PPBio Australasia Metadata – HOLLOW BEARING TREES

Title:
Hollow Bearing Trees at Karawatha Forest

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Summary:
This study aims to investigate the abundance and distribution of hollow bearing trees within Karawatha Forest Park and determine which tree attributes favour hollow formation.

Key Words:
Tree Hollow, Hollow Occupancy, Eucalyptus, Rainbow Lorikeets

License and Rights of Use:
EcoAccess Permit to Collect Scientific Data All PPBio data will be made public within 2 years of collection, as long as those responsible for the collection are credited in any publications that use the data. We recommend that those interested in using these data contact the relevant data collectors to discuss the possibility of co-authorship. It is also suggested that you download and read the PPBio Data Policy and Procedures. (EcoAccess Permit Number – WISP05347908)
**Geographic Coverage:**
Data were collected at Karawatha Forest Park over a site approximately 900 ha of mixed eucalypt and wetland forest.

**Geographic Coordinates:**
Latitude: -27.632° Longitude: 153.084°

**Temporal Coverage:**
Data collected from June to August 2009

**Collection Methods:**

*Hollow Surveys;*

Trees identified as having a DBH greater than 30cm (*sensu* Butler 2007) within the plots at Karawatha were surveyed using a ground based survey method (Gibbons and Lindenmayer 2002; Harper *et al.* 2004; Koch 2008). A review of the PPBio database revealed that this cohort of trees comprised 2043 trees (≥ 30cm DBH). In the field, each of these trees were surveyed using the naked eye and/or binoculars from a distance until all aspects (trunk, branches, canopy) of the tree had been viewed, or for a maximum survey period of one minute, to identify the presence or absence of hollows in that tree. All observations were made by one person to prevent observer bias (Harper *et al.* 2004). For those trees in which hollows were detected, a number of variables were subsequently measured to quantify the characteristics of the tree as well as those of the hollow (Table 2.1). Tree surveys were undertaken between June and August 2009.

Environmental (topographical, soil and vegetation) parameters on each of the 33 plots were used (Butler 2007) to compared to the distribution and abundance of HBTs across KFP to determine which had the greatest influence (Table 2.1). Parameters included slope, aspect, elevation, fire history, soil chemistry, biomass and number of trees per plot (Appendix 2). Similar parameters were used by Eyre (2005) in SEQ who also included logging history and a categorical variable of topography.
Usage by Vertebrate Fauna Surveys;

The pole mounted camera technique (Murphy et al. 2003; Proudfoot 1996) was chosen as surveys can be conducted during the day, it does not rely on animals leaving the hollows at a particular time and juvenile animals can be seen which may not have left the nest. Unlike spotlighting, animals observed within a hollow are known to be utilising that hollow, whereas spotlighting may not indicate where the animal had been roosting or nesting. To climb each tree and observe hollow occupants was not practical due to time and financial limitations. Ethical approval for the completion of hollow surveys was obtained from the Griffith University Animal Ethics Committee while the PPBio research program has an EcoAccess Scientific Purposes permit.

A 12m telescopic pole was used to survey hollow bearing trees within KFP. The maximum extended height of the pole precluded any hollows above approximately 12m from being surveyed. Similar methods have been used previously to within Australia to monitor Palm Cockatoo nest hollows (Murphy et al. 2003). A small, light weight security camera (IR body camera, model: CCG8110 from OzSpy) hard wired to a rechargeable 9 volt power source was mounted to a flexible arm at the top of the pole. Video footage (3GP format) from the camera was transmitted via a cable to a monitor and digital recording device (2.4” TFT-LCD monitor with 640 x 240 pixels resolution) at the bottom of the pole. The camera uses infra red light to record in black and white when in low light conditions. This allows surveys of the hollows to be completed during the day. For each hollow surveyed, the presence or absence of any fauna, particularly vertebrates, was noted as well as the species and number of the occupant/s if occupied.

A snapshot survey of hollows was undertaken once all HBTs had been located within KFP. This survey was completed over two days in September 2009 during fine weather. At each hollow the pole was extended to the height of the hollow and the camera was then manoeuvred into position by the operator to obtain a clear view of the hollow cavity. The hollow height, entrance dimensions and entrance orientation required the pole to be lowered and extended a number of times to reposition the camera to ensure a detailed view of the hollow could be obtained. Once the camera had a clear view of the hollow interior any species were noted directly from the live footage observed on the monitor. In addition a recording was made of each hollow to verify use in the laboratory. The snapshot survey undertaken in this study may be limited by seasonal hollow use patterns (Gibbons and Lindenmayer et al. 2002). However, the survey was undertaken at a time when many birds (e.g. Rainbow Lorikeet) were nesting. As the hollows are surveyed during the day, it is possible that diurnal vertebrates, such as some birds, lizards or frogs, that principally use hollows for roosting at night may not be detected.

Information on the data archives:

KarFor_HollowBearingTrees_2009.csv
KarFor_TreeHollowOccupancy_2009.csv

Description of table attributes:

Name of Attribute: Location
Definition: Place where PPBio grid is located

Name of Attribute: Plot Name
Definition: Name of plot where hollow bearing trees were identified

Name of Attribute: Tag#
Definition: Tree code or tag number where a hollow or hollows were identified
Name of Attribute: Species
Definition: The species of the tree keyed out using field guides by observing the leaves, bark and fruits

Name of Attribute: Tree Form
Definition: Following Lindenmayer et al. (1993b), HBTs were classified into 8 categorical forms which reflect the stages of senescence

Name of Attribute: Tree Height
Definition: Measured using a laser rangefinder standing 20m from the tree base, closer if line of sight is distorted by vegetation

Name of Attribute: Dist HBT
Definition: Distance (meters) from the midline to hollow bearing tree

Name of Attribute: Hollow #
Definition: Number given to hollow where more than one hollow is present in the tree

Name of Attribute: Hollow Height
Definition: Measured from the ground in meters to where the hollow was located in the tree

Name of Attribute: Hollow Length
Definition: Length of hollow measured in centimetres

Name of Attribute: Hollow Width
Definition: Width of hollow measured in centimetres

Name of Attribute: Hollow Location
Definition: Type of structure in which the hollow was located in the tree

Name of Attribute: Hollow Type
Definition: Type of hollow

Name of Attribute: Aspect
Definition: Direction/aspect that the hollow was facing

References of Interest:


