



15TH INTERNATIONAL CONFERENCE ON LAKES AND WETLANDS



**CONFERENCE
BOOK**

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ABSTRACTS OF PRESENTATION

Keynote Presentations 07.05.2019, 10.00 – 11.30

- Approaches to protect lakes and wetlands: Successes and challenges for lake protection on global level. Francisco Rilla, Director, Science and Policy, Ramsar Convention on Wetlands, Switzerland

Wetlands, our most valuable ecosystem.

Wetlands are among the most productive life-support systems in the world and are of immense socio-economic importance to humans. Wetlands continue to decline globally, both in area and in quality. As a result, the ecosystem services that wetlands provide to society are diminished. Contracting Parties and their policymakers are urged to take immediate action to meet the Ramsar Convention's objective to stop and reverse the loss and degradation of wetlands and services to people.

Wetlands, the most economically valuable and among the most biodiverse ecosystems in the world, are disappearing three times faster than forests with severe consequences for our future unless urgent action is taken to ensure their survival.

Wetlands include lakes, rivers, marshes and peatlands, as well as coastal and marine areas such as estuaries, lagoons, mangroves and coral reefs, and are currently estimated to cover more than 12.1 million km², an area greater than Canada. Between 13 to 18 % of them are on the Ramsar List of Wetlands of International Importance ("Ramsar Sites"), which are sites protected, under the Ramsar Convention on Wetlands.

Wetlands are critical to human and planet life.

Directly or indirectly, wetlands ecosystems provide almost all of the world's consumption of freshwater. More than one billion people depend on them for a living and 40 % of the world's species live and breed in wetlands. They are a vital source of food, raw materials, genetic resources for medicines and hydropower.

They mitigate floods, protect coastlines and help build community resilience to disasters, and they play an important role in transport, tourism and the cultural and spiritual well-being of people.

These valuable ecosystems provide people with water, they protect us from floods, droughts and other disasters, they provide food and livelihoods to millions of people, they support rich biodiversity, and they store more carbon than any other ecosystem.

The multiple benefits and services provided by wetlands are essential for achieving global policy goals and commitments, such as the Sustainable Development Goals (SDGs), the post 2020 under the CBD the Nationally Determined Contributions NDCs under the Paris Agreement on Climate Change and Land Degradation Neutrality under the UN Convention to Combat Desertification.

Wetlands play a critical role in providing ecosystem services.

Water and wetlands can lead to better informed, more efficient and fairer decision making. Appreciating the values of wetlands to both society and the economy can help inform and facilitate political commitment to policy solutions to environmental and social issues.

It is also about The wide range of ecosystem services provided by nature to people and the economy that need to be taken into account to ensure that their full benefits are not overlooked. These “values” of nature can be expressed in a number of ways, using different methods, including qualitative, quantitative and monetary indicators.

Wetlands offer solutions to water security – they provide multiple ecosystem services supporting water security as well as offering many other benefits and values to society and the economy.

Values of both coastal and inland wetland ecosystem services are typically higher than for other ecosystem types.

Wetlands provide natural infrastructure that can help meet a range of policy objectives. Beyond water availability and quality, they are invaluable in supporting climate change mitigation and adaptation, as well as helping promote human health, as livelihoods, local development and poverty eradication.

The role of the Ramsar Convention on Wetlands.

The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Conservation and the wise use of wetlands lie at the heart of sustainable development. The Ramsar Convention enables governments to conserve and use wetlands wisely through the provision of technical support, a global policy framework, on-the-ground advice and identifies sites at risk.

The Ramsar Strategic Plan 2016-2024 has four closely related goals: 1) addressing wetland loss and degradation, 2) conserving and effectively managing Ramsar Sites, 3) using wetlands wisely and 4) enhancing implementation. Each of the 19 related targets in the Ramsar Strategic Plan link to the UN Sustainable Development Goals and specifically to 75 of the SDG targets. Yet, wetlands in many parts of the world are in trouble, with serious implications for society. Reversing the trend of degradation and loss is critical.

The Ramsar Convention provides a ready-made platform for governments to implement these actions to halt and reverse the decline of this valuable and irreplaceable resource.

- Living Lakes Partner City of Valencia: L’Albufera de València, Present and Future. Sergi Campillo Fernández, Delegated Councilor for the Conservation of Natural Areas and Devesa-Albufera, City of Valencia, Spain

Main characteristics.

The Albufera Lake, located south of Valencia City, has 2100 hectares and 1.5 m depth. Its freshwater comes from the surrounding rice fields, which in turn are fed by Júcar and Turia rivers. The lake is connected to the sea through canals known as Golas. The water of the lake is in a hypertrophic state.

