Title	Mid North Coast Vegetation (EcoLogical Version). VIS_ID 3886
Alternative title(s)	MidNthCoast_Ecological_E_3886
Abstract	Two spatial products generated for the Comprehensive Regional Assessment (CRA), namely floristic linework captured by aerial photographic interpretation (API), and a; forest ecosystem model, were integrated to provide an improved spatial map of forest ecosystem distribution on the Mid North Coast of NSW. The process involved intuitive assignment of dominant forest ecosystems to polygons captured by the API, and involved a number of iterative steps. The resultant layer is both polygon and grid cell based, and provides an interim spatial product upon which Government agencies will be able to identify high conservation value native vegetation across the Mid North Coast of NSW with reasonable reliability.; The original forest ecosystem classification included some 230 ecosystems, occurring from the Queensland Border to the Lower Hunter Valley. Of these, 124 were eliminated, either because they were not considered to occur in the Mid North; Coast, or they were replaced by new or existing ecosystems. A total of 40 ecosystems were introduced, including splits of existing ecosystems (eg. rainforest) or new ecosystems imported from more recent classifications. The final number of ecosystems mapped within the Mid North Coast for this project was 140. Derivation of current and former extent of each ecosystem was undertaken to provide an index of conservation status in the form of a %-cleared estimate. In; summary, 39 ecosystems possessed a %-cleared value of at least 50%, while 46 ecosystems were less than 20% cleared. Several of those with a high clearing rate are equivalent to endangered ecological communities listed under the Threatened Species Act 1995. In the longer term, an improved classification will be required to replace forest ecosystems, which is overly broad on coastal and private land given the influence of commercial forest types on the classification. Additional targeted API will also be; required in future, as the reliability of API undertaken for the CRA is questionable in many areas. Provision of an improved API coverage and a more appropriate classification will enable production of a new generation of vegetation mapping products for north-east NSW, providing the future basis for property vegetation planning, benchmarking, bio-certification and bio-banking.; VIS_ID 3886

Resource locator

Data Quality Statement	Name: Data Quality Statement Protocol: WWW:DOWNLOAD-1.0-http--download Description: Data quality statement for Mid North Coast Vegetation (EcoLogical Version). VIS_ID 3886 Function: download
Vegetation MidNthCoast Ecological E VIS 3886	Name: Vegetation MidNthCoast Ecological E VIS 3886 Protocol: WWW:DOWNLOAD-1.0-http--download Function: download

Unique resource identifier

Code	9f68d2b9-9a9b-4f42-adfa-5d770dcfd5f8

Presentation form	Map digital
Edition	unknown
Dataset language	English

Metadata standard

Name	ISO 19115
Edition	2016

Dataset URI	https://datasets.seed.nsw.gov.au/dataset/9f68d2b9-9a9b-4f42-adfa-5d770dcfd5f8
Purpose	Vegetation Mapping
Status	Completed
Spatial representation	
Type	vector
Spatial reference system	
Code identifying the spatial reference system	4283
Equivalent scale	1:None
Additional information source	Ecological Australia (2006). A vegetation Map for the Mid North Coast of NSW. Project# 072-005.
Topic category	

Keyword set

keyword value	VEGETATION
	FLORA

Originating controlled vocabulary

Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location

West bounding longitude	151.3037
East bounding longitude	152.8052
North bounding latitude	-32.7013
South bounding latitude	-31.4424

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

Resource maintenance

Maintenance and update frequency	Not planned

Contact info

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Lineage

Development of an updated vegetation map for MNC was undertaken using a sequential process which involved the following stages:; 1. preparation of API layer,; 2. forest ecosystem screening; 3. non-spatial assignment of dominant forest ecosystem to each polygon,; 4. spatial assignment of dominant forest ecosystem to each polygon,; 5. integration of new forest ecosystem s,; 6. calculation of areal extents to support conservation priority assessment using; the Biodiversity Forecasting Tool (BFT) developed by

