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**Waves of Change: Changing Hearts and Minds
Through Citizen Science**

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Waves of Change: Changing Hearts and Minds Through Citizen Science

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Book of Abstracts

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ORAL COMMUNICATIONS



Project Rios: Companies and Citizen Science, a Strategic Alliance

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ABSTRACT

Introduction

The conservation of riverside ecosystems requires collaborative approaches. The Project Rios, coordinated by ASPEA since 2006, is committed to strategic partnerships between the project's national coordinator, companies and municipalities with the aim of strengthening environmental monitoring and the protection of water resources. Of particular note is the collaboration with Águas do Tejo Atlântico, the managing body of the multi-municipal wastewater sanitation system for Greater Lisbon and the West, which has been fundamental in involving its 23 municipalities and promoting citizen science. Studies show that institutional partnerships increase the continuity of volunteers in environmental programmes. Ballard et al. [1] emphasise that collaborations between schools, companies and local governments strengthen the commitment of participants and the credibility of projects, improving the social response to environmental degradation.

Objectives

This study analyses the impact of partnerships on the continuity of Rios Project volunteers, focusing on the case study of cooperation between ASPEA and Águas do Tejo Atlântico, which has been implementing the project with the municipalities in its concession area since 2008. The aim is to assess how these partnerships improve environmental monitoring, encourage participation and strengthen citizen science in the conservation of river ecosystems.

Methodology

Setting up a water quality monitoring network requires effective coordination. The partnership between ASPEA and Águas do Tejo Atlântico is a success story, with national and regional coordination. At local level, municipal coordinators liaise directly with volunteers in a close relationship and partnership with local communities, ensuring proximity and efficiency in the implementation of the Project.

Results

Since 2008, the partnership has involved 18 of the 23 municipalities covered. These include Torres Vedras, Sintra, Mafra and, more recently, Caldas da Rainha, which have promoted the training of

dozens of monitors and the adoption and continuous monitoring of river sections. The training of certified monitors allows the project to be disseminated and fosters an interdisciplinary and participatory approach to the conservation of river ecosystems. These municipalities have a total of 36 Rios Project groups involved, with strong participation from local school groups and great potential for expansion.

Conclusion

Environmental volunteering achieves greater adherence and sustainability when supported by strategic partnerships. The participation of water and sanitation organisations as partners and patrons of the Rios Project reinforces credibility, guarantees resources and increases social and environmental impact. These results highlight the importance of strategic collaborations to maximise the involvement and effectiveness of volunteering in nature conservation.

Keywords: Citizen Science; Environmental Quality; Methodology; Partnerships; Conservation of Freshwater Systems

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Monitoring Surface Waters in the Miranese Area through Citizen Science Projects: I.I.S. Levi-Ponti Secondary School's Experience

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ABSTRACT

Introduction

Through cooperation with several society stakeholders, citizen science acts as a powerful instrument to enlarge scientific database [1], as well as to encourage collective participation in water quality studies [2]. The case of I.I.S. Levi-Ponti high school showcases collaboration between territorial institutions to the monitoring of surface waters in the Miranese area.

Objectives

Three main objectives were achieved: enlarging scientific database, developing easily accessible methods for further data collection along with promoting active learning and development of students' competences. In partnership with the Consorzio di Bonifica Acque Risorgive and the University of Padua, I.I.S. Levi-Ponti carried out a high-quality monitoring activity through project Lycaena Oasi. Moreover, the MICS project aimed to the development of an easily accessible method for students to perform microbiological analysis on the Oasi waters. Furthermore, this year I.I.S. Levi-Ponti initiated a collaboration with primary and lower secondary schools of the city of Noale, in an early stage of a citizen science project under OTTERS network.

Methods

The Lycaena Oasi project is constructed upon official chemical and microbiological analysis [3]. At least 10 parameters, under both chemical and microbiological settings, are analysed through field sample collection and experiments over the last 15 years. During the MICS activity, students developed a simple method to test everyday materials in order to analyse the *Escherichia coli* parameter on the Oasi waters. In OTTERS citizen science perspective, younger students performed chemical and microbiological surface water quality analysis guided by older peers.

Results

The Lycaena long-term monitoring, with the collection of a large amount of data, demonstrated the system depurative efficiency over the last 15 years. Moreover, the MICS activity led to the development and set up a specific microbiological method, tested from sampling to final analysis, which allowed the *Escherichia coli* content to be measured in a simple and "home-made" way. Last but not least, the effective collaboration between teachers, students and the younger part of the population ameliorated their soft skills, while pave the way for their future roles in the society. It was also a precious opportunity for the younger ones to participate in chemical and microbiological monitoring process through active and experimental learning methods.

Conclusion

Overall, these meaningful projects showed that, with the cooperation of various society stakeholders, from schools to institutions, integrated water monitoring process is achieved, and awareness on the importance of water protection is increased.

Keywords: Citizen Science Projects; Chemical and Microbiological Analysis; Surface Water Monitoring; Schools; Territorial Institutions

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Be Butterfly Friendly: Engaging Schools in Conservation Through Citizen Science

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ABSTRACT

The loss of biodiversity is one of the most pressing problems facing the planet. Insects, one of the most diverse and abundant groups, play essential roles in the functioning of ecosystems and are therefore thought to be one of the groups most affected by this loss of diversity. Among the most studied and charismatic groups among the public are butterflies due to their ease of identification. This group has been widely used as a study model and as a biological indicator because it responds quickly to environmental changes. It is common knowledge that the causes of this decline are related to the loss and fragmentation of habitats, the use of agrochemicals and climate change, and possibly the synergistic action between these factors, with many of the species assessed by the International Union for Conservation of Nature and Natural Resources' Red List revealed to be at some degree of risk of extinction.

The project "BE BUTTERFLY FRIENDLY – Planting butterflies" was created with the aim of engaging the school community in the monitoring and raising awareness about the conservation of butterfly species that visit school gardens and other green spaces. The project was implemented in a pilot phase (school year 2023-2024) in 15 schools in Oeiras municipality, the project selected *Melitaea aetherie* as its flagship species. This butterfly species is considered locally extinct in Oeiras and Sintra (Lisbon district) and is classified as "vulnerable" on the Portuguese Red List of Invertebrates of Portugal published in 2023. Initially targeting teachers, students of all education levels, and technicians from the Oeiras municipality, the project expanded its reach in 2024-2025 to a national audience. This work presents the four activities co-created with the students from the secondary school Quinta do Marquês: i) a theatre play: "Metamorphosis: *Melitaea aetherie* on stage!"; ii) a game: Escape Room in Quinta de Recreio do Marquês de Pombal; iii) a workshop "Flying, drawing and planting butterflies in Portugal"; and iv) a field trip: "Citizen Science on field". The school community (7th grade to 12th grade), the municipality community, and the butterfly and natural enthusiasts across Portugal are now involved in conservations efforts through the Be Butterfly Friendly monitoring scheme. The results

of this project will be presented by students who participated in co-creating the activities, showcasing the outcomes of the pilot project's first year across the 15 participating schools in Oeiras municipality.

Keywords: Citizen Science; Conservation; Education; Lepidoptera; Pollinators

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Investigating Water Quality: A Citizen Science Project in the Fourth Grade of Primary School

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ABSTRACT

Citizen science has proven to be a useful paradigm both in terms of contributing to the students' understanding of science as well as with regard to cultivating future responsible, environmentally aware citizens. Through the design and implementation of hands-on citizen science projects across all age levels, Ellinogermaniki Agogi school aims to nurture environmentally conscious students who understand the importance of sustainability and who actively care for nature taking responsible actions to protect the planet. Moreover, the school aims to equip students with essential learning skills such as critical thinking, creativity, collaboration, and self-directed learning, overall fostering a love for exploration and problem-solving across disciplines.

The presentation focuses on the citizen science project "Investigation of Erasinos river water quality" developed for and implemented in the fourth grade (10 year olds) of Ellinogermaniki Agogi primary school. The project encouraged inquiry-based learning, active participation, observation, data collection and problem-solving in order to help students develop critical thinking and scientific literacy through direct practical experience. Additionally, by investigating water quality on site, students were expected to develop a stronger connection to their environment and community that would in turn spark a lasting sense of stewardship and civic responsibility. Altogether, our aim was not just teaching science but nurturing future changemakers.

