

GOANNA NEWS 10 APRIL 2020

Park access

Like many researchers in New South Wales and Victoria, we are fortunate to have been permitted back into Namadgi National Park (subject to following sensible OHS practice) which is still closed to the general public (including the Visitor Centre). All roads south of Tharwa are also closed.

Research equipment lost

Many researchers interstate have posted photos on social media of their burned equipment, mostly trail cameras – many hundreds of them. We are fortunate to have removed our cameras, radio bases and all traps except one, a few weeks before the fire. Another researcher who could not remove his equipment lost six cameras in Naas Valley, and our one trap was destroyed.

C19 precautions

For C19 safety we have been travelling one person or couple per vehicle, and making appropriate use of our washing bowl. Figure 1 shows the new way of sitting down together for lunch.

Figure 1: Kerry Moir, John Brickhill and Isobel Crawford lunching at Horse Gully Hut in a time of 'social distancing'.



Fate of goannas and their GPS packs

The Rosenberg's Goannas appear to have fared relatively well in the fire itself.

Of fourteen GPS packs fitted this season (Table 1), three on females were shed and had been recovered, before the park closure. Another female GPS pack was shed after the closure and before the fire. We recovered it by digging under flood debris in the river channel. Its GPS indicates that after it was shed by the goanna, it survived the fire but during the storm was washed down into the flooded river, then tumbled along the flooded stream almost a kilometre to where we found it, still working. (And no, Quintin Kermeen of Telemetry Solutions did not pay for that statement.)

That left ten GPS packs at the time of the fire. We captured five goannas after the fire, to remove their GPS packs, and two more packs were picked up where they had been shed just before we got to them. One seemed to have been deliberately scraped off under a ledge. The other three GPS packs on goannas could not be found in spite of much searching.

So at worst, three of ten goannas may have been killed in the fire and flood. However I do not think that is likely. It may be that some GPS packs were shed before the fire and burned, or not shed and malfunctioned. In years to come, we may find some of these three animals still alive. Two are valuable individuals to retain in the project, so in spring we will set traps in the hope of recapturing them.

