

LOCALISED KOALA HABITAT ASSESSMENT MANUAL



This manual describing the Localised Koala Habitat Assessment Tool has been developed by Lockyer Uplands Catchments Inc (LUCI) for use by landholders, citizen scientists and community conservation groups. For further information contact Diane Guthrie at info@lockyeruplandscatchmentsinc.org.au

1. Introduction

The Localised Koala Habitat Assessment Tool (LKHAT©) is designed for landholders, citizen scientists and community environment groups to use in **building knowledge of koala habitat at the property scale and in the local landscape**. When coupled with a koala occurrence survey, the LKHAT enables:

- citizen scientists to collect valuable data on koala presence and habitat usage, dominant tree species, vegetation characteristics and vegetation condition in the koala occurrence area and investigate questions around koala distribution and activity levels;
- landholders to understand the nature of koala habitat on their property, identify potential areas for koala conservation attention in their land management and monitor the impacts of land management practices on koala use of habitat areas; and
- community conservation groups to undertake landscape scale analyses (e.g., habitat condition and connectivity analyses) to inform priorities for conservation action and enable monitoring of the effectiveness of those actions.

Koala habitat is broadly defined in this manual as referring to areas where koala occurrence is established through direct observation and/or indirect observations such as through scat finds. Koala occurrence in these areas may involve habitat use for browsing, sheltering, mating and/or movement between resource areas for any of the foregoing purposes.

2. The need for a localised koala habitat assessment approach

Koalas occupy a range of eucalypt woodlands and forests across eastern Australia from warmer northern regions in Queensland through to lowland regions in Victoria. Within any one region, koala populations may be distributed across different eucalypt vegetation communities at more local scales. A recent review by Australian National University¹ highlighted the difficulties in generalizing from bioregional benchmarks for, and predictive models of, what constitutes quality koala habitat at finer scale landscapes. The application of bioregional-scale assessment methods has the potential to overlook local variations in koala habitat attributes and risk undervaluing viable koala habitat areas and misguide local koala conservation priorities and on-ground actions.

As stated in the ANU review, “[k]oala habitat maps and species distribution models can provide indicative information on areas that may be koala habitat. However, the information should not replace local field data and site observations. It is rare for maps to be fully ground-truthed and large-scale mapping is often limited in its ability to predict features at smaller scales that are important to landscape use by koalas.” (p.12). This manual aims to enable local land managers, citizen scientists and community groups to build an information base from which local scale koala habitat maps and koala distribution models can be derived and inform koala conservation action planning.

¹ Australian National University (2021) *A review of koala habitat assessment criteria and methods*.

3. A localised approach to koala habitat assessment

The following criteria were used as a guide in the development of the content and format of the LKHAT to utility and functionality with robust data gathering:

- the items derive from on-ground monitoring of local koala use areas over the long-term;
- the information generated by the items is sufficient to allow landholders to identify known and potential koala habitat areas on their property;
- the items generate information that can be used in on-ground conservation action or citizen science;
- the format of the assessment tool has regard for the user's capacity, both in terms of time availability and familiarity with assessment language.
- Rapid and easy to use in the field;
- Relevant to a specific, local area and can be adapted to other areas; and
- Collect robust data that can be used to compare sites over time to provide information on gains The LKHAT in the field

The LKHAT has two parts: a habitat assessment component and a koala occurrence survey. Each part can be administered separately although the informational value of the LKHAT is greatest when both parts are completed for any one habitat survey area. A copy of the LKHAT, developed for the Lockyer Uplands landscape, appears in Attachment 1.

(a) *Habitat assessment component*

The location of a **habitat assessment site (HAS)** is decided on an individual property by:

- ☞ the location of an existing koala occurrence record (sighting or scat); or
- ☞ a pre-survey reconnaissance walk to look for evidence (sighting or scat) of koala occurrence;² or
- ☞ location of an RE with vegetation characteristics similar to that of known local koala use areas³

For the assessment, the HAS is a 25m radius circle established around a central tree (2,000m² area). In the first two methods above, the central tree is the one associated with the koala occurrence (sighting or scat record) or the tree nearest the occurrence. In the third method above, the centre tree is chosen is the nearest tree of a species that is known local koala habitat tree. The 25m circle can be marked by use of flagging tape or some other means that is visible and durable to facilitate longer-term monitoring.

² The reconnaissance walk would focus on eucalypt woodland and open forest areas identified either by the landholder or by reference to the Regional Ecosystems (RE) mapping database although scats may be found in open grassy areas between separated stands of eucalypts.

³ The lack of an occurrence record does not mean true absence of koala in an area, which can only be established through repeated surveys across time, *Ibid.* p. 16

The 25m radius circle is then assessed using the questions on page 1 of the LKHAT.

NOTE: The survey includes an item on the tree species that dominate in the HAS. In the Lockyer Uplands version of the LKHAT, this section lists seven tree species that five years of koala monitoring data indicate are the most common species in areas associated with koala occurrence (See Table 1). Surveyors are asked if these species are present while also recording other species of note in the HAS.

