

After Fifty Years of Ups and Downs, What is Needed for International Wetland Conservation to Become a Relevant Force for the Challenges of the Future?

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INTRODUCTION

This article has been developed from the presentations made in the Society of Wetland Scientists (SWS) Ramsar Section's symposium during the SWS virtual conference on December 3, 2020.

THE CRISIS FACING WETLANDS AND WETLAND GOVERNANCE

Despite 50 years of global governments' commitments to delivering wetland conservation and wise use, and stemming the loss and degradation of wetlands, we face an accelerating biodiversity crisis and a climate crisis and none of the world's twenty 2020 Aichi Biodiversity Targets have been delivered (Convention on Biological Diversity 2020). This is very much the case for wetland biodiversity, as shown through the Global Wetland Outlook (Ramsar Convention 2018), global citizen science assessments of the world's wetlands (McInnes et al. 2020; McInnes et al. 2021), and an analysis of information contained in national reports submitted by Contracting Parties to the Convention (Davidson et al. 2020). Similarly, given the importance of wetlands for storing carbon, their alarming loss and mismanagement is contributing to increased carbon emissions and contributing to the climate crisis, while also being highly vulnerable to changes in the climate (Moomaw et al. 2018a).

The data that are now available confirm that existing policy and governance are not sufficient to stem wetland loss and degradation. Finlayson and Gardner (2020) contend that "A switch from documenting the change in wetland biodiversity towards more emphasis on taking decisions is needed to implement effective responses and reverse the negative trends for wetlands." and "...that

failure to place greater emphasis on effective responses could lead to the [Ramsar] Convention becoming an irrelevant force for the wise use of wetlands." This is a harsh critique from authors who have over many years ardently supported the Ramsar Convention.

Given these multiple lines of evidence something needs to change - continuing "business as usual" is not an option. The data speak for themselves – the condition of wetlands globally is dire, and getting worse.

Since 1971 the Ramsar Convention has established itself as the main international voice for the conservation and wise use of wetlands. As at 25 November 2021, it has 171 national governments as Contracting Parties. These governments have met on 13 occasions to consider the wise use of wetlands and agree formal decisions covering administrative and technical issues. There are now 2,434 Wetlands of International Importance (Ramsar Sites) covering 254,618,717 ha (as at 25 November 2021). However, as shown by the data from multiple sources, this delivery of wetland wise use is not enough – wetland loss and degradation has not been stopped, let alone reversed.

Approaching the 50th anniversary of the signing of the text of the Convention in the Iranian city of Ramsar in February 1971 we took the opportunity of the Society of Wetland Scientists (SWS) Virtual Conference (1-3 December 2020) to examine what has gone wrong, and why. We then outlined a number of new approaches and paradigms for better addressing efforts for achieving the wise use of wetlands, including the new SWS initiatives on the Rights of Wetlands (Simpson et al. 2020; Fennessy et al. 2021) and on Climate Change and Wetlands (Finlayson et al. 2020a), and how SWS can respond to the "Statement of World Aquatic Scientific Societies on the Need to Take Urgent Action against Human-Caused Climate Change".

INTERNATIONAL AND NATIONAL WETLAND GOVERNANCE – WEAKNESSES AND DEVELOPING A ROADMAP FOR CHANGE

We face a recognised global biodiversity crisis. Wetlands are not exempt. In 1971, 50 years ago, the Ramsar Convention on Wetlands was established by governments because of then increasing concerns over wetland loss and degradation – and its impacts on wetland-dependent species. But since 1970 the area of wetlands has progressively continued to decline, through deliberate drainage and conversion, in all parts of the world (Darrah et al. 2020). Deterioration in the state of our remaining wetlands is becoming progressively more widespread, including for designated Wetlands of International Importance (Ramsar Sites) (Davidson et al. 2020). Populations of freshwater (inland wetland-dependent) species have declined since 1970 by 84% - far more than species depending on other biomes (WWF 2020).

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The world's governments failed to meet any of their twenty 2020 Aichi Targets for biodiversity, including for wetlands (Convention on Biological Diversity 2020). Nor are we on track to deliver the 2030 UN Sustainable Development Goals (SDGs) for wetlands. Yet governments, including through their intergovernmental processes, seem to be just continuing with "business as usual". In 2022 the same governments are now preparing to agree yet another suite of biodiversity goals and targets, this time for 2030. Their draft 2030 targets are similar to previous targets.

