

Wetlands and waterbird research

Inventory update highlights conservation progress and priorities in Pacific Island countries

Roger Jaensch and Doug Watkins

There has been significant change for the better when it comes to the understanding, conservation and management of wetlands in many developing countries in Oceania.

Aware that two decades had passed since *A Directory of Wetlands in Oceania* was published, in 2013 the Secretariat of the Pacific Regional Environment Programme (SPREP) commissioned an update of wetland inventories for Kiribati, Palau and Vanuatu. Funding was granted by the Australian Government and the Convention for the Protection of Natural Resources and the Environment of the South Pacific Region, while the Ramsar Convention on Wetlands of International Importance contributed technical support. Capacity building, consultations and data collation were conducted in-country during the first half of 2014.

A highly significant change since 1993 has been the establishment of 'conservation areas' in these countries, arising from involvement with the Convention on Biological Diversity. Community-managed conservation areas, in land and sea under customary ownership and established under legislation, now exist in many of the wetlands already identified as nationally and globally important. Two of the countries have joined the Ramsar Convention, with Palau designating Ngardok Lake and Kiribati the mangroves of Nooto–North Tarawa, as Ramsar sites.

Another major advance has been increased understanding of the ecosystem services and biodiversity values of important wetlands. For example, economic valuation of ecosystem services

provided by mangroves was recently completed for the Crab Bay area in Vanuatu, sponsored by the International Union for the Conservation of Nature. In freshwater streams, surveys by local and international experts have documented endemic fish species, some new to science, in several of the important wetlands.

Priorities for the management of important wetlands in Kiribati, Palau and Vanuatu include adaptation to climate change, a critical issue for atolls and for coastal communities generally. Invasive fish and plant species are a growing concern. Agencies responsible for wetlands desperately need sufficient resources and trained personnel to integrate wetland management across relevant agencies and organisations. Palau is leading the way on mechanisms for sustaining conservation actions by introducing a Green Fee payable by all visitors to the country which is directed to site management through its Protected Area Network.

The SPREP project has updated datasets for known important wetlands, boundary maps have been created, and descriptions of several new sites meeting criteria for international importance have been compiled. Subject to securing additional resources, many more sites could be documented, broadening the scope of inventory to include subterranean karst waterways, geothermal spring systems and shallow marine wetlands involving coral reefs.



Ngardok Lake Ramsar site is the Republic of Palau's first designation under the Convention on Wetlands of International Importance (© Copyright, Roger Jaensch)

We'd like to order some more bitterns and rice, please

Matthew Herring, Murray Wildlife Pty Ltd, Neil Bull, Rice Growers' Association of Australia, Andrew Silcocks, Birdlife Australia and Mark Robb, Coleambally Irrigation.

The word is out. Not only are there large numbers of the endangered Australasian bittern (*Botaurus poiciloptilus*) using rice crops—it's an ideal breeding environment too!

Since the 2012–2013 rice-growing season, and as a result of the Bitterns in Rice Project, we've known that the rice fields of the Riverina in New South Wales can support large numbers—not dozens, but hundreds—of bitterns. There was also some suggestion of widespread breeding, but until January this year, we'd been unable to find conclusive evidence.

The first nest for the 2013–2014 season was a glowing beacon of bittern reproduction: three chicks and two eggs. In total, we found four nests including three found in randomly selected rice farms (with aerial or spreader-sown crops), giving us some confidence in extrapolating our results. For bitterns, incubation is approximately 24 days and then it's another seven or eight weeks before the chicks are flying. All four breeding sites had ample time before harvest, although one was close. In this study we learnt that the chicks leave the nest within two weeks of hatching. They then clamber about in the rice and hide on the banks, making it difficult to determine breeding success, although all indications so far are positive.

It's quite extraordinary that the production of food can directly support one of Australia's most threatened species. The annual creation of surrogate, agricultural wetlands—rice fields—presents a rare opportunity to combine agriculture and conservation. The need for increased food production is inevitable and has sparked debate among conservation scientists. How well can biodiversity conservation be incorporated into farming ('land-sharing') compared to the reservation of protected land alongside more intensive farming ('land-sparing')?

Potentially, this is a success story for wildlife-friendly farming. We are slowly but surely uncovering what it is about rice crops (and their management) that attract the bitterns. The sowing method and water management are important along with the presence of Cumbungi in the toe furrows, and weedy banks as cover for roaming chicks. In future seasons, we're planning to trial some alternative rice field designs and test the effectiveness of bittern-friendly rice-growing techniques.

In the 2013–2014 season, we were also thrilled to find several eastern grass owls (*Tyto longimembris*) roosting in the crops, big numbers of Baillon's crane (*Porzana pusilla*) and discovering that golden-headed cisticolas (*Cisticola exilis*) probably breed in their tens of thousands in the rice.

