

Ramsar wetlands support waterbirds and their habitat

Ashmore Reef: A tropical paradise for seabirds

Rohan Clarke, Monash University

Ashmore Reef is a Commonwealth Marine Reserve situated some 630 kilometres north of Broome, Western Australia and 145 kilometres south of the Indonesian island of Roti. The reserve supports outstanding marine life including vast areas of shallow coral reefs.

Four small islands provide critical breeding and roosting sites for exceptional numbers of seabirds. With 16 species of seabird and huge numbers of individuals, Ashmore Reef is listed as both a Ramsar site and an Important Bird Area.

To facilitate effective management, especially given the extensive oil and gas developments in the region, a team from Monash University led by Dr Rohan Clarke run a large-scale research programme at Ashmore Reef and other nearby islands. Seabirds are

of particular interest, with research focused on monitoring population trends at the breeding sites and identifying foraging ranges and essential food resources procured from the surrounding oceans.

Experienced ornithologists equipped with spotting scopes, binoculars and 'clickers', and small drones that gather high resolution images of nesting seabird colonies from low altitudes without disturbing the birds are the two techniques used to monitor seabird populations. Monitoring has shown that more than 100 000 seabirds



*A small drone fitted with a high resolution camera returns to the landing site after photographing crested tern (*Thalasseus bergii*) and lesser frigatebird (*Fregata ariel*) colonies from above. Aerial photos provide another tool to maximise accuracy of monitoring efforts (© Copyright, Rohan Clarke)*



A male great frigatebird (Fregata minor) in full display mode with his throat pouch inflated. Great frigatebirds are just one of 16 species of seabird that breed at Ashmore Reef (© Copyright, Rohan Clarke)

breed at Ashmore Reef in any year, with tens of thousands of additional seabirds making use of the islands as a nighttime roost site. The drone flights provide a completely new perspective—not only are they streamlining the counting process, but for the first time they are also allowing the team to assess the accuracy of the more traditional ground counts.

Research on seabird movements at Ashmore Reef includes the deployment of small GPS devices on frigatebirds, boobies and tropicbirds. Recovered tags allow researchers to determine where seabirds go to obtain their food. Most boobies undertake daily foraging trips involving flights of 80 to 140 kilometres from the breeding islands, whereas frigatebirds undertake trips lasting 3 to 10 days that take them up to 400 kilometres from the islands before they return.

Away from the islands, the team also maintains a continuous record of marine fauna (seabirds, whales, dolphins, turtles and sea snakes) when transiting to and from study sites. This data is especially valuable to identify the needs of seabirds that breed elsewhere, yet routinely forage in the oceans surrounding Ashmore Reef.

In combination, these and other research approaches will provide the insight needed to best manage this very special place.

More information on this research can be found at www.researchecology.com.au



A female great frigatebird (Fregata minor) fitted with a small solar powered GPS tag. These tags record the bird's position at regular intervals through the day and when it next returns to the island the data is automatically downloaded to a small base station without having to capture the bird. Such technology provides important insight into seabird movements with minimal disturbance

(© Copyright, Rohan Clarke)

Banrock Station's record bird numbers

Tim Field and Christophe Tourenq, Banrock Station, South Australia

Wetland bird surveys have revealed record bird numbers and increasing diversity at Banrock Station Wetland Complex Ramsar site in South Australia.

In 1993, the Banrock Station wetland, downstream of Kingston on Murray in the Riverland of South Australia, went through its first of several human-induced drying phases since the construction of Lock 3 in the 1920s. Since 2007, the implemented hydrological regime means the cycle of wet and dry now takes place every three years or so. This allows us to reduce water needs through the summer months and provide a pulse of water in the spring to mimic what once would have happened along the river prior to construction of dams, weirs and locks.