Assessment plot 25m radius circle - Attributes	
GPS coordinates for centre tree in plot:	
Circle which of the following tree species are present:	
<input type="checkbox"/>	Ironbark (If possible indicate which of the following species of Ironbark)
<input type="checkbox"/>	<i>Eucalyptus crebra</i>
<input type="checkbox"/>	<i>Eucalyptus fibrosa</i>
<input type="checkbox"/>	<i>Eucalyptus siderophloia</i>
<input type="checkbox"/>	Yellow Box <i>Eucalyptus meliodora</i>
<input type="checkbox"/>	Grey Gum <i>Eucalyptus major</i>
<input type="checkbox"/>	Blue Gum <i>Eucalyptus tereticornis</i>
<input type="checkbox"/>	Other trees species of notes
The ones you've circled make up what proportion of trees in the plot (tick one)?	
<input type="checkbox"/>	less than 10%
<input type="checkbox"/>	between 10% - 50%
<input type="checkbox"/>	more than 50%

Table 1. The Lockyer Uplands version of the KHAT lists the tree species identified as dominant local koala habitat trees established through 5 years monitoring of koala use areas.

Existing local knowledge of koala use areas will determine if this section of the LKHAT can be populated with known local koala use trees in advance of a survey, while also retaining an open-ended option, or if a local knowledge base needs to be built and requires the surveyor to record the most dominant species in the HAS.

(b) Koala occurrence component

The second part of the LKHAT includes a scat survey to investigate koala occurrence in the HAS. The survey is an amalgam of modified versions of the original Phillips and Callaghan (2011) Spot Assessment Technique (SAT) survey⁴ while addressing the LKHAT criteria in section 3 previous page.

The survey is conducted on the HAS centre tree and the 29 nearest trees with a diameter at breast height (DBH) of at least 10cm. In choosing trees, it is time saving to use a caliper set at 10cm rather than a measuring tape given the LKHAT does not include recording actual DBHs for each tree in the HAS.

To locate the 29 nearest trees may require moving outside the 25m HAS circle.

⁴ For a review of the SAT and modified versions of the SAT, see *ibid.* pp. 2-23

The scat search is conducted, initially, around the base of the tree and moving outwards under the canopy for a period of 2 minutes for each of the 30 trees.

If a scat is found during the 2-minute search, the tree species or, if not known, a description (or photograph(s)) of tree characteristics is recorded on the survey form. Information is not recorded for 'no scat' trees.

It is a good idea to choose and visibly identify (with something bright and removable) all 29 trees before commencing the survey. When the survey commences, results are recorded at the end of each of the 2-minute searches and the visible marker removed to avoid mix-ups.

ATTACHMENT 1

Localised Koala Habitat Assessment Tool

Spot Assessment Technique Survey		
Tag #	Scat present Yes/No	If Yes, record tree species or, if unknown, provide a description (or photographs) of tree characteristics noting the size and structure of the tree, leaf structure, nature of the bark and any seed capsules present. Record photo ID information with corresponding tag#.
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ATTACHMENT 2

Koala Scat Characteristics

As a koala scat is accepted as evidence of Koala (*Phascolarctos cinereus*) presence, finding a scat can be as important as sighting a koala. If a Koala is present then there is a high likelihood of finding a scat given it can poop over 300 pellets a day!

A Koala feeds almost exclusively on eucalypt leaves usually from a small range of tree species within the area. For example, primary koala food trees in the Lockyer Uplands tend to be *Eucalyptus melliodora* (Yellow box), *Eucalyptus major* (Grey gum), *Eucalyptus crebra* (small-leaved Ironbark) and *Eucalyptus tereticornis* (Blue gum) while secondary koala food trees include *Eucalyptus moluccana* (Grey box), *Eucalyptus fibrosa* (Large-leaved Ironbark) *siderophloia* (Ironbark) and *Corymbia intermedia* (Pink Bloodwood).

A Koala grinds leaves into a paste with its heavily ridged molars and produces scats 24hours a day. While it is usual to find the scats around the base of a tree (within a 1-2 metre radius of the trunk), sometimes scats can be spotted on a path as the koala moves from tree to tree.



Photo Kate Zimmerman

What are some clues in identifying a koala scat?

- Oval shaped
- Can be rounded or pointed at the ends
- If fresh, grey-green or green-brown in colour otherwise usually brown, reddish-brown in colour
- Harder surface as it ages
- Often ridged along the side
- Contents are firmly packed, finely textured leaf matter
- Sometimes smells of eucalypt but usually only when fresh
- Can look more 'speckly' as it ages
- Not likely to contain hair



Photo Martin Bennett

Most likely to be confused with Brushtail Possum scat, which tend to be cylinder-shaped although often blunter at the ends, darker in colour than koala scat (though colour can depend on diet) with contents a bit coarser in texture.



Photo Diane Guthrie



Variation in koala scat size, shape and colour. Photo Diane Guthrie



Variation in koala scat size, shape and colour. Photo Diane Guthrie



Koala scats showing ridge marks and 'speckled' appearance as they become drier. Photo Diane Guthrie.



Koala scat samples bagged, labelled and ready for confirmation by an ecologist. Photo Diane Guthrie.