Title	Fauna Key Habitats for North East NSW
Alternative title(s)	Upper North East and Lower North East Fauna Key Habitats
Abstract	Layer of regional key habitats for fauna of the Upper North East and Lower North East NSW CRA regions. Modelled distributions for priority forest fauna were subjected to a pattern analysis technique to derive species assemblages and their predicted distributions. Key habitats (core habitats and hot spots) were then derived from the predicted assemblage distributions. Maps of another fauna key habitat type, centres of endemism, were generated for the UNE and LNE CRA studies (see appropriate metadata statement). The three fauna key habitat types were combined into one map layer. The final key habitats map layer is a regional representation displaying the likelihood of occurrence of key habitats for fauna consolidated at the regional scale. The mapping and derivation has been based on state-of-the-art data and GIS tools combined with qualitative interpretation based on ecological principles and expertise. As of April 2001, the mapping has not been formally field tested and the methods have not been peer-reviewed outside several conference and workshop presentations, all well received. A journal paper and project report are in preparation.
Resource locator	
Data Quality Statement	Name: Data Quality Statement Protocol: WWW:DOWNLOAD-1.0-http--download Description: Data quality statement for Fauna Key Habitats for North East NSW Function: download
NENSW KeyHabitats ClimateChangeCorridors	Name: NENSW KeyHabitats ClimateChangeCorridors Protocol: WWW:DOWNLOAD-1.0-http--download Description: Datasets for download Function: download
Unique resource identifier	
Code	f671fbeb-4e4a-4c08-b20a-e7fac2dfe169
Presentation form	documentDigital
Edition	Not known
Dataset language	eng
Metadata standard	
Name	ANZLIC Metadata Profile: An Australian/New Zealand Profile of AS/NZS ISO 19115:2005, Geographic information - Metadata
Version	1.1
Dataset URI	https://datasets.seed.nsw.gov.au/dataset/f671fbeb-4e4a-4c08-b20a-e7fac2dfe169
Purpose	Mapping of key fauna habitats in upper/lower north east of NSW
Status	completed
Spatial representation	
	vector

Type	

Spatial reference system

Authority code	GDA94 Geographic (Lat\Long)
Code identifying the spatial reference system	4283

Equivalent scale

1:None

Additional information source

Metadata statement for UNE/LNE Corridors. ; ; Modelling areas of habitat significance for vertebrate fauna and vascular flora in north east NSW. A project undertaken for the Joint Commonwealth NSW Regional Forest Agreement Steering Committee as part of the NSW Comprehensive Regional Assessments.; ; Metadata statement for UNE/LNE RFA Centres of Endemism. ; ; Scotts, D., Drielsma, M, Whish, G. and Kingma, L. in prep. Regional key habitats and corridors for forest fauna of north-east New South Wales; a framework to focus conservation planning, assessment and management.

Topic category

Biota

Keyword set

keyword value	FAUNA

Originating controlled vocabulary

Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location

West bounding longitude	150.231775
East bounding longitude	153.633389
North bounding latitude	-33.567963
South bounding latitude	-28.158107

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	1999-01-01
End position	N/A

