

GWYDIR FLOWS



Welcome to Issue 4 of Gwydir Flows, in this issue we share the news and outcomes from the second year of environmental water monitoring in the Gwydir.

The Gwydir Flows is a newsletter that seeks to keep you up to date with work we are doing to monitor the outcomes of Commonwealth environmental water management in the Gwydir, as part of the Commonwealth Environmental Water Office's Long Term Intervention Monitoring (LTIM) Project.

What did we see in 2015-2016

2015-2016 was a relatively dry year in the Gwydir. Environmental water improved downstream connectivity in the Gwydir, lower Gwydir, Gingham, Mehi river channels, and in Carole Creek. Increased connection provided links between isolated pools that in turn helped to sustain native fish, invertebrate and other aquatic animal communities. We also saw improvements in water quality with increased primary production and lower nutrient levels.

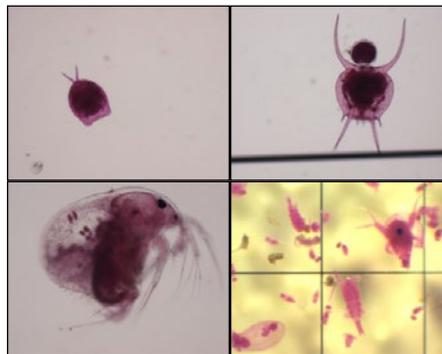
Wetlands also benefited – waterholes that contain several threatened species of native fish were topped up and core areas of native vegetation, habitat for waterbirds and frogs, were also kept in good condition. A total area of 472 ha of the Gingham and Gwydir wetlands was inundated in August to October 2015 and 204 ha of wetlands in the Mallowa system were inundated during 2015-2016.



Fyke nets out to dry

Water quality

Environmental water acted to reduce conductivity, turbidity and nutrients by diluting the water already in the channel and wetlands. At the same time dissolved carbon concentrations increased, which promoted aquatic invertebrate diversity and in turn stimulated primary and secondary production.



A selection of zooplankton under the microscope

Resilience

Native wetland vegetation communities whose condition was improved during 2014-15 remained in good condition during 2015-16 water year.

Survival of fish and other aquatic biota in the channels of the lower Gwydir system was assisted by steady replenishment of refuge pools.

Small-scale waterbird breeding in early 2015-2016 occurred because of residual inundation from previous environmental water.

Biodiversity

Olive perchlet, a threatened species, was assisted by water delivered into the Gingham Waterhole. This waterhole contains the only known local population of olive perchlet.

Native fish such as eel-tailed catfish and spangled perch could move between habitats thanks to increased connectivity between waterholes.

Residual inundation in wetland areas helped to maintain vegetation communities and provide habitat for birds and frogs.

Key areas of channel, floodplain and wetland were also inundated, helping to maintain aquatic and semi-aquatic habitats.



Baby turtle, shrimp, and macrobrachyum

IMPLICATIONS

For environmental water management

The positive ecological outcomes achieved in part by environmental water over the duration of the project suggests that the long-term environmental watering strategy being used in the Gwydir river system continues to be effective.

Even with planned reduced watering in the 2015-2016 water year, native vegetation responses to 2014-2015 wetland environmental watering were still evident.

Positive ecological outcomes can be achieved with relatively small amounts of environmental water delivered at critical times. Deliveries of environmental water that connected pools and maintained water quality also helped ensure the survival of aquatic species during low to no flow periods.



