

Symposium Presentation No. 6

Nest boxes in the Lurg Hills - what have we learnt?

Lessons from the Regent Honeyeater Project – 20 years of nest boxing

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Ray spoke about the Gliders and Phascogales of the Lurg Hills east of Benalla. The combination of corridors and nest boxes has provided opportunities for populations to grow and disperse and also opportunities to study habitat preferences.

Lurg is famous for its Mugga Ironbark habitat. There are many large bush blocks that provide refuge for many species. But many of the bush areas are only 60 years old regrowth, with very few hollows. It's tough going for many species.



The Project has revegetated corridors across the landscape for Regent Honeyeaters and a wide range of other woodland birds, and also Squirrel Gliders, Sugar Gliders and Brush-tailed Phascogales. For the mammal species in particular, nest boxes are an essential addition to their habitat in both the older regrowth patches and increasingly along the newer corridors.

Choosing Sites for Nest Boxes

We place nest boxes at locations for a number of reasons, so careful strategic choices will have the best results:

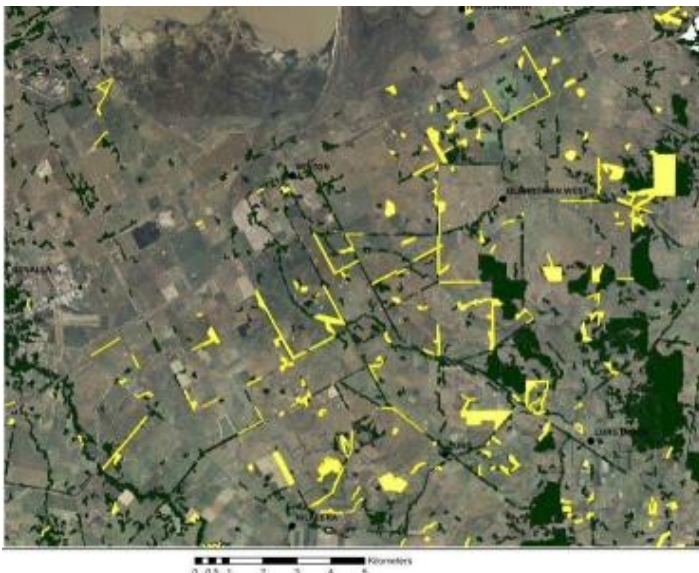
- providing hollows in young regrowth forests
- extra hollows nearby to allow families to expand
- safe spots in wildlife corridors - dispersing juveniles move to new territories
- shelter in planted areas (where there are very few hollows)
- fertile soils in or near a gully if possible
- close to the food reserves
- breeding quarters close to the richest food reserves
- 'litmus test' boxes - how quickly do gliders use our planted areas and are phascogales present?

But the position of nest boxes is also important:

- box must remain cool on hot summer days :
- SE side of tree gets extra shade from the tree trunk in the hottest part of the day.
- branches to shield the box from view.
- sheltered from cold winds.
- rough bark easier to climb - so choose box trees or stringybarks.
- vandals possible - ensure roadside boxes are well concealed.

Nest boxes and connectivity

Many of the bush remnants in the Lurg Hills are cut off from one another, and it's vital that we link them up for a number of reasons.



Corridors help wildlife find new food resources, new breeding partners, and also reduce the risk of predation by keeping wildlife off the ground away from feral predators. This map shows some of the corridors vegetated as part of the Regent Honeyeater Projects.

We have put many nest boxes half way along the corridors to see how quickly the new connections are utilised. The results have been very encouraging.

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For example, Squirrel Gliders used the corridor above only 4 years after planting
And gliders moved 600m along the corridor left to set up home in the nest box
placed strategically along the way.



Nest boxes and monitoring

Monitoring the outcomes of all our work is vital. We need to see results to know if our efforts are making a difference. In the simplest case, measuring changes in occupancy provides info about species' locations and population trends. But nest boxes also provide us with more detailed information on breeding success and habitat preferences.