Dataset reference date

Date type	creation
Effective date	1999-01-01
Date type	publication

Effective date	2010-07-23
Date type	revision
Effective date	2011-08-04

Resource maintenance

Maintenance and update frequency	notPlanned
Date of next update	2001-01-01

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Lineage

The process employed in deriving fauna key habitats is explicit and repeatable in as much as:; *The fauna species models, which are the basic biodiversity entities that the project seeks to summarise and integrate are stored and held by NPWS;;* All relevant data layers, developed at each stage of the project, are stored and held by NPWS;; * The Geographic Information System (GIS) tools developed for the analyses are available as extensions to the ARCVIEW GIS. ; At numerous stages of the analyses, informed interpretation of outputs and assignment of thresholds has been required to move the process along or to finalise an output. Any qualitative decisions taken have been based on the project manager's ecological expertise and knowledge of the data sets being considered. Various 'decision rules' have been explicitly documented below, along with the rest of the process. ; The categories of fauna key habitat included are:; I. Fauna assemblage core habitats; areas where the highest proportion of species comprising each priority fauna assemblage are predicted to occur (an index of priority species diversity).; II. Fauna assemblage hot spots; areas where the highest quality habitats for at least one third of species comprising each priority fauna assemblage are predicted to occur (an index of priority species relative abundance).; III. Centres of endemism for vertebrates and invertebrates; areas where the highest proportion of endemic vertebrates and invertebrates are predicted to occur (Developed previously for the UNE and LNE RFA studies) (see additional metadata statement). ; The process of deriving and mapping regional key habitats for fauna has revolved around the summary and integration of priority species' modelled distributions into a manageable but ecologically relevant format. This involved a 6 step process which is detailed below:; 1. Collate existing integrated regional key habitat data layers - vertebrate and invertebrate centres of endemism;; 2. Collate best "all-tenure" distributional models for north-east NSW priority fauna;; 3. Tailor priority species distributional models to the four KHC Project study areas;; 4. Derive priority fauna assemblages;; 5. Derive key habitats: fauna assemblage core habitats;; 6. Derive key habitats: fauna assemblage hot spot habitats;; STEP 1. COLLATE EXISTING INTEGRATED REGIONAL KEY HABITAT DATA LAYERS - VERTEBRATE AND INVERTEBRATE CENTRES OF ENDEMISM.; Centres of endemism for vertebrates, invertebrates and vascular plants were previously identified and delineated across all land tenures of the UNE and LNE RFA areas for inclusion and consideration in the development of reservation options. In that program, reservation targets were developed for these features, all of which remain under-achieved. These data layers were available for immediate inclusion as subsets of regional fauna key habitats in the KHC Project.; Six vertebrate centres of endemism (COEs) were identified and mapped, for the UNE and LNE RFA study areas. The individual COE data layers are stored and held by NPWS (see relevant metadata statement). For the purposes of the KHC Project these six were amalgamated to a single vertebrate fauna COE map layer, one subset of regional fauna key habitat. ; Invertebrate COEs were also identified and mapped for the UNE and LNE RFA study areas. These data layers are stored and held by NPWS (see

