

Title	Koalas in the landscape (KITL1.0) modelling for NSW
Alternative title(s)	KITL data
Abstract	<p>Koalas in the landscape (KITL1.0) enhances the prioritisation of landscape conservation actions for the Koala Strategy. It measures and forecasts the statewide status and trends in population persistence and habitat carrying capacity, considering future climate change based on NARClIM1.0 climate models. The risk of future clearing of koala habitat is not part of the model. The model projects how the current pattern of native vegetation is able to support koalas into future climate.</p> <p>Spatial data identifies candidate areas for the establishment and enhancement of habitats that are capable of supporting koalas into the future. The project also identifies where translocating koalas into currently unoccupied regions has a higher likelihood of success. For further detail refer to the KITL1.0 project technical report.</p> <p>KITL2.0 is currently under development. It also uses NARClIM1.0 climate models. Future versions of KITL will make use of updated climate and other input data, as it becomes available.</p>
Resource locator	
Data Quality Statement	<p>Name: Data Quality Statement</p> <p>Protocol: WWW:DOWNLOAD-1.0-http--download</p> <p>Description:</p> <p>Data quality statement for Koalas in the landscape (KITL) modelling - inland-coastal-NSW</p> <p>Function: download</p>
Koala tree species index	<p>Name: Koala tree species index</p> <p>Protocol: WWW:DOWNLOAD-1.0-http--download</p> <p>Description:</p> <p>The koala tree species model (KTSI) combines the predicted distributions of 44 (inland) and 31 (coastal) tree species using Boosted Regression Tree (BRT), a correlative species distribution model. It is a grid surface describing the current probability of finding a koala preferred Eucalyptus trees. For details, please see below link https://iar.environment.nsw.gov.au/dataset/koala-tree-indices</p> <p>Function: download</p>
Koala bioclimatic suitability model	<p>Name: Koala bioclimatic suitability model</p> <p>Protocol: WWW:DOWNLOAD-1.0-http--download</p> <p>Description:</p> <p>Koala bioclimatic suitability baseline model (KBSM) was developed using recent and historical records, then projected to 2030 and 2070 by replacing baseline climatic predictors with projected climatic predictors. KBSM is an environment niche model developed using MaxEnt. The KBSM was fitted using the koala occurrences records, the model predictors surfaces (covariates) are maximum temperature, annual precipitation, soil ph, soil organic carbon, and available water capacity. The model predicts the bioclimatic suitability of habitat within the study area, based on the above 5 covariates. The suitability is expressed along a scale from zero to one (low to high).</p> <p>Function: download</p>
Surface water availability	<p>Name: Surface water availability</p> <p>Protocol: WWW:DOWNLOAD-1.0-http--download</p> <p>Description:</p> <p>Surface water availability was based on distance to perennial waterbodies (DPW) and stream order weighted distance to water (drainage) (SWD). Distance to perennial waterbodies was derived from both monthly Sentinel surface water and Landsat surface water. Sentinel water detection was performed in Google Earth Engine by</p>

applying a water detection index and threshold (Ricardo et al. pers. comm.) to monthly median pixel reflectance values. Monthly binary water masks were summed for all 48 months from 1 January 2016 to 1 January 2020. Pixels were assigned a value of one (water) where water was detected for more than 24 months (>50% detection rate).

Function: download

[Green accumulation index as a surrogate for groundwater availability](#)

Name: Green accumulation index as a surrogate for groundwater availability

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Groundwater availability (GWA) surrogate was derived from the NSW green accumulation index (Landsat 1988-2012). A logistic transformation was applied to better discriminate between high and low values with a midpoint of 0.3 based on visual interpretation of the data. The purpose of GWA is to support to koala strategy planning and prioritisation investment. Data source can be found at <https://portal.tern.org.au/metadata/22015>

Function: download

[Woody percent cover](#)

Name: Woody percent cover

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Woody percent cover or the Woody extent (pixel %) uses the 2017 NSW 5m Woody Extent layer, a state-wide binary classification of woody vegetation derived from multi-temporal 5m SPOT-5 satellite imagery. The pixel percent is calculated as the percentage of 5m source pixels within each 90m destination pixel that is mapped as having a woody extent.