The marsh is formed by rice fields, with a total of 14,100 hectares (70% of the Natural Park surface). These regulate the hydrological regime of the entire park, including the lake. A high biodiversity, especially birds, can be found here.

The Devesa is the natural system that separates l'Albufera from the sea, in which we find a great variety of ecosystems: beaches, dunes, forests and malladas (mainly temporary ponds in interdepressions of dunes). Its dimensions are 10 x 1 km.

The management of this space is complex due to the various related actors:

On the one hand, the Central Government is in control of the hydrological management through the Hydrological Confederation of Júcar (CHJ).

On the other hand, the Generalitat Valenciana (regional government) is the responsible administration of environmental management. It declared l'Albufera the first Valencian Natural Park in 1986.

Finally, l'Ajuntament de València (local government), the owner of the Lake and Devesa for more than 100 years. From the 80's, it has been highly involved in the management of both lake and forest.

Ecological situation in the historical context

In the 70's the Albufera Lake reached its ecological collapse due to the high populations of macrophytes. Currently, the green color of the waters reveals the hypertrophic state in which the lake is located, due to the large presence of microalgae.

With the data we have of surplus crops poured into the lake, a strong decrease can be observed from the 60's to 2015. In the 60's we had data of more than 350 Hm³ until 2015 that reached 0 Hm³.

In the last 20 years, the data of Chlorophyll-a ($\mu\text{g/L}$) show us values of more than 100 $\mu\text{g/L}$, thus exceeding the lake limit in the hypertrophic state, set at 75 $\mu\text{g/L}$. It should be noted that the 150 $\mu\text{g/L}$ have been exceeded since 1997 until 2005, with an increase of more than 250 $\mu\text{g/L}$ in 2003. On the other hand, the years 2016 and 2017 had values around 50 $\mu\text{g/L}$, which led to an improvement in the water quality status.

There are some macrophytes species with high presence in the lake (spring 2016): *Potamogeton pectinatus*, *Myriophyllum spicatum*, *Najas marinas*.

- Floodplains and wetlands in Germany. Significance, threat and measures for protection and restoration. Bernd Neukirchen, Head of Unit "Inland Waters", German Federal Agency for Nature Conservation, Germany

The German Federal Agency for Nature Conservation provides the German Environment Ministry with scientific assistance in all nature conservation and landscape management issues including those of wetlands. For this, the GFANC supervises scientific research projects as well as a number of funding programs and carries out conservation and restoration projects jointly with external partners.

In Germany a large number of different wetland types exist. They include for example coastal, inland and human made wetlands. Here you can see some examples for floodplains with alluvial forests, marsh areas, peatlands, rivers, lakes and coastal areas. Surface waters and wetlands have major influence on the landscape and they are of great ecological and economic importance. Wetlands provide essential ecosystem services: They capture carbon, retain water and nutrients and provide habitats for numerous plant and animal species. Not to forget: River landscapes are highly valued for recreation.

Especially global warming and its uncertainties and impacts currently pose challenges for wetlands and their conservation. Another very important reason, why the situation of wetlands

and floodplains today is so bad, lies in the past. To provide areas for agriculture, forestry and settlements wetlands have been destructed on the large-scale during the last centuries.

This loss of natural floodplains, caused in particular by the construction of dikes, is the result of a strategy pursued for centuries to provide local protection against flooding and to improve the conditions for agricultural production in floodplains.

Restoring floodplains can have tremendous positive effects not only for the ecological network but also on floodplain status and ecosystem services like flood protection. One example of a successfully implemented restoration project is the dike relocation at Lenzen, located at the lower Middle Elbe. An area of 4.2 square kilometers has been reconnected to the river's flood regime.

Although only very few projects of the political programs introduced before have already been implemented many restoration measures have been carried out all over Germany since the 1980s already. We detected about 170 projects, which are important on a supraregional level. These measures include re-connections of oxbow lakes, restorations of alluvial forests and wet meadows as well as the relocation of dykes and changes in land use intensity. In many places, improvements of the floodplain status have been achieved.

There is still great need but also significant potential to restore floodplains in Germany. Restoration projects do not only have positive effects on biodiversity and overall floodplain status but also enhance ecosystem services which benefit our society: For example, flood peaks and therefore flood damages are mitigated by the natural flood retention functions of floodplains. Investments also pay off economically. Various political programs and legal requirements on the national and European level support the current trend to redevelop semi-natural floodplains. Projects should always be implemented in cooperation with partners from various disciplines and authorities to ensure maximum success. Thereby we have to be aware that floodplain restoration is a task for generations and is only just beginning.