As part of the monitoring of wetland health and diversity at Banrock Station, monthly wetland bird surveys began in 2007 so that changes in bird diversity, abundance and seasonal variations could be recorded. Record annual numbers of several species of waterbirds have been recorded in the first quarter of 2014, including Australasian shovelers (*Anas rhynchos*), black-winged stilts (*Himantopus himantopus*), red-necked avocets (*Recurvirostra novaehollandiae*), black swans

(*Cygnus atratus*) and the four species of cormorants (little black (*Phalacrocorax sulcirostris*), little pied (*Microcarbo melanoleucos*, pied (*Phalacrocorax varius*) and great (*Phalacrocorax carbo*)).

During winter 2013 when the wetlands were dry, Banrock Station welcomed a group of volunteers from the International Student Volunteers (ISV) programme for a two week period. Amongst all the projects they assisted with, their lasting legacy was to help the Banrock Station rangers construct an artificial island to create additional refuge for bird life, giving visitors the opportunity to observe the birds from the nearby bird hide.

The refuge has proven a winner with the four species of cormorants now using the new island as a roost along with coots, ducks, swans and pelicans. Since the construction of the island, cormorant numbers have surpassed the 2013 figures by 64 per cent (189 birds) and the previous highest count by 47 per cent (154 birds).



Birdlife enjoy the new refuge island that was constructed during the 2013 dry phase at Banrock Station Wetland Complex Ramsar site, South Australia (© Copyright, Tim Field, Banrock Station)

In the last 12 months, nine new bird species visited the area, including the great crested grebe (*Podiceps cristatus*). The blue-billed duck (*Oxyura australis*), which had not been observed since 2001 at Banrock Station, was also sighted and recorded. Several new species have been added to the site list, with notable recordings of a spotless crane (*Porzana tabuensis*) and a banded stilt (*Cladorhynchus leucocephalus*) viewed from several of the bird hides located around the wetland. A new and unusual observation was the oriental plover (*Charadrius veredus*), seen late last year amongst samphire floodplains adjacent to the 8 kilometre walking trail circuit around the Banrock wetlands.

Currently, 176 species of birds have been recorded across the wetland, floodplain, black box (*Eucalyptus largiflorens*) and mallee habitats of Banrock Station Wetland Complex.

For further information on Banrock Station Wetland Complex and the waterbirds it supports, please visit www.banrockstation.com.au



An oriental plover (Charadrius veredus) was recorded late 2013 at Banrock Station Wetland Complex Ramsar site, South Australia (© Copyright, Tim Field, Banrock Station)



One of the many red-necked avocets (Recurvirostra novaehollandiae) seen on the wetlands at the Banrock Station Wetland Complex Ramsar site, South Australia (© Copyright, Tim Field, Banrock Station)

Delivering biodiversity dividends for the Barratta Creek Catchment, and for the Bowling Green Bay Ramsar Wetland in Queensland

Hanna Kogelman, Regional Manager Townsville, WetlandCare Australia

The Barratta Creek Catchment is located in the Burdekin Shire and the Burdekin Dry Tropics Natural Resource Management region approximately 50 kilometres south-east of Townsville in North Queensland.

Barratta Creek forms the main artery of the Ramsar-listed Bowling Green Bay wetlands. The estuarine reaches of Barratta Creek are also part of the Great Barrier Reef World Heritage Area, making this particular creek catchment a significant and highly important ecosystem in North Queensland.

Along the coastal plains of Queensland, a large number of seasonal wetlands have been lost due to development. Unlike other coastal areas of Queensland, Barratta Creek remains a relatively intact floodplain creek system with a wide variety of environmental values including vegetation connectivity from rangelands to the ocean. The Barratta Creek remnants provide habitat for nationally endangered and locally threatened wildlife including the northern quoll (*Dasyurus hallucatus*), squirrel glider (*Petaurus norfolcensis*), greater glider (*Petauroides volans*), spectacled hare-wallaby (*Lagorchestes conspicillatus*), bare-rumped sheath-tail bat (*Saccolaimus saccolaimus nudicluniatus*), black-throated finch (*Poephila cincta*), squatter pigeon (*Geophaps scripta*) and rufous owl (*Ninox rufa*).