The project lasted for 12 weeks with two science teachers and one hundred and forty students participating. During the first phase, through specially designed group activities in the classroom, students were familiarised with water ecosystems and the importance of water as well as with the associated problems such as water shortage, overconsumption and pollution. In the second phase students focused on investigating the water quality of the Erasinos river. To this end, after discussing in the classroom with their classmates and teacher, they decided they needed to consider parameters from different fields, such as biology (existing microorganisms), physics (temperature) and chemistry (PH). They also built their own digital thermometers in the IT lab. After that, students visited the river and got involved with field work. They collected several data on site, extracted and discussed their conclusions in the classroom.

Students' perceptions about the project were explored through questionnaires including both closed and open questions. One hundred and thirty-five questionnaires were collected. As displayed by the questionnaires, the majority of students were very positive about the project, as well as the individual activities. Most of the students said they learned a lot about the quality of water, while the vast majority claimed they believe they must protect the environment.

Keywords: Citizen Science; Water Quality; Inquiry Learning; Primary Education; Students' Perceptions

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Guardians of Our Waters Project

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ABSTRACT

"Guardians of Our Waters" is an Erasmus+ project that empowers students to become active environmental stewards, focusing on the critical importance of water conservation and the protection of aquatic ecosystems. This presentation will showcase the project's innovative approach to engaging students in collaborative, inquiry-based learning through the eTwinning platform, specifically utilizing the TwinSpace to document, share, and disseminate project activities and outcomes. We will highlight the project's objectives, methodologies, key activities, impact on student learning and engagement, and the vital role of the TwinSpace as a central hub for communication, collaboration, and showcasing project results. We will also address challenges encountered and lessons learned, providing valuable insights for educators seeking to implement similar projects.

Project Objectives

- Increase student awareness of water-related environmental issues.
- Develop students' critical thinking and problem-solving skills related to water conservation.
- Promote cross-cultural collaboration and communication among participating schools.
- Integrate digital technologies effectively into environmental education.
- Foster a sense of responsibility and active citizenship among students.

Project Activities

- Water quality testing and analysis.
- Development of educational materials on water conservation.
- Student-led awareness campaigns.
- Online collaborative projects with partner schools using the TwinSpace.

Expected Outcomes and Impact

- Increased student knowledge and understanding of water pollution and availability related issues.
- Improved student skills in critical thinking, problem-solving and collaboration.
- Enhanced digital literacy and communication skills.
- Greater student engagement in environmental stewardship.

Endangered Species Game: A Reaction Time Experiment Based on Student's Body Conductivity

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ABSTRACT

The implementation of active learning methodologies, where students take an active role in constructing their knowledge through practical, collaborative, cooperative and autonomous learning, combined with the use of digital technologies, is essential for transforming education in the 21st century [1,3,4]. These methodologies encourage students to apply computational thinking [2] in the process of creation and problem-solving. To actively engage students in their learning process and motivate them towards science and technology, while developing competencies such as creativity, critical reasoning, problem-solving, and computational thinking, 11 students of grades 9th, 11th and 12th, were challenged to design a creative project focused on endangered species in Portugal and Romania, as part of their Erasmus+ School Accreditation project (nº. 2023-1-PT01-KA121-SCH-000137013) during their mobility to Romania. For the implementation of the project, the following materials were necessary: cardboard, aluminum foil, paper, 1 micro:bit microcontroller, battery holder, 2 AAA batteries and 4 crocodile clips.

The project involves utilizing a reaction time game, responding to the students' body conductivity, where two players are competing to press a button as quickly as possible after a random delay. The setup includes two cardboard and aluminum foil input switches connected to the micro:bit. The game waits for a random time between 1 and 5 seconds, then displays an icon on the micro:bit LED display. Players press their buttons when the icon appears, and the fastest player gets to answer a question. The students used the micro:bit open-source code on Microsoft platform MakeCode (<https://microbit.org/projects/make-it-code-it/reaction-game/>). The game rules require one hand to always be on the aluminum foil. The game master reads a question, and the fastest player, indicated by lines on the LED display, answers aloud. Correct answers earn points; incorrect answers do not (Fig. 1).

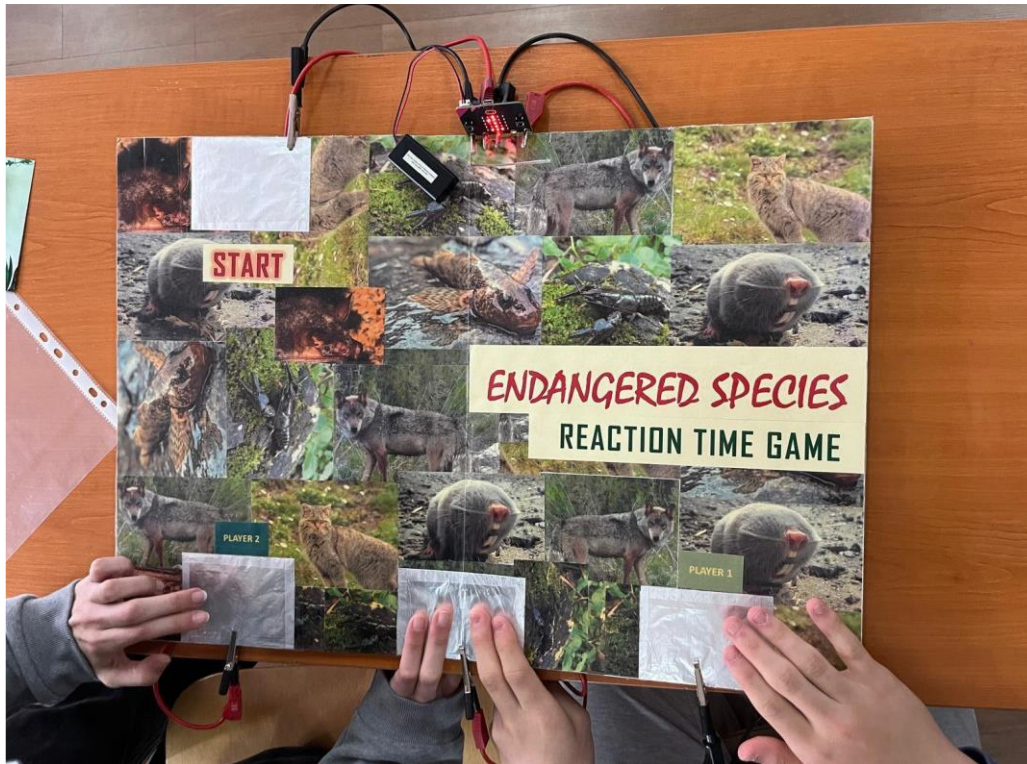


Fig.1. Endangered Species Game.

The game combines electronics, programming, and reaction time practice while promoting computational thinking. The positive feedback from the students emphasized the effectiveness of this active learning experience, showing that the combination of technology, interdisciplinary content, and hands-on learning was both motivating and rewarding. This project exemplified how innovative educational approaches can help students connect with important global issues, such as environmental conservation, while developing essential skills for the future.

