Title	Bell Miner Associated Dieback (BMAD) Mapping for the Gondwana Rainforests of Australia Border Region 2013
Alternative title(s)	BMAD Survey 2013
Abstract	Bell Miner Associated Dieback (BMAD) mapping for the border region of the Gondwana Rainforests of Australia World Heritage Area most likely undertaken as a Caring for Country project. Prepared for Department of National Parks, Recreation Sport and Racing August 2013 by Tree Crop Technologies Pty Ltd (TCT). Bell Miner Associated Dieback (BMAD) has been identified as a key threat to Gondwana Rainforests WHA values. BMAD occurs where there is an over-abundance of sap sucking psyllid insects and the associated establishment of dense colonies of Bell Miners, leading to a decline in forest condition. BMAD affects a broad range of sclerophyllous communities, many of them dominated by eucalypt or related species. In many forests affected by BMAD, the ground stratum is lost or dominated by weeds, the original understorey structure is replaced by a dense mid-stratum favourable for high density colonies of Bell Miner, and the upper stratum is subject to a decline in vigour. No severity classes only BMAD infected patches.

Resource locator

Data Quality Statement	Name: Data Quality Statement Protocol: WWW:DOWNLOAD-1.0-http--download Description: Data quality statement for Bell Miner Associated Dieback (BMAD) Mapping for the Gondwana Rainforests of Australia Border Region 2013 Function: download
Download Package	Name: Download Package Protocol: WWW:DOWNLOAD-1.0-http--download Description: Shapefile Data Function: download

Unique resource identifier

Code	599abc9f-c6da-4dd6-9587-4d50d112d950

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/599abc9f-c6da-4dd6-9587-4d50d112d950
Purpose	Fire and Pest (including lantana) Management
Status	Completed

Spatial representation

Type	vector
Geometric Object Type	complex
Geometric Object Count	1285

Spatial reference system

Code identifying the spatial reference system	4283

Spatial resolution

50 m

Topic category

Keyword set	
keyword value	HAZARDS-Pests FORESTS-Natural
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location	
West bounding longitude	151.940918
East bounding longitude	153.709717
North bounding latitude	-28.782104
South bounding latitude	-27.746746
NSW Place Name	South East Queensland and North East 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	2013-01-01
End position	N/A

Dataset reference date

Resource maintenance	
Maintenance and update frequency	Unknown
Contact info	
Contact position	Data Broker
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Responsible party role	pointOfContact

Lineage

Forest condition classification Prior work by Queensland and NSW NPWS established a framework methodology for forest condition assessment involving of a three point score for each of the lower stratum (0-2 m); mid-stratum (2-6 m) and the canopy, nominally providing 27 possible structural condition combinations, with further sub-classification of canopy condition by the degree and severity of dieback to provide additional combinations. Based on iterative testing and application, it was agreed in conjunction with the project team to modify the assessment framework by removing the sub-classifications, and to note the presence of dead trees as possible indicators of BMAD. Mapping and assessment procedure A structured approach to air photo interpretation (API) was developed and applied to mapping forest structural condition over an area of slightly greater than 100,000 ha. All available photoigray was captured in 2009. Hard copy imagery (approx. 1:30,000) proved unsuitable for useful interpretation. For consistency of format across the region, API was carried out using digital ortho-photography based on multiple cues. First, visible areas of possible BMAD were identified, then reasonably homogenous polygons delineated. Aerial transects sampling 98% of mapped polygons were flown as a means of validating API and to inform amendments to the initial mapping. Aerial transects provided a highly efficient and accurate means of truthing mapped API polygons. A total transect length of 3,218,974 m (3,219 km), corresponding to an effective area of 32,190 ha or around 32% of the project area, was coved in 10 days. Transects were flown at a height above ground level of approximately 120 m. Permanent plots were established by a combination of ground-based assessment and aerial assessment by hovering over the plot location. This allowed otherwise inaccessible areas to be sampled, and more extensive sampling to be carried out than could have been reasonably achieved by ground-based sampling alone. The permanent plots provide benchmark data that can be revisited to monitor changes in vegetation condition over time and/or in response to management interventions. Estimation of polygon score from aerial survey sampling API mapping is the result of averaging condition over a large area. Conversely, aerial survey transects represent a series of short, contiguous, linear plot samples. These approaches represent forest condition at significantly different scales. Notwithstanding, aerial survey transects were used to validate API mapping by calculating the weighted average condition score of transect plots within a polygon. When a weighted average condition score is calculated, it may be definitive (e.g., 90% condition score 3), or marginal (e.g. 33% condition score 1, 33% condition score 2 and 34% condition score 3). To address this issue, and to use weighted average condition score from aerial transect mapping to provide an outcome that is useful from a management perspective, it was agreed with the project team to use aerial transect scores to classify polygons on the following basis: Use aerial transect data to get an “aerial transect” score for each polygon on the basis that for each layer as follows: if >30% “3”, then score as 3; If 30% “2”, then score as 2; If 30% “1”, then score as 1. The resulting calculated condition score for any polygon was subsequently used to compare with the original the API condition score. Accuracy and mapping correction Accuracy of API mapping relative to the condition score of polygons based on aerial assessment surveys, calculated on a stratum-by-stratum basis and allowing for a tolerance +/1 condition score class, was between 75.9% and 77%. Five error types were identified as reasons for possible discrepancies between API (based on 2009 photography) and aerial transects (carried out in 2013). These were as follows. Only type 4 and 5 errors represent mistakes: 1. The aerial transect is not representative of the mapped polygon (e.g., the aerial survey transect may follow a gully line that is not representative of the overall polygon); 2. The aerial transect does not adequately sample the mapped polygon (e.g., the aerial survey transect may cross the corner of a polygon, providing an inadequate sample to accurate represented the true polygon average canopy conditions; 3. There is a real change in the average canopy condition from the time of aerial photograph capture (2009) and the time of aerial survey (2013); 4. The original API is incorrect; or 5. The aerial survey is incorrect. Following comparison of API and aerial transect results, any polygons differing by greater than one condition score class were marked for review.

Supplemental Information - BMAD Transect Points, BMAD Transect Lines, BMAD Vegetation API Original Polygons, BMAD Vegetation API Bell Miner Damage Polygons, BMAD Permanent Plot Points.

Limitations on public access

Responsible party

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Responsible party role	pointOfContact

Metadata point of contact

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Metadata language