Management of Koalas in Forestry Plantations

Operational Code of Practice

Prepared for and on behalf of

the

International Fund for Animal Welfare

and the

National Koala Alliance

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About the International Fund for Animal Welfare...

The International Fund for Animal Welfare (IFAW) focuses on improving the welfare of wild and domestic animals. IFAW seeks to promote animal welfare and conservation policies that advance the well-being of both animals and people by adopting a flexible and pragmatic approach that varies from assisting individual animals in distress to also effecting policy change to protect whole populations and their habitat.

About the National Koala Alliance....

The National Koala Alliance (NKA) is a recently established, non-profit NGO that works to improve the welfare and conservation status of wild koala populations throughout their range. The NKA strives to achieve this through advocacy, education, research, understanding and community empowerment. The NKA is committed to being a strong, united and cohesive voice for koala conservation and protection.

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1. Introduction

Koala ecology – a brief overview

The koala is Australia's largest arboreal marsupial folivore. Restricted to eastern areas of the continent, the distribution of koalas extends from far north-eastern Queensland to the Eyre Peninsula in South Australia (Strahan and Van Dyck 2008). Koalas do not have a high reproductive output; females reach sexual maturity between eighteen months to two years of age, after which they can theoretically produce one offspring each year. However, on average most females in wild populations breed every second year over the term of their reproductive lives (McLean and Handasyde 2006). While examples of free-ranging koalas as old as or older than 15 years of age are known, the longevity of individuals in the wild appears to average 8 -10 years for most mainland populations.

Factors that influence the distribution of koalas at the local population level are more complex than that simply represented by habitat considerations alone. Studies of free-ranging koalas have established that those in stable breeding aggregation(s) arrange themselves in a matrix of overlapping home range areas (Lee and Martin 1988; Faulks 1990; Mitchell 1990; Kavanagh *et al*. 2007). Home range areas of individual koalas vary in size depending upon the quality of the habitat (measurable in terms of the abundance of preferentially utilised food trees) and the sex of the animal (males have larger home range areas than do females). Long-term attachment to the home range area is generally maintained by adult koalas in a stable population (Mitchell 1990; Kavanagh *et al*. 2007).

Throughout their range in eastern Australia, koalas have been reported as utilising and/or depending on a diverse range of *Eucalyptus* species (Hawkes 1978; Lee and Martin 1988; Hindell and Lee 1990; Phillips 1990; White and Kunst 1990; Melzer and Lamb 1996; Lunney *et al*. 1998). Within a given area however, only a few of the available *Eucalyptus* species will be preferentially browsed, while others, including some non-eucalypts, will be incorporated into the diet as supplementary browse or utilised for other purposes (Lee and Martin 1988; Hindell and Lee 1990; Phillips 1990; Phillips *et al*. 2000, Phillips and Callaghan 2000).

Use of forestry plantations by koalas

Both itinerant and resident populations of koalas can occur in forestry plantations, especially when preferred koala food tree species are present and/or being cultivated for harvesting purposes. Preferred koala food trees currently being grown in plantations include:

Victoria & South Australia: Southern Blue Gum *Eucalyptus globulus* and affiliated subspecies are widely grown as plantation hardwoods for the pulp/paper industry. Recent work in the Strzelecki Ranges/South Gippsland area of Victoria (Phillips and Allen 2014) has identified naturally occurring Southern Blue Gum as one of the two most preferred koala food tree in that area (the other being Mountain Grey Gum *E. cypellocarpa*), use of both species conforming to a size-class based model of utilisation (Figure 1) whereby the larger trees (i.e. generally over 300 – 350mm dbh) tend to be preferred over smaller ones. Such a mode of use is typical of Eucalypts in the sub-Genus *Symphomyrtus* that grow on low – medium nutrient soils such as the Wonthaggi Formations and

Haunted Hills Gravels as occur throughout much of the Strzelecki Ranges (Phillips and Allen 2014), implications being that as earlier reported by the Australian Koala Foundation (2008) the use by koalas of plantation areas on these lower nutrient substrates tends to be peripheral and dependent upon the proximity of areas of undisturbed native forest that contain larger specimens of the preferred food tree species. On higher nutrient Basalt derived soils such as those that occur in some parts of south-western Victoria however, use of smaller size-class Southern Blue Gum will be the same as that of the larger size classes such that use by koalas can be demonstrated to be independent of size class. In such instances, plantation areas will be capable of supporting high density (> 1 koala ha^{-1}) koala populations.