Water challenges of our times 07.05.209, 12.15 - 13.30

- Strategies for partnerships of business and NGOs for the protection of wetlands
Frank Hoffmann, Technical Officer – Biodiversity and Corporate Relations, Wetlands International, The Netherlands

Companies are important stakeholders in a landscape or basin. Companies have a multi-facetted interaction with wetlands: they either rely on services that wetlands provide (e.g. water security, drinking water), or they impact economic activities can have on the wetlands (e.g. water abstraction, pollution). Thus for inclusive and sustainable development decisions it is essential to include businesses in conservation. Examples are presented in which Wetlands International works with businesses at basin scale: the Rhine River in Germany, the Cagayan de Oro River Basin in the Philippines, and the Central Rift Valley Lakes in Ethiopia. These projects aim at supporting businesses in changing their practices, while the business will technically support and co-finance more sustainable river and lake basin management.

- Private cooperation for water management. Factors of success. Jaime José Castillo Soria, Director of Institutional Relations, Global Omnium, Spain

Global Omnium is a private company created in 1890. We manage the urban water cycle with presence in 11 of the 17 regions of Spain and in five countries on three continents.

Water scarcity is common in Spain, not only in Valencia, either because of the lack of it, either because it does not have the necessary quality or because the flow is insufficient. Water is a continuous medium: Rain and dew pass to rivers and aquifers, and from there to lakes, wetlands and springs. The lack of water has a global dimension.

The prospects are not good: the population increases, we tend to live more and more concentrated in cities and conurbations, and our way of being does not help. What is the best management model?

It is convenient to analyze each case, and define what responsibilities and functions can be assigned to each entity according to their nature, purpose and capabilities. Thus, it corresponds to the Public Administration the definition of policies and priorities, and monitor that work is being done in the established direction. Private companies can offer alternatives for the execution of those policies, and carry out the one chosen by the Administration. An example: The Serpis River, during most of the year, does not have enough flow for the self-cleaning of the channel. When an intense rain arrives, the accumulated dirt reaches the beach of Gandía, which has to be closed for bathing. The City Council raised the problem and we offered alternatives such the use of unusable wells for supplying water to the river, or changing the working conditions of the treatment plant in order to discharge its effluent to the river and not to the sea.

The importance of finding ways to collaborate with civil society through NGOs or associations, especially in the field of biodiversity conservation, should be highlighted. One species of turtle (*Caretta caretta*) has returned to nest in the coasts of Valencia. When a landing is detected, the NGO Xaloc takes care of the nest with the support of the Oceanogràfic, in whose capital participates Global Omnium. At birth the turtles are taken to the Oceanogràfic taking care of them, making successive releases, the last with location systems. Since long before, these scientists have been collaborating with fishermen, when they accidentally catch turtles, they suffer decompression when they board them. In the Oceanogràfic they are recovered and, once their wounds are healed, they return, healthy, to the sea.

That is why we consider tendentious to deny the contribution of the private entities in the care of the environment, and, therefore, to take care of water, both needed water and not.

We want to fulfill our responsibility, we do not expect to be protagonists, only to contribute, because we think that the environmental task is of such magnitude that the contribution of everyone, Administration, environmental organizations, private entities, the nature itself is necessary and, of course, of all of us, each one in its role.

- Business tools to manage water challenges. Marta Santamaría Belda, Policy Director, Natural Capital Coalition, UK

The presentation showed the progresses done by companies in incorporating natural capital into their decision making processes, thorough the application of the Natural Capital Protocol and with special focus on showing examples of assessments that helped companies to have a better understanding of their impacts and dependencies on water and inform their decision to reduce their natural capital risks or enhance their opportunities.

Parallel Session 1 07.05.209, 15.00 – 17.00

Spanish & international initiatives of the business sector to conserve water resources and increase resilience against climate change

- Example I – Carolin Häfner, Specialist Corporate Citizenship, Public Relations, Cultural and Social Sponsoring, Alfred Kärcher SE & Co. KG, Germany

Kärcher is the world's leading provider of cleaning technology and is especially well-known for its high standards in terms of sustainability. Implementing the company's commitment, its various corporate citizenship activities are organized in four separate pillars: cooperations, donations and sponsorships, corporate volunteering and the Alfred Kärcher foundation. One successful example of these cooperations is the partnership with the Global Nature Fund. In 2013, the organizations created the “Clean Water for the World” Initiative, which aims to increase water and living conditions in rural regions of developing and newly industrializing countries. To fulfill this goal, greenfilter systems are being built to naturally reduce nutrients, pollutants and germs in local water resources. While Kärcher participates offering financial support, the GNF leads and administrates the construction processes. Using this system, 15 greenfilter systems have already been completed in six different countries and more are being planned. As a result, the “Clean Water for the World” Initiative developed into a long lasting and effective success story. Finally, the cooperation of the GNF and Kärcher is characterized by a good bond of trust, as well as an open-minded, honest and continuous communication.

