Society of Wetland Scientists' Ramsar Section 2016 conference symposium

Corpus Christi, Texas, USA
Friday 3 June 2016: 0920-1110 h & 1240-1430 h

A heroic struggle against impossible odds? Helping the Ramsar Convention to assess wetland status and trends

Chairs: Nick Davidson (Ramsar Section Chair) & Matthew Simpson (Ramsar Section Vice-chair)

The Alamo is widely recognised as having been "a heroic struggle against impossible odds". This seems an appropriate description of current attempts to assess the status and trends of wetlands and their ecosystem services. This symposium, building on the outcomes of the 2015 Ramsar Section SWS symposium (Providence, Rhode Island), will examine a range of issues, methods and practical experiences in assessing and reporting on the state of the world's wetlands. Whilst there has been some recent progress in assessing trends in wetland area change (i.e. loss: Davidson 2014; Dixon et al. 2016[1]), it is just as important for the Ramsar Convention to understand what is happening to the state of the world's remaining wetlands, including designated Wetlands of International Importance (Ramsar Sites), and the ecosystem services which they deliver. Yet current reporting on wetland state is minimal, and there are widely differing approaches to, and scopes of, assessing what is termed "wetland status and trends".

The first part of this symposium will look at different approaches to the assessment of wetlands, what aspects of wetland ecological character they do and do not cover, and underlying issues of determining whether ecological character change has or is occurring and if it is, whether there is improvement or decline in wetland state. The second part of the symposium will, through a number of case studies, focus on the particular social and ecological challenges of recognising and assessing change in the range of wetland ecosystem services (provisioning, regulating, cultural and supporting), and their implications for the wise use commitments under the Ramsar Convention of maintaining the ecological character of wetlands and its contribution to human well-being. The symposium will conclude with a panel discussion to identify key issues and challenges, and potential solutions and recommendations for addressing them to improve wetland status and trends reporting.

[1] Davidson, N.C. 2014. How much wetland has the world lost? Long-term and recent trends in global wetland area. *Marine and Freshwater Research* 65(10): 934-941; Dixon, M.J.R., Loh, J., Davidson, N.C., Beltrame, C., Freeman, R. & Walpole, M. 2016. Tracking global change in ecosystem area: The Wetland Extent Trends index. *Biological Conservation* 193: 27–35.

Programme & speakers

Session 1: Assessing wetlands and ecological character change

3 June: 0920-1050 h

0920-0930	**Introduction**
0930-0950	1. ***What do we really mean by "wetland status and trends" - and why aren't we better assessing and reporting on it?*** Nick Davidson
0950-1010	2. ***Assessing change in wetland ecological character: issues, challenges and opportunities*****.** C. Max Finlayson
1010-1030	3. ***National Aquatic Resources Surveys: Applications for Wetland Condition Monitoring and Assessment in Texas***. Jenny Oakley; Mandi Gordon; George Guillen
1030-1050	4. ***Translating assessments of wetland condition to forecast ecosystem services at the national scale***. M. Siobhan Fennessy; Amanda Nahlik

Session 2: Social and ecological challenges in assessing wetland ecosystem service

3 June: 1240-1410 h

1240-1250	**Introduction**
1250-1310	5. ***Assessing changes in the status of wetland ecosystem services and the implications for human well-being***. Robert McInnes
1310-1330	6. ***Assessing the ecosystem services of Chilika Lake, India to inform decision-making and management***. Ritesh Kumar
1330-1350	7. ***Supporting local communities in monitoring ecosystem services***. Matthew Simpson
1350-1410	8. ***Identifying key issues and challenges for improving wetland status and trends reporting, and solutions and recommendations for addressing them***. Facilitated panel discussion. Nick Davidson; Matthew Simpson; Siobhan Fennessy

Abstracts

1. ***What do we really mean by "wetland status and trends" - and why aren't we better assessing and reporting on it?*** Nick Davidson (Nick Davidson Environmental, Queens House, Ford Street, Wigmore HR6 9UN, UK) arenaria.interpres@gmail.com

Assessing and reporting on the state of the world's increasingly few remaining wetlands has been identified by the SWS Ramsar Section as a major gap in the knowledge-base underpinning wetland conservation and wise use and the implementation of the Ramsar Convention. This presentation will explore a range of issues and challenges that the wetland research and conservation community faces in undertaking wetland status assessments, including of wetland ecosystem services. When we talk of, and publish on, "wetland status and trends" this appears to mean very different things to different people and processes. It can speak to changes in overall wetland area or of different wetland types, or the state of health, and trends in that health, of existing wetlands.

Assessments of the status of remaining wetlands can cover only the wetland's ecological character (components, processes and services) status, or be conservation status assessments covering aspects of ecological character, and/or threats/pressures and/or conservation actions. Some are quantitative assessments, others qualitative. There are also challenges in establishing what we mean by "change in ecological character" of wetlands, and how such change is recognised. There is a need to scan across all these different approaches to establish if any common wetland status assessment metrics can be identified and if, so, recommended for future wetland assessments. This in turn would contribute to improving the currently very limited extent of knowledge, and reporting including to and through the Ramsar Convention, on the state of the world's wetlands.

