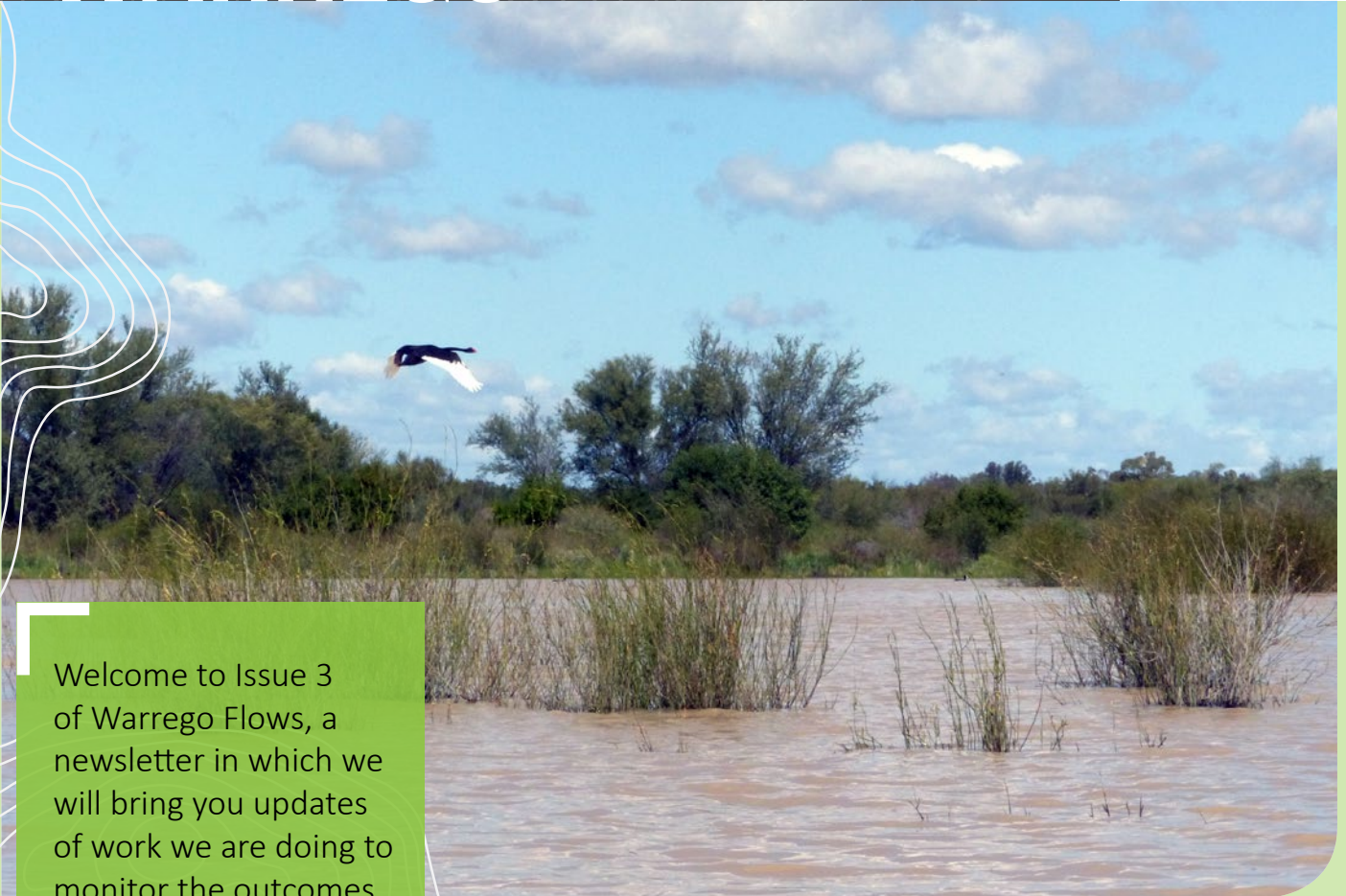


WARREGO FLOWS



Welcome to Issue 3 of Warrego Flows, a newsletter in which we will bring you updates of work we are doing to monitor the outcomes of Commonwealth environmental water management in the Warrego-Darling Selected Area, as part of the Commonwealth Environmental Water Office's Long Term Intervention Monitoring (LTIM) Project. In this issue we would like to share outcomes from vegetation monitoring.

At Toorale, we undertake vegetation monitoring on the Warrego's Western Floodplain. The vegetation communities we monitor are:

- Coolibah-River Cooba-Lignum Woodland
- Chenopod shrubland
- Coolibah woodland wetland
- Lignum shrubland wetland



Black box (*Eucalyptus largiflorens*) (Iris Tsoy)



Chenopod shrubland on the Western Floodplain

The Western Floodplain supports predominantly continuous stands of floodplain species such as coolibah, black box and lignum that have adapted to the increased inundation patterns as a result of the water management structures on Toorale which have been in place for around 130 years.

Common species encountered on the floodplain are listed below. The most diverse group are the saltbushes (chenopods), which have adapted to withstanding the arid conditions in interesting ways. These include saltbushes in the Atriplex family which have adapted to high levels of salt present in the soils by excreting it into small hollow hairs. The hairs burst open when they are full, leaving a thin, salty coating on young leaves and flowers which reduces moisture loss and flammability. Atriplex also use salt to control germination. High concentrations of salt inhibit seed germination for as long as they are retained on the plant. When the seeds fall from the plant and subsequent rain reduces salt concentration, the seeds germinate.