Keywords: Computational Thinking; Educational Digital Technologies; micro:bit; Sustainability

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CIÊNCIA + CIDADÃ PROGRAM: Active Citizenship in Scientific Research in Oeiras Valley

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ABSTRACT

Ciência + Cidadã (C+C) is an innovative program promoting citizen science in the Municipality of Oeiras, Portugal [1]. Coordinated by ITQB NOVA and Oeiras Municipality in partnership with several research institutes, NGOs, schools and companies, C+C fosters public engagement in science through participatory research, co-creation, and transdisciplinary collaboration across generations. C+C currently supports eight ongoing projects, involving over 250 citizen scientists and 30 researchers from different research institutes, addressing diverse and pressing challenges such as environmental sustainability, food security, public health, and antibiotic resistance:

1. **Oeiras Experimental Living Lab** – A climate-smart agriculture project restoring the historical agroecosystem of “Quinta de Cima do Marquês de Pombal” while identifying resilient crops and raising awareness on food systems and climate change (Partners: ITQB NOVA, C+C, Oeiras Municipality, IMPETUS, European Union).
2. **MicroMundo@Oeiras** – Engages university and high-school students in the search for new antibiotics and mapping of soil antibiotic resistance, in partnership with local schools [2] (Partners: ITQB NOVA, C+C, Universidade do Porto, Oeiras Municipality, Tiny Earth).
3. **Carbon Tree** – Uses DIY low-cost sensors to monitor air quality in Oeiras schools (Partners: ITQB NOVA, INOVLABS, IST, INESC-ID, C+C, Oeiras Municipality).
4. **Microbioma Comunidade Portugal** – Involves 30 families in the pilot characterization of gut microbiome dynamics (Partners: GIMM, ITQB NOVA, CBR, C+C, Oeiras Municipality).
5. **SCAR** – Studies how everyday substances affect gut bacteria and influence human health, in collaboration with 30 citizen scientists (Partners: ITQB NOVA, C+C, Oeiras Municipality).
6. **SEAMIC** – Develops and tests a rapid tool to detect microbial contamination in coastal waters, with potential for application in public health and humanitarian contexts. Supported by EUTOPIA_HEALTH (Partners: ITQB NOVA, UNL, C+C, Oeiras Municipality, Eutopia Ealth, European Union).
7. **SOILED (Soil Plastic Degradation)** – School students assess plastic biodegradation in garden soil and its impacts on soil health and fungal diversity, raising awareness of microplastic pollution (Partners: ITQB NOVA, C+C, Oeiras Municipality).

8. **Sombra Para Todos**—Promotes safe sun exposure and skin cancer prevention through community-based shade and sunscreen strategies. The research is being carried out with the participation of students from Oeiras (Partners: Associação EVITA, Lisboa PH, ITQB NOVA, C+C, Oeiras Municipality, VAC, INOVLABS, a Universidade da Maia e a ULSLO).

By actively involving citizens in meaningful research, the C+C program promoting inclusive knowledge production and more sustainable, community-centred research.

Keywords: Citizen Science; Citizenship; Schools; Citizens; Equity

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Publics as active participants: AI perceptions, cultural media and inclusive citizen science

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ABSTRACT

Public perceptions of artificial intelligence (AI) are deeply influenced by cultural narratives, media representations, and direct experiences with technology. Recent studies reveal how these perceptions vary depending on familiarity with AI and the degree of engagement, with those closer to the technology often exhibiting more nuanced and positive views. At the same time, the level of engagement influences whether AI is seen as a tool for empowering humans or as a source of dystopian fears about human obsolescence, as often depicted in fictional portrayals in cultural media like films, which in turn shape public discourse and attitudes.

This presentation builds on focus group research on public understanding of AI to explore its relevance for a more inclusive participation in science and technology. Science fiction and mass media often position the public as passive consumers or fearful sceptics rather than active contributors, limiting the perceived potential for inclusive participation. By linking perceptions of AI to science participation, we open a conversation about how media and cultural representations can influence the participation and engagement of communities in the co-creation of knowledge and ethical reflection. Drawing from Science and Technology Studies (STS) and Public Understanding of Science (PUS), this study emphasizes the need to challenge exclusionary narratives in cultural media and promote inclusive engagement.

In particular, fostering inclusive citizen science initiatives requires recognizing and addressing these cultural biases to create participatory models that empower diverse voices in the scientific process. By exploring how cultural narratives reflect societal views of technological innovation, we can gain insights into how the public perceives itself as part of the scientific and technological development process, which can help foster inclusive models that empower diverse voices in both the co-production of knowledge and the ethical debates they inspire.

Keywords: Citizen Science; Public Understanding of Science; Popular Culture; Science Engagement; Inclusion

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Education and Artificial Intelligence: Enhancing Environmental Awareness in Wetland Conservation

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ABSTRACT

Introduction

Environmental education plays a crucial role in fostering public awareness and engagement with wetland conservation. The EVOA Interpretation Center, located within the Tagus Estuary Natural Reserve, has incorporated Artificial Intelligence (AI) to enhance visitor experiences and deepen their connection with wetland ecosystems. Inspired by the evolving role of digital education [2] and the potential of AI in learning environments [6], this initiative aims to merge scientific accuracy with artistic and emotional engagement.

Objectives

This project explores how AI-supported approaches can:

1. Enhance the visitor experience through interactive and artistic methods, such as colorizing historical black-and-white images to reveal hidden ecological and cultural details [3].
2. Support environmental interpretation by developing structured narratives, diagrams, and interactive texts that communicate complex bird behaviours in wetlands.
3. Integrate technical tools, such as QGIS, to visualize and communicate Ramsar site connectivity and bird migration routes.
4. Utilize creative expression, including poetry, to foster empathy and emotional engagement with the birds' migratory journeys.

Methods

The exhibition "EVOA, nas Asas do Tejo" was developed through a multidisciplinary approach combining AI-assisted tools and conventional environmental interpretation methods. AI was used to:

- Convert historical black-and-white wetland images into colour, making past ecological conditions and landscape changes more perceptible [4].
- Generate structured educational materials, including behaviour diagrams of wetland birds and interactive storylines inspired by citizen science methodologies [1].
- Optimize the use of GIS tools to overlay migration data with Ramsar site networks, providing a spatial perspective on habitat connectivity and conservation needs [5].

- Create poetry and artistic content to humanize the bird migration experience, allowing visitors to “see through the eyes of a bird” and emotionally engage with their journeys.

Results

Visitors showed increased engagement when interacting with AI-enhanced elements. The use of colorized images provided a novel way to perceive landscape evolution, making historical transformations more tangible. The structured texts and behaviour diagrams improved understanding of bird migration patterns and wetland dynamics. GIS-based visualizations facilitated discussions about conservation strategies and policy implications for Ramsar sites. Finally, the artistic elements, including poetry, helped create a deeper emotional resonance, reinforcing the need for active conservation efforts.

Conclusion

By integrating AI-driven content with environmental education strategies, the EVOA exhibition enhances scientific literacy and emotional connection to wetland conservation. This interdisciplinary approach aligns with global citizen science efforts to bridge knowledge gaps and foster engagement in biodiversity conservation [1]. The success of this initiative suggests that AI can serve as a powerful tool in environmental interpretation, providing innovative pathways to communicate complex ecological narratives and inspire pro-conservation attitudes.

Keywords: Artificial Intelligence; Environmental Education; Wetlands; Science Communication; Bird Migration; Conservation

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Engaging Rural Communities in Aquatic Ecosystem Service research: A Case Study from Armenia

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ABSTRACT

This presentation is divided into two parts. The first is a systematic literature review that examines participatory approaches used in aquatic ecosystem valuation, discussing several approaches in relation to the categories of ecosystem services. The second part presents a practical case from Armenia, where various participatory activities, including stakeholder workshops, teacher seminars, and a summer school were implemented in case study region to rise the public awareness and explore the opportunities and challenges of engaging local communities in aquatic ecosystem services valuation. Additionally, the photovoice method will be examined as an approach for revealing ecosystem service valuation in rural regions of Armenia. Based on the outcomes of these activities, a citizen science initiative was launched in collaboration with local rural schools, where schoolteachers and children, after receiving training, began conducting water quality measurements and ecosystem services analysis.

The results will emphasize the importance of local knowledge in valuing ecosystem services and the potential of participatory methods to bridge the gap between academic research and community perspectives. The findings highlight the significance of ecosystem services in rural Armenia and their role in enhancing local well-being. The study also identifies challenges in implementing participatory approaches, such as organizational and logistical constraints and varying levels of participant engagement.

Although the study focuses on the specific context of Armenia, it contributes to broader discussions on the role of participatory methods in aquatic ecosystem service research, particularly in regions undergoing transitions in academic and societal structures. The role of citizen science will be highlighted as a means of data provision and ecosystem conservation, as well as for initiating a sense of ownership of local resources in countries with limited financial and resource capacities. Finally, the presentation underscores the potential of participatory

approaches to improve ecosystem management and conservation by incorporating local knowledge and fostering inclusive decision-making.