DEC.; ; 2.1 Stage 1 - preparation of API layer; The LNE CRAFTI layer was used as the spatial basis of vegetation mapping in this project. It was first clipped to the spatial extent of the MNC region.; All vegetation layers undertaken post-CRAFTI were also sought for this project. Five major datasets were acquired:; 1. Mapping undertaken by Greater Taree City Council (347,500 ha within MNC),; 2. Mapping undertaken by Great Lakes Council (128,900 ha within MNC),; 3. Nandewar vegetation mapping undertaken for the Western Regional; Assessment (Wall 2004; 42,800 ha within MNC),; 4. Mapping of remnant vegetation on the valley and lower slopes of the Upper; Hunter (Peake 2005; 32,200 ha), and; 5. Several NPWS Reserves (total 48,000 ha within MNC).; These were merged into a single layer before being superimposed onto the LNE; CRAFTI layer (i.e. CRAFTI data were replaced with updated spatial data where they; overlapped).; All polygons representing non-native or cleared vegetation in the integrated layer; were eliminated. These included polygons labelled as 'bare ground', 'cleared','excluded','improved pasture/cropland', 'industrial', 'mine', 'quarry', 'timber; plantation - pine, poplar', 'urban development' and 'water surfaces'.; The development and integration of large spatial datasets invariably results in creation of many tiny polygons called 'slivers'. Of the 106,383 polygons in the final; merged MNC layer, a total of 22,808 were found to be less than 0.04 ha in area, representing just 167 ha in total (of these, 16,619 polygons were less then 0.01 ha, and; totalled just 28 ha). As a final step in API preparation, a number of procedures were employed in ArcMap (ArcGIS-9) to eliminate such polygons and clean the final layer:; NRCMA Vegetation Map Production FINAL 23/02/2007 5; Eco Logical Australia Pty Ltd Ph - (02) 6651 5484; Ecological Assessment, GIS, Environmental Management and Planning Fax - (02) 6651 6890; o 'Check Geometry' and 'Fix Geometry' commands were used to identify and fix; 65 polygons with bad geometry.; o 'Eliminate' was used to merge polygons less than 400m2 in area with their largest neighbour, taking on the attribute values of that neighbour polygon.; o A 'Topology' was created in the Personal Geodatabase to identify overlapping polygons, of which there were about 500. These polygons largely coincided with overlapping polygons drawn from different API sources.; o For all overlapping polygons, expert judgement was employed to remove the least accurate or incorrect record.; The final API layer comprised a total of 83 356 API polygons, including 1285 unique polygon codes. Based on its attribution nomenclature, each polygon was assigned one or more of the following broad non-rainforest API classes.; ; 2.2 Stage 2 - forest ecosystem screening; 2.2.1 Step 1 - elimination; A total of 139 original and 30 expertly derived forest ecosystems were mapped for the NRCMA (Eco Logical 2005), while several southern and Hunter forest ecosystems; were omitted. Similar to that process, the broad geographical distribution of each forest ecosystem was expertly considered for the MNC map, and those deemed to; be either confined to the NRCMA region, or not otherwise considered to occupy the MNC, were flagged for exclusion. Those considered to be better merged with other forest ecosystems based on their floristic and distributional similarity were also flagged. Table 2.1 lists all forest ecosystems excluded from consideration in development of the MNC vegetation map.; ; 2.2.2 Step 2 - nomenclatural candidacy; A nomenclatural candidacy matrix was expertly constructed in which every combination of forest ecosystem and broad API class was assigned a compatibility ranking of 2, 1 or 0, based on nomenclatural similarity, and diagnostic canopy; species reported for each forest ecosystem. An index of 2 represented high compatibility between the forest ecosystem and the API class, an index of 1 indicated moderate compatibility, and an index of 0 was assigned to combinations with no likely compatibility; ; 2.3 Stage 3 - non-spatial assignment of forest ecosystems to API polygons; 2.3.1 Step 1 - direct nomenclatural assignment; Forest ecosystems were assigned directly to polygons in cases in which there was irrefutable nomenclatural compatibility between the forest ecosystem and the API; description. For example, snow gum (forest ecosystem 131) was assigned directly to polygons attributed as 'snow gum' or 'E. pauciflora', and mangrove (forest ecosystem 77) was assigned to polygons such as 'mangrove', and 'A. corniculatum/ A. marina'. A total of 23,659 polygons were completed in Step 1, with 66 forest ecosystems assigned to at least one of 390 unique polygon types.; 2.3.2 Step 2 - dominant internal forest ecosystem assignment; This step required integration of the forest ecosystem model and API layer. The area of each forest ecosystem within each unassigned API polygon was first calculated; using the 'tabulate areas' command in ArcView. The resultant table was exported to EXCEL where the 1st, 2nd, 3rd and 4th dominant forest ecosystem occurring in each; polygon, in terms of area occupied, was identified and linked back to the API coverage.; ; A sequential allocation process was then undertaken in which either the 1st, 2nd, 3rd or 4th dominant forest ecosystem was allocated to its polygon, depending on its relative area in the polygon (i.e. dominance) and its nomenclatural compatibility with the polygon (section 2.2.2). If all four dominant forest ecosystems exhibited a low compatibility with the polygon, none was assigned in this step. The allocation sequence was as follows:; i. if domFE1 = highly compatible, then allocate; ii. if domFE2 = highly compatible, then allocate; iii. if domFE1 = moderately compatible, then allocate; iv. if domFE3 = highly compatible, then allocate; v. if domFE2 = moderately compatible, then allocate; vi. if domFE4 = highly compatible, then allocate; vii. if domFE3 = moderately compatible, then allocate; viii. if domFE4 = moderately compatible, then allocate; A total of 28,693 polygons were assigned a forest ecosystem following the stepwise procedure outlined above.; 2.3.3 Step 3 - dominant adjacent forest ecosystem assignment; Over 31,000 polygons remained unassigned following steps 1 and 2 as a result of nomenclatural incompatibility between the API floristic description and the underlying forest ecosystems. To address this problem, a 500 m spatial buffer was delineated around each polygon using an ArcView script. The area of each forest ecosystem within the buffer of all unassigned polygons was then calculated, similar to step 2, using the 'tabulate areas' command in ArcView. The resultant table was exported to EXCEL where the 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th dominant; forest ecosystem occurring in