Table 1: Fate of goanna GPS packs

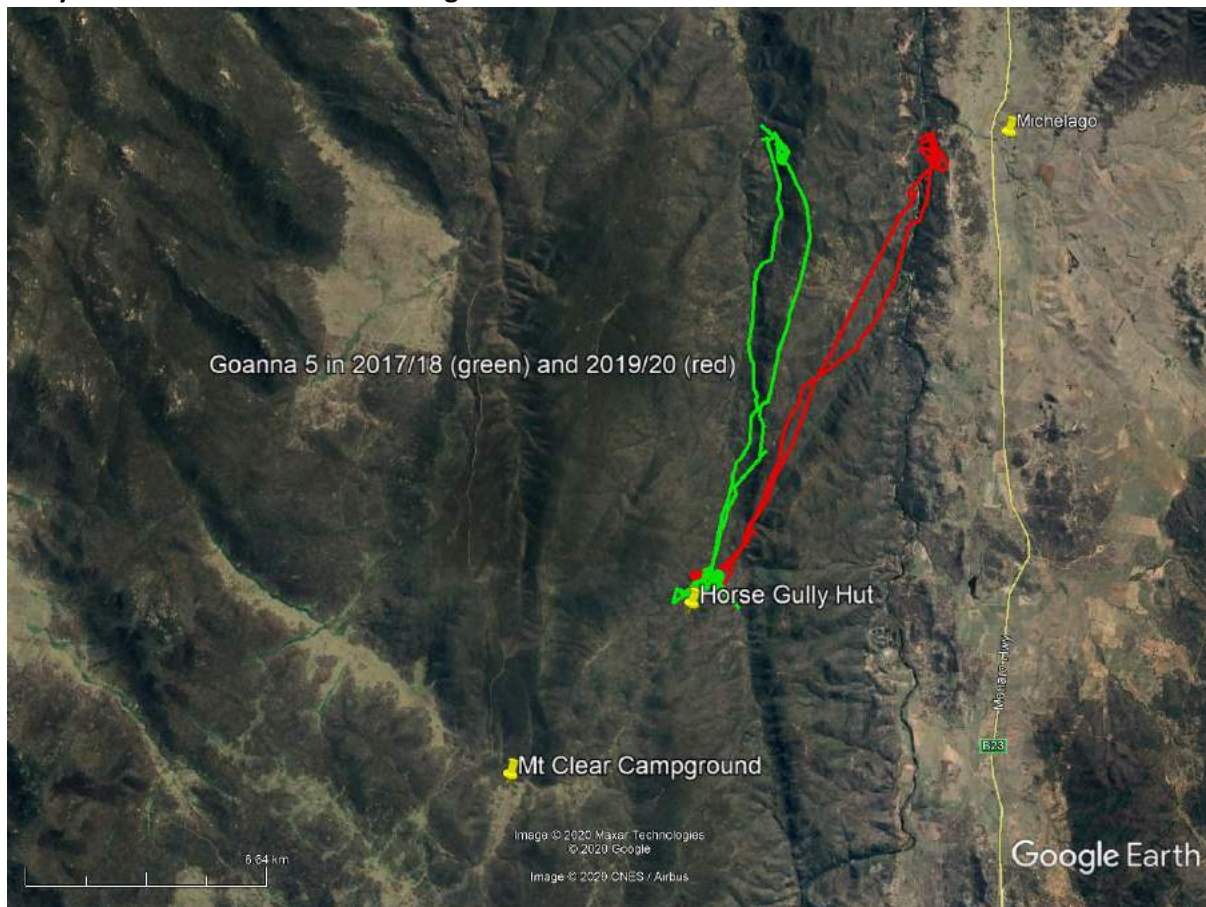
Fate of GPS pack	Goanna Back Symbol	Sex
Missing	41	F
Missing	42	M
Missing	H	M
Removed	22	M
Removed	54	M
Removed	#	M
Removed. Radio fitted	14	M
Removed. Radio fitted	18	M
Shed just before found	5	M
Shed just before found	3	M
Shed before fire	47	F
Shed before park closure	45	F
Shed before park closure	M	F
Shed before park closure	□	F

The bigger threats to goannas and many other animal species arising from the fire are a looming food shortage, and foxes invading due to the more open conditions.

Impressive movements

Two of the recovered GPS packs had data indicating impressive movements. One, for Goanna 18, was presented in the report of our first visit after the fire, but an even more impressive movement than that one was that of Goanna 5, who had also done something similar last time he was in the project in 2017/18 (Figure 2). Note that he still occupied the same home range near Horse Gully Hut as he did two years earlier.

Figure 2: At the same time of year in two different years, Goanna 5 briefly visited places 12 km away then returned to his home range.



Post-fire opportunities

It has been pointed out elsewhere that bushfires create opportunities. The most obvious is for searching. After a bush fire it is easier to find things such as aboriginal and historic artefacts. For example, we saw the rabbitier's abandoned 'trap setter' tool illustrated in Figure 3 and the wire contraption which was strung between trees to hang rabbits from.

Figure 3: Head of a rabbit's trap setter, wire for hanging rabbits



Goanna labrynth or rabbit warren repurposed?

Prior to 2019/20 we had excavated three goanna burrows to retrieve GPS packs. Also we had tried to use cheap fibre scopes to see inside burrows, mostly with little success. The most remarkable observation was that the burrows were up to 3 m long which is several times longer than ones on Kangaroo Island, and illustrated in the goanna book.