In July 2012 Barratta Creek Catchment Management Group and WetlandCare Australia developed a monitoring and evaluation programme designed to measure the success of the projects and other activities such as community events, extension, communications and project management. Project baseline and monitoring information will be documented and stored by WetlandCare Australia and reviewed periodically to determine achievements against key performance indicators relevant to activities in the project. For example, monitoring will involve measuring the percentage of open water in wetlands, wetland bird species, woodland bird species, and arboreal and ground mammal counts.

The activities are also designed to engage the local community, including to mentor and provide traditional owner Natural Resource Management work teams with appropriate training and adequate resources to enable them to become a viable long term professional resource.



Black-throated finches (Poephila cincta) utilise remnant habitat along Barratta Creek, Queensland (© Copyright, Brian Furby)

The team will also conduct flora and fauna surveys of high value remnant vegetation as well as develop local programmes to preserve habitat for nationally endangered and locally threatened wildlife. The project itself covers a total of 125 000 hectares, of which 30 000 hectares will be revegetated, 30 000 hectares will be restored and 3000 hectares will be managed for invasive species. On ground monitoring, training programmes, research partnerships and restoration initiatives will protect, manage and enhance the high ecological values of the Barratta Creek Catchment.

For more information, please
contact Hanna Kogelman
(hannakogelman@wetlandcare.com.au)
or visit www.wetlandcare.com.au



Squatter pigeons (Geophaps scripta) are one of the endangered species that could benefit from local programmes to preserve habitat in the Barratta Creek catchment, Queensland (© Copyright, Brian Furby)

Protecting Ramsar values at Little Llangothlin Lagoon

Laura White and Eli Dutton, WetlandCare Australia, Ballina, New South Wales

Located near Guyra on the New England Tablelands of New South Wales, Little Llangothlin Lagoon Nature Reserve is a Ramsar listed wetland, noted for its waterbird habitat values, unique ecological character and the threatened species and communities it supports.

This permanent freshwater lake represents one of the last remaining Upland Wetlands, a nationally Endangered Ecological Community (EEC). The site also supports the nationally endangered New England Peppermint Woodland ecological community and the nationally threatened herb Austral toadflax (*Thesium australe*).

Little Llangothlin Lagoon is a waterbird habitat refuge, regularly supporting over 20 000 birds. Nearly 50 waterbird species rely on the permanent water, food and shelter that the lake provides, including the nationally endangered Australasian bittern (*Botaurus poiciloptilus*). Many migratory birds also seasonally feed and roost at the lagoon.

Land uses in the surrounding catchment, such as grazing, can result in excessive sediment and nutrients entering the lagoon, causing infilling and water pollution. Loss of native vegetation in the wider area reduces habitat connectivity for waterbirds and other fauna.

The following catchment management actions are implemented to promote catchment health to keep the lake clean and flourishing with birdlife:

- Confine stock to drier areas to prevent sediment and nutrient run-off.
- Maintain healthy pastures and avoid overgrazing.
- Control noxious weeds to stop their spread.
- Restore areas of native vegetation to provide habitat for wildlife.
- Promote wetland vegetation to capture soil and nutrients.

WetlandCare Australia and the Northern Tablelands Local Land Services are currently delivering a project funded by the Australian Government, to assist farmers in the Lagoon's catchment to improve wetland health. The project aims to increase productivity and farm health, while protecting habitat values through the provision of livestock fencing, alternative watering options and revegetation. The project will also assist farmers with the control of noxious weeds in the catchment and work with New South Wales National Parks and Wildlife Service (NSW NPWS) to undertake revegetation around the lagoon. Over 200 hectares of native vegetation will be improved, benefiting lagoon health and bird habitat.

Over 20 farmers attended a field day at the Lagoon in February 2014 to learn more about the wetland and many are now engaged in on-farm works to improve management practices. Project partners, including fifteen trees and the NSW NPWS, have donated their advice, materials and services to the project to boost outcomes. On-ground works will assist to maintain the ecological character of this Ramsar wetland by improving water quality within the lake, reducing the threat of weed incursion and expanding key habitat and corridors within the region.