relevant metadata statement). For the purposes of the KHC Project these were amalgamated to a single invertebrate fauna COE map layer, one subset of regional fauna key habitat. ; STEP 2. COLLATE BEST "ALL-TENURE" DISTRIBUTIONAL MODELS FOR NORTH-EAST NSW PRIORITY FAUNA. ; Lists of priority fauna inhabiting forests of north-east NSW have been derived under criteria emphasising vulnerability to threatening processes and level of endemism. The KHC Project takes a landscape approach and addresses all land tenures in the process. Consequently only those priority species for which a sound, all-tenure distributional model was available (as assessed by expert fauna panels convened for the UNE and LNE RFA studies) were included in the project analyses. The modelled distributions for 122 priority species comprise the basic analytical entities for deriving key habitats for vertebrate fauna in the KHC Project. ; STEP 3. TAILOR PRIORITY SPECIES DISTRIBUTIONAL MODELS TO THE FOUR KHC PROJECT STUDY AREAS.; The four KHC Project areas (Appendix 1)) were chosen for two reasons:; A. To reflect the Interim Biogeographic Regionalisation for Australia (IBRA) classification which describes a framework for setting national reserve priorities. The IBRA divides the UNE and LNE RFA study areas, source of the current fauna distributional models, into three bioregions, NSW North Coast, New England Tablelands (hereafter referred to as TAB) and Sydney Basin (SYD);; B. The NSW North Coast Bioregion was split into two, the Upper North Coast (UNC) and Lower North Coast (LNC) to prevent a "swamping" effect noticed in a trial of the KHC Project whereby the relative abundance of priority species models in the upper north part of the North Coast tended to bias the delineation of assemblage and key habitats to the north and away from known important habitats in the south, often the southern limits or disjunct occurences of priority species which were better delineated by a more focused consideration. The UNC - LNC split also reflects the UNE - LNE RFA study area split. ; The 122 fauna distributional models available for summary and integration were tailored to the four study areas in a two-staged process:; A. Initially available across the two RFA study areas, the models were cut to fit each KHC area;; B. Models within each KHC study area were then assessed in order to exclude those predicting habitat for a particular species within a KHC study area but that species is not known to occur, and is unlikely to occur, in that area.; This process left a subset of the 122 available distributional models for summary and integration within each KHC study area:; UNC - 104 models; TAB - 54 models; ; LNC - 84 models; SYD - 51 models.; STEP 4. DERIVE PRIORITY FAUNA ASSEMBLAGES ; Two techniques were implemented to aid the derivation of fauna assemblages and key habitats for fauna: PATNMAP and COST-BENEFIT SPATIAL CONTEXT; both are extensions to the ARCVIEW GIS program.; 1. PATNMAP; PATNMAP utilises pattern analysis to derive a greatly reduced set of mapped species assemblages from a pool of individual species distributions by grouping those with similar distribution patterns, a reflection of their ecological association, at least at the regional scale. The outputs are assessed to reveal any anomalies, based on an ecologist's expert knowledge of species associations. The system-derived groupings can be altered at this stage to adjust for ecological reality; minimal adjustments were required to the KHC assemblage outputs. PATNMAP then provides a means to produce spatial surfaces representing the likely distribution of the assemblages by averaging the component species models, transformed to eliminate bias due to the effects of varying abundance between species. Higher values within the spatial surface generated for each assemblage indicate areas that are likely to support a larger proportion of the species comprising the assemblage. Species assemblages represent ecologically relevant entities for the identification of regional key habitats for species and a level that is manageable at the regional planning level. The outputs are continuous probability surface models (map layers) depicting the predicted distributions of each assemblage. These can be used as planning entities in their own right or, as in this project, can be further worked to derive key habitats and corridors. ; 2. COST-BENEFIT SPATIAL CONTEXT; COST-BENEFIT SPATIAL CONTEXT (CONTEXT) is used to refine modelled probability surfaces by considering spatial context in terms of species-habitat interaction and by recognising the patchy nature of natural landscape. Habitat for any particular species occurs as a heterogeneous mosaic of favourable and unfavourable areas, in terms of resources and impediments to movement. Impedance weightings are applied to different classes of predicted habitat and non-habitat and considered relative to a defined ecological neighbourhood that reflects connectivity, in a landscape sense, and incorporates the concept of non-linear connectivity that characterises many important ecological functions (e.g. foraging, predation, dispersal). For the purposes of this project the CONTEXT analysis was used to refine the predicted fauna assemblage distributions, accentuating areas of highest probability of occurrence, and larger area of predicted habitat, and lowering the relative value of lower probability and smaller, more fragmented areas.; The CONTEXT analysis involved a number of stages:; A. Expert classification of the continuous probability surface assemblage layers, based on the assessment of predicted habitat quality, to generate four habitat classes and a "habitat grid" for each assemblage. The four classes are: 0 - non-habitat; 1 - marginal habitat; 2 - intermediate habitat; 3 - high quality habitat;; B. Expert application of "thresholds of impedance" to the habitat grids reflecting perceived habitat quality for the assemblage and relative impedance of the four habitat classes. The resultant "impedance grid" reflects predicted habitat patchiness and variation in resource and movement potential.; C. CONTEXT produces a "cost-benefit" grid for each assemblage; this is a continuous probability surface model (map layer) depicting the predicted distribution of each assemblage. As before, these can be used as planning entities in their own right or, as in this project, can be further worked to derive key habitats and corridors. ; The PATNMAP and C-BSC analyses undertaken for the four KHC study areas yielded final priority fauna assemblages for the four KHC areas:; Upper North Coast (UNC) - Eight priority fauna assemblages;; Lower North Coast (LNC) - Eight priority fauna assemblages;; Tablelands