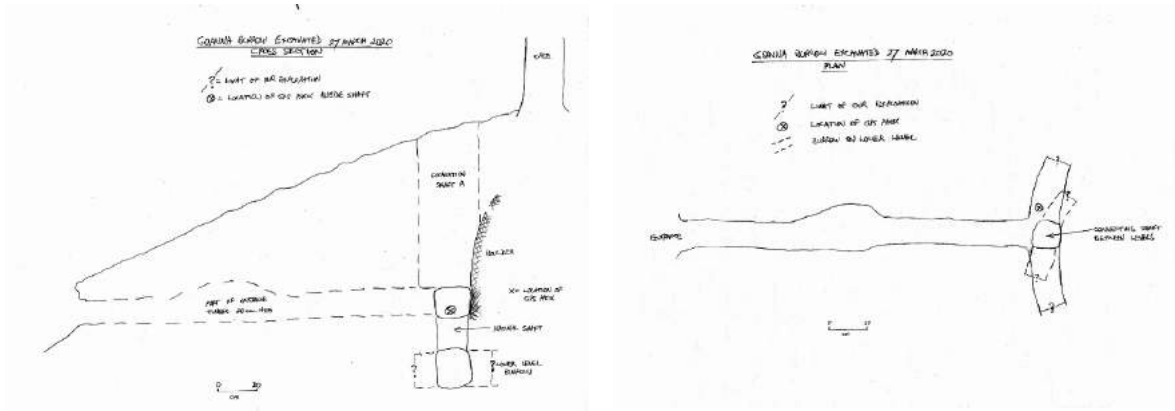
The situation became more interesting recently when we excavated a GPS tracker from 1.3 m below the surface in a complex structure of branching tunnels at different levels. We did not dig it all, and indeed we carefully restored the structure so it all remained accessible to goannas (Figures 4, 5). One of the simplest explanations is that a goanna took over a rabbit warren, then over time, all entrances were filled in except the one being used by the goanna.

There are no rabbit warrens in such areas of the Naas Valley but that is probably because rabbits are now sparse, i.e. the warren may have been dug by rabbits long ago. A bigger problem with this explanation is that goannas were uncommon here in the rabbit era, so such branching goanna burrows would now be extremely rare. Alternatively, maybe rabbit warrens do not collapse as generally believed, after their entrances fill in, but persist for decades, and goannas occasionally get lucky by burrowing into one of these empty 'fossil' warrens. If so, there should be more branched goanna burrows out there and also some fossil rabbit burrows not connected to the surface.

Figure 4: Left, excavating a burrow by a series of shafts, so it can be restored to working order; right, the GPS pack recovered; and below, John and Peter backfilling. Pics by JB and DF



Figure 5: Elevation (i.e. cross section) and plan of excavated burrow.



To my surprise, another complex set of branching tunnels was found on our next visit. This excavation was of a burrow whose entrance had been filled by a flow of soil during the intense rain event after the bush fire. (I wondered if we would find a drowned goanna inside.) On encountering another complex burrow, I stopped digging at an early stage (Figure 6) to think about the problem and invite Enzo and others to take a look.

I wondered how we could tell a rabbit warren from a goanna dug structure. Evidence of rabbits, such as rabbit bones, or grass nests for rabbit kittens, might no longer be present because goannas seem to clean out their burrows. A more basic difference is that rabbit warrens have multiple entrances

but Rosenberg's Goanna burrows have one. This time I decided to excavate as much as possible of the burrow, looking particularly for tunnels to former entrances that had become blocked off. At the very least we will learn what kind of structure the goannas had potential access to. And maybe a thorough search will find a few signs of rabbits, if they are there in spite of goanna housekeeping. We are set to do it next week, so you will have to wait for the next Goanna News to learn what we found.

Figure 6: Start of excavation. Arrows mark animal tunnels found. The dotted circle indicates a large void which I could reach at arm's length. (Kerry was supervising.)



Application for an Environment Grant

As a group we have decided that NPA will apply for another ACT Government Environment Grant to keep the goanna project going, so that work id being done this month.

Work in other sites than Naas Valley

We have long spoken of the need to work in other sites as well as Naas Valley, such as Ainslie-Majura Nature Reserve. Perhaps this year the time has come.