Despite some successes for wetlands, and increasing recognition of the benefits and value of wetlands to people and their livelihoods (Davidson et al. 2019), overall sectoral nature conservation actions and protected area approaches have not delivered sufficiently to stem the loss and degradation of wetlands worldwide. They will continue to fail if the drive for economic growth, rather than truly sustainable development (Bradshaw et al. 2021), continues to over-ride efforts to achieve wetland wise use.

This begs the question as to whether the intergovernmental agreements such as the Ramsar Convention on Wetlands are any longer "fit-for-purpose"? There is now an urgent need to change mindsets and approaches and develop new paradigms finally to begin to achieve wetland wise use.

FROM NATURE CONSERVATION TO THE UTOPIA OF GREEN CAPITALISM - HOW TO SHIFT FROM THE MOLLIFYING AND ANODYNE REBRANDING OF THE 'WISE USE OF WETLANDS' TO GENUINE ACTION

Wise use is the central tenet of the Ramsar Convention. Defined as the "maintenance of ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development", 'Wise Use' can be considered as the brand slogan for the Ramsar Convention, in the way that "Think different" is to technology or "Just do it" is to sportswear. Unfortunately, given the plight of wetlands reported in this paper, the Ramsar Convention has been considerably less effective than Apple or Nike in promoting and, more concerningly, protecting its product.

In the marketing world, 'Ramsar' can be considered as the brand, 'wetlands' the product and 'wise use' the slogan or strapline. The brand name should give the product an identity whilst the slogan should play an important role in protecting the brand identity (Abdi and Irandoust 2013). Every good marketing executive knows that a slogan should aim to be timeless.

The slogan (wise use), in contrast to the brand name (Ramsar), is capable of telling where the brand is going (Kohli et al. 2007). This could not be more apposite for wetlands as non-wise use has left them in the parlous state

they find themselves in today – without wise use there will be very few wetlands remaining in the future. Rather than emphasising and promoting the slogan (wise use) and forming strong links between the slogan and the product (wetlands), the slogan has taken a backseat whilst the name and role of the product has continually changed in an attempt to appeal to differing and emerging audiences.

Since the Ramsar Convention came into being in 1971, wetlands, and the language around wise use, has undergone continuous and evolving rebranding attempts. Terms such as natural or green infrastructure (Kumar et al. 2017; Stefanakis 2019), blue carbon (Sheehan et al. 2019), nature-based solutions (Thorslund et al. 2017), natural capital (Cahoon and Guntenspergen 2010) and natural climate solutions (Griscom et al. 2017), have been thought-up and rolled out in successive rebranding attempts, each time stressing a new version of the value proposition that wetlands offer. The messaging between the type of product (wetlands) and what it delivers (the value proposition) has become confused. Wise use has been supplanted by a variety of slogans each seeking to reposition wetlands to find favour with a certain audience. Meanwhile wetlands have continued to be degraded and lost.

One of the main human connections with wetlands is their aesthetical qualities (Buell 2005; Do and Kim 2020). From John Constable's landscape paintings of rural England to the sun-kissed beaches and coral lagoons of holiday companies' promotional materials, we can all picture wetlands in our minds. However, one of the challenges faced by wetlands as a brand is their diversity and the vast contrasts in their visual elements. Urban ponds in London, tropical coral reefs fringing the Maldives and swamp forests of Amazonia are visually and eudaemonically very different products. This presents significant challenges if the marketing goal is to achieve the delivering of visual unity within diversity (Phillips et al. 2014). Nevertheless, all humans, both as individuals and collectively, have relationships with wetlands. However, confusion has arisen through the rebranding of wetlands, often because the focus has been primarily on the hedonic and moral values (see Costanza et al. 1989; Richardson 1994; Mitsch and Gosselink 2000; Ghermandi et al. 2010; Davidson et al. 2019) and an attempt to commodify wetlands within capitalist nature (O'Connor 1994; Robertson 2000) and the lack of attention to the relational or eudaemonic values.

