Title	Willi Willi National Park Addition Vegetation 2023. VIS ID 5131.
Alternative title(s)	WilliWilliVegAddition
Abstract	Vegetation community mapping for Willi Willi National Park Addition, 2023. A North Coast NPWS Branch contract by Ecoplanning consultancy. The mapping identifies Plant Community Types (PCTs).
	Willi Willi National Park Addition is located wholly within the NSW North Coast Botanical Region and covers an area of approximately 2,091 ha. The closet major centres are Kempsey to the east, Walcha to the west and Armidale to the north-west (Figure 1.1). It is bounded by Oxley Wild Rivers National Park (NP) to the west, The Castles Nature Reserve (NR) to the north and the remainder of Willi Willi NP to the southeast. The addition was formally the Carrai State Forest (SF) and there remains two portions of Carrai SF adjacent to Willi Willi National Park.
	The Vegetation Report is supplied with the spatial data for external use. Internally the report is located at P:\Corporate\Products\Vegetation\VegReserves\WilliWilli. The actual name on the report is The Vegetation and Flora of Willi Willi National Park Addition. The report should be cited as: 'Ecoplanning (2023). The Vegetation and Flora of Willi Willi National Park Addition – Carrai Road, Moparrabah NSW. Prepared for Hastings Macleay Area of the NPWS, NSW Department of Planning and Environment.'
	VIS ID 5131

Resource locator

Data Quality Statement	Name: Data Quality Statement
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Data quality statement for Yarri Barri Nature Reserve Vegetation. VIS ID 5128.
	Function: download
Download Package	Name: Download Package
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Data (Shapefile) and Report (PDF)
	Function: download

Unique resource identifier

Code	4bdc6882-494a-4738-bd5f-18955e1bb975
Presentation form	Map digital
Edition	1
Dataset language	English

Metadata standard

Name	ISO 19115
Edition	2016
Dataset URI	https://datasets.seed.nsw.gov.au/dataset/4bdc6882-494a-4738-bd5f-18955e1bb975
Purpose	Management of the reserve

Status	Completed

Spatial representation

Type	vector
Geometric Object Type	complex
Geometric Object Count	102

Spatial reference system

Code identifying the spatial reference system	4283

Spatial resolution	10 m

Topic category

Keyword set

keyword value	VEGETATION-Floristic
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location

West bounding longitude	152.152748
East bounding longitude	152.435646
North bounding latitude	-31.034504
South bounding latitude	-30.923239
NSW Place Name	NSW Mid North Coast

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	2023-07-17
End position	N/A

Dataset reference date

Resource maintenance

Maintenance and update frequency	As needed
Contact info	
Contact position	Data Broker
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Lineage

Several vegetation classification systems have been used to describe the vegetation at a regional scale covering north-eastern NSW including land within WWNPA, with the SVTM being the most recent and detailed. This report classifies and describes vegetation communities within the reserve as Plant Community Types, which aligns with the SVTM. However, surveys at the site-specific level often yield additions or omissions of vegetation

communities from previous broader classification systems, and some that might not fit clearly into any one PCT.

Capture of vegetation patterns and digital mapping of vegetation communities Vegetation patterns were mapped digitally in ArcMap 10.8.2 based upon API of high resolution airborne digital sensor imagery (ADS40) in combination with more recent high-resolution imagery taken in enhanced compression wavelet file format (ECW) supplied by NPWS for the purposes of this project. ECW files have the advantage of capturing detailed images on a large scale with a high level of detail. The ECW imagery was also captured approximately two years following the bushfires of 2019-2020. Initial polygons digitised were those areas that were easily discernible from API. These included the Kookaburra Sawmill and village site, and polygons with distinct boundaries between broad areas of eucalypt forest and rainforest communities. Other vegetation communities were more difficult to interpret or delineate through air photo interpretation due to similar patterns in vegetation canopy and/or where individual aerial photographs (ADS40 tiles) have been 'stitched' together in the production of the digital layer. In the latter case, problems arise such as where adjoining tiles may have been photographed under different lighting conditions (e.g., time of day), where edge effects of adjoining tiles (eg. image warping) affects the appearance of vegetation, or where adjoining tiles have been photographed during different seasons. Similarly, the contrast of the ECW imagery affected some of the visual interpretation of the vegetation patterns across the reserve.