For more information on the project, please contact WetlandCare Australia on 02 6681 6169 or visit www.wetlandcare.com.au. For more information on the Little Llangothlin Nature Reserve Ramsar site, please visit www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=47



Little Llangothlin Lagoon Ramsar site supports endangered ecological communities, threatened species and provides key waterbird habitat (© Copyright, Laura White)



Unmanaged stock can significantly decrease wetland health and catchment wide water quality (© Copyright, Laura White)

Hooded plovers and hypersaline pink lakes — a possible symbiosis?

Don Cater, Recovery Catchment Technical Officer, Western Australian Department of Parks and Wildlife

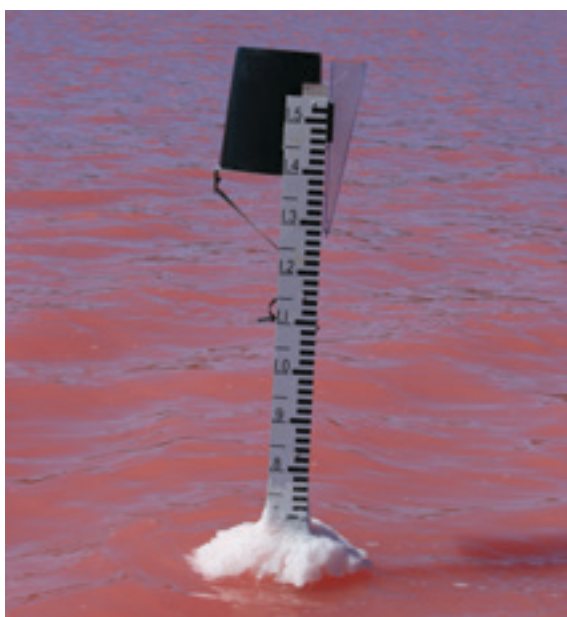
The Lake Warden Wetland System in Esperance, Western Australia, was listed as a wetland of international importance (Ramsar wetland) in 1990. The system consists of numerous interconnected lakes, including the iconic Pink Lake.

Extensive land clearing activities over the past three decades have resulted in an altered hydrological regime. Consequently, Pink Lake no longer has its namesake colour and shorebird habitat has been drastically reduced.

In August 2009, engineered dewatering of the system began with the aim of reducing current water levels to optimise shorebird habitat and vegetation recovery. For further information on this project, please refer to the article by John Lizamore and Michael Coote in

Wetlands Australia, Issue 24, 'To wade or not to wade — hydrological management effects on species composition', found at: www.environment.gov.au/resource/wetlands-australia-national-wetlands-update-february-2014.

Following this dewatering, weekly bird surveys at Lake Warden indicate that shorebirds have returned in record numbers during the early summer, but move on in late summer despite there being optimal nesting habitat available. New evidence suggests that the reduced water



Salt crystals form on the gauge plate at the Lake Hillier monitoring station in Middle Island, part of the Pink Lakes project (© Copyright, Don Cater)



Hanson 3, part of the Pink Lakes project, is a small pink lake situated on private property at Speddingup (© Copyright, Don Cater)



Hooded plovers (*Thinornis rubricollis*) feeding at Lake Warden where *Dunaliella salina* cysts with accumulated carotenoid (red colouration) have washed ashore (© Copyright, Don Cater)

levels have increased salinity values above those that invertebrates can survive—the food source of waders. At saturation point, salt crystals form either as an underwater crust or as crystals above the water line. It is at this point that pink colouration changes are usually observed.

Interestingly, hooded plovers (*Thinornis rubricollis*) appear to favour these conditions as they are recorded in greater numbers than usual, while other shorebird numbers decline drastically from this point forward (Figure 1). The pink colouration of hypersaline lakes is produced by various organisms, including the algae *Dunaliella salina* when it assimilates beta carotene, and the carotenoid and retinal pigments of halophylic (salt-loving) micro-organisms. Current speculation is that hooded plovers are able to procure food resources at pink lakes that are not available to other species.

In an attempt to better understand this ecological trait, the recovery catchment program has established a monitoring program to find correlations between shorebird species richness and water chemical parameters specifically in hypersaline lakes that exhibit pink colouration changes.

