



Leaping to It: Yurrayas Jumping in Puddles

Figure 1: Barking Marsh Frog (*Limnodynastes fletcheri*).
(Photo credit - UNE).



Photo Credit - UNE.

Today we are leaping into the waters and finding some Yurraya (Frog in the Gamilaraay language).

A study conducted by the University of New England Masters Student, Abdur Razzaque Sarker in collaboration with the NSW Department of Planning and Environment (DPE), looked at the patterns between inundation and frog breeding of species within the Gwydir State Conservation Area (SCA) and surrounding privately-owned wetlands. The frog monitoring data was collected from 2015 as part of DPE- Environment and Heritage Group's (EHG) environmental water monitoring program. The EHG surveys from 2015 to 2020. The study documented a diverse community of Yurraya finding 12 species, including the Barking Marsh Frog (*Limnodynastes fletcheri*) (Figure 1). One of these is a newly recorded

Traditional Gamilaraay Language of the Gomeroi nation used in this article
(H. White & B. Duncan - Speaking Our Way)

species in the Gwydir Wetlands called the Knife-footed Frog (*Cyclorana cultripes*), which has no webbing on its fingers, and only partially webbed toes. Razzaq also captured calling activity via acoustic recorders and analysed the acoustic data using a spectrogram (Figure 2).

The spectrogram shows variability in chorusing behaviours across species, with some species chorusing less or more following the arrival of flows. For instance, the Spotted Grass Frog (*Limnodynastes tasmaniensis*) demonstrated increases in chorusing durations following

Why do Yurrayas chorus

Only male Yurraya's sing as they advertise themselves to the females as potential partners. Females seek out the males whose "love song" they like best. For us the best time to hear Yurraya calls is in the warmer months as most species breed in the spring and summer.

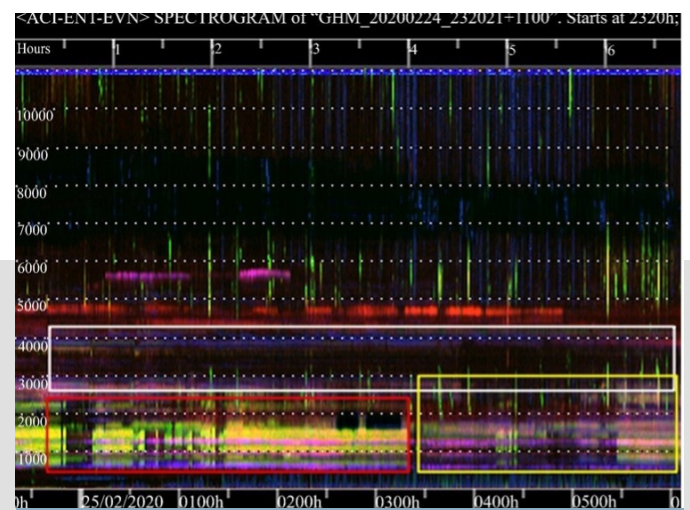


Figure 2: The audio recordings of the croaking Yurrayas over time. We can identify Yurraya species by the coloured bars. For instance, the Barking Marsh Frog by the purple marks in the yellow box bottom right.



Photo Credit - UNE.



Figure 3: Spotted Grass Frog (*Limnodynastes tasmaniensis*) photographed in the Gwydir wetlands during night-time surveys. Photo credit - UNE.

inundation (Figure 3). Increased flows can create more favourable breeding conditions, thus triggering increased chorusing to kick off the breeding season.

Not all Yurraya species have the same biotic and abiotic preferences - some like the Knife-footed Frog, a burrowing species, likes to be in the floodplain areas or alongside riverbanks. Other species such as the Barking Marsh Frog exhibit strong associations with tall spike-rush (*Eleocharis sphacelata*). These niche environments are known as microhabitats and many Yurraya species within the Gwydir Wetlands rely on these specific conditions and resources for breeding and foraging (Figure 4).

So why do we do this research? Research is a foundation upon which we can base future management actions. For instance, the research team found that floodplain inundation following environmental watering was beneficial to Yurraya populations occurring



Figure 5: Peron's Tree Frog (*Litoria peronii*) in the Gwydir wetlands. Photo Credit - UNE.

within the wetlands, particularly during dry and low rainfall periods (Figure 5). This knowledge helps to inform the decision making process of environmental water managers to achieve the best outcomes for not only the Yurrayas, but the whole ecosystem.

What Makes Up Ecosystems

Biotic factors are the living things such as the plants, animals and bacteria, while abiotic factors are the non-living components in our ecosystems such as water, soil, atmosphere and temperature.



Figure 4: Water-holding Frog (*Cyclorana platycephala*) tadpole found within the Gwydir wetlands. Photo credit - Zac Lewis.

Managing water for the environment is a collective and collaborative effort, working in partnership with communities, private landholders, scientists and government agencies - these contributions are gratefully acknowledged.

We acknowledge the Traditional Owners of the land on which we live, work and play. We also pay our respects to Elders past, present and emerging.