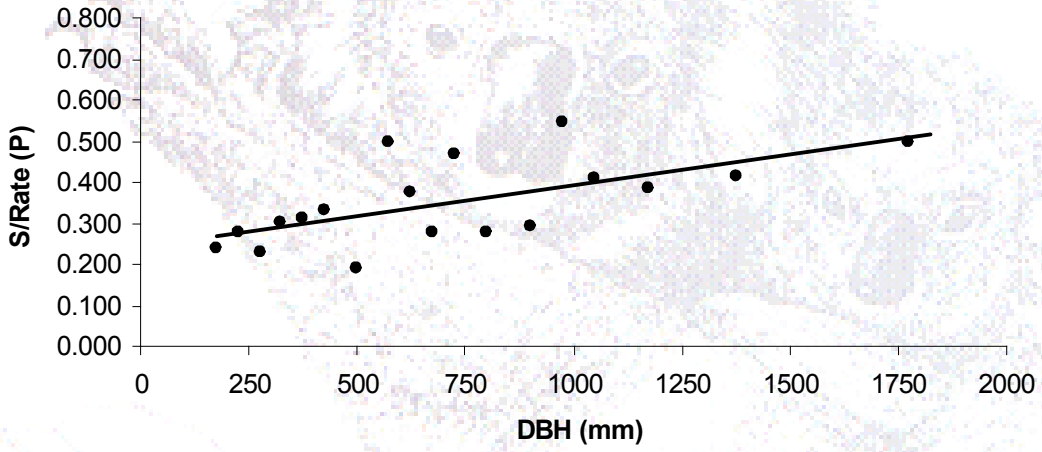

Figure 1. – Scatterplot and associated data trend illustrating size-class based use of Southern Blue Gum *Eucalyptus globulus* by koalas in the Strzelecki Ranges/South Gippsland area of Victoria (Source: Phillips and Allen, 2014).

The use of Southern Blue Gum plantations by koalas in some parts of Victoria and in South Australia may be additionally complicated by the origins of source populations from which colonisation of plantation areas has occurred, those from source populations comprised entirely of translocated animals from localities such as French Island being typically in-bred and pathogen-free. The disease-free status of such populations effectively disables any potential for density-dependent regulation mechanisms to operate at the local population level and so reduce reproductive output when resources such as food become scarce.

New South Wales & Queensland: Eucalypts commonly grown in plantations in NSW include Flooded Gum *E. grandis*, Blackbutt *E. pilularis* and Spotted Gum *Corymbia* sp.; these species are not generally the subject of preferential use by koalas.

Elsewhere, the preferred koala food tree species Tallowwood *Eucalyptus microcorys* is commonly used as a plantation wind-break species by the Macadamia industry, sometimes in association with other known food tree species including Grey Gums such as *Eucalyptus propinqua*, boxes such as Grey Box *E. molucanna* and other closely allied species. On high nutrient sites the use of

Tallowwood and Grey Gums best conforms to a model of utilisation that is again independent of size class (Phillips *et al* 2000), again establishing the basis for a high koala carrying capacity. Indeed, plantation wind-breaks of Tallowwood planted 20 – 30 years ago on farmland areas in northern NSW are now playing an important role in terms of supporting local koala populations.

The Nature of the Problem

Timber is one of the few truly renewable resources and plantation-grown Australian hardwoods make a significant contribution to the lessening of impacts on biodiversity values in areas of native forest. Unfortunately, koalas residing or otherwise making use of forestry plantations can and are being injured or killed during tree-felling operations. The extent of injuries being sustained by koalas that get caught up in harvesting operations can be confronting, ranging from crush injuries resulting in the rupturing of internal organs, torsion damage in the form of severed limbs, complex limb fractures and broken backs; often these injuries occur in combination with each other and invariably result in a painful death or require euthanasia of the affected animal (Figure 2).