The Bitterns in Rice Project is a collaboration between the Rice Growers' Association of Australia and Birdlife Australia, with key support from the Norman Wettenhall Foundation, the Riverina and Murray LLS, the Rural Industries Research and Development Corporation, Coleambally Irrigation, Murrumbidgee Irrigation, Murray Irrigation, Murrumbidgee and Coleambally Landcare, the Murrumbidgee Field Naturalists Club, and the New South Wales National Parks and Wildlife Service.

Further information on the Bitterns in Rice project can be found here: www.murraywildlife.com.au/major-projects/bitterns-in-rice



Golden-headed cisticolas (Cisticola exilis) are among a range of other wetland dependent bird species that use the rice crops as habitat (© Copyright, Matthew Herring)



Recent research in the Riverina suggests that there is widespread and regular breeding of the Australasian bittern (Botaurus poiciloptilus) in rice crops (© Copyright, Matthew Herring)



At approximately 18 days of age, this Australasian bittern (Botaurus poiciloptilus) chick has left the nest and is using the cover of barnyard grass on a bank between rice bays (© Copyright, Matthew Herring)

Conserving Seasonal Herbaceous Wetlands in the South East of South Australia

Steve Clarke, Wetland Conservation Ecologist, South Australian Department of Environment, Water and Natural Resources

Seasonal Herbaceous Wetlands have recently been listed as a critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*.

They are usually less than one hectare in size and between 30 to 50 centimetres deep. They are generally only wet over spring and early summer (hence 'seasonal') and characterised by sedges and grasses growing in the water along with a rich array of herb plant species (hence 'herbaceous'). These wetlands are only filled from rainfall and runoff from the local catchment, and have fresh water (salinity of around 1000 parts per million).

Seasonal Herbaceous Wetlands were once abundant through Victoria and eastern parts of the Lower South East of South Australia, as well as extending into southern New South Wales. However, these wetlands occur on soils which are often used for crop, pastureland or plantation forest. This means hydrological and biological changes have often resulted in the loss of wetlands or change in their character. Nevertheless while many Seasonal Herbaceous Wetlands have been lost, many have been lightly grazed or treated gently and still retain much of their former character.

The South Australian Department of Environment, Water and Natural Resources is currently working in the south-east of South Australia to conserve this wetland community by first surveying, mapping, assessing its condition, entering the data into the South Australia Wetland Database and then implementing

conservation techniques. Since work started in November 2013, over 150 potential Seasonal Herbaceous Wetlands have been surveyed and 98 have been determined to fit the listing advice. These wetlands have now been found to have an extent of occurrence in the south east of South Australia of 7500 square kilometres and are located on public and private land. Work has also started on raising community awareness of these unique wetlands.

The surveyed wetlands have been found to vary in condition from almost pristine to completely degraded and work has commenced on conservation based on condition rating and accessibility. This work includes fencing to exclude stock or to manage a grazing regime conducive to restoration, track closure, weed control and restoring hydrology. Over 30 Seasonal Herbaceous Wetlands have undergone varying forms of conservation work since the start of 2014.

The Seasonal Herbaceous Wetlands Project is funded by the Australian Government. For further information on the project, please contact Steve Clarke (steve.clarke@sa.gov.au).



Surveys of the recently listed threatened Seasonal Herbaceous Wetland ecological community are being done to establish their condition (© Copyright, South Australian Department of Environment, Water and Natural Resources)



A seasonal Herbaceous Wetland near Tarpeena in the South East of South Australia (© Copyright, South Australian Department of Environment, Water and Natural Resources)



*Bladderworts (*Utricularia* sp.) are often prolific in these types of wetlands* (© Copyright, South Australian Department of Environment, Water and Natural Resources)

Dances with cranes

Tim Nevard, Wildlife Conservancy of Tropical Queensland and Charles Darwin University

Thousands of brolgas (*Grus rubicunda*) and Australian sarus cranes (*Grus antigone gilliae*) flock to the Atherton tablelands in the dry seasons creating a 'brolga and sarus central' for up to six months.

Their roosts are well known, with many of the largest ones (such as the Mareeba Wetlands, Lake Tinaroo and General Plains Swamp) being man-made, while others (such as the Bromfield Swamp volcanic crater) are natural wetlands. All sites are stunningly evocative, with bugling cranes flying in to their evening roost at dusk to dance. Movements to and from these roosts to foraging areas and how these movements are triggered are still poorly understood, and this knowledge gap is a critical element of the research being conducted by Charles Darwin University and the Wildlife Conservancy of Tropical Queensland.

