

ECOMAP project

“Proceedings of the Forum (Virtual and subaqueous travels)”

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Abstract/Executive Summary

In the framework of the Work Package 5.4, dealing with “Virtual and subaqueous travels” along the Italian and Croatian Coastal sides, the partnership has organized many Forums and Workshops in the Adriatic areas, that brought many topics around the concept of the virtual and subaqueous travels at the attention of several target groups located in the port cities. The basis of the WP has been identifying best practices, project and case studies on this input: the biodiversity of protracted environments is not always perceived and people think of ports as degraded areas, gray areas of no ecological interest. The project sought to bring out tangible and intangible value of habitat in port areas through virtual journeys that for experienced people can also become submarine diving offers. Awareness and overcoming the ambiguous perception that port areas are compromised and uninteresting for conservation purposes can favor the preservation and recovery of environments of high ecological value and develop programs to counter colonization of alien species that is destroying ecosystems of community interest. This project in the port area identifies areas where diving is possible and the use of marine biodiversity so as to directly experience the high ecological value of areas with high implants. In order to talk about and exchange relevant discussions on above mentioned topics Forums and as consequence a documentary on virtual tours in the Adriatic Sea have been realized throughout the project actions. As to summarized, these have been the Forums organized during the project implementation from 2020 to 2022: SEALOGY Editions, REMTECH Edition, Tipicità and Tipicità in Blu Editions (Digital and Physical ones) and other small scales. All these initiatives have been consistently spread through a unique Marketing Campaign connected with ECOMAP project – called “THE BLUE WAY”. Through the RWG meetings, the partners and interested entities have decided to bring up many topics and best practices, some for MOU’s objectives and others for good practices’ identification, to give an overview on the state of play of the blue growth paradigm, at the widest status of itself, and in particular at local and regional levels. For each Forum, many best practices and topics have been recognized and presented in live at various strategic locations along the Adriatic Coastal sides, in this regard on archeological and virtual subaqueous tours.

1 FORUM: SEALOGY 2020-2021

SEALOGY is the European Saloon for the Blue Economy, which valorises marine and underwater ecosystem into a sustainable approach, and the ECOMAP project has taken part to this marvellous series of events. This FORUM has been transversal within all the sub-work packages of the WP5.

SEALOGY EDITION NOVEMBER 18-19-20th, 2021

SEALOGY® Digital Preview
18-19-20 Novembre-November 2021

ATELIER DI FORMAZIONE – TRAINING ATELIER

“Biodiversità e specie aliene tra mare e zona costiera: fruizione e mantenimento degli ambienti naturali”
“Biodiversity and alien species between the sea and the coastal area: use and maintenance of natural environments”

Phygital, 19 Novembre-November 2021, 10:00 – 12:00

Luogo-Where	Platform SEALOGY® - Il Salone Europeo sulla Blue Economy The European Exhibition on Blue Economy
Organizzatori-Organizer	SEALOGY® in collaborazione con la Partnership del progetto ECOMAP ² - INTERREG: Programma Italia/Croazia SEALOGY® in collaboration with the Partnership of the ECOMAP project - INTERREG: Italy / Croatia Program
Crediti-credits	SEALOGY® Partner della Commissione Europea SEALOGY® Partner of the European Commission
Abstract	L'evento è dedicato al tema del mantenimento della biodiversità negli ambienti naturali. The event is dedicated to the theme of maintaining biodiversity in natural environments.
Lingua-language	Italiano-Croato traduzione in simultanea Italian Croatian simultaneous interpretation
Chairman:	Giuseppe PESSA – Biologo libero professionista Freelance biologist
Contesto:	L'evento è dedicato al tema del mantenimento della biodiversità negli ambienti naturali e racconta buone prassi e politiche di contenimento degli

