HFNC Beear State Forest fauna nest box report, 29 Nov. 2020

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Background

On 20-21 April 2012 ten nest boxes were installed at Sites 2, 3, 5, 6 & 10 (pairs of a large and a small box) in the Beear SF. Boxes were moved from Sites 6 & 10 to Sites 14 & 15 in April 2014.

John Burtonclay from Mandurang constructed the boxes (www.nestboxenvironest.com)
The fauna nest boxes were of 2 types, both with a 40 mm entry hole specific for our target species:

- Tuan/Glider box – 370 mm x 197 mm x 235 mm internal spaces (H x W x D), with top-hinged lid.
- Bush box – 271 mm x 195 mm x 157 mm internal spaces (H x W x D), with side opening.

The aim was to survey small mammals, hopefully including Brush-tailed Phascogale, Sugar Glider, Pygmy Possum and *Antechinus* spp. Boxes were sited in pairs 10-20 m apart to allow Brush-tailed Phascogales the chance to use a box in areas where the dominant Sugar Gliders were present (gliders may not allow another glider family to live close by but might allow phascogales to do so).

Bees were initially a problem in 3 of the large nest boxes. In May 2013 bees and honey was removed from the 3 boxes and wool carpet was stapled on the upper walls and under the lid (Site 2) or only under the lid (Sites 3, 5, 6/14 & 10/15) of the large boxes. Two boxes (Sites 5 & 6/14) also had a movable sheep tag flap fitted over the inside of the hole to exclude bees.

Inspection of mammal nest boxes: results from Nov. 2012 to Nov. 2020

In 2015 we acquired a pole camera unit to enable us to view (and photograph) the inside of the boxes from the ground, obviating the use of a ladder. The camera lens is inserted through the entry hole on the box. The lid of the large boxes could be lifted, using a telescopic pole, to obtain a clearer view.

Site 2 – 1.2 km from Beear SF sign on Hallams Tk. [37-22-35/142-02-25]
Habitat – dense *E. baxteri* forest with *X. minor* understorey (unburned >60 years).

Site 3 – 2.7 km from Beear SF sign on Hallams Tk. [37-21-46/142-02-2]
Habitat – a valley with *E. leucoxylon, E. melliodora, E. viminalis, E. baxteri, B. marginata*.

Site 5 – west of fire dam on track to McAdams Rd, in a flat. [37-21-20/142-01-30]
Habitat – *E. melliodora, E. baxteri, B. marginata, A. mearnsii* and *X. Minor* and many logs.

[Site 6 – 0.9 km on 2011 Burn Tk from jn 2011 Burn Tk/McAdams Tk. [37-20-51/142-01-40]
Habitat – *E. leucoxylon & E .baxteri* and *X. minor* in an area partially burned in 2011.

[Site 10 – 0.7 km N on Hallams Tk from McAdams Tk jn, then 250 m west. [37-20-50/142-02-12]
Habitat – *E. leucoxylon, E. melliodora, E. viminalis* & *B. marginata* open woodland with *X. minor*.

Site 14 – 1.3 km N on Hallams Tk from McAdams Tk jn. [37-20-32/142-02-31]
Habitat – *E. leucoxylon & E. melliodora* open woodland

Site 15 – 1.9 km on Hallams Tk from McAdams Tk jn. [37-20-32/142-02-48]
Habitat – *E. leucoxylon* open woodland adjacent to *E. baxteri* forest & *E. camaldulensis* creek line

Nest box occupation in 2020: Sugar Gliders were found at 4 of the 5 sites. At least 2 gliders were seen in the large box at Site 1 and at least 3 gliders in the large box at Site 5. The small boxes had resident gliders at Site 14 (1 adult and possibly others, incl. juveniles) and Site 15 (3 or more gliders). All boxes had nests of leaves, indicating that most had probably been occupied at some time during the year. The boxes were in good condition, except for the large unoccupied box at Site 15, where the lid was not firm and the attachment to the tree was not secure. That will need attention in 2021. There were no bees in any box, indicating that the measures taken after the intrusions in 2012 continue to be effective.

The pole camera had a faulty electrical connection and inadequate lighting. We pushed up the lid of the large box at the first site (Site 2), to get enough light to assess occupancy. Possibly too much time was taken getting the camera to function when the lid open and 2 gliders moved out, climbing to the top of the tree and then gliding to trees nearby. That did not happen again when lifting the lid of the other large boxes. With 3 of those boxes we resorted to the use of a ladder to make that inspection, without use of the pole camera. All small boxes were opened after ascending the ladder. The access with these boxes is on the front and nest material is inclined to fall out when the 'wall' is opened. Oddly, the occupants of the boxes did not appear to be disturbed by this action. This type of box is, however, not easy to assess and a top opening would be better. Photos were taken of any occupants, using a mobile phone.

There were plants flowering (see photos) but the season was finishing earlier this year.