The results will be used to adaptively manage the Lake Warden Wetland System in an attempt to restore the ecological integrity of the system. This includes the provision of optimal nesting and feeding habitat for shorebirds and a suitable explanation, and possible remedy, to the Pink Lake colour dilemma.

For more information and research opportunities, contact John Lizamore (Western Australian Department of Parks and Wildlife, john.lizamore@wa.gov.au, (08) 9083 2109).

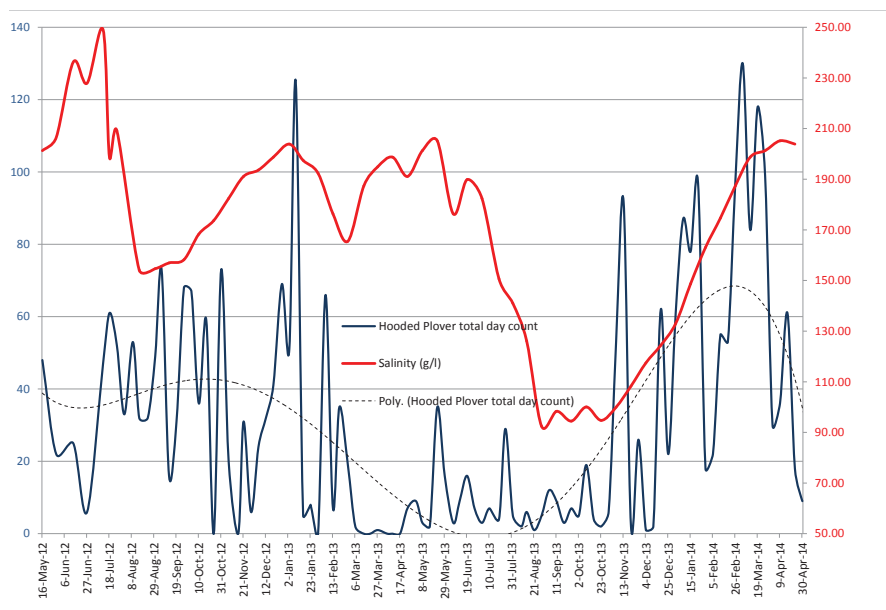


Figure 1: Hooded plover (*Thinornis rubricollis*) weekly counts versus salinity values at Lake Warden, Western Australia (© Copyright, John Lizamore)

Restoring the upstream catchment of a Ramsar listed wetland

Louise Duff, Manager Hunter Region, WetlandCare Australia

Think of the city of Newcastle in New South Wales and chances are coal will immediately spring to mind. Think again.

Newcastle's wetlands have been identified as the most significant migratory shorebird habitat in New South Wales, and an important drought refuge for waterbirds. The assemblage of wetlands on the city's doorstep includes the nationally listed Hexham Swamp, and the Hunter Wetlands National Park. Set amidst this assemblage is the community-owned Hunter Wetlands Centre, a component of the Hunter Estuary Wetlands Ramsar site. The site provides habitat for 67 species of waterbirds. The deeper ponds are used by teal, swans and even a resident flock of magpie geese (*Anseranas semipalmata*) who punctuate the peace with their sing-song cackles and squawks.

The site's freshwater swamp forest is a breeding colony for egrets and an evening roost for thousands of Australian white ibis (*Threskiornis molucca*) and straw-necked ibis (*Threskiornis spinicollis*). During droughts, the wetlands are welcome refuge for threatened species. At WetlandCare Australia's Hunter office, located at the Centre, we were recently delighted by a flock of wandering whistling ducks (*Dendrocygna arcuata*) on the pond outside, all in couples, courting.



Sharon Claydon MP (Federal Member for Newcastle), Louise Duff (Manager Hunter Region, WetlandCare Australia) and Ken Conway (Chief Executive Officer, Hunter Wetlands Centre) at the Hunter Wetlands Centre, New South Wales

(© Copyright, Verity Robson)

For Novacastrians, these wetlands are a haven — a place for birdwatching, photography, bushwalking, fishing, boating and barbecues. Recognising their value, community organisations including WetlandCare Australia work in every aspect of conservation, from advocacy and research to education and on-ground works.