² <https://www.italy-croatia.eu/web/ecomap>

As proof, event Agenda

PP10 and partners organized the Phygital Preview Edition of SEALOGY on 28-30 September 2021 - consisting of 3 day-events of ECOMAP special Event in collaboration with Tipicità in Blu in Ancona <https://www.tipicitainblu.it/eventi/ecomap-the-blue-way-anteprima-sealogy/> for discussing Starfish Mission with relevant experts and related goals of Ecomap project, and the SEALOGY Edition in November 2021, in which many best practices have been identified, discussion, transferred jointly. In fact, SEALOGY Phygital Edition into the “BLUE ECONOMY CONFERENCE – A NEW APPROACH FOR A SUSTAINABLE BLUE ECONOMY” <https://www.sealogy.it/convegni/> of November 2021 (18-19-20/11/2021) consisted of 4 webinars planned between PP10 as co-organizers and SEALOGY organizers. ECOMAP project impacted many topics through this edition, belonging to: “Bottom-up concertation processes for Local Development: presentation of the ECOMAP working groups set up in the Italian regions” on 18/11/2021 – 10:00-12:00 in collaboration with OGS, Life Sciences Cluster FVG, Aries /Chamber of Commerce of FVG and FLAG GAC FVG, Marevivo Association, Bibione Mare, Contract of the wet area of Caorle, VeGAL, University of Ca’ Foscari, Venetian Cluster and many more with 4 different working groups in specific field of interests; “Smart Methodologies to fulfil the indications of the EU Green Deal: Ecological Transition in Port Cities” on 18/11/2021 – 15:00-17:00, in collaboration with CURSA, University of Ferrara, Municipality of Ancona, OGS, University of Split, ENEA, Hydrographic Institute of the Navy; “Biodiversity and alien species between the sea and the coastal area: use and maintenance of natural environments” on 19/11/2021 – 10:00-12:00, in collaboration with University of Ca’ Foscari, University of Bologna – Department of Biological, Geological and Environmental Sciences, CNR of Crystallography, BIO-RES and the “Water footprint: awareness in the management of water and its consumption” on 19/11/2021 15:00-17:00, in collaboration with the University of Ferrara, ENEA, Consorzio Veneto Colli Marketing Consortium of Euganean Hills and LAMORO Agency and Acqui terme reality.

The Sealogy Edition in 2021 has been structured in 4 thematic sessions:

- Bottom-up processes
- European Green deal
- Biodiversity and alien species
- Water footprint

The thematic relevant to this report is that one about the biodiversity and alien species presented on 19th November 2021, 10:00-12:00.

One of them has been the Life project REDUNE of University of Venice has been reported as an example of management of coastal areas. Project REDUNE restores dune habitats which are highly fragmented and threatened by summer beach tourism.

Federica Nasi from National Institute of Oceanography and Applied Geophysics - OGS, Italy, underlined the importance of ecological monitoring in port areas, which are often neglected in ecological traditional monitoring programs. Within the ECOMAP project, in two Croatian marinas, i.e. Strožanac and Špinut located near Split, the foraminifera community was investigated. Benthic macrofauna communities and foraminifera assemblages were analysed to assess the quality status of marinas and to point out the importance of using bioindicators like (foraminifera and macrofaunal invertebrates) also in small marinas for the ecological status assessment of marina coastline. The study confirmed the importance of the renewal time of marine water (confinement) for the dilution and dispersion rates of contaminants. Further, these results indicate that including the macrofaunal community features and foraminifera assemblages in monitoring plans could help local ports and marinas design site-specific environmental interventions to mitigate anthropogenic disturbances.

University of Bologna - Ravenna Campus – Department of Biological, Geological and Environmental Sciences (BiGeA) with Federica Costantini touched the argument of alien species in the port areas. An integrated standardized approach has been used, based on photo analysis, morphological identification and molecular analysis (barcoding and metabarcoding), inside the project “Global ARMS program”, Marine Biodiversity Observation Network for genetic monitoring of hard bottom communities, MBON.