Keywords: Citizen Science; Aquatic Ecosystems; Transdisciplinary; Knowledge Co-creation; Academia-Society Collaboration

BioMARatona Norte: Citizen Science as a Tool for Coastal Biodiversity Monitoring

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ABSTRACT

Citizen science has become an essential tool for marine biodiversity monitoring, helping to bridge knowledge gaps by increasing the number of observations and species records across large spatial and temporal scales. By involving the public in data collection, it enables large-scale biodiversity assessments that would be difficult to achieve through traditional scientific approaches alone. However, volunteer-collected data often lacks standardization, leading to potential biases in species distribution and abundance. Addressing these challenges requires well-structured initiatives that balance public engagement with scientific rigor to ensure data accuracy and reliability.

The ANERIS project aims to promote citizen participation in coastal and marine biodiversity monitoring by implementing structured initiatives that enhance public engagement while ensuring high-quality data collection. One of its key initiatives, the BioMARathon, is an extended BioBlitz running from mid-spring to mid-fall, encouraging volunteers to document marine species. This study focuses on BioMARatona Norte, a regional effort in Portugal's northern coast, with the objective of increasing citizen involvement in biodiversity documentation and improving data availability for marine ecosystem monitoring.

BioMARatona Norte engages volunteers, including amateur naturalists, students, and the public, in marine biodiversity observation. Participants record species occurrences through a mobile application and an online platform (MINKA), where afterwards each observation is validated and properly identified.

During its first year, BioMARatona Norte registered over 1,200 observations, documenting more than 170 species with contributions from over 100 volunteers. The dataset provides valuable insights into local marine biodiversity, helping to track species presence and potential shifts in

distribution. These findings highlight the effectiveness of citizen science in generating large-scale biodiversity data while fostering environmental awareness within local communities.

This initiative could also be integrated into schools, allowing students to participate in the BioMARatona or develop their own biodiversity monitoring projects, promoting ocean literacy. By involving the community in data collection and fostering environmental responsibility, initiatives like the BioMARathon contribute to conservation efforts and support informed decision-making for marine ecosystem management.

POSTERS



“Os Guardiões da Praia” – *Plastic pirates go Europe!* em Oeiras

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ABSTRACT

This project stems from the need to implement and integrate Citizen Science into schools, empowering students as explorers and agents of change in the study of aquatic ecosystems within the Municipality of Oeiras.

The Plastic Pirates – Go Europe! project, promoted in Portugal by Ciência Viva, was selected to actively involve "Escola Azul" ambassadors in relevant scientific activities addressing the global challenge of marine litter and promoting Ocean Literacy.

This study aimed to: Investigate the presence of marine and riverine litter on the Tagus River banks/Paço de Arcos Beach, Oeiras, using the Plastic Pirates – Go Europe! project methodology; Conduct two cleanup campaigns at Paço de Arcos Beach; Share data with the Plastic Pirates – Go Europe! platform; Integrate Citizen Science into the Escola Azul Program.

Sampling was performed at multiple points (9 circular transects of 3 m diameter and a 50 m survey along the beach, 20 m from the water). Waste was collected, categorized, and quantified in the lab. Floating debris and microplastics were also analysed using a sampling net for one hour. The reporting team documented the process, photographed waste, interviewed participants, and investigated its origins. The data was shared with the Plastic Pirates – Go Europe! platform.

Preliminary results showed few waste items in circular transects near the water and no floating debris or microplastics in the sampling net. The linear transect revealed 0.01629 kg of plastic waste and 0.07484 kg of total waste, with 60.69% being disposable plastic. Among 318 waste items, 193 were disposable plastic, including 191 microplastic polystyrene particles, and 58 cigarette butts.

Although the area appeared clean, closer inspection exposed significant microplastic pollution, mainly polystyrene, and cigarette butts, confirming their dominance in the Top 10 waste items found on Portuguese beaches (Fig. 2-G).



Fig.2-A. The team of participants in the Autumn Campaign/1st Sampling, Paço de Arcos Beach (12/13/2024).



Fig.2-B. Marking of sampling locations, Paço de Arcos Beach (12/13/2024).



Fig.2-C. Sample collected, Paço de Arcos Beach (12/13/2024).



Fig.2-D. Analysis of results at the ESCCB laboratory (01/16/2025).



Fig.2-E. Categorization of marine litter at the ESCCB laboratory (January and February 2025).



Fig.2-F. Dissemination of results with activities created for "Science Days", ESCCB (March 12 and 13, 2025).

TOP 10 | 2022

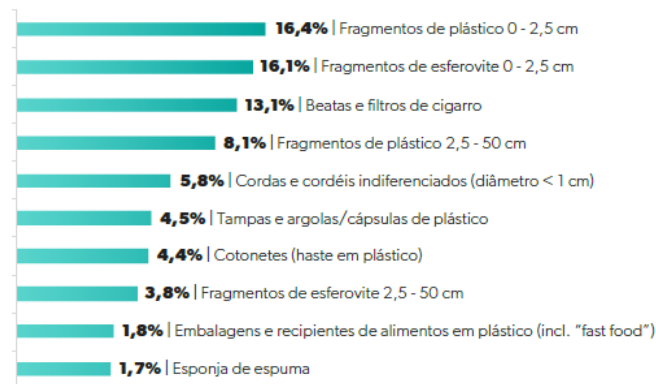


Fig.2-G. TOP 10 of marine litter in Mainland Portugal in 2022 [1].

Keywords: Citizen Science; Marine Litter; Environmental Monitoring; Ocean Literacy; Blue School

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Hidrolaboratório EADS – Cais de Entrada Para a Literacia Científica na Educação Pré-Escolar

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ABSTRACT

Este poster vai apresentar um recurso educativo composto por um conjunto de atividades lúdicas e pedagógicas pertencentes à área do conhecimento do mundo, uma das áreas de conteúdo da educação-pré-escolar. Refere-se, que a sua criação procura promover a educação ambiental relativa aos recursos hídricos do planeta, de modo articulado e favorecedor do questionamento e procura organizada do saber, para que a criança compreenda melhor o mundo, que a rodeia, através da realização de um percurso de desenvolvimento e aprendizagem no jardim de infância. Pretendeu-se, ao desenvolver o referencial pedagógico, que aqui se dá conta, elevar o processo de ensino e aprendizagem das crianças, que frequentam a educação pré-escolar, bem como, prover o desenvolvimento das mesmas com sucesso e qualidade. Este foi um estudo interpretativo e as estratégias de recolha de dados foram a observação participante; o diário do educador, dados visuais fotografia e dados visuais vídeo, com o intuito de “captar e estudar os processos dos atores em ação e interação” (Amado, 2014, p.235). A etapa da educação pré-escolar é uma fase por excelência em que a criança se desenvolve brincando e jogando, movida pela sua curiosidade e desejo de saber e compreender os porquês do mundo, Almeida et al. (2017) referem, que “os jogos têm o carácter atrativo e apazibilidade para envolver, motivar e mobilizar a energia necessária para se constituírem ambientes de aprendizagem” (p. 184). Concretiza-se, que o recurso pedagógico “Hidrolaboratório EADS – Cais de embarque para a ciência experimental na educação pré-escolar” traduz um conjunto de processos, procedimentos e produtos cujo cerne remete para a resolução de questões que visam a promoção da educação ambiental para o desenvolvimento sustentável dos recursos hídricos, baseada e fundamentada no conhecimento científico e operacionalizada através de diversas atividades lúdico-pedagógicas como é demonstrado no quadro abaixo.

Empowering citizens for marine and aquatic science: multi-level commitment to ocean literacy and monitoring of European seas and waters

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ABSTRACT

Citizen science is a powerful tool for involving the public in marine and aquatic research, science literacy and engagement. Since 2015, the Flanders Marine Institute (VLIZ) in Belgium has built robust citizen science programs that empower volunteers to contribute meaningfully to marine and aquatic monitoring. Besides being a citizen science coordinator, VLIZ also contributes to good practices, roadmaps and policy on marine and aquatic citizen science, both at the national and the international level.