Although at least 98 per cent of Australia's brolgas and all our sarus are found north of the Tropic of Capricorn, their interactions, movements and behaviour are not well understood.

Both species are under increasing pressure from expanding agricultural cropping, recent advances in harvesting efficiency and plans to further expand irrigated agriculture in the region. Also, the expansion of wind, solar, hydro and other energy projects are potentially problematic in areas critical to cranes. These practices potentially impact not only crane foraging behaviour but also critically important wetland breeding and roosting habitats.

While it is well known that cranes readily adopt new feeding strategies in response to agricultural change, this adaptability brings risks and there are already emerging conflicts with agricultural interests.

In the near future the Australian sarus population could be critical to the survival of world sarus populations (which have an overall IUCN 'Vulnerable' classification) due to serious declines in Asia. We therefore need to safeguard existing Australian breeding and roosting wetlands used by cranes and better understand the ecology and behaviour of brolgas in northern Australia.

Conducting research in to the ecology of the sarus and brolgas will provide the necessary background to make sure appropriate conservation measures are established to protect the future of these magnificent creatures and ensure their wetland nesting and roosting sites remain protected, understood and appreciated by the community. In addition to research, the Conservancy works with the Tablelands Regional Council, the community, business and other non-government organisations on initiatives such as the annual September Crane Week (www.craneweek.org) on the Atherton Tablelands, sharing the mystery and magic of sarus and brolgas with a wider audience.



Australian sarus cranes (Grus antigone gilliae) are iconic species of the savannas and wetlands in northern Queensland
 (© Copyright, Wildlife Conservancy of Tropical Queensland)



During the dry season, brolgas (Grus rubicunda) and Australian sarus cranes (Grus antigone gilliae) roost at wetlands like Pandanus Lagoon at the Mareeba Wetlands near Cairns, Queensland (© Copyright, Wildlife Conservancy of Tropical Queensland)

Rangers raise the profile of waterbird breeding and migration in Gulf wetlands

Roger Jaensch and Paul Richardson

Recent activities of Land and Sea Rangers based in Normanton, north Queensland, have raised awareness of the exceptional importance of wetlands in the Gulf Plains bioregion for breeding and migration by waterbirds.

Seasonal inundation, limited ground access, difficult fieldwork conditions and sparse human population have constrained the development of comprehensive knowledge of waterbirds in freshwater and intertidal wetlands in this region.

The Normanton Rangers, managed by the Carpentaria Land Council Aboriginal Corporation, started documenting breeding colonies of egrets, ibises and spoonbills in 2009, with technical support from Wetlands International. Subject to available funding, this has continued annually as a wet season activity, using aerial surveys. Remarkably, 33 colonies collectively including 12 waterbird species and often with several thousand breeding pairs per colony, have been found over this six year period. Many of the colonies meet criteria for international importance. Colonies are located from the Leichhardt River in the west to the Gilbert River in the north and up to 100 kilometres inland. Some colonies in estuarine mangroves were already known, but the majority, many in wooded waterholes far inland, were previously unknown. The number of active colonies has been highest in the years of river flooding that creates vast areas of feeding habitat, which has implications for future water management in these

catchments. Preliminary results have been published (Jaensch and Richardson 2013) while ongoing work is attempting to better define the ecological requirements of these waterbirds for breeding in the Gulf Plains, to inform site and catchment management.

The South-East Gulf of Carpentaria has been identified as an internationally important area for migratory shorebirds. Count data from occasional expeditions by volunteer-based wader study groups indicate that it is one of the most significant sites in Australia (Driscoll 2001; Bamford *et al.* 2008). In 2014, the Normanton Rangers received training and mentoring on waterbird migration, shorebird ecology, field survey methods and criteria for international importance and have started spreading the amazing migration story to their communities. This has sparked considerable interest among Indigenous people of the area, especially in regard to the connections these birds make with wetlands far overseas. Possible nomination of part of the Gulf to the Flyway Site Network of the East Asian — Australasian Flyway Partnership has been discussed with stakeholders. If funding and technical support can be arranged, the Rangers may eventually engage in research activities on shorebirds in their country, to determine exact migration routes and possibly establish contact with connected 'sister sites' in the Flyway.

References

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Egrets breeding in a freshwater wetland, Gulf Plains region (© Copyright, Normanton Land and Sea Rangers)



Flocks of migratory shorebirds on the Gulf Plains coast (© Copyright, Roger Jaensch)

Informed decision making for the conservation of wetland birds and their habitats

Queensland Department of Environment and Heritage Protection

The Queensland Government, along with non-government organisations, private consultancies and universities, is working on a project to improve decision making relating to the management of wetland birds and their habitats.