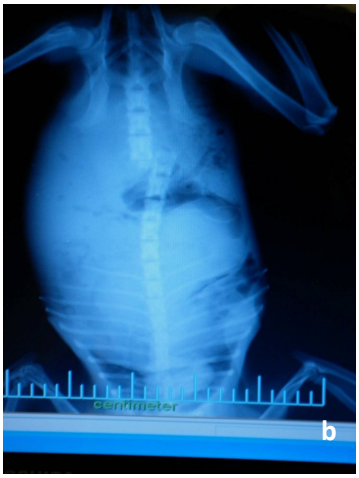

Figure 2. Examples of injuries received by koalas during the course of harvesting operations in Southern Blue Gum plantations (a = torsion injury resulting in severed forearm, b = broken spine, c = fractured femur).

Given the preceding considerations it is important that appropriate measures are taken to diminish the risk of injury to koalas in the first instance and secondarily to identify the most appropriate form of intervention, management and treatment (including euthanasia in cases of severe injury) in instances whereby injuries are sustained. Where plantations on high nutrient soils are entirely comprised of or otherwise contain preferred koala food tree species there is also a possibility that the viability of local populations may be adversely affected as a result of the loss of food resource.

The current management approach to the presence of koalas in plantation areas is one which effectively results in a forced dispersal of koalas from areas that are in the process of being harvested; this is achieved by the progressive removal of trees around those koalas that are detected during the harvesting process, the remaining trees not being sufficient to provide either food or shelter and thus necessitating dispersal. While this may seem a practical solution to the issue, the mortality rates that results from this practice are invariably high (i.e. > 50%).

The purpose of this document is to provide a Code of Practice by which koala populations making significant use of plantation areas can be more sustainably managed. The Code of Practice operates at several different levels, commencing at the landscape-scale with considerations of connectivity, at the local site level by requiring best-practice habitat assessment procedures and associated mitigation strategies to be implemented, and finally to the welfare of individual animals that may be caught up in the harvesting process.

2. Management Aims and Objectives

a) Aims

The Aims of this Code of Practice are as follows:

a) to establish the basis for long-term sustainable management of free-ranging koala populations inhabiting Eucalypt plantations, and

b) to ensure that a high standard of care, including a rapid response time, is afforded any koala that is inadvertently injured during harvesting operations.

b) Objectives

The Aims of this Code of Practice will be met through the following objectives:

(i) Development of area-based management strategies that improve landscape connectivity values so as to allow for the natural dispersal or movement of displaced koalas away from plantation areas,

(ii) Ensuring that best practice koala population assessment techniques are employed by suitably trained and/or accredited personnel prior to the harvesting of Eucalypts from within plantations,

(iii) Ensuring that individual animals are protected from injury to the maximum extent possible by avoiding areas being utilised by resident koala populations in the first instance, and by requiring the presence of specialist koala spotters in and near such areas during harvesting operations, and

(iv) ensuring that appropriately designed, long-term monitoring, auditing and reporting mechanisms are in place to enable the industry and wider community to be confident that harvesting practices are operating to the highest professional and ethical standards and with the welfare of koalas afforded a high level of attention.

3. General Provisions

The following actions and associated provisions will give effect to the Aims & Objectives of this Code of Practice:

a) Koala handling and capture

(i) The capture and handling of koalas as required by various parts of this Code of Practice can only be undertaken by appropriately trained and/or accredited personnel who have completed an approved koala capture/handling course.

b) Koala Population Assessments

(i) Koala population assessments as required by this Code of Practice can only be undertaken by appropriately trained and/or accredited personnel who have satisfactorily completed a training

course in the use and application of Regularised, Grid-based Spot Assessment Technique (SAT) sampling or other similar method[1].

c) Establishment of a Koala Management Officer

(i) plantation management areas must have one or more personnel trained and designated as Koala Management Officers whose role it is to implement those aspects of the Code of Practice that are of relevance in the day to day management of koalas in plantation areas.