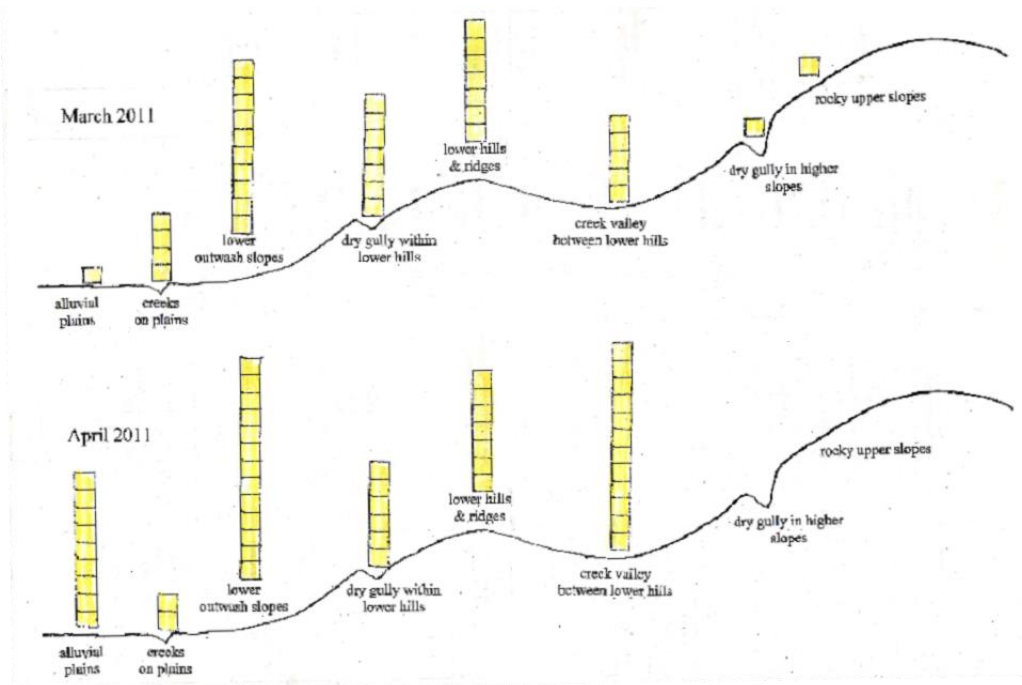
For example, in 2011, we checked a selection of 240 nest boxes in March and then again in April. The results showed strong habitat competition between Squirrel Gliders and Sugar Gliders, with the larger and stronger squirrels winning the better habitat in most cases. We also observed that gliders shift markedly across the terrain in response to the season changes and other factors.

Squirrel Gliders

The preferred habitat is in the lower slopes and gullies, where soils and nutrients are richer. In fact we've only found breeding in the very best soils along gullies, and in good years there is enough food for two rounds of breeding. We frequently find juvenile Squirrel Gliders up the hills where there is some food to survive, but not enough for breeding. So in restoration works, we focus on the better soils wherever possible.

One surprising observation was that Squirrel Gliders only moved out onto the plains as it got cooler and moister in April (see the figure below). So what is the habitat on these plains? It's mostly linear strips, and an extremely harsh micro-climate during the hotter months. There is much potentially good habitat on the plains, but it seems the gliders can't live there until it cools off in the Autumn! These seasonal shifts up and down the slopes are clearly significant, so we need to make sure we connect these places, so the gliders can move where and when they need to.