Function: download

[MS01-Evaluation and trends in koala landscape capacity](#)

Name: MS01-Evaluation and trends in koala landscape capacity

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

The Koala landscape capacity model (KLCM) was developed by creating a Koala Environmental Niche Model (KENM) which represents the year 2000 koala habitat suitability by considering the processes of colonisation and extinction over time. KLCM map shows habitat occupancy based on the metapopulation dynamics for each decade alone, independent of whether habitat is suitable or occupied in the previous decade or not. Higher values represent higher koala landscape capacity. This shows where new areas of suitable habitat emerging under climate change may be able to support future koala populations even when they're unreachable from existing occupied habitats. Thus, a habitat that is well connected to expanses of suitable habitat is assigned higher potential occupancy, despite having lower habitat suitability. MS01-Evaluation and trends in koala landscape capacity folder consist of map of hindcasted and forecasted koala landscape capacity from Pre-industrial (1975), 2000, 2030, and 2070. Pi refers to Landscape capacity (or potential occupancy) from REMP model and t7 refers to epoch (2030, 2070).

Function: download

[MS02-Model consensus](#)

Name: MS02-Model consensus

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

The koala landscape capacity consensus map indicates places with relatively high forecasted koala landscape capacity in 2070 regardless of the climate scenario used and can therefore be considered to be comparatively low risk in terms of investing in conservation. Model consensus was calculated by setting a landscape capacity threshold of 0.25 for the 4 inputs. For other technical detail, please see section 3.2. of the technical report.

Function: download

[MS03-Degree of Expected Change](#)

Name: MS03-Degree of Expected Change

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Degree of expected change in koala landscape capacity 2000 to 2070. Data is averaged across projections, based on the passive (stable) stream. Range of possible values is between -1.0 and +1.0.

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[MS04 Persisting koala landscape capacity map](#)

Name: MS04 Persisting koala landscape capacity map

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Persisting koala landscape capacity map shows areas with high persisting koala landscape capacity that provide habitat benefits across multiple time-steps and projections. This map sums koala landscape capacity across all projections and all epochs from 2000 to 2070.

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[MS05-Latent capacity](#)

Name: MS05-Latent capacity

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

The latent koala landscape capacity map shows where the greatest improvements in landscape capacity can be achieved by enhancing existing native vegetation with climate-ready koala feed trees and reconnecting areas of habitat to areas of passive (stable) koala landscape capacity.

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[MS06-Habitat construction benefits](#)

Name: MS06-Habitat construction benefits

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

The habitat construction benefits map provides insight into what level of (passive) occupancy is possible by 2070 at each location, if it were fully restored. The term 'habitat construction' refers to the establishment of climate-ready koala Eucalyptus food species in places that are expected to remain or become suitable for them by 2070, but which are predominantly not present now.

Function: download

[MS07-Conservation Options](#)

Name: MS07-Conservation Options

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

The combined conservation options map highlights important guides to management arising from the project. These map is a composite image where the 3 principal colour bands are assigned to each of 3 surfaces relevant to climate-ready koala management:

- Band 1 (yellow) - MS01 - stable, passively high koala landscape capacity in 2070, based on the average of the 12 climate projections
- Band 2 (cyan) - MS05 - latent capacity, additional map of NSW showing the Koalas in the Landscape study area that could potentially be made available in 2070 through enhancement of habitat with climate-ready Eucalyptus species; and construction of habitat connectivity and/or assisted migration
- Band 3 (magenta) - MS06 - habitat construction benefits, by establishing new, climate-ready Eucalyptus species in areas functionally connected to the Band 1 areas, including areas currently devoid of trees.

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Unique resource identifier

Code adaa5c0c-76b5-4a20-87c8-5f8a3a25bfe8

Presentation form Model digital

Edition KITLv1.0

Dataset language	English
Metadata standard	
Name	ISO 19115
Edition	2016
Dataset URI	https://datasets.seed.nsw.gov.au/dataset/adaa5c0c-76b5-4a20-87c8-5f8a3a25bfe8
Purpose	Koala strategy planning and prioritisation of investment
Status	Completed
Spatial representation type	grid
Spatial reference system	
Code identifying the spatial reference system	4283
Spatial resolution	90 m
Topic category	
Keyword set	
keyword value	HERITAGE-Natural CLIMATE-AND-WEATHER-Climate-change FAUNA VEGETATION-Floristic ECOLOGY-Landscape ECOLOGY-Habitat
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16
Geographic location	
West bounding longitude	141.108398
East bounding longitude	152.270508
North bounding latitude	-36.219903
South bounding latitude	-29.202521
NSW Place Name	NSW
Vertical extent information	
Minimum value	-100

Maximum value 2228

Coordinate reference system

Authority code urn:ogc:def:cs:EPSG::
Code identifying the coordinate reference system 5711

Temporal extent

Begin position 2022-07-07
End position N/A

Dataset reference date

Resource maintenance

Maintenance and update frequency As needed

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Responsible party role pointOfContact

Lineage

Data is derived from various sources comprising: independently derived tree species models and koala bioclimatic models; soil fertility; ground and surface water availability and a woody/non-wood layer. These are all explained in the KITL technical report

Limitations on public access

Responsible party

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Metadata language