- Example II – María Pedro and María Peña, R+D+i Global Omnium, Spain

With more than 125 years of experience, Global Omnium is at present a national and international reference business group. It is specialized in the different processes that involve the Integrated Water Cycle, providing its services to more than 350 municipalities in Spain, Latin America, Asia and Africa .Through its work, Global Omnium contributes to the conservation of water resources, increasing their resilience to climate change in different ways: by improving the efficiency of drinking water distribution networks, discharging high quality treated wastewater into the natural environment, developing advanced control systems, preventing how to cope with extreme events (such as floods and droughts), and managing R+D+i projects, including studies about artificial wetlands. To provide all this care to the environment, Global Omnium collaborates with NGOs and universities, and promotes awareness in society.

- Example III - Klaus Strixner, Sika Community Programme, Sika AG, Switzerland

Sika's community engagement program is a pillar of the comprehensive Sika sustainability strategy "More Value – Less Impact". Mindful of its obligations, Sika actively engages in sustainable and humanitarian development projects, either as a member of international organizations or directly on the spot. Sika's social involvement also embraces community engagement and initiatives in the fields of science, culture, and sport.

Sika aims to sustain local communities in order to help people to help themselves. Cooperation and support of existing, professional charity organizations is given first priority. Field of activities are: buildings and infrastructure for social and ecological projects, technological education of construction people and ecological water projects correlating indirectly with Sika's field of waterproofing activities (products, markets, customers).

Parallel Session 2 07.05.2019, 15.00 – 17.00

Watershed management, water footprint and other tools: Potential achievements and limits

- Water Footprints: Concepts, Methodologies and Policy Responses. Francesc La Roca Cervigón, Fundación Nueva Cultura del Agua, Spain

The water footprint is a measure of humanity's appropriation of fresh water expressed in volumes of water consumed and/or polluted. The water footprint concept is related to the previous one of ecological footprint proposed by Wackernagel and Rees in the nineties. It is based on Allan's idea of virtual water, the quantity of water needed for producing a commodity. Water footprint and virtual water have proved to be useful tools in arising awareness among consumers, firms and policy makers. However, the use of such indicators in decision making processes has to be carefully managed, avoiding oversimplification and complementing the useful information they provide with other indicators.

- Example I: Water Stewardship @Nestlé: Caring for Water initiative. Cédric Egger, Corporate Water Resources Manager, Nestlé Waters – Paris

Since many years, Nestlé is committed to Water Stewardship. *Caring for Water initiative* is the new flagship initiative of the Group's purpose and value framework. It provides internally the mindset and the guidance for all water synergies and projects along the whole value chain. All starts within the factories, implementing technologies for circular use and recovery of water contained in agricultural raw materials like milk, allowing achieving "0 Water factories" best practices in regions with water stress. "*Manos al Agua*", a program for integrated water management in coffee communities in Columbia, or sustainable sourcing of tomatoes in the Spanish Extremadura represent further concrete and relevant examples. In the same mindset, and to proceed in that direction, Nestlé committed to certify all its water factories worldwide according to the Alliance for Water Stewardship standard by 2025, thus taking a leading position for responsible water management.

- Example II: Methodology to evaluate ecosystem services in wetlands. Nieves Cifuentes Valero, Corporate Responsible for Environment and Sustainability, Naturgy, Spain

Naturgy is a company of gas and electricity, the largest in Spain and in Latin America with a presence in 30 countries. The environment and sustainability are fundamental for the company they are leaders in the most recognized indices of responsibility at an international level: DJSI, FTSE4Good, CDP.

For the company the water is a key resource:

- We use it in hydroelectric plants to generate electricity. We have 55 hydroelectric plants, most of them with their reservoirs, which are artificial wetlands.
- We use and consume water, mostly to cool our 24 thermal power plants (nuclear, coal, engines and combined cycle).
- We have also used it for the restoration of an open-pit coal mine, creating the largest artificial lake in Europe.

Case of success: Meirama Artificial Lake

In 1980 Naturgy began to extract coal from an open pit mine to feed the Meirama thermal power plant. In 2008, its exploitation ended and environmental restoration work began. Among the different alternatives, it was decided to transform the tailings pit into a lake. It is a unique reconversion project in Europe, there are only similar cases in the United States, although born in much smaller mines that supply water to smaller populations.

