H O L L O W L O G H O M E S

Hollow

Hollow Log Homes eNewsletter, Autumn 2012 edition

Number of boxes since April 1999: 15440

A Quarterly Newsletter concerning hollow dependent fauna and nest boxes **1st March 2012**

Species Profile

Australian Owlet Night jar

Aegotheles cristatus

Temperature Variation and Nest boxes

Article extract by Dr Ross Goldingay

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Owlet Night jar, sharing nest box with green tree frogs - Amberley QLD

Owlet night-jar, looking out of nest box on fence post - Cambroon QLD

Two Owlet night-jar chicks Cambroon QLD

Species Profile

Australian Owlet Night-jar

Aegotheles cristatus
Status: common

Nest boxes used by this species
Owlet night jar
Small parrot
Possum
Boobook owl
Glider (front entry)
Large Owl

Food. Insects

Eyes do not glow in spotlight

Owlet night jars are wide spread across most of Australia, they are a nocturnal bird related to tawny frogmouths. They can often be heard at night, their call sounds a little bit like somebody squeezing a child's rubber bath toy.

Owlet night-jars are sometimes seen sunning themselves in the entrance to their roost hollow. These roost hollows are used all year round, for roosting, breeding and for shelter if scared when out feeding at night.

In the breeding season parents will not spend much time in the hollow with the young once they are feathered. They will just come in during the night with moths and other insects to feed them. When the young fledge, each bird will go to a separate hollow in the vicinity of the nest hollow.

Other species are often found in the nest box with owlet night-jars, such as geckos or frogs. Telltale signs of night-jar activity in nest boxes are piles of droppings in the corners of the box. These break down quickly however staining will also be evident. There are often leaves in boxes or hollows where owlet night-jars are present. However, the birds do not line their nest with leaves but rather claim a hollow that has formerly been occupied by another species such as sugar or squirrel gliders. In areas where there are no gliders present the owlet night-jars nest on the bare mud-guts or mulch of the nest hollow floor. Owlet night jars do not seem to show any preference for size or shape of box but rather take advantage of any available hollow within their home range.

SOME HOLLOW LOG HOMES STATISTICS

Hollow Log Homes, nest boxes for wildlife since 1999,

TOTAL NUMBER Nest boxes to date: 15440

Total number of boxes audited from 2001-February 2012: **4483.**

Average habitation rate across all audited boxes from 2001 to present **76.77%**

2011

Number of sites audited **25**

Number of nest boxes audited across all sites **606**

Habitation rate across all sites **78.5%**

Number of native species recorded using Hollow Log Homes nest boxes: 42 native vertebrate species. 1 native bee species

There are also a number of other species found in nest boxes such as mud wasps, ants, mites and spiders who perform a vital role in maintaining the ecological balance.

Temperature Variation and Nest Boxes

The issue of temperature variation in nest boxes is one that often comes up. It stands to reason that temperatures in tree hollows will not have the same variation as those in nest boxes. Little research has been done into the temperature needs of individual hollow dependent species. There are of course ways of insulating nest boxes however the increased cost of materials and weight of the box may negate any advantage gained.

Below in an extract from Dr Ross Goldingay's 2009 paper

Characteristics of tree hollows used by Australia birds and bats

Temperature

The influence of temperature on hollow use by Australian birds and bats is not well documented. Temperature within tree hollows will vary with the ambient temperature although the degree to which does will depend on various tree-hollow characteristics, including the aspect of the hollow (*Calder et al. 1983 ; Hooge et al -1999; Wiebe 2OO1; Isaac et al 2008*). The amplitude of such variation will also vary with latitude and elevation. Temperature may play a key role for some birds in hastening incubation and rates of growth by developing young (e.g. Dawson *et al.* 2O05; Ardia *et al* .2006). Microbats may also select warmer hollows to promote rates of growth of young (e.g. Kerth *et al.* 200l). This may be of particular relevance in northern hemisphere locations where spring temperatures can be quite low and it should be examined in Australia to better understand factors that influence hollow selection by birds and bats.

