Inspirational wetland restoration on private land

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

The Department of Environment, Water, and Natural Resources South Australia (DEWNR) has been working with private property owners to achieve an exciting large scale restoration project in the south east of South Australia. Steve and Kaleen Harris, graziers, from Iluka Estate, near Beachport have recently placed 130 hectares of their property underwater in a conservation measure to restore the landscape to that of pre-drainage and clearance.

Originally part of a vast near-coastal wetland system that spanned over 100 square kilometres, the Iluka tract of wetland abuts the Crown land wetland of Mullins Swamp effectively creating a 375 hectare, 5 kilometre long wetland.

Recent on-ground works designed to hold water for longer periods on Iluka have included reinstating a 500 metre levee/causeway, a spillway, fish passageway and fencing. The engineering has enabled the surface water to remain within the required area to a depth of up to 60 centimetres. On a brief survey over 50 indigenous flora species have been identified including tall saw sedge (*Gahnia clarkei*), river buttercup (*Ranunculus inundatus*) and bottlebrush tea-tree (*Melaleuca squarrosa*), which are all rare, state listed species. Fauna records so far are equally impressive and include the EPBC listed southern bell frog (*Litoria raniformis*), dwarf galaxias (*Galaxiella pusilla*) and the Australian mudfish (*Neochanna cleaveri*), which was recently thought to be extinct in SA. So far five species of fish, seven species of frogs, and over 20 species of water fowl have been recorded. Transects and quadrats have been set up and surveys undertaken to better understand the vegetative changes that will occur over the next few years.

Top: 2 kilometres of open water (Steve Clarke)
Bottom: Tea tree and sedge (Steve Clarke)

Top: Steve Harris inspecting a spillway and fish passageway (Steve Clarke)
Bottom: Survey at Illuka (Steve Clarke)

The Harris', though very excited about the possibility of restoring a wetland to such extent, debated for some time about placing such a large part of their property under conservation. Eventually, after much deliberation, they settled on the option of grazing parts of the wetland that totally dried over summer, alleviating some of their concerns. Selectively grazing was the ideal method to manage the introduced pasture grasses therefore reducing fire fuel loads and allowing an economic return at the same time. Grazing management would be undertaken using hot wire ribbon (a type of electric fence) and exclude stock from high conservation areas and revegetation sites.

DEWNR works with many private landowners to conserve their wetlands but only rarely do landowners return such large areas to wetland. All landholders that conserve must be highly commended for their contribution to the natural environment.

Restoration work at Iluka Wetland has been funded by the South Australian and Australian Governments. Contact Wetland Conservation Ecologist Steve Clarke for more information (steve.clarke@sa.gov.au)

Wetland thrives alongside food production

Garry Baker

There's a unique habitat for a plethora of wildlife, birdlife and reptiles near Deniliquin, in southern New South Wales. It's called Lake Geraldine and provides food in abundance and a fertile breeding ground for birds including ibis, brolgas, Australasian bitterns, ducks and pelicans…the list goes on.

If you stand on the lake's edge you will discover it is also home to numerous species of croaking frogs, lizards and other reptiles, including the snakes which slither around the wetland and its surrounds. It also provides the environment for a myriad of plant species.

But this is a wetland with a difference.

It's not in a national park or even a public adjunct to a river or tributary system. Lake Geraldine is in the middle of a productive irrigated mixed farming enterprise, sharing its surrounds with crops of rice, cereals and pasture, as well as sheep and cattle.

It is a great example of reconciliation ecology, where biodiversity lives in harmony with a human ecosystem, and highlights how agriculture and ecological outcomes can coexist.

The owners, like most farmers, appreciate they are custodians of their land and take pride in the benefits this wetland habitat provides to the profusion of wildlife that calls Lake Geraldine home, or simply drops in for a cursory or extended visit.

Birdlife abounds on Lake Geraldine, unaware of the beef-producing cattle in the background (Garry Baker)

The Lake Geraldine wetland on a mixed farming property east of Deniliquin, in the NSW Murray region (Garry Baker)

The lake is a natural low spot on the property, and as such rainfall drains into the area. Lake Geraldine highlights the need to ensure the focus of environmental water is extended to private land. Nature does not care about ownership, and therefore public land should not be the sole focus of assessing environmental outcomes for water reform. Maybe we should ask the question: Do the thousands of birds, reptiles and invertebrates who inhabit the wetland care who owns it? We suspect not.

If wetlands on farms are recognised as important pieces in the ecological puzzle, we will take positive steps to reduce the impact which extremes in the Australian climate can have on non-human life that shares our environment.

Finding ways to maintain healthy private wetlands will ensure they always provide effective breeding grounds, even in times of drought.

For further information, contact Louise Burge on 0428 984 570

Native fish responses to increased connectivity and flows in a restored freshwater wetland

Lauren Veale, Nature Glenelg Trust

Long Swamp, proposed to be Victoria's next Ramsar site, is a large freshwater wetland in south western Victoria, supporting a suite of nationally threatened species, including the Yarra pygmy perch (*Nannoperca obscura*) and little galaxias (*Galaxiella toourtkoourt*). With a complex range of factors at play (catchment land use change, climatic trends and artificial drainage), the wetland system has experienced a long-term drying trend, reducing habitat for these and other key species.