(ii) in order to become a KMO, an individual must have satisfactorily completed recognised training courses and/or be otherwise accredited in techniques of koala habitat assessment, capture, handling and rescue.

(iii) a KMO must also be appropriately licensed or accredited in the use and application of drugs required to assist the management and welfare of koalas, including those necessary to affect the euthanasia of individual animals if so required.

d) Monitoring, Reporting & Auditing

(i) Each plantation management district must have an independently designed koala monitoring program that amongst other things can inform on matters relating to the distribution, abundance and conservation status of koala populations making use of and/or inhabiting plantation areas.

(ii) The KMO must prepare an annual report on matters of relevance to koala management that have occurred over the preceding 12 month period.

(iii) The annual report referred to in c) (ii) above must include the following:

- details of population assessments that have been undertaken in plantation areas,
- where translocation is part of the approved management strategy required by Sec. 4(b) below, details of the number of koalas translocated into other habitat areas,
- details of the number of koalas injured or killed during harvesting activities, including the results of *post*-mortem examinations, and
- any recommendations to improve the ongoing management of koalas in plantation areas.

(iv) A copy of the annual report must be supplied to the appropriate regulatory authority and by advertisement be available to other interested parties upon request.

[1] Phillips, S., Hopkins, M., and Warnken, J., Modelling koala population structure across the landscape in order to provide greater certainty for conservation and management purposes. Submitted to *Landscape and Urban Planning.* Unpublished manuscript conditionally available upon request.

e) Certification

(i) Demonstrable compliance with this Code of Practice is a condition of any sustainability certification issued by auditing organisations.

f) Training

(i) All personnel associated with the management of koalas in forestry plantations shall receive adequate training and/or accreditation so as to ensure compliance with this Code of Practice.

(ii) Contractor's intending to use alternative procedures to that outlined herein must demonstrate to the Regulatory Authority that any such measures they propose to use meet or exceed the requirements of this Code of Practice.

(iii) The KMO shall be responsible for ensuring training is delivered. This training shall include but not be limited to matters outlined elsewhere in this Code of Practice.

4. Landscape-scale strategies

a) Corridors and linkages

(i) Companies engaged in the establishment and harvesting of broad-acre *Eucalyptus* plantations must contribute to broader biodiversity strategies by dedicating a proportion of the lands under their control to the reestablishment and/or rehabilitation of native forest and so provide a network of linkages to facilitate the movement and safe passage of wildlife within and beyond plantation areas.

(ii) Riparian areas in broad-acre Eucalyptus plantations should be targeted for rehabilitation purposes, using standard stream-order buffering systems[2] as a means of establishing dedicated linkage areas.

b) Approved Koala Management and/or Translocation Strategies

(i) For each plantation management area a formal koala management and/or translocation strategy that focuses on achieving measurably sustainable outcomes for koalas must be developed and approved by the regulatory authority.

(ii) Where translocation is part of an approved management strategy

- the translocation program must identify the locations of unoccupied but otherwise suitable habitat into which koalas can be introduced.
- translocations can only occur in accord with criteria and protocols outlined in Part 6 (c) of this Code of Practice.

[2] Refer Hansen *et al* (2009).*Minimum width requirements for riparian to protect flowing waters and to protect biodiversity: a review and recommendations with application to the State of Victoria*. Report to the Office of Water, Department of Environment and Primary Industries

(iii) koala management and/or translocation strategies must be revised on an annual basis.

5. Site-based strategies

a) Pre-harvesting Assessments

(i) Pre harvesting assessments of koala activity will be undertaken using Regularised Grid-based Spot Assessment Technique (RG-bSAT) sampling. For plantation areas the recommended sampling intensity is 500 m intervals with a 350 m or 175 m defaults as required (i.e. in the event that further refinement of population boundaries are required to assist harvesting plans). Further design details derived from actual field surveys are detailed in Appendix 1.

b) Designation of exclusion zones

(i) For the purposes of plantation management, machinery will not be permitted to harvest timber from any area inside:

- the 10% koala activity contour[3] if the plantation is located on low-nutrient metasediment or sandstone derived soil landscapes, or

- the 23% koala activity contour[3] if the plantation is located on high-nutrient (generally Basalt derived/associated) soil landscapes.