Positive relational values offer important opportunities for the evolution of values that may be necessary for transformative change towards wetland wise use (Chan et al. 2018). However, the eudaemonic or relational values which genuinely connect people to wetlands remain for the main part overlooked (van den Born et al. 2018). The

Ramsar Convention (the brand), and its various agencies and acolytes, needs to rebuild and stress the link between the aesthetic or visual qualities of wetlands (the product) through the eudemonic or relational values (wise use). The focus should shift from the hedonic or moral values to a promotion of the meaning of wetlands to people rather than jumping on the latest bandwagon or buzzword. Under this construct wise use becomes the delivery vehicle for the maintenance of the meaning that wetlands give to peoples' lives, a meaning that can extend beyond the economic or moral.

A SHIFT IN PARADIGMS – NEW WAYS OF RECOGNISING OUR RELATIONSHIP WITH WETLANDS

The world is at a tipping point, as the World Scientists' Warning to Humanity: A Second Notice (Ripple et al. 2017) starkly warns us. David Attenborough (2020) uses his own close to century-long lifetime (94 years) as illustration. When he was 11 years old in 1937, the world's human population numbered 2.3 billion, atmospheric carbon dioxide stood at 280 parts per million (ppm), and 66% of the earth was wilderness. By 1989, humanity had more than doubled, growing to 5.1 billion, carbon dioxide in the atmosphere had reached 353 ppm, and only 49% of the earth remained wilderness. Just 31 years later in 2020, wilderness has dwindled to a mere 35% of the earth, carbon dioxide in the atmosphere has shot up to 415 ppm, something not seen in more than 800,000 years (Lindsey 2009), and the world's human population has ballooned to 7.8 billion (Attenborough 2020). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 2019) reports that 1 million species are in imminent danger of extinction. The climate change and biodiversity crises and associated loss and decline of wetlands are accelerating at paces unimaginable to most of us even just a few years ago, not to mention the concomitant social upheavals and crises. As we continue with "business as usual", no end is in sight for these accelerating downward trajectories in the condition of our planet and its atmosphere. Thus, new approaches are required if we wish to restore a stable climate, healthy biodiversity, and a viable, sustainable future for humans and other species, all of which depend on functioning wetlands and other ecosystems.

Along with non-governmental organizations (such as the Global Alliance for the Rights of Nature, the Earth Law Center, and the Community Environmental Legal Defense Fund) and others, Indigenous peoples and local communities have been leading a growing Rights of Nature movement that provides an alternative paradigm, one that fundamentally realigns the human-Nature relationship and recognizes the legal personhood of Nature based on the

living beingness of Nature, and Nature's inherent rights, including the right to exist. By fundamentally shifting our relationship with Nature and with wetlands – to one that is based on respect, reciprocity and gratitude, similar to the relationship that many Indigenous peoples and local communities have had with Nature for millennia, we may find a truly sustainable and restorative way to manage wetlands and live on this planet.

Recent successes in recognizing the rights of Nature include the passage of the Te Awa Tupua Act (Whanganui River Claims Settlement Act) in 2017 (New Zealand Parliament 2017) by the New Zealand Parliament in agreement with the Maori iwi (iwi = tribes), in which the legal rights and living personhood of the Whanganui River, as well as the special relationship between the Maori iwi and the river, were recognized in law. Other examples include the 2008 recognition of the rights of Nature in the Ecuadorian Constitution (Morales 2013), the 2018 issuance of the Kawsak Sacha (Living Forest) Declaration (Kichwa Native People of Sarayaku 2018) by the Ecuadorian Sarayaku, and the 2010 issuance of the Universal Declaration of the Rights of Mother Earth (World People's Conference on Climate Change and the Rights of Mother Earth 2010) at the World People's Conference on Climate Change and the Rights of Mother Earth in Cochabamba, Bolivia, where the inherent rights of Mother Earth and status as a living being were declared. In 2020, the Earth Law Center and International Rivers issued a Universal Declaration of the Rights of Rivers (Earth Law Center and International Rivers 2020), which includes riparian wetlands. Although many may find the recognition of the legal personhood and rights of Nature, and possibly the living beingness of Nature, to be unfamiliar, this perspective has deep cultural, legal, religious, and philosophical roots around the world, including in western thinking (Nash 1989; Stone 2010; Davies et al. 2020).