Over the last three years, Nature Glenelg Trust has successfully worked with the community and agency partners to reduce the impact of artificial drainage on the system and restore natural flows towards the Glenelg River. With funding from the Department of Environment, Land, Water and Planning (DELWP), a trial structure was completed in April 2015 and successfully closed the last remaining artificial outlet at Nobles Rocks (Figure 1). This resulted in the recovery of approximately 200 hectares of aquatic habitat upstream of the weir.

Following this year's above average rainfall for the region, water levels upstream of the Nobles Rocks weir rose to a level that saw our ultimate goal achieved: the redirection of flows downstream towards the Glenelg River. For the first time, this spring we recorded continuous hydrological connectivity throughout Long Swamp and prolonged freshwater flows. The restoration of this natural flow path has been essential in facilitating species colonisation and assisting the movement of migratory species.

Figure 1—from top: The trial structure at Nobles Rocks built of over 7000 sand bags and recreated aquatic habitat upstream of the weir. (Lauren Veale)

Figure 2—from top: the threatened Yarra pygmy perch and little galaxias, and juvenile short-finned eel and common galaxias recorded during monitoring in spring 2016.
(Lauren Veale)

Ecological monitoring (funded by DELWP and Glenelg Hopkins Catchment Management Authority) conducted throughout the restoration process has been pivotal in detecting the native fish responses to restoration. During monitoring in spring 2016, an increased number of juvenile common galaxias and a single juvenile short-finned eel were detected in central Long Swamp (Figure 2). This confirmed restored connectivity and the ability of fish that migrate between fresh and salt water to utilise the reinstated original flow path to the ocean. Providing further evidence of increased connectivity, was the exciting discovery of Yarra pygmy perch in the newly inundated habitat upstream of Nobles Rocks weir. Furthermore, this restored habitat is providing critical refuge for another nationally threatened fish species, the little galaxias.

While other areas of Long Swamp (which may receive less groundwater influence) will remain susceptible to drying during periods of low rainfall, the Nobles Rocks weir should result in permanent aquatic habitat. This restored habitat will provide important refuge for fish and other fauna, and greatly contribute to their overall persistence in an ever changing landscape.

For more information, contact
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Taking a whole of catchment approach to Ramsar conservation

Conservation Volunteers Australia

Two major projects are yielding conservation outcomes for Ramsar sites by taking a whole-of-catchment approach. One is focussed on urban waterways in the upstream catchment of the Hunter Estuary Wetlands Ramsar site in Newcastle, NSW. The second is rehabilitating Barratta Creek, the catchment for Bowling Green Bay Ramsar site in Queensland.

The two projects are separated by 2000 kilometres of coastline, and face different issues from urban degradation to agricultural impacts. But both are successfully employing similar strategies to improve conservation values downstream: working with Indigenous Australians, engaging local communities and undertaking on-ground rehabilitation in partnership with land managers.

The four-year projects were initiated by WetlandCare Australia and funded by the Australian Government. They are now in their final year. Since WetlandCare Australia merged with Conservation Volunteers in July 2015, the project teams have been retained and Conservation Volunteers is now the lead agency through its *One Reef* program in Queensland and *Wetlands Catchments Coasts* program in New South Wales.

Expert scientific staff assess wetland health in a wide variety of environments (Conservation Volunteers Australia)

Results by numbers

Newcastle Wetland Connections is improving the condition, function, resilience & biodiversity of urban waterways from the top of Ironbark Creek catchment via state-listed freshwater wetlands to the Hunter Wetlands Centre.

The project has regenerated 11 hectares of riparian bushland at 14 sites improving 10 kilometres of creek line. Revegetation projects have focussed on improving biodiversity and creating buffers to reduce pollutants entering the waterways. In all, 48,898 local natives have been planted covering 6.4 hectares. Rock riffles, check dams, armouring and bio-swales have been introduced into the system to slow water movement, reduce sediment and create habitat.

157 Indigenous Australians participated in cultural events around the project. Fifteen were employed on the project, with two achieving accredited qualifications. 1,723 members of the community participated in projects activities.

The Barratta Creek project is protecting and enhancing a major artery of the Bowling Green Bay wetlands, the only Ramsar site in North Queensland. The project is also improving in-shore waters to protect the Great Barrier Reef.

Revegetation with over 30,000 local natives has improved the connectivity of wildlife corridors, increased diversity of species, and protected stream-banks from erosion. The project has also treated 35 hectares of invasive aquatic weeds to improve water quality and re-establish fish habitat. Feral animal control targeted sensitive wetlands being degraded by feral pig colonies. Community events have attracted 316 volunteers, and 70 Aboriginal people have participated in a range of training and on-ground activities. Community education has seen a significant reduction in environmentally destructive wildfires.