(TAB) - Six priority fauna assemblages;; Northern Sydney Basin (SYD) - Five priority fauna assemblages.; STEP 5. KEY HABITATS: FAUNA ASSEMBLAGE CORE HABITATS ; The process of deriving fauna assemblage core habitats from each assemblage distribution model was to apply a threshold to the cost-benefit grid for each assemblage that resulted from the CONTEXT analyses. Initially it was planned to assign a set cut point with the highest 25% of the predicted assemblage habitat included in the core category but this proved enormously varied between assemblages and lead to small fragmented fragments being included for some. Other cut-points yielded similar problems. It was decided to determine the core habitat threshold individually for each assemblage by assessing the proportion of predicted assemblage habitat included or excluded by varying the cut-off points.; The core habitats for each assemblage were then combined to produce overall fauna assemblages core habitat map layers for each KHC study area and for north-east NSW. ; STEP 6. KEY HABITATS: FAUNA ASSEMBLAGE HOT SPOT HABITATS ; Fauna assemblage hot spots were derived from the seven identified assemblage distributions. This was done by returning to the original priority fauna modelled distributions for each identified assemblage, delineating the highest probability class for each species and overlaying these to identify hot spots for each assemblage. The hot spots represent the subset of regional key habitats for priority fauna where highest quality habitat for at least one third of the species in each assemblage overlap. ; The hot spot habitats for each assemblage were then combined to produce overall fauna assemblage hot spot habitat map layers for each study area and for north-east NSW. ; The subsets of fauna key habitats for north-east NSW were to produce a consolidated grid layer (All_fau_keyhb)which was finally converted to a polygon shape file for final storage (Key_habitats.shp). ; ; Key Habitats layer amendment - May 2001.; The key habitats map layer was amended to reflect the most recently derived vegetation cover mapping resulting from the CRAFTI (Comprehensive Regional Assessment Aerial Photograph Interpretation) mapping project for the UNE and LNE RFA study areas. The Eastern Bushlands Database vegetation mapping was used to supplement the CRAFTI mapping coverage to complete the coverage across private lands. Within the complete map layer, mapping features were designated "uncleared" or "cleared" to derive a layer for filtering the key habitats to existing native vegetation. This was necessary as the fauna models underpinning the derivation of key habitats were derived with predictor environmental map layers based on previous, broader vegetation extent mapping.; Note that the same process had been undertaken previously but the "cleared/uncleared" map layer used on that occasion had some inherent problems in the representation of certain coastal habitats which lead to a patchy, or blotchy, key habitat mapping in those areas. These were low lying wet heath areas in particular. The new layer provides a more accurate representation of key habitats within existing native vegetation.; Land-uses and map units designated to the "cleared" category:; - Excluded lands (lands cleared of any vegetation; the majority of "cleared" lands); - Plantations (native hardwood); - Plantations (softwood); - Bare ground; - Open water; - Sand; - Rock; - Transmission lines; - Crops and orchards; - Rural / residential areas; - Industrial areas; - Recreational areas (eg. sports fields); ; Positional Accuracy:; ; Species assemblage distributions and key habitats have been derived from regionally scaled interpolated species distributions generated by modelling point locality species records (with a spatial accuracy of approximately 100m) in relation to mapped environmental layers (with a map scale of 1:100 000 to 1:250 000) (see additional metadata). In applying and interpreting the key habitats map layer it should always be remembered that they are based on modelled data and have been developed at the regional scale, to inform regional land, water and vegetation reform programs. The mapped products represent a state-of-the-art consolidation of fauna information for UNE and LNE areas but should be interpreted in terms of a likelihood of occurrence of fauna key habitats; they are indicative representations (see mapping caveat). It should also be noted that the process of development of the key habitats layer has necessarily included qualitative judgements relating to interpretations and setting of thresholds; these have been made based on ecological expertise and explicit decision rules.; ; Attribute Accuracy:; ; The species assemblage distributions and derived key habitats are a direct reflection of the species distributional models from which they are developed (see Additional Metadata).; The extent to which the predicted key habitats in fact support the assemblages or priority species for which they have been delineated will vary between species, assemblages and areas. ; Field evaluation surveys are required to further assess the attribute accuracy. The form of the assemblage distributions lend themselves ideally to field-based evaluation and monitoring; the occurrence of relative proportions of the species comprising relevant assemblages can be used to assess the predictions.; ; Logical Consistency:; ; The subsets of fauna key habitats (core habitats, hot spots, vertebrate and invertebrate centres of endemism) overlap in extent and coverage but have been combined to form a single map layer that should meet the needs of most regional planners and managers. The individual key habitats data layers are also available, for more detailed uses, upon request. ; ; Completeness; The derived fauna key habitat shapefile is restricted to the extent of native forest defined by the Forest Ecosystems map layer derived for UNE and LNE RFA studies. For the purposes of this project these layers have been further restricted to delete areas mapped as forestry plantation, agricultural plantation, pasture and cropland, introduced scrub, cleared / partially cleared, camphor laurel. These were mapped categories that were not assigned a conservation target in the RFA process.

Constraint set

Use constraints	This data is provided under a Creative Commons Attribution 4.0 licence http://creativecommons.org/licenses/by/4.0 Attribute 'Department of Planning, Industry and Environment ' in publications using this data.
Limitations on public access	

Scope	dataset

Completeness Commission

Date type	revision
Effective date	2009-01-10
Explanation	

Completeness Ommission

Date type	revision
Effective date	2009-01-10
Explanation	

Non Quantitative Attribute Accuracy

Explanation	The species assemblage distributions and derived key habitats are a direct reflection of the species distributional models from which they are developed (see Additional Metadata).; The extent to which the predicted key habitats in fact support the assemblages or priority species for which they have been delineated will vary between species, assemblages and areas. ; Field evaluation surveys are required to further assess the attribute accuracy. The form of the assemblage distributions lend themselves ideally to field-based evaluation and monitoring; the occurrence of relative proportions of the species comprising relevant assemblages can be used to assess the predictions.

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Metadata date

1999-01-01

Metadata language

eng