Starting while Namadgi was closed to us, a camera trapping survey was carried out in early March by John, Lisa, Amy and I, in Bluett's Block, aka Denman Prospect Hill, in the Molonglo Valley. We were encouraged and supported by Nic Jario, one of the rangers for the Lower Molonglo River Park. The survey was partly a response to the sighting by Karami Hearn of a Tree Goanna (*Varanus varius*) on one of the buildings under construction (Figure 7), which was drawn to my attention by Luke Dunn who runs Canberra Snake Rescue and Relocation. Tree Goannas are almost extinct in the ACT now. Our survey did not detect any goannas but it was only a brief one, at the limit of the season. However our finding of an Agile Antechinus (*Antechinus agilis*) was significant because this species

has disappeared from Canberra Nature Park and its presence has implications for fire hazard management and for cat containment in adjoining suburbs.

Figure 7: Tree Goanna in Denman Prospect. Photo by Karami Hearn.



Back over at Ainslie-Majura, Luke and others had followed a Rosenberg's as it explored rabbit warrens in an offset area on the lower slopes (Figure 8). Comparison with goanna face photos taken a few years ago by Matthew Higgins and I, shows this to be a different individual, the 5th goanna we have good images of in that area. We will talk to Parks and Conservation about the possibility of a survey of the 21 sq km reserve area next summer. (Surveying the entire patch of habitat will simplify the analysis, and strengthen the interpretation, of mark-resight results.)

Figure 8: A Rosenberg's Goanna emerging from a rabbit warren in the Ainslie-Majura area. (Photo by Luke Dunn)



Update to notes on effects of the bush fire in the Naas Valley

My previous impression that the worst impacts of the fire, rainstorm and flood may be on the aquatic gilled fauna, have not been diminished by further time in the area (Figure 9). In regard to recovery of vegetation, it is still early. There is still only a little of the epicormic growth that will undoubtedly make a great contribution to the greening yet to come (Figure 10). The Australian Blackthorn (*Bursaria spinosa*) which dominated the shrub layer, is making a comeback too (Figure 10). Grasses and forbs have recovered faster, as they do. A mix of pretty flowers and weeds have begun appearing in the burnt grassland areas (Figure 11). Patches of Nodding Thistle (*Carduus nutans*), one of the worst ACT weeds in my opinion, are present in new areas. This species has expanded relentlessly in spite of decades of management efforts against it (Figure 12). As well as washing down all vehicles and plant that enter Namadgi, it may be appropriate to do so on the reverse trip as well, in the hope of restricting this nasty species to the southern ACT.

Figure 9: Parts of the Naas River channel have filled with sand



Figure 10: (left) epicormic shooting starts at different times on different trees; and (right) Australian Blackthorn (*Bursaria spinosa*) is coming back too.



Figure 11: There are pretty patches of Wood Sorrel (*Oxalis* sp.) (left) In the burnt upper-valley grassland and woodland, that look from a distance like patches of Buttercups (*Ranunculus* sp.), and there are orchids appearing, like this Parson's Band Orchid (*Eriochilus cucullatus*) (centre) identified by Isobel and photographed by Kerry, and many other pretty flowers.



Figure 12: Nodding Thistle (*Carduus nutans*) rosettes and a field mushroom.



Interesting fauna

On the latest visit we stopped on the Boboyan Rd in the morning to observe four dingoes which had been feeding on a small kangaroo carcass. Someone had kindly moved the carcass off the road, with the effect that wildlife attracted to it would be less likely to become roadkill themselves, then had dropped his disposable nitrile glove on the road. After we stopped the car, the dingoes retreated to 200m away (Figure 13) and lay down to watch us. On our way home in the afternoon, the dingoes had been replaced by three Wedge-tailed Eagles, one of which could barely take off with its crop full of kangaroo. As Kerry pointed out, with the road usage restricted to local traffic, there is probably less roadkill now, which perhaps explains the number of animals attracted to this one small carcass.

Figure 13: Three of a group of four dingoes, one each of white, yellow, brindle and black.



Finally, here is a link to lovely and fascinating footage of Tree Goanna (Lace Monitor) hatchlings emerging from a termite mound with an adult goanna (presumably the mother) apparently watching over them. It was taken by Peter Constable near Bega. As well as the striking difference to Rosenberg's in colour pattern of the hatchlings (seen in previous Goanna News), note the differences in animal behaviour and mound structure.

<https://atlasoflife.org.au/creaturefeatures/goanna-hatchlings>