



# Weekly Bulletin

The Lakes Hub is an initiative of the Milang and District Community Association Inc. funded by the Australian Government and the South Australian Government's Murray Futures program.

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Happy World Turtle Day!

Call them what you will, the *Emydura macquarii* and the *Chelodina longicollis* that inhabit our region are two of the cutest creatures you can come across down by the water or crossing the road during peak traffic on Daranda Terrace.



We featured the Eastern Long-necked Turtle (*Chelodina longicollis*) last week, in honour of Timmy, but to be completely fair to our very own heroes in a hard shell, we take a gander at the Murray River Turtle.

As to our use of the name "Turtle": as a community organisation we of course recognise that historically these little creatures were referred to as tortoises in Milang. We receive regular communications alerting us to that fact. Our tendency is to follow convention within Australia and report accordingly, to avoid confusion.

As the [Australian Museum puts it](#), "The terms turtle and tortoise are often used interchangeably and can cause some confusion. In the past, all freshwater turtles were called tortoises and marine turtles were called turtles. The more recent convention has been to restrict the term 'tortoise' to the purely land-dwelling species. As such, Australia has no tortoises."



Did you know that the collective term for a group of Turtles is "a bale of turtles"?

## Weekly Links

TurtleSAT is a new website where communities are mapping the location of freshwater turtles in waterways and wetlands across the country. Australia's unique freshwater turtles are in crisis - their numbers are declining and your help is needed to record where you see turtles in your local area. [www.feralscan.newtongreen.com/turtlesat/](http://www.feralscan.newtongreen.com/turtlesat/)

## New app helps track turtles



Smart phones could soon be a turtle's best friend with a new app for Australians to report turtle sightings launched today, World Turtle Day.

*TurtleSAT* - Turtle Survey and Analysis Tools – is an easy to use free mapping app for all smart phones and tablets.

“By downloading the *TurtleSAT* app every phone becomes a sophisticated data logger and every user becomes a field assistant in the biggest study of freshwater turtles ever undertaken in Australia,” says Dr Ricky Spencer a zoologist at the University of Western Sydney and one of the app's developers.

The app is designed for quick data entry with picture guides to help users identify the turtle they have spotted. The phone's inbuilt GPS automatically records the location. Users can also easily adjust the coordinates on a map to make it more accurate or log previous sightings. For those without a smart phone there is an easy to use website ([TurtleSAT.org.au](http://TurtleSAT.org.au)) to record sightings once people get home or to work. “We're hoping everyone with a smart phone or a computer will join this unique study to map the distribution of turtles in Australian waterways. There is a turtle crisis happening at the moment, with declines of over 90 percent in parts of the Murray River,” says Dr Spencer.

Turtles live in almost all rivers, creeks, lakes and ponds throughout most of Australia, yet scientists have been unable to build a complete picture of these quiet environmental cleaners. “Turtles play an essential role in the ecosystem,” says Dr Spencer. “They help maintain water health for plants and other animals by ‘vacuuming up’ algae and dead material and eating young pest fish, such as European carp.” Dr Spencer runs turtle field surveys in some of the nation's most famous rivers, including the Murray and he raises several hundred hatchlings every year at the UWS Hawkesbury campus.

However, there are many dangers for turtles in Australia, which could threaten their future; from foxes eating nesting females and their eggs to droughts and urban development. Dr Spencer says data collected through ‘citizen science’ using the *TurtleSAT* app or website, will help scientists better protect turtles.

“If people report lots of sightings near busy roads or frequent road kills, there are some simple and inexpensive measures we can introduce at those locations, which help direct turtles and other wildlife to safer areas,” says Dr Spencer.

“A hot spot on the *TurtleSAT* maps will identify nesting grounds, which could be targeted to reduce the number of foxes at critical times of the breeding season.”

“It's about getting current and geographically accurate information so we can respond in the most efficient way to give turtles the best chance of survival,” Dr Spencer says.

*TurtleSAT* is a collaboration of the University of Western Sydney, The University of Sydney, NSW Department of Primary Industries, Invasive Animals CRC, The Field Naturalist Society of South Australia and the Barbara Hardy Institute at the University of South Australia.



