



LIVING RIVER

CARING AND PROTECTING THE LIFE AND CULTURE AROUND RIVERS AND STREAMS



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WATER

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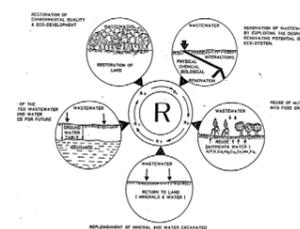
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One of the groups of Simultaneous River Cleaning of 2019.

15 YEARS OF RIVERS PROJECT

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In 2004 the River Project, coordinated in Galicia by ADEGA, started with the main intention of the divulgation of the environmental situation of the rivers, which contributes to raising environmental awareness through citizen participation and reach solutions to problems associated with water and rivers, as well as becoming a benchmark in education programs and environmental volunteering.

In the last 15 years the Rivers Project has been consolidated in Galicia, and the results are very positive. Since this time, the interest of the groups of environmental volunteering grew year by year.

WHAT IS THE RIVER PROJECT?

The River Project is a program of environmental volunteer that bases their labor in three essential steps: the importance of the environmental education to give knowledge about the aquatic ecosystem and promote their conservation; the perseverance of the environmental volunteer work that makes them responsible of one section of the river: this is a fundamental tool which let us educate citizens on how to protect these ecosystems.

The participation on the River Project, at individual level and with different entities, focuses in the two annual river inspections of autumn and spring. The inspections consist in the analysis of biological characteristics, physico-chemical, hydromorphic patrimonial logics of river ecosystems, using the information for the River Project.

With the data of the inspections, River Project elaborates annual reports about the quality of the different Galician Rivers.

One of the requirements to be a volunteer at this time is to send the results of the inspections to Project Rivers coordinators. With this data, from the River Project, a statistical treatment is carried out to conclude the general state of the rivers studied by the participating volunteers. This work, however, has the objective to evaluate the inspection activities carried out by the volunteers and, on the other hand, inform the project of the health or the quality of our river systems. After fifteen years of reports, we concluded that the rivers had improved. The quality of the water is worse than the quality of the forest.



Taking specimens for the river inspection.

TRAININGS:

The training of environmental volunteers who participate in the Rivers Project is a priority for them to be able to carry out their task as efficiently as possible. For this reason, volunteering participants receive general training on the Rivers Project, as well as specific training on other issues that directly affect their work. We try to get all the people to join the initiative, attend some training proposals, either participating in training courses or through training outings.



Inspection of Macroinvertebrates.

ADOPT A RIVER

The River Project (Projeto Rios) in Portugal

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Different stages of river monitoring activities, within Projeto Rios.

Have you ever thought about the possibility to adopt a section of a river, taking care of it and being responsible for its health and protection? If you're in Portugal you can do it!

Since 2006 Portuguese citizens have the opportunity to adopt part of a river or stream, through the initiative Projeto Rios (River Project), which aims to involve people in the protection of rivers and streams along the national territory and work against the deterioration of the quality of these water courses.

This project challenges citizens take care of a river stretch, performing a minimum of two field activities for monitoring purposes, per year (one in spring and one in autumn) and improve that section of the river by taking action, which means creating one activity per year, such as a cleaning action, control of invasive species or other, as long

as it improves their river or the surrounding area. With the practical application of this project people learn to appreciate the importance of implementing a national network through observation, monitoring or surveillance towards river ecosystem's conservation.

On their visits, the participants will have to "put their hands to work" and they will challenge different senses in order to register the required data: they will have to use the sense of smell to understand if there is a bad odor coming from the river, which is an indicator of pollution; they will have to observe and listen very closely in order to be able to identify fauna and flora species as well as to identify the conditions of the river in terms of waste; they will use the sense of touch to make physical and chemical analyses, as well as to measure the width and the depth of the section. In addition to these

components the groups must also identify the cultural heritage of the adopted area, identifying the type of infrastructures present, such as watermills and bridges.

In the last 14 years groups of citizens, varying from schools to municipalities and local authorities, NGOs, scouts and even families and friends have been engaged in the conservation of rivers and their ecosystems all over Portugal. The vast majority of groups involved in River Project choose river sections that are close to their homes, schools or working places as there is an emotional connection between the people and the river, with this being a key aspect to motivate and maintain the groups in the project for a long period of time.