Being located in the same basin as the Cecebre reservoir that supplies the region of A Coruña, and the excellent quality of its water, the lake of Meirama serves to supply, without previous purification, the 400,000 inhabitants of the region of A Coruña. In addition, this lake has the capacity to regulate avenues avoiding floods and their adverse effects. In the lake, an artificial beach has also been created, which together with the rehabilitated natural landscape boosts the economic and tourist development of the area.

In addition, 450,000 trees have been planted, recovering riparian vegetation around the lake. In fact, at the moment the place has been repopulated by more than 830 animal and vegetal species.

Natural capital

To determine the economic value that the project can bring to the region, the natural capital tool has been used. They have been considered only: 1) Stock of water natural capital, 2) Assessment of recreational and environmental uses of the lake 3) Obstatng other impacts (flood control, CO2 sink ...). Comparing the results, it is clear that the lake generates great benefits. Natural capital is a good tool for: 1) Decision making, 2) Support for negotiations with other stakeholders and communication.

Environmental Restoration Project

The main steps followed in the restoration of the mine have been:

1. Sealing of the bottom of the mine with clay filling between 65 and 130 m.

2. Controlled flooding, by diverting the flow of the streams from Meirama's surroundings + Control of the slopes geotechnical stability + Control of water quality throughout the entire process: more than 500,000 data.
3. Environmental restoration: 450,000 trees have been planted
4. Environmental monitoring: water quality, state of the ecosystem.

At the moment this territory is a fenced enclosure in which programmed visits are realized, waiting for the regional administration to take the lake management.

Bolarque: The Pilot Project of Natural Capital

Before using natural capital as a tool to evaluate ecosystem services, we conducted a pilot project at Bolarque Hydrographic Confederation, located in Guadalajara, Spain.

Directly related to the natural good "water", there are other services, such as:

- Development of a tourist and recreational activity (jetty) that places the Salto de Bolarque as a reference in the local and regional offer.
- The hydraulic infrastructure, as for the town and the museum, is also considered an industrial enclave and historical architecture which also attracts a significant number of visitors with another type of interest beyond the purely recreational.
- 1,858 ha of properties in the vicinity of the Salto de Bolarque. Almost the entire surface consists of forest vegetation not subject to exploitation.

In the study of natural capital, all impacts and dependencies were analyzed qualitatively, but a sample was selected to be monetized, due to the complexity of the work required.

Pilot project

The steps that we followed to carry out the pilot were:

1. Selection of methodologies and tools: natural capital protocol, CICES for identification and classification of ecosystem goods and services, ESR, etc.
2. Compilation of information, site visit, interviews, data analysis
3. Determination of natural capital
4. Validation of the pilot and conclusions

- Example III: Water Footprint and Natural Capital Accounting. Hitomi Miura, ESG Management Promotion Department, SEKISUI Chemical, Japan

SEKISUI Chemical Group is a Japanese company with branches all over the world that produces intermediate products and materials that are part of many of many everyday products. At Living Lakes Conference, SEKISUI will present two products that are able to reduce water-related risks (as floods) in urban areas. Besides SEKISUI is assessing its impacts and contributions to the Sustainable Development Goals (SDGs) and to Natural Capital. The calculation goes into a method called the "SEKISUI Environmental Sustainability Index" which will be presented as well.

Parallel Session 3 07.05.2019, 15.00 – 17.00

Payment for ecosystem services, project support, sponsoring: Compensation or contribution or both?

- Payments for Ecosystem Services opportunities for the companies and environment. Marion Hammerl, President of Global Nature Fund, Germany

In her introduction, Marion Hammerl described briefly the different ways for NGOs to cooperate with companies. Most of the cooperation's start with punctual sponsoring or a donation for a conservation project. Some contacts further develop towards longer term relations focussing on concrete projects. Experience shows that NGOs should be very clear regarding the project objectives, support of the company (in-kind services, knowledge, financing), reporting and external communication. It is positive if the project is related to the business of the company – easy in the case of lakes and wetlands protection, because all companies have a direct relation to water resources.

With which companies, NGOs can cooperate and with which ones better not? Global Nature Fund cooperate with those companies which have potential to reduce their negative impacts and improve their environmental performance.

Payment for Ecosystem Services (PES) and Natural Capital Valuation are relatively new concepts with the objectives to influence positively company's decision processes and to motivate them to compensate the negative ecological footprint. Marion welcomes these approaches, but underlines that not always very complete studies and calculations are needed and many studies confirm what is known anyway. Companies should not stop after having the calculation of their footprint, but initiate activities to really "pay back" to nature.