# TurtleSAT.org.au

## COMMUNITY PROGRAM

MAP TURTLES AND NESTS



FERALSCAN.ORG.AU



## Nature Spot

### Murray River Turtle

**Scientific Name:** *Emydura macquarii*

Also known as the Macquarie turtle or Murray short-necked turtle, this turtle can grow to about 30cm in length. The male has a much fatter and longer tail than the female. There are two fleshy barbells under its chin. The shell is predominantly medium to dark brown above, cream coloured below. The skin is greyish and there is a distinctive creamy-yellow stripe running back along the side of the head from the corner of the mouth. The eyes are small and yellow with a round black pupil.

#### **Habitat:**

It is restricted to the Murray-Darling River system in south-eastern Australia, inhabiting larger rivers and permanent lakes in this region.

#### **Diet:**

They feed mostly on molluscs and crustaceans but will also consume carrion. Adults tend to eat a large proportion of vegetable matter such as fruits and water plants.

#### **Reproduction:**

In spring and summer about ten elongated eggs are laid in a burrow close to the river. They hatch about eighty days later. The eggs and newborn hatchlings face a long list of predators that includes goannas, rats, foxes, birds, cats and wild pigs. Adult turtles have few natural enemies.



### **Native Turtles-recovery to rescue**

Native freshwater turtles in the Goolwa Channel and Lower Lakes region were under threat due to the poor water conditions affecting their habitat. Thankfully with the help from local communities and schools, the turtles were rescued and cared for until they could return to their natural habitat. For more information on Native turtles rescue to recovery program go [www.environment.sa.gov.au/cllmm](http://www.environment.sa.gov.au/cllmm)

Reference: Australian Reptile Park [www.reptilepark.com.au](http://www.reptilepark.com.au), Murray Futures CLLMM fact sheet [www.environment.sa.gov.au/cllmm](http://www.environment.sa.gov.au/cllmm)



24<sup>th</sup> MAY  
2014

## GET YOUR CRAYONS, PAINTS AND CREATIVE HATS OUT & JOIN "THE TRAVELLING FISH" COMPETITION

Steps to participate:

1. Go to [www.worldfishmigrationday.com/promotional-material](http://www.worldfishmigrationday.com/promotional-material) and download the colouring pictures
  2. Colour in any number of the WRMD 2014 colouring pictures
  3. Then you, your family and/or your friends have to take a photo together with your WRMD 2014 pictures  
(Remember to get permission from your parents before you do this)
- Try to make your photos as interesting and creative as possible.  
Try to tell us a story, show us what you have learnt about fish migration, dress up and most importantly have lots of fun!
4. After you have taken your photo with your pictures, you need to upload it onto our Facebook page
  5. The WRMD 2014 partners will decide on the best, wackiest and most awesome/fun/creative/informative photos
  6. The winners of the top 3 photos will get a prize courtesy of WRMD 2014 partners  
(winners will be announced after 24 May 2014)

[www.worldfishmigrationday.com](http://www.worldfishmigrationday.com)

## On World Fish Migration Day what are we doing for our native fish in the region?

During the recent drought of 2006-2010, the majority of sites across the Lower Lakes region that provided refuge for native freshwater fish were severely impacted by falling water levels and drying-out of habitat. Environmental water was pumped to many of these sites to keep threatened fish populations in the wild.

Four species of freshwater native fish significantly declined in numbers and were a high priority for protection under the CLLMM Critical Fish Habitat project.

They were:

- \* Murray hardyhead (*Craterocephalus fluviatilis*);
- \* Southern pygmy perch (*Nannoperca australis*);
- \* Yarra pygmy perch (*Nannoperca obscura*); and
- \* Southern purple-spotted gudgeon (*Mogurnda adspersa*).



During the drought, wild fish populations were captured before they became locally extinct. These fish populations were maintained in purpose-built fish hatcheries and surrogate refuge sites, and bred to increase their populations. .

Improved water levels and aquatic habitat in the Lower Lakes since 2010/2011 have allowed the native fish to be re-introduced to their natural environment at selected sites.