(ii) maps showing the locations of exclusion areas must be provided to harvesting personnel and be made publicly available.

(ii) All tree felling operations work must cease with a minimum distance of no less than 25 m or 2 x height of canopy (whichever is the greater distance) from any koala observed during the course of harvesting operations and must not resume until either:

a) the koala has moved on of it's own accord, or

b) the koala has been captured and relocated as part of an approved koala management and/or translocation strategy.

c) Use of Koala Spotters

(i) A minimum of 2 experienced Koala spotters who are additionally accredited as detailed in 3 (c) (ii) above must be in attendance where harvesting activities are proposed to occur within 50m of any exclusion area identified for the purpose of 5(d) above.

d) *Post*-harvest monitoring

(i) *Post*-harvesting monitoring must be undertaken in any plantation area wherein evidence of koalas was detected during the pre-harvesting assessment.

[3] As determined by interpolation/modeling of activity data obtained using RG-bSAT sampling approach (Appendix 1 refers).

(ii) Monitoring must be undertaken by suitably qualified and/or accredited koala spotters and must take the form of a systematic assessment of the entire plantation area wherein the harvesting occurred.

(iii) Part 6 of this Code of Practice applies to any koala found sitting on the ground within a plantation area wherein harvesting has recently occurred.

(iv) a report detailing the results of the post-harvesting monitoring must be included in the annual report referred to in Part 3 c) of this Code of Practice.

6. Koala Management Strategies

a) Management and processing of injured koalas

(i) The emergency response detailed in the Register referred to in 6 d) below must be activated by the KMO and/or the Company responsible for management of the plantation area for any koala found or otherwise considered to have suffered an injury as a consequence of harvesting activities.

(ii) All injured koalas must undergo a complete and thorough examination by a wildlife experienced veterinarian as soon as possible. In the majority of cases, the examination will be performed under a general anaesthetic to minimise stress to the koala and allow for a thorough assessment of injuries. Appropriate diagnostics and treatment will be instituted by the examining veterinarian.

(iii) Where necessary, the costs of koala rescue/rehabilitation that are incurred by volunteers and/or the veterinary treatment of injured koalas must be borne by the industry.

b) Koala rescue kit

(i) A minimum of 2 koala rescue kits are to be maintained for each plantation management area.

(ii) A koala rescue kit must typically contain the items detailed in Appendix 2.

c) Capture, handling & processing of koalas to be translocated

(i) Koalas suitable for translocation are those within an area of significant koala activity that is located wholly within a plantation area or otherwise more than 50m from the edge of an area of native forest or linkage area.

(ii) Koalas located within 50m from the edge of a native forests or linkage area cannot be captured for translocation purposes, but instead must be encouraged to re-enter the area of native forest or linkage area by way of the progressive removal of plantation timber.

(iii) for the purpose of (ii) above the KMO or a qualified koala spotter must be in attendance at all times.

(iv) All koalas identified for inclusion in an approved translocation program must undergo a detailed physical examination, the minimum standard of which must be in accord with best-practice scientific research protocols [(i.e. capture by trap or by pole and flag only (no noosing), processing under

anaesthetic (no manual restraint for screening purposes)]. A typical data sheet used for such purposes is provided in Appendix 3.

d) Register of wildlife rescuers and wildlife experienced veterinarians

(i) For each plantation area a register of local wildlife rescuers and wildlife experienced veterinarians must be established and maintained by the Company responsible for management of the plantation.

(ii) A wildlife experienced veterinarian is one with demonstrable experience, training and/or accreditation in the clinical assessment and treatment of marsupials.

(iii) The register must include contact details for each individual and/or organisation and be appended in the approved Koala Management and/or Translocation Strategy as required by Section 4 b) of this Code of Practice.