Institute of Crystallography National Research Council – CNR applies an innovative technique based on algae-based biosensors for the environmental monitoring. Algae and their sub-components can be integrated into both optical and electrochemical transduction, allowing analysis in complex matrices with different turbidity and analytes concentrations, with no requirement for sample pre-treatment. Examples of biosensors designed exploiting the green photosynthetic alga *Chlamydomonas reinhardtii*, in combination with advanced sustainable materials (e.g. paper) and nanomaterials (e.g. carbon black), for the detection of diverse target analytes (e.g. photosynthetic herbicides and pathogens) are presented and described. The biosensor was designated for the detection of atrazine.

2 FORUM: REMTECH EXPO

RemTech Expo is the only permanent international event specializing in the protection and sustainable development of the territory, remediation of contaminated sites, coasts and ports, hydrogeological instability, climate change, seismic risk, urban regeneration and sustainable chemical industry. RemTech Expo is a special brand of Ferrara Fiere Congressi, and the ECOMAP project has taken part to this marvellous series of events. This FORUM has been transversal within all the sub-work packages of the WP5.

The project ECOMAP has organized 1-day (September 22nd, 2020) workshop on exchange of good practices for Smart Port cities through the Remtech 2020 digital edition, in Ferrara. The Remtech EXPO 2020 digital edition was held online from September 21 to September 25. The program of the appointments is always focused on: normative evolution, characterization, analysis, risks, technologies, research, innovations, monitoring, territories, works, industries, sustainability.

There have been discussed 4 sub-topics: 1) protection and sustainable development of the territory; 2) climate changes; 3) remediation of contaminated sites and 4) coasts. Those are aligned with WP5 activity, specifically they are given contribution to the 5.1, 5.2, 5.3 and 5.4 sub-activities. The interventions to this workshop generated further participation and have conducted to a relevant contamination of ambitious practices for Smart Port cities.

<p style="text-align: center;">Remtech EXPO</p> <p style="text-align: center;">Ferrara Tuesday 22 September, 11.00 -13.00</p> <p style="text-align: center;">"Good practices for Smart Port Cities" ECOMAP INTERREG Italy Croatia Program.</p> <div style="text-align: center;">  </div> <p>Coordinators:</p> <ul style="list-style-type: none"> • Diego Santaliana, Technology Park of Pordenone SCPA • Lorenzo Braida, Bibione Mare spa <p>• <u>[11:30-11:35] REGISTRATION OF PARTICIPANTS</u></p> <p>• <u>[11:35-11:40] WELCOMING GREETINGS & INTRODUCTION</u></p> <p>• <u>[11:40-12:20] PROTECTION AND SUSTAINABLE DEVELOPMENT OF THE TERRITORY:</u></p> <ul style="list-style-type: none"> ◦ Venetian Cluster: Venice project "Underwater Archeology and enhancement of the historical archaeological heritage of the Lagoon" - Cultural tourist enhancement of submerged archeology - Speaker: Sergio Calò; ◦ Trieste Contemporanea: BOTH WAYS project "Communication of Science through Contemporary Art" and Case Studies of virtual environments for the enhancement of the territory - Speaker: Antonio Giacomini; <p>• <u>[12:20-12:55] CLIMATE CHANGES:</u></p> <ul style="list-style-type: none"> ◦ National Institute of Oceanography and Experimental Geophysics - OGS: BALMAS project "Bioinvasion of alien species introduced by ballast waters into the Adriatic Sea" - Speaker: Marina Cabrini; 	<ul style="list-style-type: none"> ◦ Institute of Oceanography and Fisheries of Croatia - IZOR: CHANGE WE CARE project "High resolution climate modeling of the Adriatic Sea" - Speaker: Ivica Vilbić; <p>• <u>[12:55-13:10] REMEDIATION OF CONTAMINATED SITES:</u></p> <ul style="list-style-type: none"> ◦ National Institute of Oceanography and Experimental Geophysics - OGS: HAZADR project "Strengthening the common reaction capacity to combat marine pollution from oil, toxic and dangerous substances in the Adriatic Sea" – Speaker: Miroslav Gacic; <p>• <u>[13:10-13:30] COASTS:</u></p> <ul style="list-style-type: none"> ◦ Consorzio di Bonifica del Veneto Orientale: the CONTRACT OF LAGUNA "Presentation of the network and its objectives" – Speaker: Graziano Paulon.
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Link to the YouTube channel:

