



Above: A marsh frog tadpole, (*Limnodynastes spp.*)

Frog and wetland carbon profiling 2017-18

Why do you want to study my wetland?

Wetlands are an amazingly diverse part of the floodplain landscape, hosting a wide variety of plants and animals. The biology of ephemeral wetlands (those that regularly dry out) is largely shaped by the how often and how long wetlands are inundated. Changes to these patterns can contribute to the loss of individual species or entire ecosystems. Protecting our wetlands into the future requires ongoing efforts to understand the biology of wetland species and their relationship with water. Widespread surveys (that encompass many individual wetlands) are a great way to better understand the water requirements of both individual wetlands and wetland systems as a whole. Such understanding can be used to help landholders and water managers objectively prioritise the use of environmental water.

With funding from the Murray LLS, I'm conducting widespread surveys to begin researching the watering requirements of wetlands in the Yanco Creek system.

Why frogs?

Have you ever wondered what kind of frogs call your water bodies 'home'? I am seeking access to frog habitats (wetlands, creeks, dams) along the Billabong-Yanco creek to investigate what frog species reside in the area. In return, I will provide you with any interesting findings from my research along the way, including a profile of the frogs found on your property and in the area.

The Yanco Creek is a significant asset of the Murray LLS region, however, there is limited information on the biota living in the system. Identifying the presence and diversity of frog species will provide important insight into both the aquatic and terrestrial habitats upon which they rely to grow and survive.

Why wetland carbon?

Wetlands are well known to be very productive – meaning they contain an abundance of food that supports high numbers of wetland-adapted animals. The source of this productivity lies in the carbon and

nutrients that are released from soils and into the water when a wetland is inundated. Wetland soils accumulate carbon from either trees (leaves, bark or wood) and grasses, or from aquatic plants and algae. How much carbon accumulates in the soil over time, and which of these two sources dominates, can change depending on how often and how long the wetland is inundated.

By studying the amount and sources of carbon in soils, I hope to better understand how wetland inundation contributes to soil health and, ultimately, the capacity for wetlands to support frogs. Again, I will provide you with the findings from the analyses so that you too can see how much carbon your wetlands are storing and where this carbon is coming from.

How & when?

Frog surveys:

15 frog friendly wetlands will be selected for seasonal surveys. Two surveys will be conducted, first, during September or October 2017 and then during January or February 2018. The actual dates will depend on water levels. Continued on next page.



Above: The Southern Bell frog (scientific name: *Litoria raniformis*) is an endangered species. Historically abundant throughout the Murrumbidgee catchment, this species is now only found in small, isolated populations. The male frog calls sound very similar to a motorbike engine revving and accelerating

Each survey will involve a day- and night-time visit. Day-time surveys will focus on tadpoles (including species and stage of development) and the habitat features of the site (such as water quality, water body proportions, vegetation species and abundance). Night-time surveys will involve walking the perimeter of the selected water body with a spotlight (for 20 minutes), to identify adult frogs and record frog calls.

Automated call recorders will also be positioned at a subset of sites for a period of 8 months. Frog species exhibit unique calls to attract the opposite sex. Recording this audible activity is an effective way to gauge the presence of frog species at a site, and their breeding attempts.

How & when?

Carbon surveys:

Soil samples (5 per wetland) will be collected from within the boundaries of dry wetlands. This will be conducted once during the month of May, 2017. The soil samples will later be tested in the laboratory for the proportion of organic carbon and nitrogen held in the soil.



Above: A male Spotted Marsh Frog (scientific name: *Limnodynastes tasmaniensis*) calls to attract its' female counterparts for breeding.

Frog field night

In case you would like to talk with us in person about the research and learn some frog identification skills, we will be holding a field night during Spring. This will be organised in collaboration with the Murray Local Land Services, so keep an ear out for further details.

About me

I recently completed my PhD on frog communities in the Lachlan catchment. I investigated what species lived where and the environmental conditions that cued the different frog species to breed. I grew up on a merino sheep farm in Bombala (south-east NSW) and fully understand the importance of things like shutting the gate, and keeping to designated tracks to reduce the risk of spreading noxious weeds. I use non-invasive survey methods to ensure minimal disturbance. I can be flexible with survey dates, and will always consult the landowner prior to undertaking surveys.

I hope you are interested in the project, and I look forward to talking to you. Please don't hesitate to contact me if you have any questions.

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Rough timeline for project activities:

Activity	Month
Wetland soil surveys	May 2017
1 st frog survey	September/October 2017
Frog field night	Spring 2017
2 nd frog survey	January/February 2018