Across 2011/12 and 2012/13 more than 15,000 threatened freshwater fish were re-introduced into suitable habitat across the Lower Lakes region.

To support the re-introduction project, monitoring of native fish populations has been conducted at the same sites in the Lakes since 2007 – tracking changes in populations before, during and after drought.

## **On World Fish Migration Day what are we doing for our native fish in the region? Continued .....**

In March and April this year researchers from the University of Adelaide (Dr Scotte Wedderburn and Thomas Barnes), SARDI Aquatic Sciences (Chris Bice) and Aquasave – Nature Glenelg Trust (Dr Nick Whiterod) monitored small-bodied fish populations in the fringing wetlands of the Lower Lakes as part of these long-term monitoring efforts.

The species being targeted were Murray hardyhead, Yarra pygmy perch (both listed as endangered and vulnerable respectively under federal environment protection legislation) and Southern pygmy perch (a state listed species).

This year, only one yarra pygmy perch was found in the entire Lower Lakes despite the reintroduction of approximately 5850 fish to five locations between 2011/13.

Fourteen Southern pygmy perch were found on Mundoo Island, the only detected population.

Murray hardyheads were the most abundant of the three threatened species detected, with over 200 individuals sampled in the area between the Goolwa Barrage and Clayton.

These results show that despite nearly four years of good flows post-drought, the ecology of the Lower Lakes still has not fully recovered, especially for populations of pygmy perch. However, there are some positive signs for the future of the Murray hardyhead in the Lower Lakes, although the population has not yet returned to Lake Albert.

For more information on threatened fish monitoring in the Lower Lakes, please contact Adrienne Rumbelow (08 8463 7486) or Adam Watt (08 8204 9051).

Monitoring is funded by the Coorong, Lower Lakes and Murray Mouth Recovery Project and The Living Murray Program.

The CLLMM Recovery Project is funded under the South Australian Government's Murray Futures program and by the Australian Government. The Living Murray is a joint initiative funded by the New South Wales, Victorian, South Australian, Australian Capital Territory government and the Australian Governments and is coordinated by the Murray-Darling Basin Authority.

# SEED COLLECTING FOR STRONG PLANT COMMUNITIES – THE RIGHTS AND WRONGS

by Gerald Thomson

When is it better to collect seed for revegetation projects from outside the local area? While most people believe that we must only collect seed from the local province, hence the five kilometre rule, there is a real risk that it could be encouraging inbreeding, genetic depression and local extinction of some species.

For revegetation to be successful, the new plant community must be able to successfully self-regenerate. This requires high genetic diversity or a large “gene pool” to prevent inbreeding and genetic depression.

At a recent talk in Murray Bridge (organised by the GWLAP and CTLAP) by Dr Linda Broadhurst, geneticist of the CSIRO in Canberra, it was stressed that unless there was a high gene pool within a local species, it would not have sufficient genes to allow natural selection to adapt to a stressor such as climate change or outbreak of disease.

The ability of a local species to create a large gene pool depends on:

- pollination mechanism, - selfing, or outcrossing
- Type and availability of pollinators
- The genetic diversity available locally
- Self-incompatibility whether the population is large or small.

If the population size is too small eg less than 100 individuals in *Swainsona recta*, the degree of inbreeding rises significantly. 200 individuals of a self-compatible species should be the minimum to reduce the risk of inbreeding. She advocated that we should be collecting seed from as wide an area as possible within the ecotype of an individual species. She suggested that collecting from tens of kilometres from the reveg site would be quite acceptable, provided it was the same plant form and habitat.

In the iconic Eucalypt species, Yellow Box, Dr Broadhurst found there is high genetic diversity in scattered trees. When these trees disappear in 150 – 200 years, we can expect the gene pool to contract. Therefore “Paddock” trees can play a major part in species survival. Even when more than 250 metres from a reveg site, they can contribute high genetic diversity to that site.

She studied 15 populations of *Eremophila glabra* in southern NSW.

The pollen was found to be coming from outside each local population to varying levels and sometimes exceeded that from within the population; sometimes from up to 15 km away. The relative contribution of the pollen from adjoining populations was unpredictable.