2. ***Assessing change in wetland ecological character: issues, challenges and opportunities.*** C. Max Finlayson (ILWS, Charles Sturt University, Australia) & Peter Gell (Federation University, Australia) mfinlayson@csu.edu.au

The Ramsar Convention seeks to protect the world's wetlands of international significance while at the same time supporting the wise use of all wetlands. It seeks to do this by identifying a wetland's ecological character and setting limits of acceptable change. Long term records of wetland state reveal however, that the ecological character is often highly variable and at the time of listing under the Convention it may be very different from the historical range. In order to better understand change in character, including change in the ecosystem services wetlands provide, Ramsar is looking to palaeoecological records as a guide to inform wise use and to promote wetland restoration. We are recommending that this information be used with contemporary ecological information and projections of ecological responses to global change to establish realistic baselines for the future management of wetlands. Hence, we are proposing that wetland managers look to the past and to the future when considering suitable baselines for their management goals. The latter will require effective consultation with key stakeholders and an understanding of wetlands as social-ecological systems that change and will change more. Hence, we need to manage with change and within social expectations.

3. ***National Aquatic Resources Surveys: Applications for Wetland Condition Monitoring and Assessment in Texas***. Jenny Oakley, Mandi Gordon & George Guillen (Environmental Institute of Houston, University of Houston-Clear Lake, 2700 Bay Area Blvd., Box 540, Houston TX 77058, USA) oakley@uhcl.edu

Wetlands are vital to the overall health and integrity of aquatic ecosystems, however little is known about their ecological health. The National Aquatic Resource Surveys (NARS) are probability-based statistically designed surveys implemented as a collaborative program between the Environmental Protection Agency (EPA) and states to assess the quality of the nation's waters and wetlands. The first National Wetland Condition Assessment (NWCA) was conducted in the summer of 2011, and has established the baseline for a long-term monitoring program to assess the health of the nation's wetlands using

nationally-consistent data. Using data from the United States Fish and Wildlife Service Status and Trends as well as the National Wetland Inventory, sample points are generated using stratified randomization to represent the condition of wetlands on a national and regional (ecoregion) scale. The survey encompasses both tidal and non-tidal wetlands covering all major wetland types from coastal marshes to forested swamps.

Data collected characterize the biological, chemical, and physical features within the 0.5-hectare assessment area at each site. Variables used to assess the ecological condition of the wetlands include: vegetation, soil, hydrology, water chemistry, algae, and stressors. An overall wetland health index based on weighted composite values of these variables was constructed. These health indices were used to construct threshold values for good, fair, and poor or low, moderate, and high stressor levels based on the distribution of values observed at the least disturbed reference sites. The survey is designed to assess the health of wetlands as groups or populations, rather than individual sites. Intensified state sampling can be used to sample at the resolution necessary to assess wetland condition at the state or local level.

On a national-level the 2011 NWCA found that 48% percent of wetland area is in good condition, while 20% and 32% are in fair and poor condition respectively. Overall condition as well as the level of potential stressors were enumerated for each of the four major ecoregions and four wetland types assessed. The state of Texas encompasses three of the four major NWCA aggregated ecoregions: Coastal Plains, Interior Plains, and West. The second National Wetland Condition Assessment is being conducted the summer of 2016 with slightly modified sampling protocols. This talk will cover the NWCA protocol, methods, and current work being conducted in Texas for the surveys.

4. ***Translating assessments of wetland condition to forecast ecosystem services at the national scale***. M. Siobhan Fennessy; Amanda Nahlik (Kenyon College, Ohio, USA) fennessym@kenyon.edu

The realization that the ecosystem services associated with wetlands are among the most critical for human well-being emphasizes the need for assessment methods that can link the effects of human activities to their ecological condition and to the ecosystem services they provide. Decisions about wetland conservation and restoration have traditionally been conducted at the site scale. However there is a long-standing need to assess the ambient condition of wetlands over large spatial scales. In 2011, the US Environmental Protection Agency conducted the first National Wetland Condition Assessment (NWCA). For this survey, field crews sampled over 1000 wetland sites across the contiguous United States using a probabilistic, spatially representative survey design. To assess the impact of anthropogenic disturbance, sites were categorized as least, intermediately, or most disturbed using *a priori* defined indicators of biological, chemical, and physical stressors. Vegetation is a key biotic indicator of ecological condition and forms the basis for condition assessment in many assessment surveys including the NWCA. Here I discuss pilot studies to develop ecosystem service delivery models using measures of condition to predict ecosystem service provision and relate those to the national study. For the NWCA vegetation indicators of condition were developed using the floristic quality assessment analysis (FQAI; mean=21, range=0-52), and a vegetation-based multi-metric index (MMI). These data were subsequently used to establish the relationship between wetland status and the ecosystem services of carbon storage and nitrogen processing. Disturbance significantly reduced soil carbon stores across all wetland classes, while disturbances related to high nitrogen loading increased indicators of nitrogen processing in wetland soils. These results highlight the need to sustainably manage wetlands to protect the key services they provide.