(iv) The register must also include contact details of other individuals and/or organisations who may be contacted in an emergency and/or for further advice on management, assessment and treatment of koalas.

(v) The register must contain the details of the emergency response that is to be activated in the event that an injury to a koala is reported.

(vi) Emergency response procedures and the contact details for rescuers, veterinarians and other individual/organisations must be updated every 12 months.

(vii) a copy of the register must be provided to the regulatory authority and also be made available to other stakeholders on request.

e) Euthanasia

(i) Euthanasia must only be considered as a management option if the koala's injuries are such (even after surgical intervention) that it will be unable to feed itself, climb or move independently and free of pain in the long term. Euthanasia must only be a consideration where it is not humanely possible to offer the koala a quality of life *post* treatment.

(ii) Any decision regarding euthanasia of an injured koala must be determined by the attending veterinarian. However, in the event that injuries are sufficiently severe so as to warrant immediate intervention, euthanasia must only be undertaken following consultation with a wildlife experienced veterinarian and only by a person qualified to implement the euthanasia in a humane and efficient manner[4].

f) Management and processing of dead koalas

(i) All koalas euthanased as a consequence of 5(e)(ii) above or otherwise found dead within a plantation area or having died after removal from the harvesting site must undergo a *post-mortem* examination.

[4] As specified for koalas in *A guide to the use of Australian native mammals in biomedical research* – Public Consultation Draft (March 2012). Australian Government National Health and Medical Research Council.

(ii) Any koala found deceased on plantation lands that are within 1km of a harvesting event that has occurred within the preceding 6 week period should ideally be collected, placed in a plastic bag and transported and/or placed into a cool room/esky until such a time as a *post mortem* can be conducted by the person referred to in (iii) below.

(iii) The *post mortem* examination must be undertaken by either a wildlife experienced veterinarian or a biologist with experience in the undertaking of koala *post mortems*.

(iv) A full report detailing the results of the *post mortem* must be submitted to the regulatory authority

(v) *Post mortem* costs will be borne by the industry

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APPENDIX 1

Undertaking Koala Habitat Assessment using Regularised Grid-based Spot Assessment Technique (RG-bSAT) sampling

Note: The technique described herein is based on a currently unpublished manuscript (Phillips, S., Hopkins, M., and Warnken, J., Modelling koala population structure across the landscape in order to provide greater certainty for conservation and management purposes. *Landscape and Urban Planning.*), a copy of which can be provided on request

The recommended RG-bSAT sampling intensity for plantation areas is at 500 m intervals with a 350 m or 175 m defaults as required (i.e. in the event that further refinement of population boundaries are required to assist harvesting plans). The following steps outline the procedures to be undertaken in order to design and undertake the field survey requirements of the Code of Practice

STEP 1

Overlay the site with a 175 m x 175 m square grid. Then, use the resulting grid-cell intersections identify those points that fall at 500 m intervals upon areas of land wherein harvesting is proposed to occur.

When overlaying the grid, ensure that adjoining areas of habitat (plantation or otherwise) are included to the extent that an overlap of at least 500 m has been achieved (i.e. provision is made to sample adjoining areas of habitat if so required and so be able to place the plantation area into a broader koala management context).

STEP 2

a) Commence preliminary sampling of the plantation area at each of the 500m sampling points identified in Step 1 above.

b) Sampling is to be undertaken at each sampling point using the Spot Assessment Technique (SAT) of Phillips and Callaghan (2011).

c) In the event that koala activity greater than 10 % is recorded at any of the 500 m sites, then the surrounding 350 m sites must also be sampled.

d) there is no need to sample a 350 m site that is located midway between any two 500 m sites that have both recorded koala activity levels greater than 10%.

e) In the event that koala activity greater than 10 % is recorded at any of the 350 m sites, then the surrounding 175 m sites can also be sampled if a higher resolution model (see Step 4 below) is required.