- Example I: Visitor Giving in the English Lake District – Connecting Tourism and Conservation in a National Park; Sarah Swindley, Director, Lake District Foundation, UK

The Lake District Foundation was established in 2017 but has a longer history. The aim is to motivate businesses, visitors and other donors to support projects and programmes of work across the Lake District. Within others, the Nature Lakeland Small Grants Fund was created to support smaller projects. The contribution of businesses – mainly tourism businesses located in the National Park – is not based on calculations of ecosystem services used. The term "Payment for Ecosystem Services" is even not just. But all businesses have very clear that the conservation of the lakes as the most attractive element of the NP is important for their business. The tasks of the Foundation are motivating businesses, guarantee a good implementation of the projects supported and make sure that the businesses have an added value regarding image and communication.

- Example II: Business Action for Biodiversity and Ecosystems. Andreas Gettkant, Coordinator of the Global Project Private Business Action for Biodiversity, GIZ GmbH (German Development Cooperation), Germany

The important role of the private sector in combating the causes of biodiversity loss and ecosystem degradation cannot be overemphasized. Successful examples show that biodiversity friendly production and commercialization is feasible. Recent trends in the field of standards and labels as well as impact investments represent opportunities for businesses and can trigger investments into biodiversity friendly production and commercialization. However, biodiversity friendly production and commercialization needs specific support and favourable framework conditions in order to become mainstream. The presentation pointed out promising instruments that need further improvement in order to create enabling conditions for integrating biodiversity into agriculture supply chains. It also gave case examples from Brazil, India and Mexico.

- Example III: Long-term cooperation between NGO and companies on rural development & lake protection. Dr Andrew Venter, CEO, Wildtrust, South Africa

Drawing on wisdom gained over 20 years, the presentation will share lessons learnt from long term sustainable development and conservation partnerships with a range of corporates, including multinationals such as UNILEVER, WALMART and DOW, and South African entities including NEDBANK, GRINDROD BANK and South 32 Mining. Emphasis will be placed on explaining the process taken to establish, build and retain these relationships, with emphasis on presenting an honest view of the compromises made, deals done and integrity challenges faced.

Keynote Presentations 09.05.2019, 10.00 – 11.30

- The ongoing work of the EKLIPSE project on the barriers to effective restoration in the EU. Judith Fisher, Chair of the EKLIPSE Restoration EWG, Member of the IPBES Multidisciplinary Expert Panel, Research Fellow at UWA African Research and Engagement Centre, Australia

The critical importance of water for securing human livelihoods, health and wellbeing and build resilience to climate change is well recognized across many fora. Recently the United Nations General Assembly declared a United Nations Decade on Ecosystem Restoration (2021 to 2030), recognizing the importance of scaling-up of restoration to address the severe degradation of landscapes, including wetlands and aquatic ecosystems worldwide. The interim findings of the EKLIPSE project on Restoration and the IPBES Land Degradation and Restoration Assessment provide strong scientific evidence to support, and provide direction, for the upcoming boost to landscape restoration to the top of national agendas. This boost is paralleled by strong societal demands for action to co-ordinate ecosystem responses to changing climates, biodiversity loss, and subsequent impacts on economies and livelihoods. We discuss the interconnections between strong scientific evidence and opportunities to bring together Policy, Societal partnerships and good governance to strengthen the restoration and resilience of wetland, aquatic and other water systems. The incorporation of nature based restoration solutions provide opportunities to respond, with positive actions, to changing climate impacts on people, water and their landscapes.

- Wetland Conservation Experiences in Comunitat Valenciana, Paloma Mateache and María Sahuquillo, Regional Ministry of Agriculture, Environment and Climate Change, Spain

Wetlands are considered very important ecosystems in the Valencian region, not only because of its extension and biodiversity but mostly because of their interrelation with Valencian culture, traditions and land use. In fact, wetlands have been protected by Valencian government since 1994 and the regional inventory dates from 2002.

This presentation tries to explain the principal characteristics of the regional wetlands (44845 ha total) and their current conservation status. The best known are the extensive Mediterranean coastal wetlands, from fresh to hypersaline waters, important for birds and for their role in water storage and regulation. But small inland ponds are also important for their unique biodiversity. Lessons learned after 20 years working on the wetlands conservation are discussed using specific examples.

Management and Monitoring of Lakes and Wetlands 09.05.2019, 11.00 -13.00

- Management and control of Mediterranean wetlands in the Júcar hydrographic demarcation: the case of l'Albufera de Valencia, Teodoro Estrela Monreal, Head of the Hydrological Planning Office of Confederación Hidrográfica del Júcar, Spain

L'Albufera wetland is the most important wetland of the Jucar river basin. Its main use is the agriculture and it has great ecological value. It has a shallow lake located in the center of the wetland and considered a heavily modified water body. This water body suffered and environmental crisis during the 60s and 70s mainly due to urban growth, industrial development and changes in agricultural practices. That caused the eutrophication of the water and loss of good quality status that still has nowadays.