Since the project's implementation, schools and teachers have been some of the most responsive and motivated groups. Teachers use this initiative to complement the school curricula, since it is a fun and dynamic way to teach about river ecosystems, as well as to bring youngsters to the rivers, so they can watch life around the river and understand the need to protect it. Furthermore, it is an opportunity for the children to be in the nature, something they do not do on their own.

As a project based on the collection of quantitative and qualitative spatial data, mapping is the best way to organize the information, making it more

objective and understandable and, therefore, more accessible to the general public. In this sense, ASPEA is developing a WebGIS that will constitute a platform where all participants will be able to share, analyze and compare the results collected during the monitoring activities, in what is intended to be a great online reservoir of information on national rivers and streams, accessible to the general public.

This WebGIS will have, in a first phase, two interactive components: a) a dashboard, an application that will allow to present the quantitative results of the project in an immediate way and in real time using not only maps, but also visual elements of analysis as charts, lists or gauges; b) a geovisualizer, a mapping application that will allow to cross the quantitative and qualitative information of the project through several layers.

ASPEA hopes that this wide accessibility to information will lead to a more committed and interventional public and to a consequent increase in participation levels, thus fulfilling the cycle of public participation in the River Project.

This River Project, coordinated by ASPEA in Portugal, has seen, so far, the adoption of 577 river sections in a total of 289 km, involving over 50000 people in the project activities.



Macroinvertebrate identification during river monitoring activity.



SMUGGLING IN MINHO RIVER

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Miño is a river that is found in the northwest of the Iberian Peninsula, with a length of 310 kilometres, which runs entirely through the autonomous community of Galicia. Its final stretch, seventy kilometres long, forms the border between Spain and Portugal before emptying into the Atlantic Ocean, between Caminha in Portugal and A Guarda in Spain. The Miño river, throughout the entire area that separates Spain and Portugal, which its inhabitants call "a raia", was crossed daily by hun-

dreds of people, who took advantage of the night hours to transport contraband goods from one place to another at the border. People of all ages, gender and parishes, with no age limit or social category, dedicated themselves to smuggling for decades. The riversides crossed the river or the dry raia by known points on foot, in boats (batel), swimming or on a mule. Either option was good for transporting coffee, gold, silver, copper, seafood, livestock, chocolate, or trucks in pieces. Primarily oil and cod passed to

Since memory exists, smuggling has been a very important activity. It emerged as a logical consequence of the economic difference between two countries that share borders. The contraband practiced during the post-war years, in parallel with agriculture and fishing, meant an important source of income for impoverished inhabitants throughout Baixo Miño. Economic and nutritional needs led to the use of merchandise traffic from one border to the other.



Valença: the Miño river, at the bottom Tui and international bridge. as 19-? Archive of the Kingdom of Galicia. Photographic collection. Sig. 706 - Stereoscopic Photography.

Portugal, while the merchandise they introduced in Spain was, above all, coffee, tobacco and copper. There are a thousand written stories of the raia, there were many Galician wet backs that survived thanks to smuggling. Most smugglers were involved in one of the various organizations that existed. Some of them, the freiteiros, were people

who were self-employed, giving them the opportunity to earn a better living than the wage earners. This commercial exchange between the border towns of Miño created great bonds of friendship and forged a shared history. The raia, as the border is popularly known, guards a story of daily struggle for survival.

COLLECTING MEMORIES ABOUT THE RIVER IN THE ARCHIVES: THE COIMBRA UNIVERSITY ARCHIVE AND THE MONDEGO RIVER

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(<https://www.uc.pt/en/au>)

Ana Bandeira, AHUC's archivist, showing one of the selected documents to the group.

The teacher training held in October 2019 promoted a visit to the Historical Archive of the University of Coimbra (AHUC). It was part of the activities related to the first half of the workshop, regarding the methodologies in History applied to knowledge about rivers - Rivers as agents of History: an introduction to historical research. The case of the Mondego river. In addition to the theoretical component on Historical research methodologies, it seemed relevant the group should have a first-hand experience of the type of documents that can be found in official repositories. Institutions like the university

archive are responsible for the preservation and dissemination of historical documents, either produced by public officials or private institutions. The Archive of the University of Coimbra was founded in the early 20th century, but only formally, as the earliest references to its existence date from the 16th century. All the relevant documents produced by the University of Coimbra, founded by the Portuguese king D. Dinis in 1290, are deposited there, as well as the records of the District Archive. The documents kept here date as far as the 12th century until the 20th century.