STEP 3

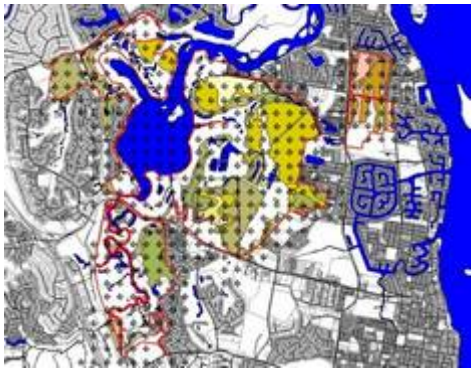
In the absence of a suitable spatial modelling technique such as splining, all field sites wherein significant* koala activity has been recorded must become the central point of a grid cell, the size of which must be commensurate with sampling intensity as follows.

- For 175m sampling intersections, the grid cell size will be 175m x 175m (3.06ha)
- For 350m sampling intersections, the grid cell size will be 350m x 350m (12.25ha)
- For 500m sampling intersections, the grid cell size will be 500 x 500m (25ha)

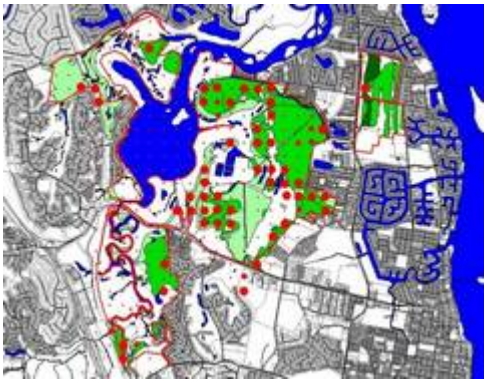
*All areas within a grid cell identified in Step 4 which have an activity level of 10% or greater if the plantation is located on low nutrient metasediment or sandstone derived soil landscapes, or the 23% koala activity contour if the plantation is located on high nutrient (generally Basalt derived/associated) soil landscapes.

The overall process is illustrated below

Step 1. Nominal study area – in this example ~ 1500ha - comprising cleared areas and a heterogeneous mix of vegetation communities.



Step 2. Same study area overlain with a point-based, regularized grid for sampling purposes, each grid cell intersection point that falls within an area of forest being sampled for koala activity using the Spot Assessment Technique of Phillips & Callaghan (2011).



Step 3. The results of SAT sampling, here illustrated by graduated symbols indicating sites of low, medium and high koala activity respectively.

Step 4. Here activity levels have been interpolated using thin-plate splining techniques and associated contouring. Boundaries of areas occupied by resident koala populations are indicated in red; blue asterisks indicate koalas that were opportunistically observed during fieldwork.

Reference:

Phillips, S., and Callaghan, J. (2011). The "Spot Assessment Technique": a tool for determining localized levels of habitat use by Koalas *Phascolarctos cinereus*. *Australian Zoologist* **35(3)**, 774 – 780.

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APPENDIX 2

Koala capture & transport

Note: the capture and handling of koalas is an undertaking that should only be undertaken by suitably experienced and/or accredited personnel.

Management of injured koalas

If a koala has been observed to have suffered physical trauma during the course of a harvesting program then the animal must be afforded a high priority and immediately captured for examination and treatment. Any koala found on the ground that is not quickly moving to another tree should additionally be considered as potentially injured.

Any koala suffering from traumatic injuries must be handled with great care to prevent causing further injury. Once captured they must be placed into a rescue basket (see below) and transported to a koala experienced veterinarian for examination and treatment as soon as is practically possible.

Koalas must be transported on the back seat of an air-conditioned vehicle or on the floor of a covered van. No koalas are to be transported in the back of an open utility. Rescue baskets must be secured to prevent movement and must additionally remain covered during transport.

Capture/Handling & transport of juvenile koalas (joeys)

A juvenile koala (joey) is less than 30 cm from top of head to base of body when in a sitting position (i.e. not stretched out). Any joey found on its own on the ground is likely to be injured and/or orphaned. The following procedure should be followed:-

In order to provide the joey with a sense of security, it must be placed into an appropriate sized artificial pouch and thereafter into a joey basket with supporting heat pad (Figures 1 & 2) as soon as capture is complete. If at all possible the handler must endeavour to promptly locate the mother of the joey at the time of capture and reunite the pair. If the mother is injured or unable to be located, then the joey must be transported for assessment by a koala experienced veterinarian as soon as is practically possible.