Through projects like SeaWatch-B, the Big Seashell Survey, and RecVis, a monitoring program involving recreational fisheries, citizens are trained and supported to collect scientifically valuable data. VLIZ also coordinates international citizen science initiatives such as Plastic Pirates & CoastSnap (in Belgium) and Collect (Africa, Asia). While participating in EU-funded projects like PREP4BLUE and CS-MACH1, VLIZ participates in defining best practices for marine citizen science.

These efforts have led to long-term, high-quality datasets on coastal, marine and riverine environments, to widespread community involvement, and to recognition of VLIZ as a national hub in international networks on marine citizen science. In this way, VLIZ demonstrates that marine citizen science can be both locally embedded and globally connected, contributing to sustainable ocean stewardship.

Useful links

Big Seashell Survey: <https://www.groteschelpenteldag.be/nl> | data: <https://minka.vliz.be/groteschelpenteldag>

SeaWatch-B: <https://www.vliz.be/projects/seawatch-b/> | data: <https://minka.vliz.be/seawatchb>

Plastic Pirates-Belgium: <https://www.plastic-pirates.eu/dt>

CoastSnap-Belgium: <https://www.kustportaal.be/en/coastsnap-belgium>

Collect - Citizen Observation of Local Litter in Coastal ECosysTems: <https://pogo-ocean.org/innovation-in-ocean-observing/activities/collect-citizen-observation-of-local-litter-in-coastal-ecosystems/>

RecVis - recreational fisheries monitoring in Belgium: <https://www.recreatievezeevisserij.be>

PREP4BLUE: Inventory: <https://wavelinks.eu/explore/citizen-science> | roadmap: <https://prep4blue.eu/portfolio/prep4blue-report/>

Beach Guardians – an approach with the Plastic Pirates Project

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ABSTRACT

Plastic pollution in aquatic ecosystems is a growing environmental concern, demanding collaborative and innovative research efforts.

The Plastic Pirates – Go Europe! project, promoted in Portugal by Ciência Viva, was selected to actively involve "Escola Azul" students in relevant scientific activities addressing the global challenge of marine litter and promoting Ocean Literacy. This project states that since 2020, 'capturing' plastic waste on the riverbanks and near bodies of water became the Europe-wide task of the Plastic Pirates. By collecting plastic waste and uploading data on the amount of waste found, we and our school can help conduct research on the pollution of bodies of water. Uniform experimental guidelines and working steps for all teams which participate ensure that, throughout Europe, the data collected is comparable and will become visible step by step on the Plastic Pirates map. The OTTERS project, on the other hand, aims to promote societal transformation for marine and freshwater stewardship through scaling up citizen science, accelerate the creation and adoption of technical, legal, and ethical standards for citizen science protocols and methods, examine the effectiveness of citizen science in societal transformation towards sustainable aquatic ecosystem stewardship. Both projects meet the need to implement and integrate Citizen Science into schools, empowering students as explorers and agents of change in the study of aquatic ecosystems within the Municipality of Oeiras.

This study aimed to investigate the presence of marine and riverine litter on the Tagus River banks/Paço de Arcos Beach, Oeiras, using the Plastic Pirates – Go Europe! project methodology; conduct in two cleanup campaigns at Paço de Arcos Beach.

The primary objective of this study is to analyze the effectiveness of integrating citizen science in our school and:

1. Compare data collection collected in two different campaigns, Autumn and Spring.

2. Contribute to an international data collection platform.
3. Proposing strategies for improved coastal and riverine pollution management.

This study pretends to compare results with other schools from the same Municipality:

- Data collection from the Plastic Pirates, involving plastic waste classification, beach transects, and environmental observations.
- Statistical comparison of datasets to assess alignment and discrepancies, from collection campaigns made by different schools and on different dates of the year.
- Qualitative analysis through participant feedback on challenges and engagement in data collection.

A first analysis reveals a big difference between the results obtained by two different schools. Our school collected a week later, but after a storm, and we collected little amount of plastic, but a lot of natural organic compound waste (probably coming from an area of the river further away from the mouth). In the next few days, a new marine litter collection campaign will take place and we will be able to compare not only with that of the other school, but also with the collection previously carried out by our school.

Data validation suggests that structured citizen science initiatives can yield reliable environmental data.

Table 1. First Data Collection: 19/12/2024. Sampling was performed at multiple points (9 circular transects of 3 m diameter and a 50 m survey along the beach, 20 m from the water). Waste was collected, categorized, and quantified in the lab. Floating debris and microplastics were also analysed using a sampling net for one hour.

Natural organic waste	$10,3 \times 10^{-3} \text{ kg/m}^2$
Total weight of plastic waste	$35,8 \times 10^{-3} \text{ kg}$
Weight of all waste including plastic	$60,5 \times 10^{-3} \text{ kg}$
Single-use plastic in the total number of all waste found (%)	37,1%
Collection area	1000 m ²
Water pH	7,3

Preliminary results showed no waste items in circular transects near the water and no floating debris or microplastics in the sampling net.



Fig.3-A-C. [Captions not provided by authors]

Keywords: Citizen Science; Plastic Pollution; Microplastics; Environmental Monitoring; Data Analysis

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Beach Guardians – an approach with the Mirim Coastal Monitoring

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ABSTRACT

Marine and coastal pollution poses significant environmental challenges, requiring integrated and multidisciplinary monitoring approaches. The Monitoramento Costeiro Mirim project engages young citizen scientists in the systematic collection of coastal environmental data, fostering environmental awareness and education. The OTTERS project, on the other hand, aims to promote societal transformation for marine and freshwater stewardship through scaling up citizen science, accelerate the creation and adoption of technical, legal, and ethical standards for citizen science protocols and methods, examine the effectiveness of citizen science in societal transformation towards sustainable aquatic ecosystem stewardship. Both projects meet the need to implement and integrate Citizen Science into schools, empowering students as explorers and agents of change in the study of aquatic ecosystems within the Municipality of Oeiras.

This study aims to evaluate the benefits of integrating community coastal monitoring, using students of different age groups, interconnecting with the specific contents of various subjects in the curriculum.

Specific objectives include:

1. Comparing data collection methodologies between Monitoramento Costeiro Mirim and other projects.
2. Assessing the accuracy and reliability of citizen-collected coastal pollution data.
3. Identifying trends in marine litter distribution and sources.
4. Proposing strategies for improved coastal and riverine pollution management.

A mixed-methods approach was employed, including:

- Data collection from the Monitoramento Costeiro Mirim, involving plastic waste classification, beach transects, and environmental observations.
- Statistical comparison of datasets to assess alignment and discrepancies, from collections made by different schools and on different dates of the year.

- Qualitative analysis through participant feedback on challenges and engagement in data collection.

Preliminary findings indicate that data collected by young citizen scientists provides valuable insights into plastic pollution patterns. The methodology used allows the identification of continental sources of marine litter through the observations made. The use of these datasets has improved the accuracy of identifying pollution sources, highlighting critical points for targeted intervention.

The use of the Mirim Coastal Monitoring project methodology provides a robust model for environmentally sound coastal monitoring. Such monitoring strengthens citizen science engagement and scientific accuracy, providing useful data for policymakers and conservation efforts. Future research should explore expanded collaborations between different coastal monitoring methodologies, refining them to improve data reliability and policy impact.



Fig.4-A, B. [Captions not provided by authors]

Table2-A. First Data Collection: 27/03/2025. Non-Natural Objects.

Materials	Microplastic	Piece of Plastic	Cigarette butts	Straw	Tissue	Styrofoam	Paper	String	Plastic lid
Count	30	112	6	11	4	42	14	5	9
Materials	Construction remains	Toothpick	Glasses	Coal	Ice cream stick	Metal	Nylon	Sponge	Cotton swab
Count	1	0	1	10	1			5	2
Extrapolating to 20 000 m ²	X500								

Table2-B. First Data Collection: 27/03/2025. Natural Objects.