Today, more than ever, policy makers, planners and managers working in the public and private sectors need efficiency in decision making. To do this, it is extremely important that the data and information required to support decision making can be easily accessed and understood.

A large volume of data and information is available for wetland birds, including shorebirds and other waterbirds. Some is published literature, but much is in unpublished reports and datasets and not in the public domain. Some data can be found in systems such as Eremaea eBird, the Atlas of Living Australia and the Atlas of Australian Birds, while other data have yet to be collated, analysed and summarised.

This project aims to deliver coordinated data and information to inform policy and planning initiatives, management activities and assist with meeting objectives under international agreements, conventions and partnerships, such as the Ramsar Convention.

A centralised, web-based portal will provide links to existing data and information, management tools and guides, monitoring programmes, assessment techniques, as well as education tools and initiatives. It will also identify critical data and information gaps to inform future research and broaden our understanding of wetland birds and their habitats.

The initial stages of the project will provide readily available data and information. Future stages will create a spatial representation of this information to enable swift and site-specific interrogation. All products will be made available through Queensland's primary portal for wetland management resources, WetlandInfo: www.wetlandinfo.ehp.qld.gov.au.

For more information on the project, please contact wetlands@ehp.qld.gov.au



*As a Matter of National Environmental Significance, migratory shorebirds like the great knot (*Calidris tenuirostris*) are a focus of the enhancements to WetlandInfo* (© Copyright, Roger Jaensch)



*The project will enhance access to information on the ecology of waterbirds, such as pied heron (*Egretta picata*), which breeds in colonies* (© Copyright, Roger Jaensch)

Wetland eBook launched

Dr Swapan Paul, Sydney Olympic Park Authority, New South Wales

On 28 November 2013, the Sydney Olympic Park Authority published the eBook *Workbook for Managing Urban Wetlands in Australia*.

It is a summary of the contents, partnerships, collaboration and research that was invested in the development of the Wetland Education and Training (WET) Program at Sydney Olympic Park. It is both a culmination and celebration of the WET Program, which has been developed and delivered by the Authority for nearly 12 years.

The eBook has five sections and 28 chapters written by eminent wetland scientists, practising ecologists and other dedicated professionals. The chapters contain useful hands-on information about managing both freshwater and estuarine wetlands in urban Australia. The publication was edited by Dr Swapan Paul, the Wetlands Manager at the Authority, who also coordinates the WET Program.

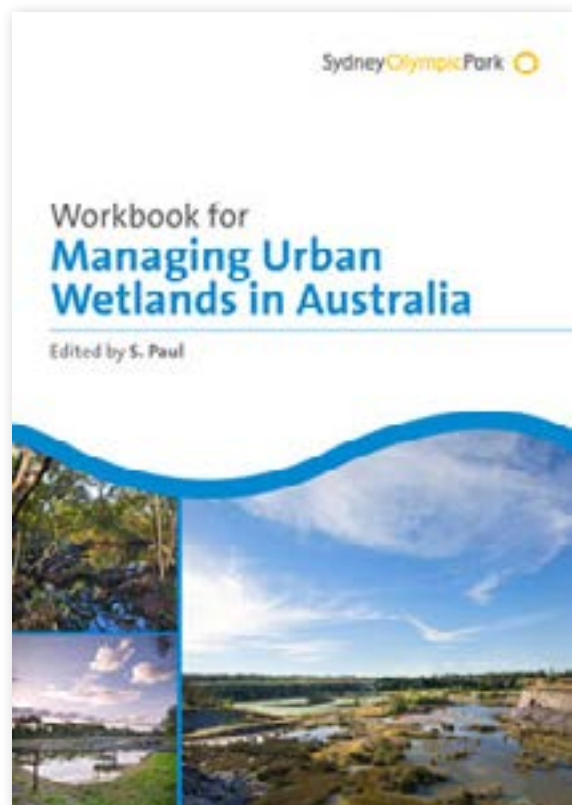
The eBook can be accessed for free on the Authority's website: www.sopa.nsw.gov.au/resource_centre/wet_ebook_workbook_for_managing_urban_wetlands_in_australia.

While officially launching the eBook, the Authority's Chairman Mr Michael Knight AO said that he hoped the eBook would enormously benefit the wetland sector in Australia and beyond, particularly because of its hands-on approach. He was joined for the launch of the publication by wetland professionals attending a regular WET Workshop and authors of the eBook.

Enjoy reading this eBook and making a difference in the wetland that you care for. Also, please encourage your peers to access this eBook and make use of it.

Happy reading!

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The Workbook for Managing Urban Wetlands in Australia, produced by the Sydney Olympic Park Authority, is a practical field guide aimed at enhancing wetland conservation and management in Australia

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