A row of 17th-century ledgers deposited in the archive.

THE ARCHIVE UNIVERSITY OF COIMBRA WAS FOUNDED IN **THE EARLY 20TH CENTURY**

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The group of teachers from the project's associated schools was accompanied by Ana Bandeira, one of the institution's archivists. The group had the opportunity to visit the archive deposits, to see how the documents are stored and kept, and also have a first-hand account on the challenges regarding conservation and preservation of archival materials. Ana Bandeira's specialized knowledge about the collections allowed the identification of reports and other documents related to the Mondego River, and its surrounding communities. Those, produced by official entities but also individuals and private institutions, gave an idea of the vast scope of its collections — police records, literary writings, ledgers from nearby monasteries, private correspondence, were some of the examples shown. All of them had information regarding the river and activities that used to take place in its banks. Identifying and collecting reports like these is one of the first steps a researcher takes to build a timeline about the River Mondego.



THE CARPATHIAN DELTA

The Dumbrăvița natural area, also called the Carpathian Delta, located on the territory of Brașov county, is a RAMSAR site and is part of the ROSPA 0037 Dumbrăvița-Rotbav-Măgura Codlei Special Avifauna Protection Area – Natura 2000 Ecological Network.

The RAMSAR site has an area of 420 ha and is characterized by wetlands, consisting of several types of habitats, such as: reeds, scrub, open water surfaces of various depths, banks / dams of land, mud, swamps, canals, meadows of the streams, reminiscent of a delta landscape, hence the generic name of “Carpathian Delta”.

The Dumbrăvița fishing complex, part of the site, consists of the accumulation lake and a system of fish ponds in the middle basin of the Hamaradia stream. Dumbrăvița Lake was formed in 1984 by damming the Hamaradia stream, a tributary of the Homorod river, part of the Olt river basin.

The area is the most important place for the concentration of waterfowl in Transylvania. The importance of the protected natural area is primarily due to the populations of wild birds and their habitats.

THE DUMBRĂVIȚA NATURAL AREA:

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Dumbrăvița Lake, Source: <https://primariadumbravita.ro/>

There are vulnerable, endangered and critically endangered species in the area, according to the Birds Directive, the Berne and Bonn Convention, the European Threat Status, SPEC category. Of these, of first importance are the species of nesting birds, such as: *Botaurus stellaris*, *Ixobrychus minutus*, *Ardea purpurea*, *Aythya nyroca*, *Crex crex*, *Porzana porzana*, *Porzana parva* etc.

There are also other species of birds that land here with large populations. Species: *Egretta alba* – over 250 specimens in autumn (the figure represents over 1% of the Central European population passing through this area); *Ciconia nigra* – over 30-70 individuals stop here between September and October (the figure represents over 1% of the Central European population migrating to southern Europe).



Porzana porzana, Photo: Mihai Baciu



Egretta garzetta, Photo: Alexandra Ion

ECOLOGICAL LITERACY

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Ecological literacy is the ability to create behaviors and attitudes beyond knowing information about ecology. Anyone with ecological knowledge may not be an ecological literate individual. It is important for a sustainable life to realize the connection of life in the ecosystem and to act with the thought that human is a part of nature. "Eco" and "logy" are Latin words. "Logy" means science and "eco" means house or home (Odum, Barrett and Işık, 2016). In this case, ecology science means knowing our home, the world. This branch of science, which deals with all living things and the non-living things, emerges as a science that concerns all disciplines to understand how life is sustained.

When architects design somewhere, they design in harmony with nature, minimize the damage caused to nature while producing an industrial product, choose the product that is suitable for the farmer's soil, plan the cities, plan the local governments for sustainability, review the habits of the consumers... have an ecological awareness in every step that the human takes is important. Individuals with this awareness are called ecologically literate individuals.

The concept of ecological literacy was introduced in 1992 by Professor of Environmental Studies and Policy David Orr and was developed by sustainability educators such as Fritjof Capra (2009, 2005, 2003, 1997), Stephen Sterling (2003, 2001), Richard Kahn (2010).

Ecological literacy is related to all disciplines, aims to create a mind-frame and lifestyle that recognize relationships with the natural world and support the development of capacities to create sustainable lifestyles. Ecological literacy

education is important for understanding the relationship between natural life processes and the human lifestyle and ensuring a sustainable life. According to Orr (1992), ecological literacy is not only to recognize the problems but also to be aware of the origins of these problems. Ecological literacy is a basic life skill.