Materials	Shells	Vegetation	Seeds	Stones	Algae	Feathers	Insects	Animal parts	Food leftovers
Count	21	108	14	42	21	4	0	0	0
Extrapolating to 20 000 m ²	X500								

Keywords: Marine Pollution; Coastal Monitoring; Citizen Science; Plastic Waste Tracking; Environmental Education

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Environmental Monitoring of Ribeira da Laje

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ABSTRACT

The Ribeira da Laje starts in the area of Casal de São José and the Pinhal Urbanization, in Mem Martins (Sintra). Along its almost 16 kilometers, it crosses three municipalities (Sintra, Cascais and Oeiras) and flows into the Tejo Estuary, in the western area of Praia de Santo Amaro de Oeiras. [1]

Over the years, the Ribeira da Laje has undergone changes and deterioration of its environmental quality, due to the increase in anthropogenic activity and the lack of progressive involvement in the preservation of the Ribeira by the general population. In 1950, the quality of its water was classified as "poor" by the Portuguese Environment Agency, as it passes through several urban centers with industrial and commercial activities. [2]

The aim of this work is to evaluate the quality of the waters of the Laje stream using biological contamination indicators; as well as disseminating the results obtained to the local community. The ambassadors of the Blue School Project, from the Quinta do Marquês Secondary School, in Oeiras, in order to respond to the aforementioned objectives, and after researching citizen science projects, considered the "Rivers Project" developed by the Portuguese Association for Environmental Education (ASPEA), which presents a work methodology that met the intended objective.

On April 8th of this calendar year, the first field trip took place with identification of: rocks; trees and shrubs; birds; butterflies; reptiles and amphibians; macroinvertebrates; mammals; fish; aquatic plants; lichens and mushrooms; bryophytes, among others [1]. Analysis of some physical and chemical parameters, such as pH, nitrates and nitrites, temperature.

The results and conclusions will be published after the data has been processed.

Keywords: Ribeira da Laje; Monitoring; Biological Indicators

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BioRegisto: Citizen Science for Biological Heritage Dissemination

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ABSTRACT

BioRegisto is a public citizen science project of Viana do Castelo City Council that aims biological heritage recording and dissemination, contributing to its study and conservation through knowledge. Developed in 2018 by PO SEUR (Operational Program Sustainability and Efficiency in the Use of Resources) with the environmental education project “School of Nature” (an European Citizen’s Award Natura 2000 winner). BioRegisto allows any citizen to insert photographic records of species, as well as tracks and traces, from any location in Portugal. BioRegisto website (<https://ambiente.cm-viana-castelo.pt/bioregisto>) contains all the species and observations recorded by our citizen scientist’s community, as well as information related to each species like habitat, ecology, conservation status, distribution and taxonomy, a very distinctive characteristic of this project. The collected data is used for several purposes like scientific research, open science promotion, environmental education actions, environmental publications and City Council intern work. With BioRegisto, we also promote annual free of charge workshops to the general public focusing on local biodiversity and habitats, carrying out fieldwork to identify species and enable citizens to recognize the main morphological characteristics of the target species. So far, BioRegisto platform has a total of 924 species, 4007 observations, 387 users and involved 630 participants in workshops and environmental education initiatives.

Project objectives

Citizen science is one of the main focuses of Viana do Castelo City Council. BioRegisto is a public citizen science project of Viana do Castelo City Council that aims biological heritage recording and dissemination, contributing to its study and conservation through knowledge. It allows any citizen to insert photographic records of any kind of species, as well as tracks and traces, from any location in Portugal. BioRegisto’s purpose is to connect people to nature while promoting biodiversity conservation and dissemination, using it not only in academic studies but also in environmental education initiatives. Furthermore, BioRegisto proves to be an excellent working tool to support the municipality’s decision-making regarding natural heritage issues.

Methodology

Submission of photographic records can be done using BioRegisto website or mobile application and a valid user account. Submission requires filling in certain mandatory options such as location, date and number of individuals observed. After submission, observation remains then in standby until taxonomic validation by our team or by expertise. A species factsheet is then created containing information like habitat, ecology, conservation status, distribution and taxonomy. Also, a map containing all the species observations is available for everyone interested. The data is then collected and processed by Viana do Castelo City Council team and used in the actions described above.

Results

BioRegisto platform has a total of 924 recorded species, 4007 observations (of which 3217 already validated), 384 users and 645 participants in workshops and environmental education actions. Of the total of 3217 validated observations, the most registered classes are: Aves (29%), Insecta (23%), Magnoliopsida (19%) and Agaricomycetes and Liliopsida (5%). The most recorded species is *Anas platyrhynchos* with 39 observations, followed by *Ardea cinerea* with 37, *Egretta garzetta* with 34, *Pyrhocoris apterus* with 33 and *Platalea leucorodia* with 32. The vast majority of these observations are in Viana do Castelo municipality (about 90%), revealing the local importance of this project. In addition to providing this data to research groups, we already promoted 14 workshops for citizen scientists and guided by researchers focused on different taxonomic groups like mammals, amphibians, reptiles, birds, fungi, plants, insects, algae and lichens. We publish the "Boletim BioRegisto", a periodic and online journal, and a field guide with native and exotic species of Viana do Castelo, thus promoting the project and contributing to biological heritage dissemination. In schools, "BioRegisto" is used in the classroom and in fieldwork to study local biodiversity, proving to be a very useful tool for the development of curricular programs. Viana do Castelo City Council also uses BioRegisto data in internal species monitoring work, specifically in invasive flora mapping and protection of *Charadrius alexandrinus* nests.

Conclusion

BioRegisto allows to improve environmental awareness and reflection of the importance of preserving the environment, contributing to scientific development and promoting environmental education actions among local communities, as well as large-scale studies of wild biodiversity. BioRegisto reveals a great potential to serve as a model for other City Councils and institutions who want to develop not only a citizen science project focused on biological heritage recording and dissemination but also a very useful municipality's decision-making project.

Keywords: Biodiversity; Science; Education; Environment; Citizens

Harnessing Citizen Science to Catalyse Clean Water and Sanitation

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ABSTRACT

My research aims to explore the impact of citizen science on the Water, Sanitation, and Hygiene (WASH) sector, focusing on how this approach can improve access to clean water and sanitation. Throughout this research project, I will investigate the effectiveness of a youth-driven, participatory approach in water monitoring, environmental reporting, and water management. Additionally, this research will examine how citizen science influences community and youth involvement in the WASH sector. It will highlight the benefits of non-formal educational opportunities in environmental conservation, as well as their role in building skills, interests, and confidence among participants.

Furthermore, this research will delve into the motivations of participants and the perceived barriers faced by non-participants. It will identify the challenges and opportunities for citizen science, aiming to provide insights into how this approach can be leveraged for greater impact in the WASH sector.

Methods employed in this research include surveys of citizens participating in and non-participants of citizen science initiatives, structured interviews with leaders of citizen science initiatives, and observatory research during this conference and spring school on citizen science in water.

Results are currently ongoing, and no conclusions have been drawn yet.

Keywords: WASH; Citizen Science; Motivation, Impact; Clean Water and Sanitation

DiverSea Citizen Science Initiatives - Monitoring for Marine Biodiversity

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ABSTRACT

To effectively address the global challenge of biodiversity loss, high-quality marine biodiversity data is essential. Citizen Science Initiatives (CSI)—which actively engage the public in scientific research—offer a powerful, participatory way to gather this crucial data while also fostering greater public awareness and stewardship of the ocean.

DiverSea is leveraging CSI across a variety of geographic case studies—from Portugal to Norway, Turkey to Africa—to strengthen marine science and conservation efforts. These initiatives invite citizens to contribute directly to marine research, helping scientists: identify key marine biodiversity components; monitor water quality; enhance scientific methodologies and data quality; and foster transdisciplinary collaboration.

The key objectives of DiverSea's CSI are: increase ocean literacy and empower local communities; improve the reliability and richness of biodiversity data; promote citizen engagement in marine conservation; and support science-based solutions to combat marine biodiversity loss. By connecting science, society, and policy, DiverSea's citizen science efforts exemplify how inclusive, collaborative approaches can drive real change for the ocean and the communities that depend on it.