To recover the optimum ecological status, the Jucar River Basin Management Plan (RBMP) has established a minimum water requirement of 210 hm³/year and has defined an environmental objective for Chlorophylla set in two steps: 90 µg / l in 2021 and 30 µg / l in 2027. Other measures like improvements of water sanitation and waste water treatment systems or the construction of constructed wetlands have been developed in the last years. But even though the efforts, there are still much to do. The Jucar RBMP establishes that, for the specific case of Albufera lake water body, the public administrations with competences in managing this wetland will boost the development of a special plan to achieve the environmental objectives established for the wetland.

The Albufera Special Plan has been elaborated with the agreement of the 3 administrations (national, regional and local) with competences in the Albufera wetland. The measures contained in the text to achieve environmental objectives have been divided in six different types; one of them groups the control and monitoring measures.

The control and monitoring of the lake is important to know if the general Water Framework Directive environmental objectives (good status) and specific environmental objectives (reduction of eutrophication and minimum water requirements) are being achieved. Also, to know about measures effects.

The Jucar River Basin Administration does the water quality monitoring in four control points of the Albufera lake and measures different parameters: in situ, biological, nutrients and chemicals. It also controls the water outflows from the lake to the sea and the sea level to estimate the inflows.

- Living Lakes – Example of tropical lakes. Senglong Youk, Fisheries Action Coalition Team (FACT), Cambodia

This presentation will share the experiences and lessons of Fisheries Action Coalition Team (FACT) work in the Tonle Sap Great Lake on strengthening community networks and improving policies and practices around fishery resource governance in the Great Lake.

The presentation will also highlight some serious and newly emerged challenges/threats to the Lake.

Drawing on FACT's experiences of engaging with multiple actors at local, national and also regional levels and working on the grounds directly with community fisheries, the presentation will also share some ideas and suggestions for how to sustain the Lake, particularly with active engagement of civil society and communities.

- Sustainable Peatland Management in the Broads – Reducing greenhouse gas emissions and creating a sustainable economy. Harry Mach, CANAPE Project Manager, Broads Authority, UK

Drained peatlands account for 5% of anthropogenic Greenhouse Gas Emissions, with large amounts of the drainage being for agriculture. When peat is drained for agriculture, approximately 30 tons of CO₂ is released per hectare. Europe is the 2nd largest source of this type of emissions, following Indonesia.

CANAPE aims to reduce these emissions by restoring peatlands, and providing farmers with viable alternatives to farming on drained land. We are promoting “paludiculture,” the practice of farming wetland crops such as Sphagnum Moss, Cattail, and Reed to provide more sustainable income sources for farmers, and additional revenue streams for conservationists.

In addition, the project includes activities to promote awareness of the value of peatlands with the wider public, and encourage more sustainable consumer behaviour, such as not buying peat based growing media.

- Participatory monitoring of watersheds. Raegan Mallinson, Claire Pollock-Hall & Avery Deboer-Smith, Living Lakes Canada, Canada

The team at Living Lakes Canada present their National stream health assessment protocol and groundwater monitoring, with indigenous cross-cultural involvement and community based monitors using updated technology. They will also cover projects which engage community members and citizen scientists to restore and establish wetlands in the headwaters of the Columbia Basin, in Canada. Finally, they will discuss how trans-boundary Columbia Basin water monitoring collaborative will make water monitoring information available for engagement, education and management decisions in support of watershed stewardship. Below is the information:

- Raegan Mallinson- National stream health assessment protocol and groundwater monitoring with indigenous cross-cultural involvement and community based monitors using updated technology.
 - Claire Pollock-Hall - Engaging with community members and citizen scientists to restore and establish wetlands in the headwaters of the Columbia Basin, Canada
 - Avery Deboer-Smith- How trans-boundary Columbia Basin water monitoring collaborative will make water monitoring information available for engagement, education and management decisions in support of watershed stewardship.
- The role of Mediterranean wetlands in climate regulation. Antonio Camacho González, Professor in the Department of Microbiology and Ecology, University of Valencia, Spain

Aquatic ecosystems, and especially lakes and wetlands, play a disproportionate role on carbon processing in comparison to their covered surface relative to other ecosystem types. As such, they can accumulate huge amounts of carbon, contributing to carbon sequestration and long term storage. In ecosystems, many efforts are currently linked to its adaptation to climate change. However, ecosystem processes, many of them linked to the processing of carbon and other elements also related to greenhouse gases (GHG), can play a major role in the mitigation of the effects of climate change, as they are able to store part of the carbon emitted by human activities. Green carbon, and blue carbon for aquatic ecosystems, is increasingly seen as a promising tool to mitigate the effects of climate change caused by the huge amounts of GHG released to the atmosphere by human activities. Conversely, under certain circumstances often linked to its degradation, wetlands can turn into net emitters of GHG.