We were able to change our planet in an unprecedented way in a short time. For a long time, we believed that nature is flexible and resources will be renewed, they exist for human beings and that we can use them freely. We continued our lives with an egocentric perspective, not as part of the ecosystem but as a living creature above the ecosystem. When we push the boundaries of our planet, we realized that if we do not have an ecology-centered thought, our life will be in danger. This situation again mobilized the states with the instinct of man to live his own life.

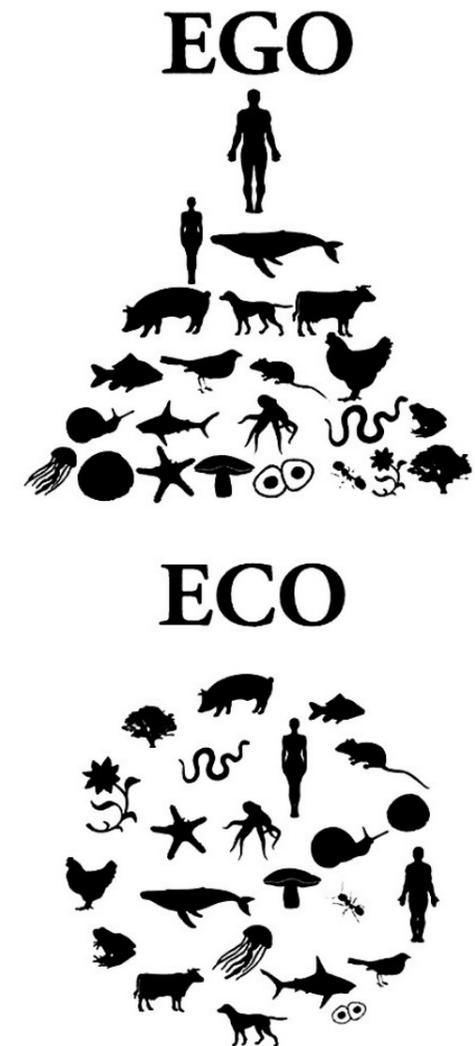
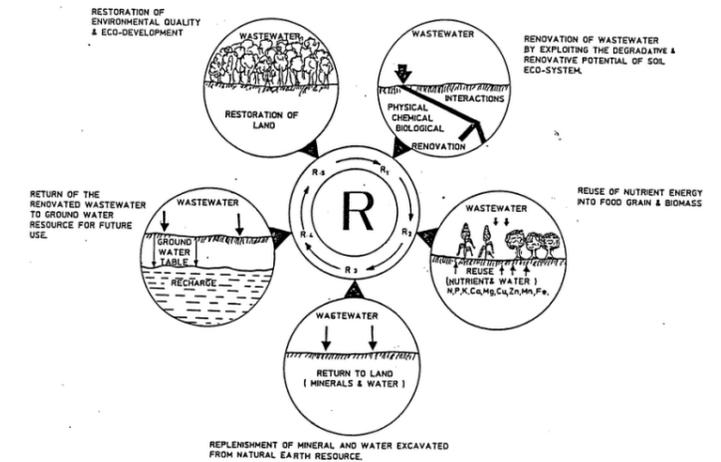
The necessity of ecological literacy can be seen today. By this time, it has started to be accepted by everyone that we need to change our thinking and actions. States have started to make joint agreements on this issue and create action plans for a sustainable life. This also requires the development of new models, new policies, new legislation, new forms of organization, and different education. This new way of thinking required us to learn to act together and to learn what the actions needed for change could be.

According to Orr (1992), the 5 basic principles of ecology are as follows:

- 1) There is a continuous flow over life braid.
- 2) The sun is the energy source of ecological cycles.
- 3) Diversity provides resistance.
- 4) There is no waste in nature.
- 5) Life spreads by establishing bonds with the world.

An ecologically literate person understands that it is part of a living system and what fundamental principles like interdependence and interconnected mean. With this understanding, he is the one who turns conscious actions into actions to minimize negative effects and maximize the contribution of our common well-being to present and future generations. We should remember, **"The impact on a part of a river will affect the whole river."**

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USEFUL LINKS

1. World Rivers day

“World Rivers Day is a celebration of the world’s waterways. It highlights the many values of our rivers, strives to increase public awareness, and encourages the improved stewardship of all rivers around the world. Rivers in virtually every country face an array of threats, and only through our active involvement can we ensure their health in the years ahead.”