As a wetlands-specific response to the global crises and the rights of Nature movement, and through the SWS Ramsar Section, the SWS Climate Change and Wetlands Initiative and the SWS Rights of Wetlands Initiative, a group of scientists and attorneys have proposed a Universal Declaration of the Rights of Wetlands (Declaration) (Davies et al. 2020). Davies et al. (2020) include a timeline and world map as supplementary material to the Declaration article, as illustration of the global and historical depth and breadth of rights of Nature. However, this timeline and world map are far from comprehensive. The authors welcome and encourage the addition of further examples from others.

The preamble and proposed Declaration are as follows:

UNIVERSAL DECLARATION OF THE RIGHTS OF WETLANDS

Acknowledging that wetlands are essential to the healthy functioning of Earth processes and provision of essential ecosystem services, including climate regulation at all scales, water supply and water purification, flood storage, drought mitigation and storm damage prevention;

Acknowledging that wetlands have significance for the spiritual or sacred inspirations and belief systems of many people worldwide, but particularly for Indigenous peoples and local communities living in close relationship to wetlands, and that wetlands provide opportunities to learn from and about Nature, which supports scientific understanding and innovation, cultural expression and artistic creativity;

Further acknowledging that humans and the natural world with all of its biodiversity depend upon the healthy functioning of wetlands and the benefits that they provide, and that wetlands play a significant role in global climate regulation;

Alarmed that existing wetland conservation and management approaches have failed to stem the loss and degradation of wetlands of all types around the globe;

Further alarmed that global climate destabilization and biodiversity losses are accelerating and that efforts to reverse these trends are failing;

Acknowledging that peoples around the world of many cultures and faiths have recognized for millennia that Nature, or elements of Nature, are sentient living beings with inherent value and rights independent of their value to humans, and that Indigenous peoples, local communities and non-governmental organizations have been contributing to a global movement to recognize the rights of Nature;

Aware that continued degradation and loss of wetlands threatens the very fabric of the planetary Web of Life upon which depend the livelihoods, wellbeing, community life and spirituality of many people, particularly Indigenous peoples and local communities who live in close relationship with wetlands;

Guided by recent legal recognition of the inherent rights of Nature, including recognition of the entire Colombian Amazon as an “entity subject to rights” by the Colombian Supreme Court; recognition of the rights and legal and living personhood of the Whanganui River through the Te Awa Tupua Act (Whanganui River Claims Settlement Act) agreed upon by the Māori iwi and the New Zealand Parliament; and Ecuador’s first-in-the-world recognition of the rights of Nature in their Constitution;

Convinced that recognizing the enduring rights and the legal and living personhood of all wetlands around the world will enable a paradigm shift in the human – Nature relationship towards greater understanding, reciprocity and respect leading to a more sustainable, harmonious and healthy global environment that supports the well-being of both human and non-human Nature;

Further convinced that recognizing the rights and legal and living personhood of all wetlands and the paradigm shift that this represents will lead to increased capacity to manage wetlands in a manner that contributes to reversing the destabilization of the global climate and biodiversity loss;

WE DECLARE that all wetlands are entities entitled to inherent and enduring rights, which derive from their existence as members of the Earth community and should possess legal standing in courts of law. These inherent rights include the following:

1. The right to exist.
2. The right to their ecologically determined location in the landscape.
3. The right to natural, connected, and sustainable hydrological regimes.
4. The right to ecologically sustainable climatic conditions.
5. The right to have naturally occurring biodiversity, free of introduced or invasive species that disrupt their ecological integrity.
6. The right to integrity of structure, function, evolutionary processes and the ability to fulfil natural ecological roles in the Earth’s processes.
7. The right to be free from pollution and degradation.
8. The right to regeneration and restoration.

WETLAND CONSERVATION – WITHOUT COMMUNITY ENGAGEMENT AND PARTICIPATION IT DOES NOT EXIST

As outlined above, are facing global biodiversity and climate change crises that include the widespread loss and degradation of wetlands but how best do we stem this loss and conserve and protect wetlands?

Historically, conservation efforts have concentrated on protecting specific areas and endangered species. This has led to positive outcomes for nature within many protected areas but with only a fragment of the globe protected, 15% of land and 3% of the oceans (UNEP-WCMC 2020), this has not addressed the steep decline in biodiversity outside of these areas (WWF 2020). The original goal for protected areas was to keep nature safe from people resulting in people being kept out of an area. Although, more recently, this approach has changed and the requirements of people are more generally considered within protected area plans, protected areas can lead to considerable negative social and economic impacts on local people although evidence is limited (Dasgupta et al. 2017). At the same time, a focus on endangered species, whilst leading to success for some critically endangered species, has seen a catastrophic decline in overall species populations (WWF 2020).

