

Monitoring procedures:

- Once a week on a given day
- Any day of the week will do as long as the counts are generally about a week apart.
- If you have to change your regular day due to weather (see below), please ensure that you keep a minimum of 4 days between measurements, alternatively- if possible- do an extra monitoring event.
- If weather is not favourable (severe cold, high winds) the monitoring should be moved to a better night
- We advise you to go with a buddy for safety reasons!!
- Monitoring is done in the first 2 hours after dark which will start approx 30 min after the last light - see indicative times in list below
- Monitoring includes **weather observations, air and water temperature, 3 min call recording, estimation of frog species and calling numbers**
- Water temperature needs to be measured not deeper than 5 cm and at an arm's length from the edge of the water
- All recordings will be verified by AM- so you do not need to be a frog expert!!
- Very windy nights?? Do not do census if it is windy and water surface or grass is being buffeted by the wind
- No need to avoid cold nights as initially the nights will be very cold. And there may be no warm night that week.
- Avoid cold nights when there are warmer evenings starting to occur regularly. If a cold change goes through wait a few days for a warmer evening or do an extra monitoring event.
- Warm nights just before a wet front goes through would be the best .
- You will receive an email if we think weather particularly good (or bad).
- We are really just trying to get out and survey on a reasonable average sort of night for that time of year.
- Do not survey when it is raining.

Remember this is a citizen-scientific approach which will enable us to compare historic frog call data with this year's observation- made by you!! it is very important that all observations have a complete data set, including

1. date and time of monitoring
2. vegetation condition
3. weather conditions (wind and clouds, special weather events of the past week)
4. information on water level changes
5. air temperature
6. water temperature (max. 5 cm below the surface, at arm's reach from the edge)
7. 3 min call recording (using a phone or a mp3 recorder)

Last light:

time of last light	17.08. 5:59pm
01.06. 5:26pm	31.08. 6:09pm
08.06. 5:25pm	14.09. 6:19pm
22.06. 5:27pm	28.09. 6:30pm
06.07. 5:23pm	12.10. 7:41pm
20.07. 5:40pm	26.10. 7:55pm
03.08. 5:49pm	

CLUSTER 1 West Belconnen

DGP001 Dunlop Grassland , accessible from Shakespeare Drive, Fraser, -35.185, 149.0332

FRA201 Adjacent to CSIRO land in cow paddock, Fraser. 300mNW of FRA200, -35.1874771092, 149.0400978847

CLUSTER 2 Weston Creek

DUF200, northern dam on Narrabundah Hill, -35.344363, 149.022882

COO100 Cooleman Ridge N-dam off Karthner Street, -35.350089, 149.02255

CLUSTER 3 Mulligans Flat

3 ponds, bike riding will speed up visiting the 3 sites!!

CLUSTER 4 Mt Majura

FMC220 - Mt Majura Dam, lower, via Jukes St, -35.2412, 149.1688

FMC200 - Mt Majura Dam, bottom, via McKenzie St. -35.251, 149.1745

FMC210 - Mt Majura Nature Reserve, top dam, via McKenzie St, (uphill from FMC200), -35.2506, 149.1769

CLUSTER 5 Weston Park- all done by Will Osborne

Here a summary what all this monitoring is about

Our key questions are:

1. Has the start of the breeding season shifted to an earlier period (the thought is that it might be commencing at least two weeks earlier).
2. Has the peak in breeding season (the period when the numbers calling are at their highest in relative abundance) similarly peaked earlier in the season than 20-30 years ago
3. Has there been a contraction or expansion in the calling season for any species,
4. What are the implications of any of the above

With these points (questions) in mind we designed the sampling as described above to detect the following seasonal events:

1. The end of the calling season of the winter breeders (We may have already missed the start). The main species to worry about is *Litoria verreauxii* (a species that almost disappeared from the ACT plains when Chytrid swept through the region in 1978-1981). *Crinia signifera* is also a mainly winter breeder but as you know some of them call after any rain event particularly if the weather is cool.
2. The start of the season for the early spring breeders (*Limnodynastes tasmaniensis* and *Crinia signifera*). Last year was a mild winter and both species called earlier than Will has ever heard previously in July. Tom Harvey (CIT Student) in claims his report that *C. parinsignifera* called all through June in low numbers at Western Park. So with this in mind it is essential we now go for an early June start to not miss this event.
3. The start of the mid spring breeders. *Lim peroni* and *Uperoleia laevigata*. These species used to start late July or even in September. They should be picked up OK with a 12 or more week sample starting early to mid June
4. The late spring early summer breeders. *Limnodynastes dumerilli* and *Litoria peroni*. These frogs used to not call until very late September and early October. They now appear to be starting in early September. We would need to continue the census to well into October to detect the peak for these two species.
5. The mid summer breeders. *Litoria latoplamata* (Broad-palmed frog). I guess beyond scope of this project and current sites are not suitable. This species is stimulated to call by warm monsoonal rain around Christmas time (Dec and Jan)
6. Autumn breeders. In the lowlands only *Pseudophryne bibronoi/dendyi*. No longer found in Canberra but still occurs Tidbinbilla and Uriarra etc. In the highlands Dave Hunter reports that Southern Corroboree frogs are commencing calling about two weeks earlier.

Regarding the number of sites - we tried to match at least two sites with Will Osborne's old 1980's sites. We must present some measure of variability across sites to have a defensible design (ie some sensible approach to site replication. That is why we chose the 5 clusters within the ACT. However, even these few sites may not be enough to give tight across site consistency , but fortunately we have picked sites with really good FW records. The larger number of sites at Mulligans Flat's should be useful because we have excellent mid season surveys for many years from that area (including many surveys from 1990's) and so it would be good to put a temporal, within-season, context to these.