COMMON NATIVE FLOODPLAIN FLORA SPECIES

Saltbush (chenopod shrubs)

- Barrier saltbush
- Berry saltbush
- Creeping saltbush
- Nodding saltbush
- Purple goosefoot
- Slender-fruit saltbush
- Sprawling saltbush

Trees

- Black box
- Black wattle
- Coolibah
- Poplar box

Shrubs

- Budda pea
- Elegant wattle
- Lignum
- Sticky hop bush

Forbs

- Common white sunray
- Ferny buttercup
- Swamp starwort

Grasses

- Cane grass
- Couch
- Warrego grass

SPECIES PROFILE:

Coolibah (*Eucalyptus coolabah*)

Found on floodplains and dry riverbanks these trees provide respite from the hot, dry conditions that prevail at Toorale, west of Bourke. These trees grow to 20 m and have flaky, box like bark on the trunk and lower branches, tapering to smooth pale grey bark at the top.

An interesting trait of this species, which allows it to persist in riparian zones of ephemeral rivers, is its ability to access shallow soil moisture stores after periods of rain and inundation. The trees then rapidly switch to deeper groundwater stores during dry periods.



Coolibah supporting glossy ibis nests with healthy lignum in the background (Iris Tsoy)

Coolibah woodlands provide habitat for small mammals, including bats, as well as birds. Older, hollow-bearing trees are especially important for nesting sites.

What grows on the floodplain?



Lignum in flower

SPECIES PROFILE:

Lignum (*Muehlenbeckia florulenta*)

This species is widespread and abundant on the riverine floodplains in central and eastern Australia. Lignum has slender, tangled branches and branchlets with thin, narrow leaves, and is often lifeless in appearance. Growing to about 3 m high its root system can extend to at least 3 m deep, protecting it during periods of drought. This species is also highly salt tolerant.

Lignum provides important habitat during both wet and dry periods. When dry lignum provides roosting habitat for small bird species like fairy wrens and shelter for mammals and reptiles. Dense stands also protect eucalypt seedlings from grazing animals. When flooded it provides nesting habitat for birds. It shelters Murray cod and golden perch as well as the juvenile stages of many other fish species. Let's hope after this most recent period of inundation in the Warrego and the Western Floodplain that plenty of baby fish are making use of the Lignum!

Vegetation response to environmental flows

Rainfall and environmental flows result in an abundance of groundcover, with forbs and grasses rapidly flourishing in wet conditions. During a recent trip to the Warrgeeo we were impressed with the blossoming of flowering plants and the vibrant colours compared to our visits during drier times. During our monitoring we have also noted eucalypt seedlings emerging at the flood level of previous inundation events, the seed having been deposited by earlier flood waters.

Main image; A flood runner on the western floodplain fringed by vibrant groundcover after rain and environmental flows

Right; An eastern grey kangaroo enjoying the abundant food that is available after substantial rainfall and environmental flows



Nathalie van der Veer

ENVIRONMENTAL SCIENTIST



Describe your role:

I have a varied role - I run the remote sensing analysis on Landsat satellite images to determine the inundation extents of different flow volumes and the veg communities that become inundated, produce maps for the reports, share updates from field teams via social media, work with Mark to schedule field teams, and sometimes am the SMS check-in person for field crews.

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

In terms of the remote sensing analysis this involves finding suitable Landsat imagery - containing minimal cloud cover and captured around the required inundation period. From this I determine the areas that are wet and then combine the data with veg mapping to determine the extents inundated for each vegetation type. This is not as dry as it sounds (pun intended!).

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

Submitting the first year's reports - it was our first run at them, everyone was great to work with and made a solid contribution. The team was buzzing when we submitted them (high-fives everywhere). It was a very rewarding moment!

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

That so far, over 2 years of monitoring, ELA have spent a total of 4,860 hours collecting field data for this project - that's almost 203 days! This number would probably double when you include the amount of time that UNE and DPI fisheries spend in the field too. A massive collaborative effort goes into these projects, which makes them all the more rewarding to be involved with.

Chris Ghirardello

NPWS RANGER — Bourke Area



Describe your role:

I work for the NSW National Parks and Wildlife Service as Ranger for Toorale National Park and State Conservation Area. My involvement with the LTIM project involves liaising with the LTIM team and organising Toorale Joint Management Committee meetings, which facilitates consultation between Kurnu-Baakandji Traditional Owners of Toorale and LTIM representatives.

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

My day to day involvement in the LTIM project involves helping field teams with access and giving advice on current weather/field conditions.

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

I have had the pleasure of meeting a few of the professionals involved in the

LTIM project and have assisted the LTIM team with their initial site induction of Toorale. My most memorable moment was taking the team to Boera Dam when the water had receded and showing them the Endangered *Dentella minutissima* (tiny teeth) growing within the bed of the Warrego River. The discovery of this plant highlights the importance of environmental flows, as the plant is dependent upon downstream flows for dispersal.

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

The LTIM project aims to monitor environmental water management in the Warrego-Darling area and examines the benefits of allowing environmental flows to inundate the Toorale Western Floodplain. The results of the project provide valuable data information which can guide the management of the park, including the Western Floodplain.



Department of Primary Industries



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