The problem with a protected area and endangered species conservation approach is that it can exclude the needs of people and draw attention away from wider landscape. This approach to conservation can result in a disconnect of conservation efforts from local and regional populations. This disconnect means a focus on key drivers of poverty and consumption, which directly impact on nature, may not occur and support for conservation from local communities does not happen as a result.

To address this situation focus should be on integrating biodiversity conservation into every aspect of land and water management, whether agriculture, urban or industrial planning. Wetland conservation cannot exclude people as local communities must be integral to conservation actions ensuring their needs are met and their voices heard (Shrestha 2013). Without the active participation of local communities ultimately wetland conservation will fail. Wetland conservation cannot remain behind a fence protecting an area but integrated across the landscape with local communities involved in planning and management.

To achieve community and stakeholder involvement you need to invest resources because talking to people and hearing their views requires both effort and time (Tschirhart et al. 2016). It is also important to use participatory techniques to ensure all voices are heard and respected, creating a space where scientific and non-scientific knowledge can be exchanged (Project COBRA Consortium 2014). Participatory techniques such as interviews, focus groups

or participatory video can be used to resolve conflicts and build a consensus of the most appropriate actions to benefit the community and conservation. It is useful to use a learning cycle approach to all stages of wetland conservation – planning, implementing, monitoring and reviewing because reflecting on what is working and what is not working helps improve community and conservation outcomes and build a consensus for the most robust solutions (Project COBRA Consortium 2014). A focus should always be on ensuring conservation actions are embedded into community actions, so communities are supported to protect their own natural resources. An approach, termed ‘community owned solutions’, developed working with Indigenous communities in South America (Mistry 2016), attempted to do this by testing, with the community, whether an intervention really was something a community needed, whether they would undertake it, control it, benefit from it, whether it was fair and whether the action was good for the environment. If a conservation intervention achieves these measures, then it will become embedded within community practices and it is more likely to be successful and continue beyond the lifetime of an initiative or funding.

Increasing evidence demonstrates that when local communities actively manage their own natural resources there are positive outcomes for biodiversity (Corrigan et al. 2018). To achieve wetland conservation local communities must actively be engaged, participate in all aspects of conservation and ideally manage their own resources.

RESPONDING TO THE STATEMENT OF WORLD AQUATIC SCIENTIFIC SOCIETIES ON THE NEED TO TAKE URGENT ACTION AGAINST HUMAN-CAUSED CLIMATE CHANGE

On 14 September 2020, the Society of Wetland Scientists (SWS) joined 110 other aquatic science societies, representing more than 80,000 scientists across the world, to release a statement on climate change entitled “Statement of World Aquatic Scientific Societies on the Need to Take Urgent Action against Human-Caused Climate Change” (<https://climate.fisheries.org/world-climate-statement/> accessed 14 December 2020). The release of the Statement was coordinated by the American Fisheries Society.

The Statement highlights the problems posed by climate change for aquatic ecosystems, and suggested actions to help turn things around. Impacts from climate change on wetlands are already occurring and many of these will be irreversible, and will continue if current socio-economic trajectories are not changed. Given that wetlands are in decline globally, the impact of climate change is expected to make a bad situation worse (Finlayson et al. 2018; Ramsar Convention 2018). Wetlands, particularly disturbed wetlands, are also an important contributor of emissions that

are driving climate change (Moomaw et al. 2018a).

Despite an increase in the level of attention being directed towards adaptation measures to respond to the impact of climate change on wetlands, far more effort is needed to develop appropriate policy and management responses, including at an international level (Finlayson et al. 2017a). The Statement of World Aquatic Science Societies included recommendations for responses with four of those of relevance to wetlands described below, with the addition of specific suggestions for members of SWS.