Data analysis As a means of grouping similar vegetation plots and correlating them with described PCTs, plot data was subjected to statistical analysis using cover data and repeated using presence/absence data from the twenty 0.04 ha full floristic vegetation plots. The analyses were undertaken using the statistical package Primer-e Version 7.0. Similarity analyses were undertaken to allow for comparisons of plot data, in order to determine the similarity between plots, with plots that cluster closer together being more similar. Results of the analyses are provided in Appendix E and a summary is provided below. Cluster analysis based on cover/abundance data indicated considerable variation in the assemblages between plots. At the 20% level of similarity, clustering gave three groups with six, eight and six plots each, representing 'dry', 'rainforest' and 'wet' forests respectively.

Statistically, nine groups of plots were identified having similar assemblages with three groups having three or more plots, with two of the three groups identified as 'rainforest' forest types. A further four plots were different to all others (Plots 2, 4, 21 and 25). Non-metric Multidimensional Scaling (NMDS) ordination followed the clustering patterns closely with the three groups identified at the 20% level of similarity easily identified in the ordination as separate communities. The larger group of 8 sites was related to higher cover of the tree Argyrodendron actinophyllum, the shrub Pittosporum multiflorum, the ferns Dictymia brownii, Microsorum scandens and Asplenium australasicum, and the epiphytic orchid Dendrobium pugioniforme. One group of 6 plots was related to higher cover/abundance of the tree Eucalyptus campanulata, the shrubs or small trees Persoonia linearis and Exocarpos cupressiformis, the shrubs Leucopogon lanceolatus and Podolobium ilicifolium, the climber Hardenbergia violacea, and the herb Lomandra longifolia. Cluster analysis based on presence/absence data also indicated considerable variation in the assemblages between plots. At the 20% level of similarity, clustering gave four groups of similar assemblages with five, seven, five and three plots each representing 'dry', 'wet' and two 'rainforest' groups respectively. There were no two plots that had 50% or more of species in common. Statistically, seven groups of plots were identified having similar assemblages with two groups having more than three plots. In addition, three of the four groups identified statistically were the same groups identified at the 20% similarity level. A further two plots were different to all others (Plots 2 and 21).

Plant Community Types (PCTs) A review of the STVM provided a basis for the initial allocation of PCTs in order to narrow down the list of potential PCTs for comparison against site specific survey data. The Forest Ecosystem mapping and the Northern Rivers Catchment Management mapping was also reviewed. Plot data collected onsite was entered into the PCT ID Tool of the NSW Vegetation Classification database. Generally, two runs through the PCT Filter tool were completed with the first run based on the dominant species listed in each structural category and with the second run including additional species commonly recorded. The output of the PCT ID Tool analysis is a list of all PCTs that had at least one matching field. Consequently, the results of the analysis returned a large number of candidate PCTs that required systematic review to identify the PCT that characterised the vegetation. To assist with the identification of PCTs, clustering of plot data resulting from the statistical analyses informed the grouping of plots into PCTs. Plot data from previous surveys was also included to inform PCT identification. Further, a number of reserves located in relative proximity to WWNPA share similar geologies, landscape features and vegetation to WWNPA and may possibly be used as surrogates for establishing appropriate PCTs in those areas of WWNPA yet to be surveyed. These include the following: • Previous floristic plot data collected from within and adjacent to WWNPA (various dates) • Flora survey, Kempsey and Wauchope Management Area, Central Region, New South Wales (Binns and Chapman1993) • Carrai National Park and Carrai State Conservation Area Plan of Management (NPWS 2008) • The Castles Nature Reserve Plan of Management (NPWS 2004) • Willi Willi National Park Plan of Management (OEH 2011) • The Vegetation and Plant Species of Oxley Wild Rivers National Park and State Conservation Area, adjoining WWNPA (Ecological Australia 2014) • Vegetation Survey Report – Carrai National Park, Carrai State Conservation Area, Carrai Aboriginal Area, Mummel Gulf National Park, Mummel Gulf State

Conservation Area and Nowhedoc National Park (Hewlett Hunter 2016). A total of nine vegetation communities within six PCTs were recognised and defined for WWMPA. An additional vegetation community is also included, 'Rainforest Complex', to indicate those areas within WWNPA where rainforest predominate. The ten vegetation communities are summarised in Table 4.1 including an assigned map unit name (MU) and number and corresponding PCT.

Limitations on public access	

Responsible party

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Metadata date	2024-02-26T13:10:42.760745

Metadata language	