A Youtube video by TropWater, one of the Barratta Creek project partners, on cane farmers restoring Burdekin wetlands can be viewed here: https://www.youtube.com/watch?v=ydPuXKE7_jE

For more information, visit www.conservationvolunteers.com.au or contact Ian Walker, Director, Conservation Volunteers, T: 1800 032 501, E: iwalker@conservationvolunteers.com.au.

ExxonMobil and Conservation Volunteers Australia support vital wetland systems

Conservation Volunteers Australia

ExxonMobil Australia has partnered with Conservation Volunteers Australia (CVA) to deliver the Victorian Wetland Care Program. Through on-ground conservation actions, community and school education programs and support, ExxonMobil and CVA aim to improve the habitat value of two wetland systems listed under the Ramsar Convention. The Victorian Wetland Care program is made up of three key elements.

Sale Common Nature Conservation Reserve

The Sale Common Nature Conservation Reserve covers 300 hectares and is managed by Parks Victoria. More than 70 per cent of the reserve consists of freshwater marsh, and the remaining area supports river red gum woodlands and grassland. The site is part of the Gippsland Lakes Ramsar listed wetlands and is home to a diverse range of waterbirds, kookaburras, wrens, brushtail and ringtail possums.

In 2015–16, key community conservation activities at the site included the removal of invasive weed species, site maintenance and the removal of more than 120 kilograms of debris. Fencing to protect sensitive areas and litter collection is essential to maintain water quality at this important wetland site.

Paisley Challis Wetlands

Paisley Challis Wetlands adjoins Cheetham Wetlands, which are part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site of international significance. The wetlands contain native grasslands, salt marsh and mangrove vegetation and function as valuable habitat for a diverse range of fauna and flora, as well as recreational spaces for local community members. Over 200 species of birds and local native plants, and the endangered Altona skipper butterfly inhabit these wetlands. Key community conservation activities at the wetlands over the past year have included weeding, planting trees, grasses and reeds and mulching to protect sensitive areas.

Little Pied Cormorant at Sale Common (Conservation Volunteers Australia)

Schools Outreach program

ExxonMobil, through their partnership with CVA have also supported a Schools Outreach program. This included the production of a Victorian Year 4 Science curriculum educational resource for students and teachers. This resource highlights the diversity in Victorian wetlands and assists Year 4 students to learn about ecosystems such as wetlands and the interrelations of plants and animals within the environment.

The Victorian Wetland Care program between ExxonMobil and CVA has delivered school education outcomes, along with community conservation actions to assist the restoration of vital wetland systems of international significance in the Gippsland and Altona regions.

For more information, visit www.conservationvolunteers.com.au or contact:
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Protecting and enhancing Esperance Ramsar wetlands

Claudia Magana, Project Officer, South Coast Natural Resource Management, Esperance

The Esperance region of Western Australia is lucky to have not one but two wetlands of international significance, Lake Warden and Lake Gore. Lake Warden is located 5 kilometres north of the Esperance town site while Lake Gore is 35 kilometres west. Each year both wetlands are crowded with thousands of winged visitors from all over the world coming to rest and feed in the mudflats of the wetlands.

As well as supporting one per cent of the global population of hooded plover (*Thinornis rubricollis*) and the chestnut teal (*Anas castanea*), the Esperance region is recognised as the most important region for shorebirds along the south coast of WA because it has consistently supported more than 4000 shorebirds and has shown an increase as reported in the recent report on '*Shorebirds on WA's South Coast—2015*' by Peter Taylor and Green Skills.

South Coast NRM and partners including a number of local land managers, community groups and government agencies, have been working together for over 10 years to address threats to the Ramsar wetlands and surrounding catchments to ensure that that these wetlands, the species they support and the wider community have a future.

Lake Gore (Claudia Magana)

Lake Warden (Claudia Magana)

With funding from the Australian Government's National Landcare Programme, South Coast NRM and partners are half way through a three year program to support the Esperance community to deliver targeted rehabilitation works in priority areas within both catchments. These works include:

1. 30 hectares of biodiversity plantings to restore and provide suitable habitats for significant flora and fauna; 15 hectares of control of invasive weeds that impact the wetland values
2. 12 kilometres of fencing to protect shorebird habitat
3. Three bird surveys
4. Six Indigenous participation opportunities to enhance cultural engagement in protecting Ramsar wetlands
5. 20 communication events to extend project activities to the community
6. Six technical advisory groups meetings to guide on ground works programs and future project activities.

The results and benefits of these activities can be seen across both catchments through the happy stories told by land managers as they see their landscapes recover from inundation, wind erosion and weeds. In addition, Esperance has had the highest species count and highest count for both resident and migratory shorebirds throughout the South Coast regions as reported in '*Shorebirds on WA's South Coast—2015*'.

South Coast NRM looks forward to continuing to support the community and land managers to rehabilitate and protect the wetland environments and Ramsar values of the Esperance wetlands and lakes.

To find out more on this exciting project please visit the South Coast NRM website www.southcoastnrm.com.au or contact Claudia Magaña the South Coast NRM Esperance project officer: claudiam@southcoastnrm.com.au, (08) 90762206.

Hooded Plovers on White Lakes (Caitlin Jackson)