1. Rapid action is necessary to curb the release of greenhouse gases and remove carbon dioxide from the atmosphere to help decrease the adverse consequences of climate change on wetlands, as outlined in Moomaw et al. (2018a). The biogeochemical processes that enable carbon emissions and the storage of carbon on wetlands are well known scientifically (Kang and Jang 2018), but policy outcomes for wetlands are lagging internationally and nationally and warrant further attention (Finlayson et al. 2017a). Communication and raising awareness about the importance of wetlands for carbon emissions and potential sequestration is needed from scientists to help inform wetland decision and policy makers about the important role of wetlands in mitigating climate change and to build public support for such policies. Individuals can help by converting their science into readily understandable messages and guidance for policy makers and the general public, as done by Moomaw et al. (2018b), including for managing ‘carbon in wetlands’ is needed to ensure the benefits of carbon storage in wetlands are realised and carbon emissions minimised. Such activities may need to be supported by incentives to reward good practice (possibly seen as a system of payment for carbon services) – we can help by converting our science into practical guidance for management and to support incentives to reward good practice.

2. Global/national targets are necessary to help protect and restore carbon dense ecosystems, such as peat, salt marshes, sea grasses, and other wetlands to sequester carbon, prevent greenhouse gas emissions, and reduce the impacts of climate change. Efforts to set targets and encourage better outcomes for wetland biodiversity have not been successful (Davidson et al. 2020). Biodiversity targets for wetlands are needed, but underlying data needs attention. Wetland scientists can assist by supplying accurate data for targets for individual wetland sites, and more generically for wet-

land types and species, and encourage policy-makers to confirm the efficacy of the underlying data and data collection mechanisms to avoid setting unrealistic targets. This is well illustrated by the inadequate state of wetland inventory globally, as reported to the Ramsar Convention in 1999 (Finlayson et al. 1999) and again by Davidson et al. (2020).

3. Robust adaptation measures: identification and easing of other environmental stressors that act synergistically with climate change; and additional resources for data collection, mapping, and research to better understand potential impacts and to arm natural resources agencies with the tools to mitigate these impacts are essential. Adaptation to climate change impacts on wetlands is needed and dependent on effective vulnerability assessment – supply information on wetland dynamics, trends and trajectories, and likely responses to climate scenarios. Wetland managers need practical tools to respond and manage for the future – wetland scientists need to convert their science into guidance for managing complex systems, and provide training.
4. It is time to acknowledge the urgent need to act to address climate change. Delaying action to control greenhouse gas emissions is not an option if humankind wishes to conserve wetlands and the environmental safety of the world. Science information needs to be actively used to influence policy and decision-making – scientists and practitioners need to actively engage in policy dialogue and ensure that policy mechanisms for climate change are aware of the role and importance of wetlands. Scientists and practitioners need to more actively engage in policy dialogue and advocate and question the efficacy of existing policy and management mechanisms that have hitherto not achieved the sustainable future of wetlands globally.

Members of the Society of Wetland Scientists are invited to consider these needs and to work with the recently established SWS Climate Change and Wetlands Initiative (Finlayson et al. 2020a). The Initiative builds on climate change statements signed by individuals at SWS meetings in 2017, 2018 and 2019 (Finlayson et al. 2017b, 2019, 2020b). The purpose of the Initiative is to develop science-based responses, share knowledge and do more as a group of wetland experts concerned about the future of wetlands, and about climate change in particular. In addition to the climate change statements, individuals now involved with the Initiative have contributed to a review of wetlands and

climate change (Moomaw et al 2018a) and a response to the Second Warning to Humanity from World Scientists (Finlayson et al 2018). Further activities are being considered, including a review of information on carbon stocks in different wetland types, and a collation of key issues from SWS special interest Sections about wetlands and climate change.

CONCLUSION

Based on the concepts presented in the combined presentations in the Ramsar Section's symposium in the December 2020 SWS virtual conference, and from associated recent activities (as outlined in Finlayson et al. 2020a; Fennessy et al. 2021; Simpson et al. 2020) our vision for the SWS is as follows:

“The Society of Wetland Scientists engages with wetland professionals and wider society (including reinvigorated Multilateral Environmental Agreements) to promote wetland research, education, and management in support of a sustainable future: develop new approaches; link with our communities; and get past the rhetoric to support effective actions, including those that reduce the impact of climate change on wetlands.”

With this in mind, speakers in the symposium are keen to engage in further dialogue with others interested in wetlands to develop and refine new approaches and paradigms for better addressing efforts for achieving the wise use of wetlands.

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