

# Flows for the Future Newsletter

## Welcome to the seventh edition of the Flows for the Future (F4F) newsletter.

With soggy soil well behind us, the F4F construction team is turning the sod with the installation of new low flow devices.

In this edition, you can put a face to the name of new field staff, as well as gain some insight into migratory birds, native flowers and the new infrastructure delivering water from the Strathalbyn Reservoir.

First though, read about a learning experience with Landscapes SA.

## Landscapes go with the flow

Sustainable land management is not a one-stop solution, and the the Flow for the Future (F4F) team is often asked for advice on a range of topics from revegetation to watercourse maintenance. To better understand how our program impacts other programs, the Flows for the Future team met with staff from Landscapes Hills and Fleurieu in November, to build relationships and share knowledge with each other and interested landholders.

The group visited a landholder's dam to familiarise themselves with a low flow device in operation, and F4F staff explained program operations step by step, from identifying sites that will achieve flow outcomes, to engaging with landholders, right through to the construction process and device handover. There was great discussion around considerations like slope, soil type,

existing infrastructure and how the device design can be adapted to suit local site characteristics.

Hills and Fleurieu colleagues led a thought-provoking discussion on water affecting activities (WAA) and best practice operating procedures when earthworks take place, particularly around waterways.

Landscape boards across South Australia provide advice and information to help land managers care for land, water and nature. They also work with dedicated partners to deliver and support projects across key priority areas which are outlined in regional landscape plans – with sustainable and resilient landscape management guiding decision making.

The annual Grassroots Grants program delivered by each board provides an opportunity for individual landholders, volunteers, schools, community organisations, First Nations and not-for-profit groups to apply for funding to support projects with environmental and primary production benefits, many of which complement F4F environmental outcomes.

Landscape boards can also provide advice about dam and watercourse maintenance and restoration, and can help individuals and businesses through the application process when applying for a Water Affecting Activity permit to ensure proposed works meet best practice standards.

For more information, you can follow Landscapes SA on Facebook for e-news and workshop opportunities, sign up for emailed news and blogs at [www.landscapes.sa.gov.au](http://www.landscapes.sa.gov.au) or give them a call and chat to their friendly staff.

- Hills and Fleurieu - 8391 7500
- Northern and Yorke - 8841 3444
- Murraylands and Riverland - 8532 9100





# Much Ado About Data

By Tanya Milne

## Act One

### Scene 1

**T**wo people stand in a creek line, looking serious but slightly dazed. One holds a clipboard, the other, a camera. Common froglets are calling, rejoicing in the recent addition of water to their dry creek...

**Rebecca:** (*singing*) Fire away!

**Tanya:** (*in a 'newsreader' voice*) Control one, cat's ear 5, fog 15, goose less than one, chick one, wallaby 5, cocks-foot 20, junk 20, fairy lights 2, the rest ... dead stuff. Native to weeds 5 to 95.

### Scene 2... and 3... and 4... etc.

Pretty much the same as Scene 1.

### Finale

Rebecca and Tanya, looking rather sweaty, rejoice in a picnic lunch by a big dam lined with native trees...

**So why all the theatrics?** Well, we wanted the spotlight shone on a typical long day of repetitive data collection that makes up part of our monitoring performance, I mean program. On days like this, the only way to stay sane (and organised at the same time) is to create code names for plants, speak in different accents, sing your demands, and take random photos of your shoes to break up the hundreds of photos of 1m square plots that all look the same.

It mightn't sound very scientific, but there is a method to the madness. If the shoes help you sort and number your plot photos, the code names are memorable and the accents make you laugh enough to get you through a mundane task,

then why not? And while the work can be a little boring, the results often aren't, and at least we don't need many props or to attend any rehearsals.