each polygon, in terms of area occupied, was identified and linked back to the API coverage.; A sequential allocation process was then undertaken in which the most dominant forest ecosystem exhibiting nomenclatural compatibility (section 2.2.2) to its; adjacent polygon was assigned. If all surrounding forest ecosystems exhibited a low compatibility with the polygon, none was assigned in this step. The allocation sequence was similar to that adopted in step 2 above. A total of 4,474 polygons were assigned in step 3.; 2.3.4 Step 4 - assignment of dominant forest ecosystems within API classes; A 'tabulate areas' command in ArcView was used to report the area of each forest ecosystem occupying each CRAFTI type (rather than each individual polygon)across the MNC. Unassigned polygons within any CRAFTI type were simply assigned the dominant ecosystem reported for that type. A total of 1369 polygons were assigned.; NRCMA Vegetation Map Production FINAL 23/02/2007 ; 11; Eco Logical Australia Pty Ltd Ph - (02) 6651 5484; Ecological Assessment, GIS, Environmental Management and Planning Fax - (02) 6651 6890; 2.3.5 Step 5 - assignment of dominant forest ecosystems to non-descriptive API polygons; Several hundred polygons in the API layer comprised codes with no floristic description, including 'untyped' and 'unknown'. Where available, these were assigned either the dominant internal ecosystem (from step 2) or, in its absence, the dominant external ecosystem (from step 3). A total of 258 polygons were assigned.; 2.4 Stage 4 - spatial assignment of forest ecosystems to API polygons; 2.4.1 Step 6 - northern border polygons; The MNC shares a common border with the Northern Rivers CMA region, for which mapping was completed in 2005 (Eco Logical 2005). To ensure compatibility between the two layers, polygons adjoining the border were assigned the same; forest ecosystem as their adjacent polygon in the NRCMA. A total of 483 polygons were assigned in this step.; 2.4.2 Step 7 - rainforest; The combined CRA forest ecosystem model presented rainforest as a single ubiquitous 'rainforest' class, irrespective of its type. In contrast, many of the rainforest polygons presented in the API layer were delineated and classified as part of SF Forest Typing and other vegetation mapping projects, in which diagnostic rainforest species were listed. For the purpose of this project, and consistent with the mapping undertaken for the NRCMA (Eco Logical 2005), rainforest was assigned to each; polygon as one of seven broad types:; FE 301 Littoral; FE 302 Sub-Tropical; FE 303 Warm Temperate; FE 304 Dry; FE 305 Cool Temperate; FE 306 Lowland Floodplain; FE 307 Sub-Tropical/Warm Temperate; Over 12,000 rainforest polygons contained rainforest descriptions of sufficient detail to enable direct assignment of one of the above rainforest ecosystems in step 1. A further 13,000 rainforest polygons contained more general rainforest codes (eg 'rainforest', 'giant stinger', 'myrtle') which required expert spatial assignment using a procedure in which polygons were first separated into a single shapefile, thence projected onto satellite imagery. Expert consideration of landscape context (ie. geographic and topographic position) was used to assign a broad rainforest ecosystem to each unassigned API rainforest polygon.; Two additional rainforest types were introduced to the MNC for this project. These were FE 308 (Hunter Vine Thicket) and FE 309 (Palm Forest).; NRCMA Vegetation Map Production FINAL 23/02/2007; 12; Eco Logical Australia Pty Ltd Ph - (02) 6651 5484; Ecological Assessment, GIS, Environmental Management and Planning Fax - (02) 6651 6890; 2.4.3 Step 8 - assignment of Nandewar vegetation units; About 2400 polygons in the combined layer occurred entirely within the extent of vegetation mapping carried out for the Nandewar WRA (Wall 2004), some of which had been assigned a forest ecosystem in previous steps. For the remaining polygons, 1237 in total, the dominant Nandewar unit was identified using the 'tabulate areas' command, and linked back into the attribute table. The relationship between API; polygons and Nandewar units was then expertly scrutinised, and one of two actions undertaken for unallocated polygons in the Nandewar region:; i. a forest ecosystem was assigned to a polygon if it was directly compatible with the dominant Nandewar unit occupying the polygon; and; ii. the dominant Nandewar unit was assigned to a polygon where no compatible forest ecosystem was available (this required inclusion of 'new' forest; ecosystems).; 2.4.4 Step 9 - expert re-assignment of forest ecosystems based on spatial review; This step was designed to improve the layer by tightening the spatial distribution of the mapped extent of each forest ecosystem, a task that had not been undertaken; previously. A descriptive summary of the geographic distribution of each forest ecosystem was compiled from relevant literature. The spatial distribution of each was; then scrutinised in ArcGIS against its described extent, and against a LandSat backdrop, and all outlying polygons (ie. those assigned a forest ecosystem deemed to exist outside its described geographic extent, or otherwise inappropriately situated) were tagged for re-assignment. On completion of this task, each of the 4932 tagged polygons was expertly re-assigned with a more suitable forest; ecosystem (ie. one with nomenclatural and spatial compatibility). This was normally undertaken on batches of tagged polygons with similar CRAFTI labels, and often; required comparison with like polygons in the surrounding landscape.; 2.4.5 Step 10 - direct spatial assignment of forest ecosystems; Following step 9, about 4000 polygons remained unassigned. These were separated into their broad API classes (from Stage 1 - section 2.1), and each class was mapped; spatially with its corresponding high compatibility forest ecosystems (step 2). Direct assignment was then undertaken visually for each polygon (or cluster of polygons), in; which the most abundant ecosystem occupying the surrounding landscape was assigned.; NRCMA Vegetation Map Production FINAL 23/02/2007; 13; Eco Logical Australia Pty Ltd Ph - (02) 6651 5484; Ecological Assessment, GIS, Environmental Management and Planning Fax - (02) 6651 6890; 2.5 Stage 5 - integration of new forest ecosystems; Throughout the forest ecosystem-API review process, an opportunity for integrating new forest ecosystems (ie. those not included in the original layer) occurred where; API was of suitable nomenclature to enable direct assignment, or where expert knowledge enabled alternative assignment. Table 2.3 lists the new ecosystems which; were integrated into the final product, with a brief justification for each.; ; 2.6 Stage 6 - calculation of areal extents; A 25m gridcell layer