In a fragmented distribution of Drooping Sheoak in Victoria some populations had strong genetic associations with others which were not necessarily nearby but were quite distant eg hundreds of kms away. This was largely due to wind direction at pollination time.

Continued next page

In the distribution of *Ac acinacea*, populations more than 100 kms apart were genetically similar than some in between. This is often reflected in the morphology. There were two main forms; an erect form and a weeping form. These are regarded as ecotypes or variations of the same species that have arisen as a result of different growing conditions.

The best example of variation within a species can be seen in *Eucalyptus camaldulensis* or River Red gum. This is the most widely distributed Eucalypt species in Australia. It was previously considered one species, but now has been split into three subspecies in SA that adjoin each other. This differentiation is most likely a result of different growing conditions that have favoured certain genes. Hence over time, a new genotype has arisen giving rise to what is probably a subspecies. But even within a subspecies there is a wide variation of features such as leaf shape and colour.

It is interesting how over time, what was a single widely distributed population has become fragmented and each new population takes on a different morphology. It would help when collecting seed to be able to recognise when those differences are important.

### **Recommendations:**

Collect from a minimum of 10 widely scattered plants within the same habitat ecotype. It has been found that 5 km is too restrictive and there is no science for it.

Use scattered plants where possible,

Genetically enrich existing restoration sites to improve their chance of sexual survival

There is a case for establishing seed production areas where:

A species is difficult to collect

A regular source of large volumes of high quality seed is needed.

The condition known as Polyploidy where a species can have different numbers of chromosomes between populations can be a problem eg *Eremophila glabra*. 18, 36 & 54 chromosomes. Therefore when propagating a rare plant species, it would be worthwhile having the genome determined. Otherwise we could be wasting our time by planting an inbred species.

### **Conclusion**

When revegetating an area, aim to re-establish connectivity between isolated communities of a plant species within an ecotype. This will widen the gene pool for successful self-propagating.

Need to consider the ability of a reintroduced species to reproduce with high genetic variability.

Need to use what is known about ecological processes (pollen movement) to maximise interactions among new and existing populations eg *Ac pinguifolia*.

The message from Dr Broadhurst was clear. If we want resilient plant communities, collect seed from as wide as possible within the ecotype ie from the widest distribution of that plant form within the same habitat. Aim for outbreeding and not inbreeding in the plant communities.

## Community monitoring update event marks World Environment Day

The community will have an opportunity to learn more about the environmental monitoring and management of the Coorong, Lower Lakes and Murray Mouth (CLLMM) region at a special forum marking the eve of World Environment Day.

The event, **Coorong and Lower Lakes Environmental Update – Sharing monitoring results** is to be held on **June 4<sup>th</sup>** at the **Murray Bridge Golf Club**. It will feature a range of speakers on topics including waterbirds and habitat, community monitoring, native fish, vegetation, and the latest water quality and acid sulfate soils investigations.

Organised by the Department of Environment, Water and Natural Resources and The Lakes Hub, the free environmental symposium begins at 9:30am and finishes at 3:45, and is open to all interested members of the public.

For more information or to RSVP for the event, please contact the Lakes Hub on (08) 85370808 or email [info@lakeshub.com](mailto:info@lakeshub.com) by May 30<sup>th</sup>.



**WORLD ENVIRONMENT DAY 2014**

**June 4**

**Wednesday June 4th**  
**9:30am - 3.45pm**

**Murray Bridge Golf Club**

*"Coorong and Lower Lakes Environmental Update – Sharing monitoring results"*

**Morning**

- Welcome to Country and overview of the operation of the Lower Lakes and Coorong
- Water quality and acid sulfate soils, waterbirds, *Ruppia* and macroinvertebrates

**Afternoon**

- Vegetation, fish, community involvement, scientific linkages to the management of the Lower Lakes and Coorong
- Questions and discussion

Morning tea and lunch provided

RSVP by 30th May 2014 [info@lakeshub.com](mailto:info@lakeshub.com) or 85370808

Photo courtesy of Stuart Jones

For further information contact the lakes Hub at : [info@lakeshub.com](mailto:info@lakeshub.com) or call (08) 8537 0808



The Coorong, Lower Lakes and Murray Mouth Recovery Project is funded under the South Australian Government's Murray Futures program and by the Australian Government. The Living Murray is a joint initiative funded by the New South Wales, Victorian, South Australian, Australian Capital Territory government and the Australian Governments and is coordinated by the Murray-Darling Basin Authority.