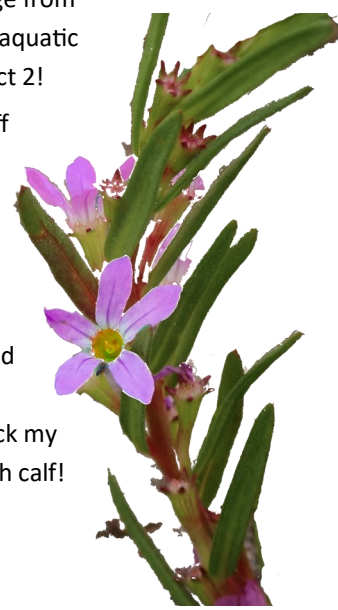
We set our scene in this case, in a new vegetation monitoring site at the old Strathalbyn Reservoir, where we had the opportunity to record changes to plant composition as a result of SA water releasing 0.51 litres of water per second into a section of creek that has been blocked from flow for many years by the imposing reservoir wall (see page 3).

In theory, the plants should change over time from riparian/terrestrial species to more aquatic species, as pools re-form with the addition of flows. *Lythrum hyssopifolia*, pictured below, is one such flowering plant that will likely increase its distribution with the help of low flows, due to its preference for wetter conditions.

And what is the significance of the 'dead stuff'? This refers to the dead chaff and stalks of the many annual terrestrial weeds, typically found growing in our degraded creek lines and mostly unidentifiable at this time of year.

Over time, will this groundcover change from 'dead stuff' to more live, green native aquatic plants? Time will tell. Stay tuned for Act 2!

P.S. Budding scientists, don't be put off by the mundane. It is a privilege to spend a day in our beautiful Eastern Mount Lofty Ranges, no matter how boring the task. A field day often brings surprises such as an exciting animal or a flowering orchid. I even had to stop counting plants on one occasion to stick my arm up a cow and help deliver a breech calf!







## Siphoning environmental flows at the Strathalbyn Reservoir

Did you catch us in the local paper? In September, Flows for the Future collaborated with SA Water to release flow into the watercourse downstream of the Strathalbyn Reservoir, which ceased being used as the Strathalbyn town water supply during the 1950s. While safely reducing the water level in the dam, a siphon set-up will release the equivalent annual inflows to the dam of roughly 16.1 ML per year. When conditions are wetter, the siphon set up can also be used to pass larger environmental flows.

SA Water will monitor the release to deliver a year-round low flow into the watercourse that joins the Angas River, approximately 400m below the dam. The Angas River is home to populations of river blackfish, southern pygmy

perch, dwarf flathead gudgeon, and obscure galaxias. Several rare, important fish species will welcome the boost of fresh water, as it will improve pool connectivity and water quality through drier months.

The Flows team trialled siphon infrastructure on the main dam at Glenthorne National Park before the Strathalbyn Reservoir installation. Park rangers were keen to lower the water level and allowed the team to test siphons with various pipe diameters at different flow rates, as well as developing a robust design for ease of installation. A theoretical model for siphon function was also developed as part of this work, which has been successful in predicting the flow rate delivered by siphons of different sizes at a range of sites.

Gravity low flow devices are still the preferred way to deliver low flows as they are in sync with natural flow patterns, including the critical timing of early season rains. Spatial constraints, longitudinal slope and the need to protect native vegetation can make trenching unsuitable for some properties, so siphons may provide an alternate solution when higher volumes of water are available.

*Image (above): Tony digs a trench to stabilise the pipe. About 100 metres of pipe was needed to deliver water over the dam wall into the watercourse.*

*Image (left): RQPod (a remote-controlled survey boat) allows us to carry out detailed depth surveys to determine dam volumes and levels of sediment build-up accurately. It is used to help determine the best location for the device inlet. The water level for the device inlet is chosen to preserve long-term water security and dam wall integrity.*