If the joey has no obvious injuries and/or is climbing unimpeded, the joey should be transported to a DEPI approved koala facility. The stress of an unnecessary visit to a veterinary clinic can contribute significantly to gut shut-down in joeys that are already traumatised by whatever disturbance resulted in separation from its mother.

No personnel should be permitted to handle (other than initial capture), photograph or display these highly traumatised young animals.

As alluded to in the figure below, there must be a full set of pouches available to accommodate different ages, suitable joey baskets and a heat pad that can be plugged into the auxiliary power (see below) onsite at all times.

a)

b)

c)

Figure 1 (a – c). Top photo (a) illustrates a series of artificial pouches for orphaned koalas (note ruler for scale), the middle photo (b) a suitable basket for transporting a joey koala (note clip-lock mechanism on the lid) while the bottom photo (c) demonstrates a rio/picnic basket set-up with 700gm joey in residence. Note presence of browse and heat pad (green) in front of basket.

Koala Rescue Kits

A typical Koala Rescue Kit can be constructed from the following items:

For adult koalas …

- a minimum of two sturdy capture bags (see Addendum A) – these should be made of a material such as light weight canvas and be of a similar size to a "postal mail bag" (approximately I metre in length and 50 to 60 centimetres wide. Bags should be washed and dried after each use and only used on one animal between laundering; this is not only for hygienic purposes but also to reduce scent distress to the next animal that maybe captured.

- one or more koala transport 'cages' that can be quickly assembled from two washing baskets (see Addendum B (a – e) below)

- Blankets – large, heavy duty wool is suitable for capture of the koala and to cover the baskets. Clean towels for lining the floor of the capture basket with further towels to be made into "log rolls" for the koala to hang onto for security as illustrated in photo 'a' of Addendum B.

For koala joeys …

- A series of artificial ‘pouches’ of varying sizes (Figure 1a refers).
- 2 rio/picnic baskets (Figure 1b refers)
- a minimum of 2 small (e.g. approx. 30cm x 30cm) 240v heat pads, along with a 12v – 240v Inverter suitable for plugging into a motor vehicle cigarette lighter socket.

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Addendum A - Canvas capture bag

Addendum B – a simple, basket-based koala rescue kit (a – e) made of two sturdy washing baskets that can be mounted "top to top" with a pillow on base covered with towel plus towel "log", straps and cover.

a – Rescue Basket kit

b -Various components

c - Basket set up with log & leaves

d - Secured basket with 2 straps

E - Basket covered to reduce visual stimuli/stress on koala patient

APPENDIX 3

Typical Koala Capture Data Standard

Date: __ / __ / __ Location: _____

_____

Zone: __ __ Easting: __ __ __ __ __ __ Northing: __ __ __ __ __ __ __ Error: __ __

Supervisor: _____ Capture Team: _ _____

If Pole and Flag: Time commenced: _____hrs. Time completed: _____hrs.

Behavioural response: Bleating Y / N **Urination** Y / N **Defecation** Y / N

Description: _____

_____

Tag Details: L/Ear : _____ R/Ear: _____ Condition Score: / 10

Sex: M / F **Weight: ____ . ____ kgs. Breeding Status:** juvenile s/adult adult

Age class: P^4: a b c d e f **M^1:** g h i **M^2:** g h i **M^3:** g h i **M^4:** g h i

General O'all Condition: POOR GOOD EXCELLENT

Wet Bottom: Y / N **Conjunctivitis:** **L/Eye:** Y / N **R/Eye:** Y / N

Nasal discharge: Y / N **Other: _____**

Microchip /WID Tag : Y / N Details**: _____**

Anesthetic/Sedative: Y / N Details: _____

Blood Sample: Y / N Details:_ _____

Punchlet sample: Y / N Details: _____

Swabs: Y / N Details: _____

Pouch examination: Y / N Details: _____

Released: _____ hrs. Details: _____

_____

Recorder: _____