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We're really proud to be launching  
Alexandrina Council's new  
Environmental Action Plan



# COMMUNITY ENVIRO-EXPO

FREE WORLD ENVIRONMENT DAY EVENT

Thursday June 5, 6-8pm. Goolwa Centenary Hall, 14 Cadell Street, Goolwa



Come and celebrate the launch of our vibrant new plan for environmental action across Alexandrina Council.

Meet new people, network with local businesses and volunteers or just come to have a good time. Everyone's welcome!

**LOCAL FOOD PRODUCTS • ECO-TOURISM DISPLAYS**

**COMMUNITY GROUPS • STALLS & EXHIBITIONS**

**WELCOME BY THE TAL-KIN-JERI DANCE GROUP**

FIND OUT MORE:

Call Shen Mann on 8555 7000

or email [shen.mann@alexandrina.sa.gov.au](mailto:shen.mann@alexandrina.sa.gov.au)



## **CLLMM Community Monitoring Update by GWLAP**

*Have you ever wondered about the impacts and management of the CLLMM Recovery Program to the Lakes and Coorong environment? Have you heard about the CLLMM program and wondered how the community can get involved ?*

As a lead up to the World Environment Day science and monitoring event hosted by the Department of Environment, Water and Natural Resources and The Lakes Hub, Regina will present an over view of the CLLMM community monitoring program, discuss results of the program and answer any questions the community may have, and how you can support this program in the future.

**Thursday 29th May**

**ACE SPACE MOSHCC**

**4.45pm til 6pm**



***Coorong Lower Lakes Murray  
Mouth Community Monitoring  
update***

Thursday 29th May  
4.45pm -6pm  
ACE Space, Milang Old School House  
Community Centre

Have you ever wondered about the impact of the CLLMM Recovery Program to the lakes and Coorong environment ?  
Come and listen to Regina Durbridge from the GWLAP discuss some of the results from the Community Monitoring Program and how these results benefit our community and the environment.

*Followed by a light supper.*

For information & bookings, contact Lakes Hub Milang  
Ph: (08) 8537 0808 [info@lakeshub.com](mailto:info@lakeshub.com)  
[www.lakeshub.com](http://www.lakeshub.com)

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# On the Level

## Lake Levels (AHD)

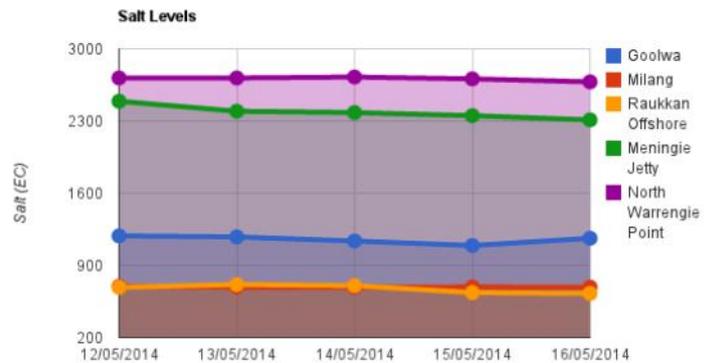
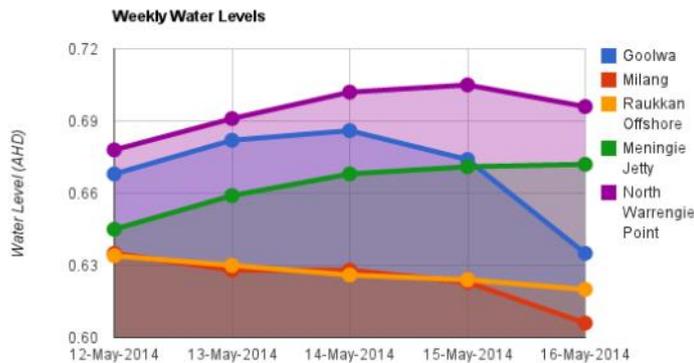
Date	Goolwa	Milang	Raukkan Offshore	Meningie Jetty	Nth Warrengie Point
12-May	0.668	0.635	0.634	0.645	0.678
13-May	0.682	0.628	0.63	0.659	0.691
14-May	0.686	0.628	0.626	0.668	0.702
15-May	0.674	0.623	0.624	0.671	0.705
16-May	0.635	0.606	0.62	0.672	0.696
<b>Average</b>	<b>0.635</b>	<b>0.624</b>	<b>0.627</b>	<b>0.663</b>	<b>0.694</b>