## Migratory water birds of the Lower Lakes

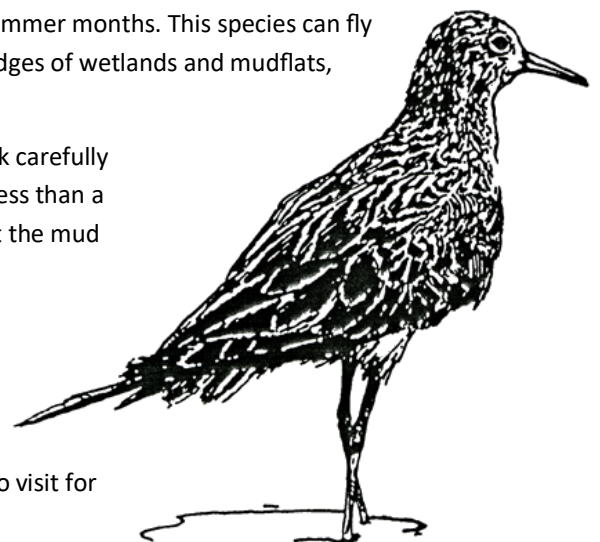
On October 14, we celebrated World Migratory Bird Day with the theme 'Water: Sustaining Bird Life'. The Murray-Darling Basin, particularly the Coorong and Lower Lakes, supports tens of thousands of migratory birds yearly. This region is part of the East Asian-Australasian Flyway, stretching from the Arctic Circle in the north to New Zealand, and is one of 9 international migratory waterbird flyways established to help protect these amazing birds on their long journeys across many countries.

During migration, waterbirds rely on healthy, productive wetlands to rest and feed, building up the energy for the next part of their travel. By increasing flows to the River Murray and Lower Lakes, the Flows for the Future program contributes to the health of these internationally significant migratory bird habitats, as freshwater flows are important for invertebrates like insect larvae, snails, worms, and crustaceans. These little creatures represent a smorgasbord for migratory birds, who will feed for around 6 months before making the long journey back to their breeding grounds in the Northern Hemisphere. During this period, some birds can increase their weight by up to two percent per day.

One of the species you may see is the sharp-tailed sandpiper, who breeds in northern Siberia, leaving these breeding grounds in late June, with the highest numbers present in South Australia during the summer months. This species can fly for an incredible 10,000 km on its migration route, and generally feed at the edges of wetlands and mudflats, although after rain you might even see them in your paddock.

Another bird you might see is the red-necked stint, although you'll have to look carefully as this is the smallest shorebird in Australia, weighing in at a tiny 25 g - that's less than a chicken egg! You may see these birds feeding on mudflats, pecking furiously at the mud before dashing across to a new spot.

Many other species of migratory birds also call the Lower Lakes home for half the year. If you want to see some of these long distance travellers, grab your binoculars and head to Tolderol Game Reserve on the north-western side of Lake Alexandrina. This 480 ha protected reserve is a great bird-watching spot with good vehicle access. The best time to visit for bird watching is late spring and summer.





## Meet our resident plant guru

Ky is our contracted field officer from Second Nature Conservancy (formerly Goolwa Wellington Local Action Planning Association). Ky brings a wealth of knowledge from his global travels and his work with various organisations in the conservation field. Most recently Ky worked in large-scale ecological restoration, native seed collection and protecting threatened flora species through eco-sensitive land management practices.

In his spare time, you'll catch Ky in our state's beautiful conservation areas observing and photographing native orchids. Aside from his love for our native plant species, he also enjoys a spot of yoga, gardening and is often down at the beach for sunset.

Below, Ky shares some information about one of his favourite native flowers, the Dianella.

Dianella is a beautiful native lily, with the name originating from 'Diana', the Roman goddess of hunting and the moon, and patroness to the countryside and nature.

Dianella is easily identifiable by its strappy basal leaves and stunning blue flowers, with yellow and brown anthers. The plant produces blueberries that are mostly edible (but not in all species!) and provides native wildlife with an abundance of food and habitat. First Nations people boil the leaves to drink as a tea, with the tuberous roots also edible on some species.

Dianellas are a hardy, water tolerant species often found along Eastern Mount Lofty waterways. They make for an



aesthetically pleasing landscape plant and can assist with erosion control thanks to the fibrous root system.

So consider planting these along your waterways, and sit back and enjoy the vibrant colour and life this species can bring to your home.