entitled 'fe_mnc_final' was produced for this project. A number of key areal estimates associated with each ecosystem in 'fe_mnc_final' was then; derived to enable future application of the BFT, and thus identification of high conservation vegetation in the MNC landscape. The following were derived and incorporated into the attribute table:; • extant area of each ecosystem within MNC;; calculated directly from the new layer; • extant area of each ecosystem outside MNC (ie. within UNE, LNE and; Nandewar); extracted mainly from Eco Logical (2005) and Wall (2004); • pre-European (pre-1750) extent of each ecosystem within the extent of UNE, LNE and Nandewar.; either extracted from Eco Logical (2005) or Wall (2004) or derived from the original pre-1750 forest ecosystem model. Some vales for new ecosystems were expertly estimated.; It is important to note that areal estimates of forest ecosystems in the NRCMA study region were derived after incorporating remnant vegetation sourced from various API layers other than CRAFTI (Eco Logical 2005). Remnant vegetation in the MNC was not included in this study, thus reported values for the extant area of most forest; ecosystems in MNC are likely to be under-estimated.

Limitations on public access

Scope	dataset

DQ Completeness Commission

Effective date	2001-01-01

DQ Completeness Omission

Effective date	2001-01-01

DQ Topological Consistency

Explanation	geometrically & topologically (no overlaps) correct

Responsible party

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Responsible party role	pointOfContact

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