried out in them and in what way.

Also, all participants were presented with the equipment that the Institute acquired through the project: SEAL Autoanalyzer AA500.

This is a modern segmented flow analyzer consisting of an autosampler, a peristaltic pump, a chemistry manifold, a detector and data acquisition software. It will be generally used for the determination of nutrient concentrations (nitrogen, phosphorus and silica) in different areas of the Adriatic. Obtained results in coastal areas will be related to the risk of eutrophication, in fish and shellfish farms to water quality and potential negative farm impacts to the marine environment and in open Adriatic waters to large scale nutrient fluctuations impacting the biological productivity of the Adriatic.





## 5. PARTICIPANTS IN NUMBERS

The 2<sup>nd</sup> cross-border exchange of experiences in Croatia involved more than 60 participants of which:

- 8 aquaculture operators
- 16 fisheries operators
- 2 representatives from regional and local authorities: Split-Dalmatia County; Croatian Chamber of Trades and Crafts
- 3 Fishing cooperative: Fishing cooperative Zadar; Fishing cooperative OMEGA 3– KALI; Fishing cooperative FRIŠKA RIBA
- 2 Public institution: Ministry of Agriculture; Development and innovation center AluTech Šibenik

## 6. ANNEXES

Annex I – ARGOS project: 2<sup>nd</sup> cross-border exchange programme Croatia

Annex II – ARGOS project: List of Participants to the 2<sup>nd</sup> cross-border exchange – Zadar, Šibenik and Split