Keywords: Biological Diversity; Capacity Building; Citizen Science; Observation; Ocean Literacy



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Monitoring invasive macroalgae with citizen science contribution: Algae on the Beach

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ABSTRACT

Under certain environmental and oceanographic conditions, macroalgae can grow excessively and accumulate on beaches, causing serious ecological and economic impacts. To study the impact of these accumulations on the Portuguese coast, a citizen science monitoring platform was created that aims to explore the spatial and temporal distribution of macroalgae accumulations on Portuguese beaches and evaluate the factors that influence their formation and transport. A website was created and a communications campaign launched to involve citizens in submitting records of macroalgae accumulations. The results were shared and a communication channel with citizens was established. Statistical analyses (RDA and PERMANOVA) were used to study the relationship between algae accumulation and environmental factors. The citizen science campaign received significant participation, with a total of 455 submissions between July 2021 and April 2025. Until July 2023 the results showed a pattern of accumulation of three species of macroalgae namely *Ulva sp.* and the invasive species *Asparagopsis armata* and *Rugulopteryx okamurae* on the beaches of the Algarve. More recently, during the years 2024 and 2025, accumulations of the species *R. okamurae* were recorded on the west coast with extension to the north of Portugal, confirming the advance of this invasive species on the Portuguese coast. Overall, our citizen science campaign effectively engaged citizens and documented algal blooms, revealing the importance of the combination of environmental, atmospheric and hydrodynamic conditions in their formation and transport, which can be of great use in creating mitigation strategies.

WORKSHOPS



Voice for Change: Empowering Water Advocates Through Authentic Communication

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ABSTRACT

Brief summary of the workshop

This interactive workshop uses voice activation techniques to help participants discover their authentic voices as water advocates. Drawing parallels between water flow and authentic communication, participants will learn how voice work can transform their ability to communicate environmental concerns and engage communities around water conservation issues.

Main goals

- Goal 1: Introduce voice activation for more authentic science communication
- Goal 2: Identify vocal patterns limiting effectiveness as water advocates
- Goal 3: Provide practical voice exercises for citizen science projects
- Goal 4: Develop personal "water stories" connecting participants to conservation

Content

The workshop combines voice activation with water literacy concepts through breathing exercises, vocal toning, storytelling, and collaborative activities—all connected to water flows and cycles. Participants will discover how releasing vocal tensions parallels removing barriers to effective advocacy, culminating in sharing brief "water stories".

Format and methodology

- Expected duration: 90 minutes
- Format: Breathing exercises (15 min), voice activation (20 min), storytelling (20 min), small group practice (20 min), group sharing (15 min)
- Necessary equipment: Open space, chairs in circle, speakers for music
- Participants: Minimum 10 participants

Equity and Diversity

The workshop accommodates all backgrounds and abilities. Voice exercises are adaptable for different physical capabilities in a safe, non-judgmental space. Cultural diversity is honoured by

incorporating heritage elements into voice work and water stories, acknowledging that water issues affect communities differently based on geography and socioeconomic factors.

Expected results

Participants will gain practical voice tools for citizen science communication, greater confidence in their authentic voice, deeper connection to water advocacy, and enhanced ability to communicate environmental messages that resonate emotionally with diverse audiences.

Keywords: Voice Activation; Authentic Communication; Water Advocacy; Citizen Engagement; Science Communication

From islands to the classroom – pedagogical tools for teachers

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ABSTRACT

Brief summary of the workshop

Small islands along the coast of Portugal, like Berlengas' Archipelago and the Barrier Islands in Ria Formosa are shelter to some amazing seabirds that occur in our country. These islands and the adjacent areas present a multitude of habitats and species that have been at risk due to some menaces like invasive alien species, human disturbance and bycatch.

In order to provide and gather as much practical information on the conservation work undertaken on both places, SPEA developed two pedagogical tools for teachers that bring together a lot of information on island biodiversity, the main threats and how conservation work helped tackle those threats. And, also, a series of activities that teachers can develop in the classroom or even outside, filled with useful annexes and information.

On this workshop, we aim to present both teacher-student dossier and develop activities of each with the teachers, highlighting the practicability of these tools.

Main goals

- Provide theoretical content and raise awareness of the importance of these islands and its ecosystems, which will allow teachers to teach independently.
- Present practical activities to be developed in the classroom context, as an environmental education tool.
- Contribute to improving the quality of the teaching-learning process, by updating teachers in the area of science teaching and environmental education for citizenship.

Content

30 minutes presentation about the islands, seabirds and the main conservation work.

60 minutes with hands-on activities from the teacher-student dossier which will include some activities from these dossiers, like a board game, experiments and ludic activities, using all the materials included in these dossiers.

Format and methodology

- Expected duration: 90 minutes
- Format: Theoretical PowerPoint presentation and hands-on activities
- Necessary equipment: Laptop and projector
- Minimum and maximum number of participants: 10-20 participants

Equity and Diversity

The workshop is open to anyone who wants to extend their knowledge, especially to teachers who want to improve their knowledge in certain areas of the natural sciences. Unfortunately, we are not equipped with tools or training that will allow blind or def-mute people to participate. Nonetheless, all our activities have a connection to the curriculum of the natural sciences of different school years and can be easily adapted to be used with children with disabilities.

Expected results

- Teachers will be able to access information more easily about islands biodiversity, seabirds and practical conservation work.
- Teachers will receive a set of activities that can be repeated at school grounds and classroom with minimal investment needed.

Keywords: Seabirds; Islands Biodiversity; Pedagogical Tools; Hands-on Activities

Engaging Communities: Co-Designing Citizen Science for Local Impact

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ABSTRACT

Brief summary of the workshop

This interactive workshop explores effective participatory methods for co-designing citizen science initiatives that foster local engagement and create a sustainable impact on local ecosystems. Participants will learn how to integrate local knowledge into citizen science and participatory research projects using case studies, hands-on activities, and group discussions. Drawing from experiences in Armenia, Georgia, Austria, and Portugal, practical cases will be presented, showcasing how university and school teachers, along with students from different disciplines, collaborated with citizens in the knowledge co-creation process, transdisciplinary case studies, and citizen science initiatives. Special attention will be given to local culture and values in fostering effective community engagement and co-designing citizen science projects.

Main goals

- Goal 1: Discuss approaches and methods for citizen engagement in the knowledge co-creation process and academia-society collaboration.
- Goal 2: Uncover strategies for co-developing citizen science projects with diverse stakeholders, ensuring inclusivity and long-term participation.
- Goal 3: Examine the impact of citizen science and identify strategies to enhance its local relevance, considering its distinct characteristics compared to other research approaches and ways to strengthen its support.

Content

The workshop will be structured around three key components:

- Theoretical Foundations: Overview of participatory methods in citizen science, ecosystem services valuation, and knowledge co-production.
- Practical Case Studies: Presentation of real-world applications, including participatory activities in Armenia that engaged local schools, teachers, and community members.

- Interactive Exercises: Group work activities where participants will share their own experience and develop frameworks for co-designing effective citizen science projects for a local impact.

Format and methodology

- Expected duration: 90 minutes
- Format: Short presentations on key concepts and case studies; Group discussions on challenges and best practices; Reflection and brainstorming session for future collaborations
- Necessary equipment: Projector, flipcharts, markers, printed worksheets, colour stickers
- Minimum and maximum number of participants: 10-25 participants

Equity and Diversity

This workshop is designed to be inclusive and accessible to diverse participants, including researchers, university and schoolteachers, students, decision-makers and local community members. Activities will be structured to ensure equal participation, with facilitated discussions that value all perspectives.

Expected results

- Enhanced understanding of challenges and opportunities of effective engagement of citizens in knowledge co-creation process.
- Effective steps and strategies for co-designing citizen science projects with local stakeholders to having a positive local impact.
- Strengthened networks among researchers, educators, and community members for future collaborations.
- Practical takeaways on integrating citizen science into ecosystem management and policy discussions.