Baby turtle



OEH, LLS, UNE and ELA all contributed to the flora surveys

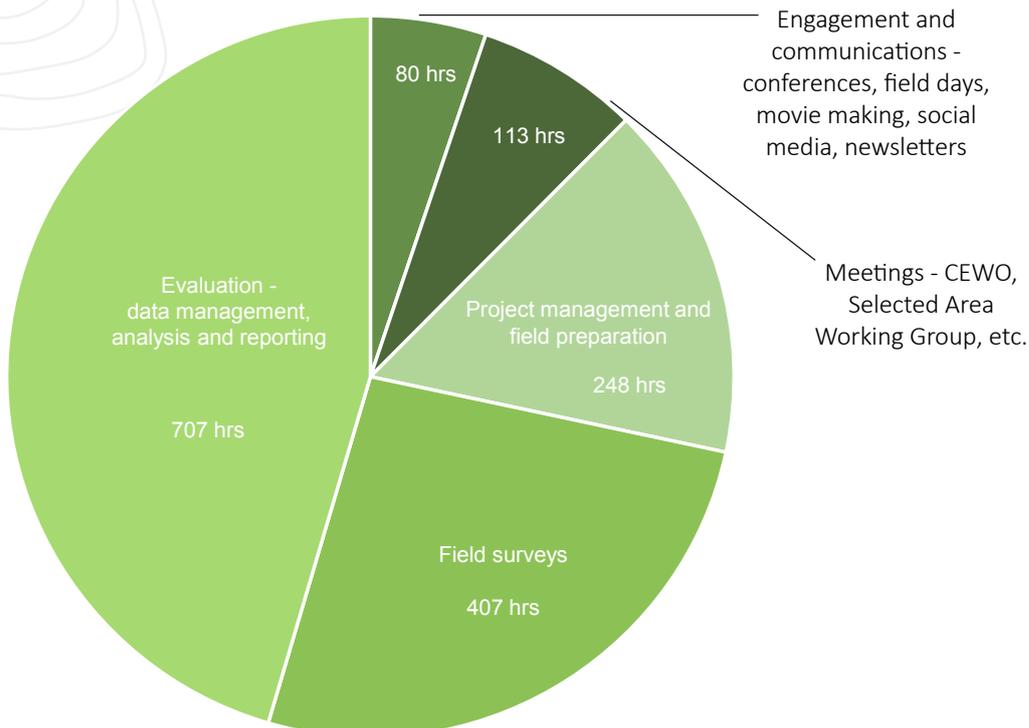
Time invested

Ever wondered how much time goes into this project? Last year it was over 1,500 hrs and this doesn't include the substantial amount of time contributed by NSW Office of Environment and Heritage, DPI Fisheries, Local Land Services and Dr Darren Ryder's team at The University of New England (UNE).

The team skill set comprises of:

- Botany
- Fauna ecology
- Aquatic ecology
- Geomorphology
- GIS analysis
- Statistics
- Data management
- Communication
- Project management
- Report writing
- Quality assurance etc.

HOURS INVESTED IN A YEAR OF MONITORING



Jane Humphries

**WETLANDS AND RIVERS
CONSERVATION OFFICER**

- with NSW Office of Environment and Heritage



Describe your role:

I am based in Moree and my role with LTIM is that I, and other OEH staff and other project teams work together for vegetation

and waterbird monitoring in the Gwydir system. We also work together on other activities such as community engagement events. It is an interesting role covering a range of things from field work, monitoring flows data, involvement in planning (at many scales from local to MDB), working with local landholders and community members, and helping to organize and run community engagement events.

What does a regular day on the LTIM Project look like?

A regular day with the project team is that we are out in the field monitoring, it is usually hot (Oct/Nov/Mar and we score the hotter weeks), we head out early, get home late, and sometimes have a longer break in middle of day if it is very hot. We spend the day either identifying and counting plants or waterbirds which requires driving and at times quad biking to the different sites. We usually get a chance to catch up with people we haven't seen for a while and debate some of the issues around conservation and life. We have a more social catch up at night with nibbles and cool drinks, while cooking and eating dinner and discussing

the day and many other interesting topics. Then the luxury of hot shower and air-conditioned rooms for the night's rest. Busy but very enjoyable days.

What's your most memorable LTIM Project moment so far?

Usually I'm missing out on the memorable moments i.e. not seeing the most interesting waterbirds (most recently the little bittern on Old Dromana). Apart from that the big effort put in one monitoring trip when rain predicted for (and arrived on) Thursday and getting all sites done in Gingham, Lower Gwydir and Mallowa in less than 3 days.

What do you wish other people knew about the LTIM Project?

How great it is that it is happening, how good a job ELA/UNE are doing with this project, and how collaboration is working well in the Gwydir (ELA/OEH/NPWS/landholders). It is fabulous that the Commonwealth are doing this monitoring in the Gwydir (and other regions). The information and the improved understanding of the system being developed is very important.

Brendan Doyle

DIRECTOR - RMTek



Describe your role:

I work at RMTek Pty Ltd in Armidale, and install and maintain high quality, pan-tilt-zoom cameras coupled with weather and water level sensors to allow remote monitoring of sites within the Gwydir Wetlands. Our systems can operate without the need for mains power or wired communication links, and provide web based access and storage of imagery and data that helps monitor the changes to wetlands and the rivers that feed into them.

What does a regular day on the LTIM Project look like?

In our business we are generally interacting remotely with the LTIM. Day-in, day-out there are 10 remote monitoring units delivering data and images across the northern basin from Pallamalawa in the east to Louth – in the west. We are lucky in our situation that

we can see these locations frequently at the click of a mouse.

What's your most memorable LTIM Project moment so far?

Working with Daryl from OEH and Mark from Eco Logical to put the gear into the wetlands is always a memorable event. Always flat out and trying to make the best use of our time, but sometimes when you are in the middle of things and you just stop and listen, the sounds of the wetland are amazing.

What do you wish other people knew about the LTIM Project?

Just how important it is to preserve what is left. The remnants are only small, but they are spectacular. If more people saw the abundance of flora and fauna, and understood how important they are, the work to keep the wetlands viable would happen with a lot less hassle!



Department of Primary Industries



Commonwealth Environmental Water Office