<https://worldriversday.com/>



2.Global overview of ecosystem services provided by riparian vegetation

“Fluvial riparian vegetation (RV) links fluvial and terrestrial ecosystems. It is under significant pressure from anthropogenic activities, and, therefore, the management and restoration of RV are increasingly important worldwide. RV has been investigated from different perspectives, so knowledge on its structure and function is widely distributed. An important step forward is to convert existing knowledge into an overview easily accessible—for example, for use in decision-making and management. We aim to provide an overview of ecosystem services provided by RV by adopting a structured approach to identify the ecosystem services, describe their characteristics, and rank the importance of each service.”

<http://www.ecrr.org/Portals/27/Publications/biaa041.pdf>

Riparian vegetation (RV) of fluvial systems is a complex of vegetation with along the river network that is functionally related to the other components of the fluvial system and surrounding area (Chapin et al. 2005). It is a hybrid and open system. It is hybrid because it results from coexistence by human and natural processes, and it is open because the land alongside fluvial systems interacts with the river and associated processes (Dohar et al. 2010). The riparian zone is therefore characterized by high spatial and temporal variability mainly driven by hydrologic, geomorphological and land use conditions, which all change over time under natural and human influences. Riparian vegetation in the context of this article is defined as the vegetation established in the floodplain—that is, the portion of terrestrial landscape from the high water mark toward the channel when elevated water tables influence vegetation and

benefits people obtain from ecosystems or the conditions that ecosystems make to human well-being, after the Millennium Ecosystem Assessment (MEA 2005) and the Common International Classification of Ecosystem Services (ICESIS) report (Hansen Young and Panchin 2013), respectively. The ICESIS concept, which introduced a new framework for analyzing social-ecological systems, has been advocated as a useful tool that provides a holistic and transparent assessment of impacts on human well-being (e.g., MEA 2005; Panchin et al. 2010), allowing decision-making to take proper account of the value of services from ecosystems (Hansen Young and Panchin 2009; Nordin and others 2009) to draw general conclusions on ES in different ecosystems regions (United Carpenter et al. 2009). There is a consensus that there should be a distinction between fluvial RV, which are the remnants of ecosystems

3.The fight for europe’s last wild rivers – Blue Heart Film

“The Balkan Peninsula is home to the last wild rivers in Europe. However, a deluge of more than 3,000 proposed hydropower developments threaten to destroy the culture and ecology of this forgotten region. Blue Heart, now in its first digital release, documents the battle for the largest undammed river in Europe, Albania’s Vjosa, the effort to save the endangered Balkan lynx in Macedonia, and the women of Krušćica, Bosnia and Herzegovina, who are spearheading a months-long, 24/7 protest to protect their community’s only source of drinking water.”

<https://www.youtube.com/watch?v=OhmHByZ0Xd8>



4.River restoration – A strategic approach to planning and management

“This book is the result of a collaborative effort between the World Wide Fund for Nature (WWF) and the General Institute of Water Resources and Hydropower Planning and Design, Ministry of Water Resources, People’s Republic of China (GWIP). This book was originally conceived to provide support to the planning and management of China’s river restoration programme by reviewing approaches to river restoration and identifying frameworks and methods suitable to the Chinese situation. The content, however, considered to be universally applicable”

<https://smarnet.niua.org/sites/default/files/resources/245644e.pdf>

5.River Cleanup

“Clean locally is key in all our actions! By activating the local community, we create involvement and commitment to create a cleaner environment, where people live, work and play.”

<https://www.river-cleanup.org/en>



6.International RiverFoundation

“The International RiverFoundation champions integrated river basin management for the restoration, protection and sustainable management of the world’s rivers. We do this by facilitating leadership, celebration and collaboration. Water is crucial for all life—and we need healthy rivers, lakes and wetlands for sustainable development. We promote and support effective management of these resources by facilitating knowledge sharing, education and best practice river basin management, and by recognising and rewarding those making a difference.”

<https://riverfoundation.org.au/>



<https://www.facebook.com/LivingRiver2018a2021/>

<https://www.instagram.com/livingriverproject/>

<https://www.youtube.com/channel/UC8qf4NwC8xh2XfqGf442ZJQ>

<https://twitter.com/LivingRiver2>