<https://www.youtube.com/watch?v=8RQWV6b1l-4&list=PLM8N8E7wyGrA44j8GqWTWzvYfIXCv8cwE&index=4&t=7s>

At the beginning of this online session held in September 2020, the project Coordinator of the Technology Park of Upper Adriatic, Diego Santaliana, gave a short introduction of the ECOMAP's main scope, objectives and specific outputs.

The strategic project pillars are the environment and the underwater cultural heritage valorisation, in which there is a capillary objective that is improving the environmental water conditions and coastal management towards a better quality, by using advanced technologies and an innovative and sustainable approach. It lasts until June 2022, with a unique scope of contributing to an efficient plan for the ports (Italian and Croatian ones) through new innovative methodologies, investments on small infrastructures, technology instruments and training of involved groups of interests. The project would directly intercept the attention of: local, regional and national authorities; local and regional development agencies; environmental and innovation agencies and association; educational and training organisms, Universities and Research institutes and lastly but not least the general public.

RemTech EXPO Digital edition on Blue Growth on September 22nd 2020, has given important impacts to the WP5 since its resonance is international and it covers many topics on remediations, coasts, floods and climate. The event has been focalized on three main topics, which are extremely major for the project and the WP5. There have been discussed many case studies (performed in Venice and Trieste) on the protection and the sustainable development of the territories (contribution to the WP5.3 and WP5.4), on climate change issues (contribution to the WP5.4) introducing an interesting case of the bio invasion of alien species (introduced by ballast waters in the Adriatic Sea) and high-resolution climate modelling of the Adriatic Sea. Furthermore, there have been discussed some remediations/potential solutions of contaminated sites (contribution to the WP5.2) to combat marine pollution from oil, toxic and dangerous substances. In regards of WP5.4 contribution and entering in the climate changes topic, two relators have contributed distinctly to it. Marina Cabrini from the National Institute of Oceanography and Geo-physics (OGS) aimed bio invasion of alien species, introduced by ballast waters in the Adriatic Sea, globally ranked as ten of the most unwanted things. The invasion of HAOP (Harmful Aquatic Organisms and Pathogens) into new marine environments through ships' ballast water and sediments is one of the greatest threats for the coastal and sea ecosystem. The relator summarized the argument by giving some inputs on that: 3-5 billion tons of BW are annually carried by ships in worldwide, in Adriatic ports about 10 million tons per year are discharged; 7000 species of different microorganisms, plant and animals are being transferred worldwide every year; economic activities, mainly fishery and tourisms sectors may be disturbed from HAOP invasions and the invasions of HAOP may cause illness or death to human populations. In 2013, the BALMAS project (17 partners and 7 associated partners) carried out activities in 10 different port between Italy and Croatia, that has contributed in creating solutions to the climate change issue. The partnership in FVG has installed a long-term research monitoring area with all needed parameters (sediments and water samplings) in Gulf of Trieste. The project

has implemented field and lab activities. It is strategic to have a ballast water management system for the protection of the Adriatic Sea with standardized and inter calibrated protocols. Indeed, use of tools such as databases for the analysis of the time series necessary for comparison with the introduction of NIS is extremely important as well as sustainability of natural capital.