Keywords: Citizen Science; Participatory Methods; Community Engagement; Sustainable Development; University-Society

BioRegisto: Citizen Science for Biological Heritage Dissemination

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ABSTRACT

BioRegisto is a public citizen science project of Viana do Castelo City Council that aims biological heritage recording and dissemination, contributing to its study and conservation through knowledge. Developed in 2018 by PO SEUR (Operational Program Sustainability and Efficiency in the Use of Resources) with the environmental education project “School of Nature” (an European Citizen’s Award Natura 2000 winner). BioRegisto allows any citizen to insert photographic records of species, as well as tracks and traces, from any location in Portugal. BioRegisto website (<https://ambiente.cm-viana-castelo.pt/bioregisto>) contains all the species and observations recorded by our citizen scientist’s community, as well as information related to each species like habitat, ecology, conservation status, distribution and taxonomy, a very distinctive characteristic of this project. The collected data is used for several purposes like scientific research, open science promotion, environmental education actions, school works, environmental publications and City Council intern work. With BioRegisto, we also promote annual free of charge workshops to the general public focusing on local biodiversity and habitats, carrying out fieldwork to identify species and enable citizens to recognize the main morphological characteristics of the target species. So far, BioRegisto platform has a total of 924 species, 4007 observations, 387 users and involved 630 participants in workshops and environmental education initiatives.

Brief summary of the workshop

This workshop aims to raise awareness of the BioRegisto platform and demonstrate its usefulness for a wide range of audiences. General public, researchers, educators and students are invited to participate in this workshop and understand how BioRegisto platform can be useful for them. The workshop is divided into two main moments: a first moment with a classroom session, where the concept of citizen science will be presented, how the BioRegisto platform works, its importance for the conservation of natural heritage; and a second moment with a short field trip session, where participants will apply the knowledge acquired, making observations and recordings of species in the area surrounding the conference.

Main goals

- Learn about BioRegisto platform: exploring the platform, how to use it (including examples of its usefulness in schools) and what species information is available;
- Promoting citizen science: empowering participants to contribute to national biodiversity records;
- Increased knowledge: raise awareness of species found in Portuguese territory and the importance of biodiversity conservation;
- Contribute to the collection of scientific data: use the data for research, environmental education, publications and support for decision-making;
- Contribute to outdoor activities: encourage active involvement in field activities, bringing citizens closer to their territory and promoting environmental literacy.

Content

The workshop is divided into two main moments: a first moment with a classroom session, where the concept of citizen science will be presented, how the BioRegisto platform works, its importance for the conservation of natural heritage; and a second moment with a short field trip session, where participants will apply the knowledge acquired, making observations and recordings of species in the area surrounding the conference. Field observations will be made individually. However, if participants are unable to install the app on their phones, they can join other participants and submit species together.

Format and methodology

- Expected duration: 90 minutes
- Format: Outside, in the field, exercises will be practical, and each participant will use their smartphone to take photos and submit wildlife observations to BioRegisto platform. Inside, in the workshop class, we will present BioRegisto do participants and demonstrate who to use it.
- Necessary equipment: Ideally, for the practical component, each participant should have a mobile phone with internet access and with BioRegisto mobile app installed (<https://ambiente.cm-viana-castelo.pt/bioregisto>) and a validated user account. In the classroom component, workshop facilitator will give an oral presentation using PowerPoint and will present BioRegisto platform, therefore needing a computer with internet access.
- Minimum and maximum number of participants: 10-20 participants

Equity and Diversity

The content will be presented clearly and adapted to different levels of knowledge, ensuring that everyone can actively participate. We will seek to apply the principles of equity and diversity by

promoting an inclusive and accessible environment for all participants, regardless of their background, gender, age or previous experience in citizen science.

Expected results

With this workshop, we intend for participants to learn about the BioRegisto project and how to use this platform in their daily lives, both in a personal context and, eventually, in a work context. Participants are expected to better understand the concepts of biodiversity, conservation, citizen science and submit records of local biodiversity, understanding the importance of projects such as BioRegisto for scientific research.

Keywords: Biodiversity; Science; Education; Environment; Citizens

From Observation to Action: Methodologies to Engage Communities in Citizen Science

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ABSTRACT

Brief summary of the workshop

How can we turn simple nature observation into meaningful conservation actions? This workshop presents interactive methodologies developed and applied at EVOA to promote active community participation in citizen science. Through hands-on dynamics and critical reflection, participants will explore strategies to foster empathy, ecological literacy, and immersive experiences that transform observers into active protectors of biodiversity.

Main goals

- Goal 1: Share tested methodologies that promote active community involvement in citizen science through education and emotional connection.
- Goal 2: Provide tools and techniques to design immersive, inclusive nature-based activities that support behavioural change and conservation engagement.
- Goal 3: Inspire educators, technicians and communicators to co-create initiatives that link observation with action, adapted to local ecological and social contexts.

Content

The workshop will guide participants through a step-by-step experience, moving toward the design of a citizen science-based educational activity.

Introduction and Icebreaker – participants reflect on their own emotional experiences in nature.

Methodology Showcase – presentation of EVOA's education approaches that integrate science, emotions and community participation.

Co-Creation Challenge – small groups develop a mini-activity or outreach idea based on a real biodiversity issue, linking it to citizen science.

Group Reflection and Feedback – share results and reflect on adaptability to participants' own contexts.

Format and methodology

- Expected duration: 90 minutes
- Format: Hands-on activities, group dynamics, role-play, guided reflection, co-creation

- Necessary equipment: Projector, flipcharts, markers, printed materials (worksheets), projector adapter (USB-C)
- Minimum and maximum number of participants: 8-25 participants

Equity and Diversity

The workshop will ensure inclusivity by using diverse learning approaches (visual, kinaesthetic, verbal), encouraging participation from all voices through group work, and using examples that reflect a variety of cultural and ecological contexts. Activities will be accessible regardless of age, background or previous experience in citizen science. Materials and instructions will use plain language and visual aids to support multilingual comprehension.

Expected results

- Participants gain concrete strategies to implement or enhance citizen science in their own contexts.
- Strengthened capacity to create activities that link emotion, knowledge, and action.
- Increased awareness of the role of education and creativity in biodiversity conservation.
- Formation of a mini-network among participants to share resources and future collaborations.

Keywords: Citizen Science; Nature Education; Empathy; Community Engagement; Conservation

Designing and planning a citizen science project: who and how?

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ABSTRACT

Brief summary of the workshop

This simulation workshop offers a structured, hands-on opportunity for participants to collaboratively design and plan fictional citizen science projects related to water stewardship. Set within the context of Praia da Torre, the session promotes practical engagement with core elements of participatory research and stakeholder collaboration.

Main goals

- Goal 1: Enable participants to experience the full cycle of designing a citizen science (CS) project.
- Goal 2: Facilitate reflection on good practices and common challenges in engaging diverse stakeholders.
- Goal 3: Promote critical thinking on strategies for long-term citizen engagement and project sustainability.

Content

Participants will work in small groups to co-design a fictional CS project, moving through phases of ideation, planning, and peer feedback. Each group will receive a defined context and collaboratively develop key project components: research question, target citizen groups, stakeholder involvement, and engagement mechanisms. Outputs will be visualized in poster form and shared in a plenary discussion.

Format and methodology

- Expected duration: 80 minutes
- Format: Group work, hands-on ideation, collaborative poster creation, facilitated discussion
- Necessary equipment: Flipcharts or poster paper, markers, sticky dots
- Minimum and maximum number of participants: 8-30 participants

Equity and Diversity

The workshop design explicitly encourages inclusion by emphasizing diverse citizen demographics and stakeholder perspectives in project planning. Activities promote equal voice in group work and highlight strategies for inclusive engagement in CS.

Expected results

Participants will gain a deeper understanding of CS project design and stakeholder engagement and will leave with practical tools and frameworks applicable in real-world contexts. Peer feedback will foster mutual learning and the exchange of innovative ideas.

Keywords: Citizen Science; Stakeholder Engagement; Water Stewardship; Participatory Methods; Science Education

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