Some of our local species are: *Dianella revoluta*, *Dianella brevicaulis* and *Dianella longifolia* var. *grandis* (vulnerable species).

## How does water quality and flow impact native animals?

Life cycles of native animals in freshwater ecosystems depend on low flows. The length of a flow season can determine if a fully aquatic tadpole becomes a frog before its pool dries up. Many fish species rely on environmental cues, such as a rise in water level or flow velocity, to trigger spawning.

Native fish communities are struggling due to altered flow patterns that favour introduced species, and local populations of river blackfish (*Gadopsis marmoratus*) and southern pygmy perch (*Nannoperca australis*) are now endangered. By reinstating low flows at their natural timing, native fish can move to spawning environments and juvenile fish have a better chance of reaching breeding maturity to restore fish populations over time.

We often talk about low flows in terms of water quantity, but what about water quality? Reduced flow can have several negative impacts on water quality, most notably reducing the likelihood of pollutants being flushed out,

intensifying their effect on the ecosystem.

Other impacts of reduced flow can include:

- increased salinity levels, which can cause a die-off of juvenile fish and bottom-dwelling organisms such as freshwater mussels
- increased incidence of algal blooms, which reduce dissolved oxygen and lead to stagnant water and unliveable conditions
- less access to diverse habitats, such as snags and woody debris, which are crucial to some species for successful breeding.

The unique requirements of these animals have evolved over millions of years and they cannot adapt fast enough to the changing environment caused by human impact. Returning low flows to the environment is one way we can reduce this impact and support the plants and animals that call the Eastern Mount Lofty Ranges home.



## Meet our new field staff

### Kale

Yes, it is like the vegetable. My life motto is 'Super food, super dude!' Before Flows, I completed a double degree in Archaeology and Biodiversity and Conservation at Flinders University. At the time, I was fortunate to have the opportunity to undertake conservation research in South Africa for the Wildlife and Ecological Investment (WEI) organisation, looking at big game animals such as lions and elephants as well as catching and tagging the native birds of the region. I also attended an archaeological excavation for Nomad Science in remote Mongolia where I excavated Neolithic and burial sites dating back to the time of Genghis Khan.

I have a strong passion for sharks, and I was so grateful to have the opportunity to obtain an honours degree investigating the microbiomes of tiger, dusky and Galapagos sharks. It has given me a great knowledge base on all things sharks and I am always eager to tell everyone some fun shark facts!



*Did you know that sharks are older than trees? Sharks first appeared in the fossil record 450 million years ago, approximately 65 million years before trees.*

### Rhys

I am interested in our native flora and completed an honours project investigating how climate change will impact native vegetation across Australia. Before Flows I worked for the Nature Conservation Society of SA, helping with the post-fire recovery on Kangaroo Island. Much of this work was dealing with the outbreak of Tasmanian Blue Gums which escaped from plantations after the fires and threatened to overrun the island's native vegetation.

I then worked on the Bandicoot Superhighway project to connect and enhance habitat for bandicoots across the Mount Lofty Ranges. I engaged with many landholders across the region, learning about their relationship with their land and their commitment to stewardship. I enjoy working collaboratively with landholders to achieve solid outcomes on their properties.

I look forward to continuing building productive relationships with landholders and exploring the landscapes of the Eastern Mount Lofty Ranges.



*I have an ongoing role building the Bandicoot Superhighway. I recently spent time teaching community groups how to use camera traps in the Angas catchment.*

**A huge thank you to the F4F community for your ongoing support and contribution to healthy catchments.**

*The Flows for the Future Program is delivered under the Murray–Darling Basin Plan, jointly funded through the Australian Government Department of Climate Change, Energy, the Environment and Water and the South Australian Department for Environment and Water.*

#### More information

Provide feedback, share your story or request to receive our next update electronically via

T: (08) 8391 2109 | E: [F4F@sa.gov.au](mailto:F4F@sa.gov.au)

[www.environment.sa.gov.au/topics/water/flows-for-future](http://www.environment.sa.gov.au/topics/water/flows-for-future)