Furthermore, Ivica Vilibic from the Institute of Oceanography and Fisheries of Croatia (IZOR) gave an example of high-resolution climate modelling of the Adriatic Sea, through CHANGE WE CARE project. First of all, an overview of climate changes meaning has been given. In fact, climate change is a global societal problem reflected in: (1) the appearance of more violent weather phenomena, drought, fires, (2) the death of animal and plant species, (3) flooding from rivers and lakes, (4) the creation of climate refugees, (5) destruction of the food chain and economic resources, especially in developing countries. To mitigate climate impacts firstly is necessary to quantify them, particularly since global climate (and even regional climate) models are not providing the details at the coastal scale. CHANGE WE CARE fosters concerted and coordinated climate adaptation actions at transboundary level. The project explores climate risks faced by coastal and transition areas contributing to a better understanding of the impact of climate variability and change on water regimes, salt intrusion, tourism, biodiversity and agro-ecosystems affecting the cooperation area. The main goal is to deliver integrated, ecosystem-based and shared planning options for different problems related to climate change (CC), together with adaptation measures for vulnerable areas to decision makers and coastal communities who may best benefit from it.

Moreover, in this report contributions to other sub-work packages (WP5.1 and WP5.2) would be reported: in the context of “Remediation of contaminated sites” some topics have been presented by relevant speakers: Miroslav Gacic from the National Institute of Oceanography and Experimental Geophysics (OGS) debated together with all the participants the HAZADR project, that contributes to strength the common reaction capacity to combat marine pollution from oil, toxic and dangerous substances in the Adriatic Sea. The first HF radar monitoring of surface currents dated from the late 1990’s in the area of Ancona within the national project PRISMA2. At that time, this was one of the first use of HF radar for coastal studies in Europe. During the 2000’s within the six-year research of the water exchange between the Venice Lagoon and the open sea, important HF radar surface circulation mapping and research was done in front of the Malamocco inlet. HAZADR project (2014) aims: to upgrade the knowledge framework on the estimated environmental and socio-economic risks in the most vulnerable Adriatic areas due to natural and human-induced factors; to support decision-making process in preventing, reacting and overcoming emergencies (also for the benefit of countries not directly involved in the project but treated by oil spillage contamination in case of shipwrecks or collisions). HF radar measurements are located along the Northwest Istrian coast and Split area (Croatia) and the two partners in oceanographic studies and data were National Institute of Oceanography and Applied Geophysics, Trieste and Institute of Oceanography and Fisheries, Split (Croatia). From the 2016,

continuous radar monitoring of surface currents has been taking place in the Gulf of Trieste within the collaboration between the Marine Biological Station, Piran (Slovenia) and National Institute of Oceanography and Applied Geophysics, Trieste. On the other hand, to give an insight on “coasts field” Graziano Paulon from the Reclamation Consortia of the east side of Veneto region, gave the last speech talking about the signed Contract of the Laguna of Caorle, “Contratto di Area Umida del Sistema della Laguna di Caorle”. With this contract the parts want to concretize, through also WETNET project (Mediterranean INTERREG), such consequences in the related territories: an initial participative process within the territories boasted by some institutional preliminary meetings, the signing of a “Document of intents” in 2019, thematic roundtables in 2019. It has conducted to a formal engagement of 31 associated partners: such as Local entities, other Reclamation Authorities, Agricultural, Touristic, Enviromental, Fisheries, Sportive Trade Associations, local Association and Professional Fisheries Companies.

Conclusions

These FORUMS have been organized with the specific aim of promoting, exchanging and transferring knowledge and competences existing along the cross-border Adriatic Coastal sides to enrich coastal plans, elaborate new strategic and sustainable methodologies in the field of the Blue Growth. These ones have gathered many experts, researchers, professors, operators, manager within blue sectors that have started discussing about challenges and opportunities, that joined the ECOMAP Cluster of Adriatic Innovation Blue Hubs in the involved regions, shared presentations through ECOMAP platform and took part to the project after-life perspectives commonly faced altogether. Together with these initiatives, a documentary into the branding frame of the “BLUE WAY” has been created to representing the virtual and subaqueous tours along the Adriatic Sea.