Table 1. Occupation of mammal nest boxes in the Beear State Forest over 9 years (2012 to 2020)

			2012	2013		2014		2015	2016	2017	2018	2019	2020
Site	Box	Contents	20/11	7/5	19/11	20/4	25/11	21/11	20/11	25/11	18/11	23/11	29/11
2	Large	Bees	Yes, S	C L&W	-	-	-	-	-	-	-	-	-
		Leaves			G	G	G	G	G		G	G	G
		Gliders	nil	nil	2+	nil	nil	2+	2+	nil	nil	nil	2+
	Small	Bees	-	-	-	-	-	-	-	-	-	-	-
		Leaves	-	-	-	-	-	-	G	D	G	G	D
		Gliders	nil	nil	nil	nil	nil	nil	?	nil	nil	nil	nil
3	Large	Bees	-	C L	-	-	-	-	-	-	-	-	-
		Leaves			G	G	G	G	G	G	G	G	D
		Gliders	nil	nil	2+	nil	nil	2+	3+	1+	nil	nil	nil
	Small	Bees	-	-	-	-	-	-	-	-	-	-	-
		Leaves			G	D	D	G	G	?	G	-	D
		Gliders	nil	nil	nil	nil	nil	nil	?	nil	6 (4j)	nil	nil
5	Large	Bees	Yes, S	C L, F	-	-	-	-	-	-	-	-	-
		Leaves	-	-	G	-	-	-	-	-	G	G	G
		Gliders	nil	nil	nil	nil	nil	nil	nil	?	5+	nil	3+
	Small	Bees	-	-	-	-	-	-	-	-	-	-	-
		Leaves	-	-	-	-	-	-	-	G	G	G	G
		Gliders	nil	nil	nil	nil	nil	nil	nil	3+	nil	nil	nil
6#	Large	Bees	Yes, S	C L, F									
		Leaves	-	-	-	-							
		Gliders	nil	nil	nil	nil							
	Small	Bees	-	-	-	-							
		Leaves											
		Gliders	nil	nil	nil	nil							
10#	Large	Bees	-	C L	-	-							
		Leaves	-	-	-	-							
		Gliders	nil	nil	nil	nil							
	Small	Bees	-	-	-	-							
		Leaves											
		Gliders	nil	nil	nil	nil							
14	Large	Bees		C L, F			-	-	-	-	-	-	-
		Leaves					-	-	G	G	G	G	G
		Gliders					nil	nil	2+	1+	4(3j)	2+	nil
	Small	Bees					-	-	-	-	-	-	-
		Leaves					-	-	G	D	G	G	G
		Gliders					nil	nil	nil	nil	nil	nil	1+
15	Large	Bees		C L			-	-	-	-	-	-	-
		Leaves					-	-	-	G	G	G	D
		Gliders					nil	nil	nil	2+	nil	4(2j)+	nil
	Small	Bees					-	-	-	-	-	-	-
		Leaves					-	-	-		G	G	G
		Gliders					nil	nil	nil	nil	2+	nil	3+

C L&W = honeycomb removed and carpet (C) stapled to underside of lid (L) & upper parts of walls (W)
C L = honeycomb removed and carpet stapled to underside of the lid (L)

F = honeycomb removed and a movable ear-tag flap (F) was screwed to the inner side of entry hole
S = the box was sprayed with an insecticide to kill bees and the honeycomb was removed
# = on 24 April 2014 boxes from Sites 6 & 10 were shifted to Sites 14 & 15, respectively.
G = green-tinged (fresh) leaves; D = older, 'dead' leaves
j = number of juvenile Sugar Glider included

Conclusions to date:

1. The action taken stapling carpet to the upper walls and/or underside of the lid to exclude bees from the large boxes has worked. Sugar Gliders have successfully negotiated the movable flap over the entry hole in the large box at Sites 5 & 14. The flap alone may be enough to exclude bees.
2. Bees have not set up in the small boxes, all of which were left without carpet or bee flaps.
3. Sugar Gliders that had ignored most of the small boxes in early years appear now to be using them.
4. Sugar Gliders were the only mammals to use the boxes, taking green leaves inside for bedding.
5. Leaves and/or gliders were found in some small boxes adjacent to occupied large boxes, indicating that Sugar Gliders may nest close to another nest site (perhaps juveniles from the same family?).
6. Boxes at Sites 14 & 15 in Yellow Gum/Yellow Box woodland were initially unused by gliders, until 2017-18. It was hoped that Brush-tailed Phascogales might be located but no sign was found.
7. The pole camera used to inspect the interior of the boxes did not provide high quality images, and it was hard to detect animals under the leaves, but it did obviate the need for a ladder and disturbance resulting from opening the lid of the box.
8. The video option, cf. individual images with the camera, enabled a better estimate of the number (if any) of occupants in a box – and it could reveal any movement deep among the leaves.

Site 5. Large Box – possibly 3 Sugar Gliders asleep on a bed of leaves. This box has a bee-excluder (a sheep ear tag) fitted over the 40 mm entrance hole, plus carpet on the underside of the lid.

The tag swivels when the gliders push to enter or leave the box. They carry hundreds of leaves into the box and pack them neatly and that must be a major task, requiring hundreds of trips and having to negotiate a difficult entry point at the front of the box.

Gliders are active at night and presumably nest-building is done then, adding to the difficulty.

Site 14. Small Box – 2 gliders visible

Site 15. Small Box –1 glider visible

Site 2. Large nest box setup

Site 5. Large Box with sleeping Sugar Gliders

Peter & Rod set up the pole camera unit

Lunch stop on McAdams Tk

Brunonia australis

Pultenea pedunculata

Bursaria sp.

Rytidosperma sp.

Pelargonium rodneyanum

Arthropodium fimbriatum