The research group of Limnology of the Cavanilles Institute for Biodiversity and Evolutionary Biology of the University of Valencia is conducting, during the last years, an intensive study on the role of Mediterranean wetlands in the regulation of the carbon cycle, which is linked to their conservation status, and this is being related to the different types of ecosystem services they provide. This includes field studies on the current rates of carbon-related processes in the main types of Mediterranean wetlands, as well as experiments to unveil how these rates could change under the different climatic scenarios established by the IPCC (RCP -Representative Concentration Pathways-).

Our studies also show how these wetlands, and its carbon cycle, regulating its carbon sequestering/releasing capacity, respond to different levels of alteration. Wetlands suffering alterations, either hydrological or by eutrophication or anthropogenic organic matter inputs, decrease its carbon storage capacity, and can even turn from being net carbon sinks, thus contributing to climate change mitigation, to become net carbon emitters. These shifts are especially harmful when water and sediment conditions are driven to low redox values by the high oxygen demand created either directly by the increase of external organic matter inputs, or by the excess of autochthonous organic matter production promoted by eutrophication. Both favour anaerobic respirations and the release of GHG, such methane or nitrous oxides, showing an increased warming capacity compared to CO₂.

Our research, also supported by results of other authors in wetlands elsewhere, stress the need to maintain a good conservation/ecological status of wetlands, where healthy functioning natural biogeochemical processes facilitate carbon storage and support its climate change mitigating capacity. Conversely, wetland degradation could not only reduce this capacity of wetlands as allies in the fight against climate change, but could even reverse its relevant role in the regulation of the amount of GHG emitted to the atmosphere.

ABSTRACTS OF POSTERS

- Experiences in the application of control and eradication methods of *Arundo donax* in humid areas in Valencia Province.

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ABSTRACT

Arundo donax or cane, belongs to the grass family (*Poaceae*) and is the largest species within its genus and one of the largest grasses in the world. In the Mediterranean region, and in particular in Spain, it is considered as an alien and invasive species, so in addition to not belonging naturally to this area, its aggressive growth entails the displacement of native species in the ecosystem.

In this work we focus on two wet areas of the Valencia province: Turia river, specifically in two points of Vilamarxant and Ribarroja del Turia; and l'Albufera de Valencia, specifically Tancat de la Pipa and Tancat de Milia. We analyze in which situation *Arundo donax* is found in both areas and then make a comparison between them. We also conducted a study of the different actions that have been carried out in order to eradicate the species.

We conclude the study proposing the method of repeated clearing as the most effective one and recommending its use as we see *Arundo donax* is highly widespread in these areas, despite the actions taken to control it. We also recommend restoration with native vegetation as a supplementary measure at the same time the cane is removed. To conclude, note that *A. donax* does not reach the areas where native vegetation is a mature mass.

- Improving the science-policy interface for ecosystem services and biodiversity conservation in multifunctional coastal landscapes: Continuous improvement in Doñana.

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ABSTRACT

Owing to historical, political and legal reasons, the Doñana coastal region is ruled by a complex governance regime involving numerous organizations and characterized by institutional rigidity. These features makes the region a particularly difficult place to innovate and improve governance and management approaches for the conservation of ecosystem services and biodiversity. In this context, we propose “continuous improvement” as a strategy to innovate incrementally at the science-policy interface, in an ongoing collaborative effort with the diverse set of stakeholders. Continuous improvement is based on the idea that progress through small cooperative changes can result in major improvements, as opposed to big transformations imposed top-down. This poster presents our long-term initiative in Doñana, which ultimately seeks the operational implementation of adaptive management as a novel approach to management under uncertainty in rigid conditions.

- Recent Morphological Changes in L'Albufera of València. Analysis of historical bathymetry and topography.

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ABSTRACT

The present work analyzes some recent morphological changes of the Albufera of València by the use of digital elevation models. From historical and current cartography, bathymetric models of the years 1752, 1973 and 2003 have been generated, analyzing the topographic variations among them. The results show two consecutive processes. In the first place, the impact of the historical agrarian sanitation works on the current lagoon environment, and second, the changes that have taken place in the sedimentary dynamics as a result of the eutrophication process suffered by the wetland since the 1970s, whose more visible impact is the increase in erosion in the islands and marsh vegetation.

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