5. ***Assessing changes in the status of wetland ecosystem services and the implications for human well-being***. Robert McInnes (RM Wetlands & Environment, UK)

In an attempt to enlighten audiences and to motivate the great unwashed into action to conserve the world's wonderful wetlands, how many times have you read something similar to the following: "The global value of wetland ecosystems at US $14.9 trillion (Costanza et al., 1997)". Similarly, in the update produced by Costanza et al. in 2014, the authors estimated that over the period 1997 to 2011 losses due to changes in tidal marshes and mangroves were US $7.2 trillion per annum, for swamps and floodplains US $2.7 trillion and for declines in coral reefs losses were US $11.9 trillion annually. All of these large

figures may serve the purpose of grabbing headlines and placing soundbites on CNN but, as is readily acknowledged by the authors of such studies, do they really help in assessing changes in the status of wetland ecosystem services and understanding the implications for human well-being? This presentation will examine how changes in global economic landscapes, government policies and motivations, and changes in wetland functioning all present challenges for understanding the status and trends of wetland ecosystem services and, more importantly, how these impact upon human well-being at a range of levels.

6. ***Assessing the ecosystem services of Chilika Lake, India to inform decision-making and management***. Ritesh Kumar (Wetlands International – South India)

Inclusion of ecosystem services within the goal of 'maintenance of ecological character' subjects wise use of wetlands to societal values and preferences for the benefits people receive from these ecosystems. To incorporate ecosystem services into management and decision making frame, the ecological character of wetlands needs to be defined based on a socio-ecological systems perspective, with the biophysical contexts embedded within socio-cultural and institutional contexts in mutually reinforcing pathways. Understanding the ways in which ecosystem services integrate with livelihood capitals, particularly the factors that determine capability to deploy ecosystem services as part of livelihood strategies have important consequences for achieving wise use. Institutions play an important role in providing a cognitive framework to interpret biophysical information on wetland components and processes for setting rules and constraints for coordinating human action and defining incentive structure for human exchanges related to ecosystem services. Such a framework has been central in achieving restoration of Lake Chilika, a brackish water coastal lagoon situated on the Indian east coast, ecosystem services of which secures livelihoods of 0.4 million dependent fishers and farmers. Designated as a Ramsar Site in 1981, Chilika was placed in Montreux Record of the Convention in 1993 owing to degradation induced by increased sediment loads from catchments and breakdown of community managed fisheries. A lake basin scale adaptive management process put in place since 2000 enabled the wetland to return to a healthy state, benefiting nature as well as community livelihoods. The wetland was removed from the Montreux Record in 2002. The role of the Chilika Development Authority, a special purpose institution crafted for wetland restoration, has been central in securing political support, and ensuring a wide-ranging stakeholder representation in management planning and decision making processes.

7. ***Supporting local communities in monitoring ecosystem services***. Matthew Simpson (Wildfowl & Wetlands Trust Consulting, UK); Jay Mistry (Royal Holloway University of London) & Andrea Berardi (Open University)

Engaging with local communities can be difficult, yet with the right approach, significant results can be obtained. The Community Owned Solutions approach was developed with Indigenous communities in the Guiana Shield region of South America but has been adapted to be used to engage communities around the world. The approach helps create an environment of mutual respect that can make stakeholder engagement more effective. It empowers the community to take control of how they wish their community to develop and face up to current and emerging challenges. This approach identifies and shares solutions to sustainability challenges such as climate change adaptation, biodiversity loss, natural resources depletion, lack of governance, health emergencies and cultural loss. The identification of these solutions allows communities to share best practice in how to monitor and manage their natural resources. The approach is fundamentally transdisciplinary and holistic, and has been used by people working in the fields of development, nature conservation, health, natural resource management, social welfare and education. This paper demonstrates through a range of case studies how the core approaches of a system viability assessment and participatory visual methods build capacity in monitoring and management strategies empowering communities to actively share and communicate their issues, experience and knowledge with other communities, governments and policy makers helping contribute to assessments of wetland status.

8. ***Identifying key issues and challenges for improving wetland status and trends reporting, and solutions and recommendations for addressing them***. Nick Davidson (Nick Davidson

Environmental; Matthew Simpson (WWT Consulting; Siobhan Fennessy, Kenyon College)

Facilitated panel discussion. Although it is vital for the governments who are Contracting Parties to the Ramsar Convention on Wetlands to know about the status (health) of the world's remaining wetlands as the knowledge-base for informing policy and setting priorities for wetland conservation and wise use, this symposium has recognised that access to such wetland status information is largely lacking, for a variety of reasons. Yet there are a range of different existing methods and approaches to wetland assessment being applied, for different purposes. During this session we will discuss what the challenges are to improving wetland status and trends reporting, and seek to initiate a mechanism to develop recommendations and solutions for improving the coverage and reporting of wetland status to the Ramsar Convention.