## Salt Levels (EC)

Date	Goolwa	Milang	Raukkan Offshore	Meningie Jetty	Nth Warrengie Point
12-May	1186	697	687	2492	2718
13-May	1176	689	714	2395	2718
14-May	1136	688	703	2382	2727
15-May	1092	690	636	2352	2709
16-May	1163	689	628	2311	2680
<b>Average</b>	<b>1151</b>	<b>691</b>	<b>674</b>	<b>2386</b>	<b>2710</b>

Data received from: [www.waterconnect.sa.gov.au/RMWD/Pages/default.aspx](http://www.waterconnect.sa.gov.au/RMWD/Pages/default.aspx)

Please note: salinity levels in the Goolwa Channel can be



## River Murray – Weekly Flow Advice

For weekly flow / level reports on the River Murray and Lakes go to the following website: [www.waterforgood.sa.gov.au](http://www.waterforgood.sa.gov.au)

Up-to-date River Murray flow and water level information can be accessed at the Department for Water, SA Water and Murray-Darling Basin Authority websites: [Water Connect](http://www.waterconnect.sa.gov.au), [Daily Flow Report](http://www.waterforgood.sa.gov.au), [River Murray Storage Data](http://www.waterforgood.sa.gov.au)

Details of river height and rainfall information in the River Murray within Victoria and New South Wales are available at the Bureau of Meteorology website: <http://www.bom.gov.au/vic/flood>

Information on the discharge of acid drainage water into the Lower River Murray can be accessed online at: [www.waterforgood.sa.gov.au](http://www.waterforgood.sa.gov.au)

For the latest River Murray Flow Report and Water Resources Update - 16th November 2012 visit: <http://www.waterconnect.sa.gov.au>

Some electrical conductivity ranges	
Water type	Electrical conductivity (µS/cm)
Deionised water	0.5-3
Pure rainwater	<15
Freshwater rivers	0 - 800
Marginal river water	800 - 1600
Brackish water	1600 - 4800
Saline water	> 4800
Seawater	51 500
Industrial waters	100 - 10000

Source: Suttar S., Ribbons of Blue Handbook. Scitech, Victoria, 1990.

## CALENDAR OF EVENTS *for more info contact the Lakes Hub*

If you have any relevant community event or courses that you would like added to the Calendar of Events please contact the Lakes Hub.

May 2014	
23	World Turtle Day
24	World Migratory Fish day
25	
26	
27	
28	
29	Lakes Hub Talking Heads with GWLAP– Regina Durbridge on Community Monitoring , 4.45pm-6pm MOSHCC
30	
JUNE 2014	
1	
2	
3	
4	World Environment Day Monitoring Event Murray Bridge Golf Course
5	<b>World Environment Day-</b> Alexandrina Council Environmental Action Plan Launch 6pm-8pm
6	
7	
8	
9	Queens Birthday
10	
11	
12	
13	
14	
15	

### Disclaimer

All the links and articles in this Bulletin are provided as a courtesy to recipients. While I try and keep these links and articles as up-to-date as possible, I can't guarantee their accuracy, adequacy, timeliness, or completeness. In addition, the existence of a link to another site or resource does not constitute a recommendation or endorsement of that site or resource. The Lakes Hub does not accept responsibility or liability for any information at any of the sites linked to from this Bulletin. If you feel a link description, site, piece of advice or anything else mentioned here is inappropriate, do [let me know](#) and I will endeavour to correct it where necessary.