Figure 1: Numbers of nest boxes occupied by Squirrel Gliders



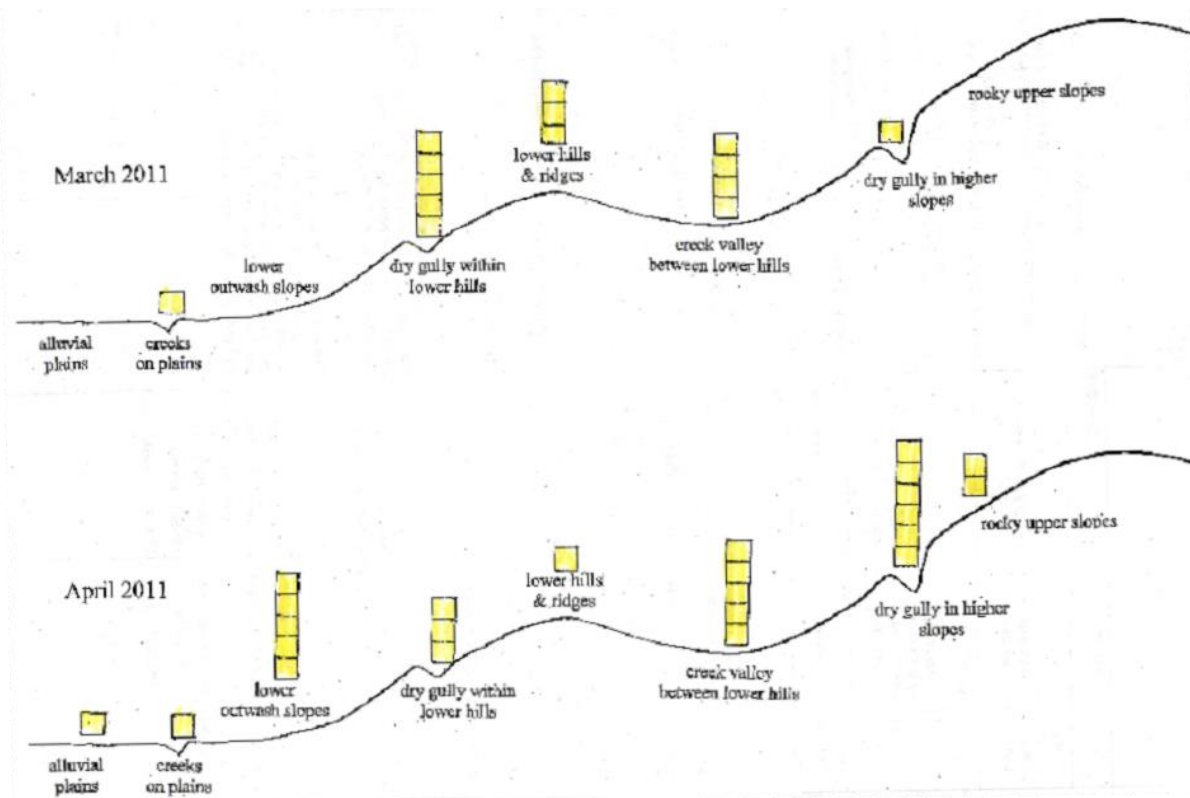
Sugar Gliders

Occupancy rates of nest boxes were much lower than for Squirrel Gliders. Approx. 10% of box inspections found Sugar Gliders at home, compared with 20% for Squirrels (see figure below). There is a distinct pecking order between the species, with the weaker sugars mostly restricted to the hill country where the food availability is poorer.

But we've seen many times that a single juvenile Squirrel Glider (leaving home for the first time), is no match for a whole family of sugars. The loner can't stay at home, can't stay in the sugars' territory in lower hills, so has to go to the higher hills for a place to stay! (see Figure 1 again)

One surprising observation was that Sugar Glider occupancy rates increased between March and April, and we saw this in all the different zones we inspected across the Lurg Hills. Possibly the Sugar Gliders were seeking any shelter over summer – roughing it in small hollows or under bark. But their small bodies lose heat rapidly, so they need to find warm, dry shelter in winter – hence the increase in occupancy of nest boxes over Autumn.

Figure 2: Numbers of nest boxes occupied by Sugar Gliders



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Brush-tailed Phascogales

These extra-ordinary creatures are still little known in the project area, with only a few actual sightings over the past 20 years. In the mid 1990's they were restricted to a single locality in the dry foothills of Upper Lurg where the bush blocks are all interlinked.

And that's been the main problem everywhere else in the district – gaps in the habitat forced them to ground where feral predators easily picked them off.



Planting corridors to connect the bush blocks was the obvious way to go, and our nest box results tell us that it has paid off. By 2011, phascogales were scattered among the Red Box Hills of Lurg, and by 2016 they had spread more than 10km to reach Glenrowan West. They have even extended to the edge of the Grey Box plains where they used to be prior to European settlement.

Nest boxes – as an ecological management tool

Nest boxes can also greatly improve the ecological balances in isolated bush blocks by reintroducing particular wildlife that have been missing for some reason. For example:

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Dieback of farm trees is mainly caused by too many insects eating the leaves, and Christmas beetles are particularly destructive in some areas.

It turns out that Gliders can eat large numbers of beetles every night. So with nest boxes as homes near the infested trees, gliders are very good control agents!



Mistletoes are a natural part of the Australian bush, providing critical food and shelter for many birds, mammals and specialist insects. But when the balance is lost, mistletoe can proliferate and be deadly to trees. Manual removal of mistletoe is often needed to save these valuable old trees.

We discovered that mistletoe prunings are highly palatable for sheep – so I asked why not possums? It turns out that Common Ringtail Possums prefer mistletoe to eucalypt leaves and are in fact a natural control agent. They just need a nest box for the family.



In fact young forests desperately need boxes for the common possums as well as for gliders!

Nest boxes as an educational tool

Many schools have been involved in making the boxes. Students as young as year 5 and 6 have worked with us to build 450 nest boxes. It's been a good exercise for environmental understanding as well as developing new skills and confidence with woodworking. It's also valuable for them to see the great results as animals move in.

For adult volunteers too, it's clear that seeing gliders close up is touching experience at many levels, and this adds much to their motivation for helping endangered species.