WetlandCare Australia has commenced a major project funded by the Australian Government to restore Boatman Creek, which flows into the Hunter Wetlands Centre. The Newcastle Riparian-Ramsar Connections project recognises that urban impacts in the upstream riparian zone threaten the water quality and biodiversity at the Ramsar listed wetlands downstream.

Led by WetlandCare Australia, a consortium of five land owners and 13 partners are tackling threats including pollution, sedimentation and weeds. The project places a high emphasis on stakeholder engagement and building the capacity of Indigenous Australians to manage natural resources.

Stakeholder activities to date include the establishment of a new Landcare group at the University of Newcastle and a workshop on Water Sensitive Urban Design hosted by the Tom Farrell Institute. A team of three Indigenous trainees managed by Conservation Volunteers Australia have commenced bush regeneration at five of the project's 14 sites, and preparation has commenced for revegetation projects that will plant over 30 000 local native plants in parks owned by the City Of Newcastle, a major partner in the project.

To find out more about the project, please contact Louise Duff (WetlandCare Australia Manager Hunter Region, 02 4951 1425, hunter@wetlandcare.com.au) or visit: www.wetlandcare.com.au/index.php/our-work/current-projects/newcastle-riparian-ramsar-connections-program. You can also visit the MERIT site on the Atlas of Living Australia and search for the 'Newcastle Riparian-Ramsar Connections project'.

Fox on the run: Integrated fox control key to protecting waterbirds

Andrew Morrison, Port Phillip and Western Port Catchment Management Authority, Victoria

The Western Port Ramsar site in southern Victoria is a complex and dynamic wetland of international importance.

The diverse ecosystem comprises sensitive saltmarsh and mangrove vegetation communities and supports a broad range of native fauna. Waterbirds, including red-necked stint (*Calidris ruficollis*), pied oystercatcher (*Haematopus longirostris*), red-capped plover (*Charadrius ruficapillus*), double-banded plover (*Charadrius bicinctus*) and eastern curlew (*Numenius madagascariensis*) make use of the extensive network of tidal mudflats and fringing riparian zones, to roost, nest and feed along the spectacular shoreline.

Although ecologically diverse, the area surrounding the narrow shoreline consists of peri-urban and rural land tenure, comprising private and public land managers. This fragmented landscape provides ideal roaming territory for many feral animals, especially foxes.

Foxes are a major predatory threat to waterbird populations as they disturb and attack waterbirds, often displacing chicks and adults from nests which reduces breeding success.



Foxes are a predatory threat to waterbirds. Regular monitoring of fox populations is a critical component of integrated pest management (© Copyright, Tim Bloomfield, Port Phillip and Western Port Catchment Management Authority)

This threat is being addressed through the Ramsar Protection Program and delivered via the Port Phillip and Western Port Catchment Management Authority (PPWCMA) with funding from the Australian Government. The Ramsar Protection Program aims to protect the ecological values of Ramsar sites in Victoria by undertaking natural resource management activities, including pest plant control, pest animal management and exclusion fencing to enhance and protect site values and characteristics.

An integrated fox control program is being implemented across Western Port Bay priority areas between Tooradin and Somers, in collaboration with City of Casey, Mornington Peninsula Shire Council, Parks Victoria and private land managers.

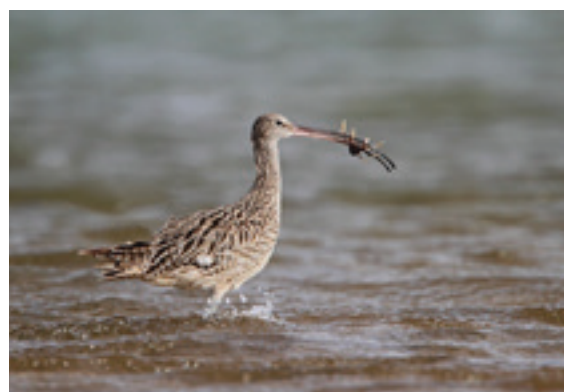
Integrated fox control provides the framework to deliver broad-scale pest management efficiently and effectively in partnership with a range of public and private land managers. This approach ensures greater impact at the landscape level through delivering a sustained reduction of foxes. Integrated fox control benefits delivery partners by:

- gaining efficiencies in implementation of fox control works
- identifying consistent control methods including baiting and trapping techniques
- coordinating timing and sequencing of control activities
- prioritising areas for control and management
- rationalising monitoring requirements.

