Department of Sustainability and Environment

Measuring nest hollows

Australia has one of the richest diversity of parrots of any continent. Most of our tree dwelling parrots do not excavate their own nest hollows. Instead they tend to rely on termites and micro-organisms to rot timber. Once a branch breaks off Australian parrots usually just remove the debris left behind. The larger cockatoo species (and Galahs) tend to undertake this primary excavation function.

Regent Parrots are a nationally listed threatened species that use tree hollows to breed in. Their Victorian distribution is restricted to the mallee where they tend to breed mostly in mature River Red Gums. (Although several active Regent Parrot nest hollows have been found in Slender Callitris Pine.)

Regent Parrots in Black Box Photo C. Field

It became evident that a number of River Red Gums containing Regent Parrot nesting hollows needed to be removed for the construction of water regulation structures at the Hattah-Kulkyne NP Living Murray. One way of off-setting the loss of these nesting hollows was to replace them with nest boxes within the remaining local nesting colony. This has the potential to retain the size of the colony within the same location (albeit with a slightly different geographical arrangement). A true "No-net loss" result could thus be obtained.

This raised the question of "what makes a good nesting hollow for this species?" Nobody has ever measured Regent Parrot nest hollows in the wild. Along the Murray River Regent Parrots nests tend to be ~17m above the ground and often the nest entrance is out on a dead limb several meters from the trunk of the tree. A daunting task using traditional climbing techniques. However, the advancement in trailer mounted boom lifts presented a solution that could safely deliver a person to a Regent Parrot nest for measuring hollows. This is how the follow measurements were taken.

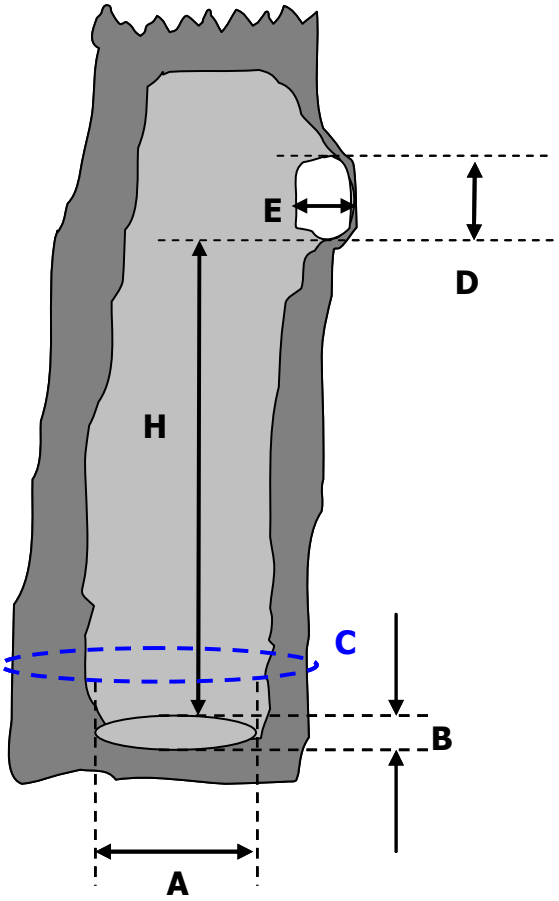
Active Regent Parrot nest, 2009. Photo by VG Hurley

NB. Measurements were actually taken after breeding had been completed.

What measures up?

The following measurements were taken for each nest tree:

Tree DBH
Height to nest entrance
Orientation of nest entrance
Depth of nest entrance (E)
Width of nest entrance (D)
Depth from entrance to nest floor (H)
Circumference of trunk/branch at nest (C)
Length of nest floor (A)
Width of nest floor (B)



Calculating nest wall thickness

C = the circumference of the trunk/branch at the nest chamber.
A = Length of nest floor
B = Width of nest floor
F = the diameter of the trunk is calculated by dividing the circumference (**C**) by pi
The wall thickness (G) can now be calculated using the following equation

$$G = [F-((A+B)/2)]/2$$

Measurement Summary

Fifteen known Regent Parrot nests have been measured to date.

Entrance dimensions	10 x 11 cm
Depth to floor	1.0 m *(0.28-1.8m)*
Floor dimensions	22 x 23 cm
Nest wall thickness	12.0 cm

It must be noted that the wall thickness is for a live tree. Earlier work on Major Mitchell's Cockatoo demonstrated that live trees provide a better thermal buffering capability than do dead trees (Hurley 2006). By extension then a nest box (using dead timber) will need to be made from thicker material than the figure presented here. An estimate of 50% thicker is proposed. This will bring the recommended wall thickness of a nest box to 18 cm. Thicker walls will also be more durable extending the useful lifespan of the nest box in the field.

The other surprising figure from these measurements is the depth of the hollows used. Major Mitchell's Cockatoo (a larger species) were found to prefer nest hollows averaging half this depth. Deeper hollows offer a taller column of air that acts as a thermal buffer for the nest chamber. The greater depth also acts as a deterrent for some species of would-be nest robbers such as Ravens. The narrow entrances preferred by Regent Parrots also act as a limitation to larger predators such as adult Tree Goannas.

These measurements were taken from nests in the southern mallee at the Outlet Creek, Wyperfeld NP. A further sample of 15 nests needs to be measured to gain a statistically representative sample. A second sample of 30 nests will be measured to determine if these figures are comparable with the larger populations of Regent Parrots along the Murray River.

Monitoring of breeding success in these nests will inform our understanding of which features are associated with the more successful nests. These results may inturn further enhance the design of nest boxes for Regent Parrots.

References:

Hurley, Victor G. (2006) "Physical characteristics and thermal properties of Major Mitchell's Cockatoo (*Cacatua leadbeateri leadbeateri*) nest hollows, Wyperfeld NP." Department of Sustainability and Environment, Mildura, Victoria, Australia.