Several studies of tree hollows selected by Australian birds have examined the aspect of the hollows used (which is measured as direction of the hollow entrance) as a surrogate for selecting a temperature profile. Hollow aspect was significant for only 1 of 12 species examined. Haseler and Taylor (1993) found that striated pardalotes in Tasmania significantly preferred enhances with a north-eastern aspect compared with random aspects. However, hollow entrances of available trees may not have a random distribution and may be influenced by the prevailing wind or the direction of severe storms (e.g.Harper *et al.* 2005b; Murphy and Legge 2007).Saunders (1979) found that the aspects of available hollows departed from random. However, selection of tree hollows by white-tailed black-cockatoos was independent of available hollow aspects, which did not appear to be influenced by the prevailing wind. Saunders e*t al.*(1982) found that galahs, corellas and red-tailed black-cockatoos chose hollows independent of available hollow aspects. It is important to note that hollow temperature may vary depending on the type of hollow used (e.g. trunk v. branch) and that species may select hollows that provide protection from wind and rain (e.g. Smith 1991), which may also lead to selection for a specific hollow aspect This issue will be resolved only by detailed studies that measure temperature within different types of hollows with different aspects.

Tidemann, and Flavel (1987) noted that the roost choices of tree-roosting bats are likely to be governed by microclimate because these bats tend to be heterothermic. Evidence has been accumulating since then that heterothermic microbats select hollows that are heated by the sun so they can employ passive rewarming to arouse from torpor to conserve energy (Turbill *et al.* 2003a, 2003b; Ruczynski 2006; Turbill 2006a, 2006b). Studies in Europe and North America have demonstrated that microbats Select artificial roosts that receive long periods of direct sun and attain high diurnal temperatures (Brittingham and Williams 2000; Kerth *et al.* 2001; Lourenco and Palmeirim 2004).

The use of passive rewarming may explain the frequent use of loose bark as a roosting site by some bats because such poorly insulated sites facilitate heat uptake when in direct sun (e.g. Turbill *et al.* 2003a). Indeed, roosts under bark of the lesser long-eared bat were more likely to occur on the north-western aspect of trees than predicted if availability followed a random or even distribution (Turbill *et al.*2003a). Lumsden et al. (2002a) also found that roosts of the lesser long-eared bat and Gould's wattled bat favoured a northern aspect. Despite these findings, little other research has been conducted to explore this issue. Campbell *et al.* (2005) found that 13 of 16 roost enhances of little forest bats faced south; however, whether this was influenced by availability is unknown. Law and Anderson (2000) suggested that seasonal temperature changes may have influenced eastern forest bats to shift roosts from trees close to creeks to those upslope where greater exposure to direct sun would be experienced.

Further work is needed to describe the tree roosts of Australian microbats and the microclimates of those roosts. Currently, only two studies in Australia (Calder *et al.* 1983; Isaac *et al.* 2008) have described temperature variation in natural tree hollows, which precludes any generalisation. It appears that for some species temperature will be important to roost selection; however, how widespread this is among species remains to be determined. Tree roosts of the long-tailed bat (Chalinolobus tuberculatus) in southern New Zealand were well buffered against ambient temperature (Sedgeley 2001) and roosts were in trees that were taller and with less canopy cover and surrounding vegetation than the available hollow-bearing trees (Sedgeley and O'Donnell 1999a, 1999b). The importance of larger trees as maternity roosts and the microclimates they provide (e.g. Sedgeley 2001) also need to be described. Furthermore, consideration should be given to whether disturbance from logging, which is widespread, may have influenced roost availability for forest-dwelling species. The loss of large trees may not only have led to the reduced abundance of potential roosts but also to suboptimal positions of remaining trees. For species willing to roost under bark this will apply specifically to their maternity roosts in tree hollows. Understanding the role of temperature in hollow selection may have a profound influence on artificial-hollow design and placement (Goldingay and Stevens 2009).

Goldingay, Ross L.(2009). *Characteristics of tree hollows used by Australia birds and bats*" Wildlife Research, 36, 394-409 CSIRO Publishing.

Scaly Breasted Lorrikeets
Trichoglossus chlorolepidotus
at entrance to natural nest hollow