

Frogs tell us how the whole catchment is going!

Frogs are very useful as catchment indicator species because they hunt and are hunted all across the area ... spending much more time in grass tussocks and under logs than at or in the creek.

The annual Frogwatch census provides a snapshot of frog activity in each sub-catchment across the whole Molonglo. Most frogs round here are spring breeders. There are eight or nine frogs that can turn up singing on spring nights between Captains Flat and Stockdill Drive.

Life for frogs changes with the weather, the amount of shelter, the food supply, the density of predators, and infrastructure hazards. If there is a heat wave in the spring, they may have to build up the strength to breed twice that year. If the paddock is cropped early all the cover may have gone. If the garden has been sprayed for pests there may be no food about. If there are cats next door... And if the road between the fallen log and the pond has constant traffic ... Frog numbers reflect both last year's breeding success and life in the last twelve months! They are good indicators of the state of the catchment.

We use a scoring system that converts the census categories (1–5; 6–20; 21–50; 51–100; >100) into tallies (1, 2, 3, 4 or 5) add those to get a site tally and convert to site scores and sub-catchment scores that fit the traffic light indicator scale we use for CHIIP: the lower the sub-catchment score the better the indication of sub-catchment health.

Catchment Health indicator (Frogs) Score.

Traffic light	Excellent =1	Good =2	Moderate =3	Poor =4	Degraded =5
Frog site tally	> 12	9–12	5–8	1–4	0

Catchment Health indications based on the 2009, 2010 and 2011 Frogwatch censuses.

Sub-catchment	2011	2010	2009	Comment
Coppins	3.2	3.6	3.1	Moderate, only two sites
Woden–Weston	3.8	3.6	3.8	moderate
Sullivans	4.6	3.8	3.8	Poor in a complex sub-catchment
Fyshwick–Woolshed	3.3	4.0	3.4	Moderate but only two sites
Jerrabomberra	3.1	3.3	3.0	Sitting on the good/moderate boundary
Lower Queanbeyan	2.9	3.6	3.3	Back into good, after several years
Kowen	2.6	2.8	n.a.	Good, with increased number of sites
Upper Molonglo	2.0	3.5	2.2	Good, but with few sites this year
Burra	2.75	3.0	3.0	Good, now based on at least four sites.
Upper Queanbeyan				

In urban areas one major threat for many frogs lies in the dramatic and long-term lowering of soil moisture brought about by urban development. When the area is levelled, roads are put in and large areas are concreted the groundwater content of the soil drops dramatically and groundwater flow is ruptured. For

those frogs that spend most of their life eating the animals of the leaf litter and the upper moist soil urban development spells the end of their way of life. They then must move and find a new home. Neat and tidy suburban gardens and parks never replace the complex mixture of leaf litter bark pebbles and more that covers the ground in an undeveloped area. The small areas of soil open to the weather do not link up and are themselves too small to sustain the invertebrate populations to support frogs.

Sullivans Creek sub-catchment continues to pose challenges for development of a healthy catchment. The many reporting sites around the ANU that once were so noisy with frogs but are now so quiet may have been affected by the drought, but the simple increase of day and night activity round the Acton campus may have driven the frogs out. North Canberra and the city are very densely settled.

The other urban and peri-urban catchments have challenges, but of a lower magnitude than Sullivans Creek. The results for Jerrabomberra Ck continue to be disappointing, as both the Royalla and Rose Cottage sites, once chosen as 'reference sites' for both diversity and numbers, have maintained the diversity but not shown high numbers in recent censuses. Lower Queanbeyan sneaks into the 'good' category. This may indicate that there are more tumbledown fences and scraps of wasteland in an old built-up area, less confronting for frogs than manicured parks and parking lots.

The rural sub-catchments provide good habitat for frogs, but it would be wonderful to be able to report that these areas score excellent grades. This may be achievable in an ideal context, but the reality is that human living and infrastructure do disturb the catchment to some degree, always.

The Spotted Grass Frog (*Limnodynastes tasmaniensis*) is possibly the best known frog in the region. What sort of a world does it need and how does it cope with city living?

From late afternoon to mid morning on any spring or summer night you may hear the ack-ack call of the males as they plead for the girls to come down to the water. The boys can be quite sneaky, and stand round while one or two do the calling, then all join in the fun. The girls are up to this and come back for more numerous times across the season. They are bubble raft layers, and theirs are the tennis ball sized rafts you often see among the spike-rush at the pond edge. Tadpoles grow rapidly and there are tiny new spotted grass frogs under logs and in rock crevices around the fringe of the creek or wetland in eight to ten weeks.

Life for a growing grass frog has three priorities:

- don't get eaten by the local snakes, magpies, herons or kestrels or particularly cats [small boys and dogs are pests but not usually lethal];
- find enough slaters, crickets, midges, and grass hoppers to satisfy a growing appetite; and
- keep a mind-map of old logs, loose barked trees, piles of bricks and rock crevices in a house-block or more of the district.

Summer and autumn are fine...winter can be a challenge.

So, from the 150 eggs in the raft, 25 may live long enough to lose their tadpole tails, and no more than five may get to winter, with as few as one coming back to the pond next year. Mum may have put down twenty or more rafts, so there is usually a small population increase, and frogs may live several seasons.