In order to maximise the effectiveness of fox control, activities such as exclusion fencing, rabbit and feral cat management will also be undertaken by a range of other program delivery partners. Throughout the implementation phase, delivery partners will also engage with private landholders whose properties adjoin Ramsar sites. This engagement will help increase the awareness and understanding of the site values and encourage participation in actively managing threats on private land.

Working collaboratively to tackle this important issue will significantly benefit waterbird populations within the Western Port Ramsar site.

For more information on the Ramsar Protection Program, please visit: www.ppwcm.vic.gov.au



Western Port Ramsar site supports the Eastern curlew (Numenius madagascariensis) (© Copyright, Dean Ingwersen)



Red-capped plover (Charadrius ruficapillus) testing the waters (© Copyright, Dean Ingwersen)

Celebrating World Wetlands Day 2014 at two Ramsar sites in Victoria

North Central Catchment Management Authority

World Wetlands Day was celebrated around the world on 2 February 2014. To acknowledge this significant day, the North Central Catchment Management Authority (CMA) hosted two events showcasing Northern Victoria's wetland diversity and habitat values.

Hird Swamp, part of the Kerang Wetlands Ramsar site, was the perfect setting for 'Breakfast with the Birds'. An early 6.30 am start didn't worry the 75 participants who travelled from all over the state to visit the amazing wetland. Thousands of birds had been observed at Hird Swamp since the delivery of spring-summer environmental water and a self-guided tour gave community members an opportunity to explore.

Project Officers Heidi Kleinert and Kathryn Stanislawski hosted the event and received overwhelmingly positive feedback.

"Attendees appreciated the sights and sounds of a productive wetland. Many said the wetland was amazing and breathtaking. Some attendees live in close proximity and hadn't realised that Hird Swamp was on their doorstep".

The wetland is a multi-use site and representatives from birdwatching groups, duck rescue groups and Field and Game discussed their respective wetland values. All agreed that birds were the reason they value the Ramsar Wetland.

Three weeks later, 40 enthusiastic and passionate people attended a second event celebrating World Wetlands Day with a bus tour of several Gunbower



Aunty Esther Kirby showcasing the traditional yam stick during World Wetland Day celebrations (© Copyright, Tess Grieves, North Central Catchment Management Authority)

Forest Ramsar site wetlands. The tour started in the timber milling town of Koondrook at the junction of the Gunbower Creek and the Murray River, heading into the Gunbower Forest. The guest speaker for the day was wetland ecologist, Michelle Casanova. Michelle discussed the function, threats and values present at each wetland. Local landholders, several living adjacent to the wetlands, also had an opportunity to share knowledge, history and their perspective of the management at each site.

The cultural importance of wetlands was a prominent theme of the day. Barapa Barapa Elder Aunty Esther Kirby and her daughter Laura Kirby thrilled guests

with stories, artefacts and demonstrations showcasing the importance of wetland plant diversity. Aunty Esther presented her art, possum skin cloaks and traditional weaponry, to demonstrate the intrinsic connection to the landscape which provided all the services of a supermarket, a pharmacy, a kitchen and a home.

The large attendance at both of these World Wetlands Day events demonstrates community thirst for wetland knowledge and appreciation. The North Central CMA will continue to deliver exciting events and materials celebrating the significance of the wetlands in the North Central region of Victoria.



Brolgas (Grus rubicunda) at Hird Swamp put on a display for the Breakfast with the Birds event (© Copyright, Kathryn Stanislawski)



Birdwatchers enjoyed Breakfast with the Birds at Kerang Wetlands Ramsar site to celebrate World Wetlands Day 2014 (© Copyright, Kathryn Stanislawski)