SHaRED – Data Submission Tool

Workshop at
Ecological Society of Australia 2021

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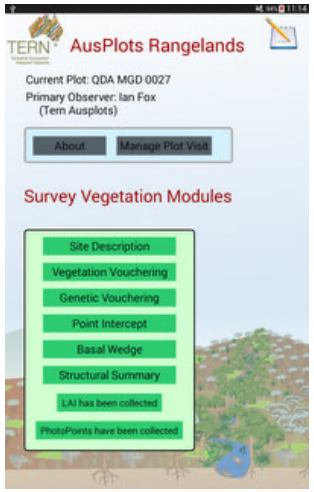
Ecosystem Research Infrastructure

Outline of the workshop

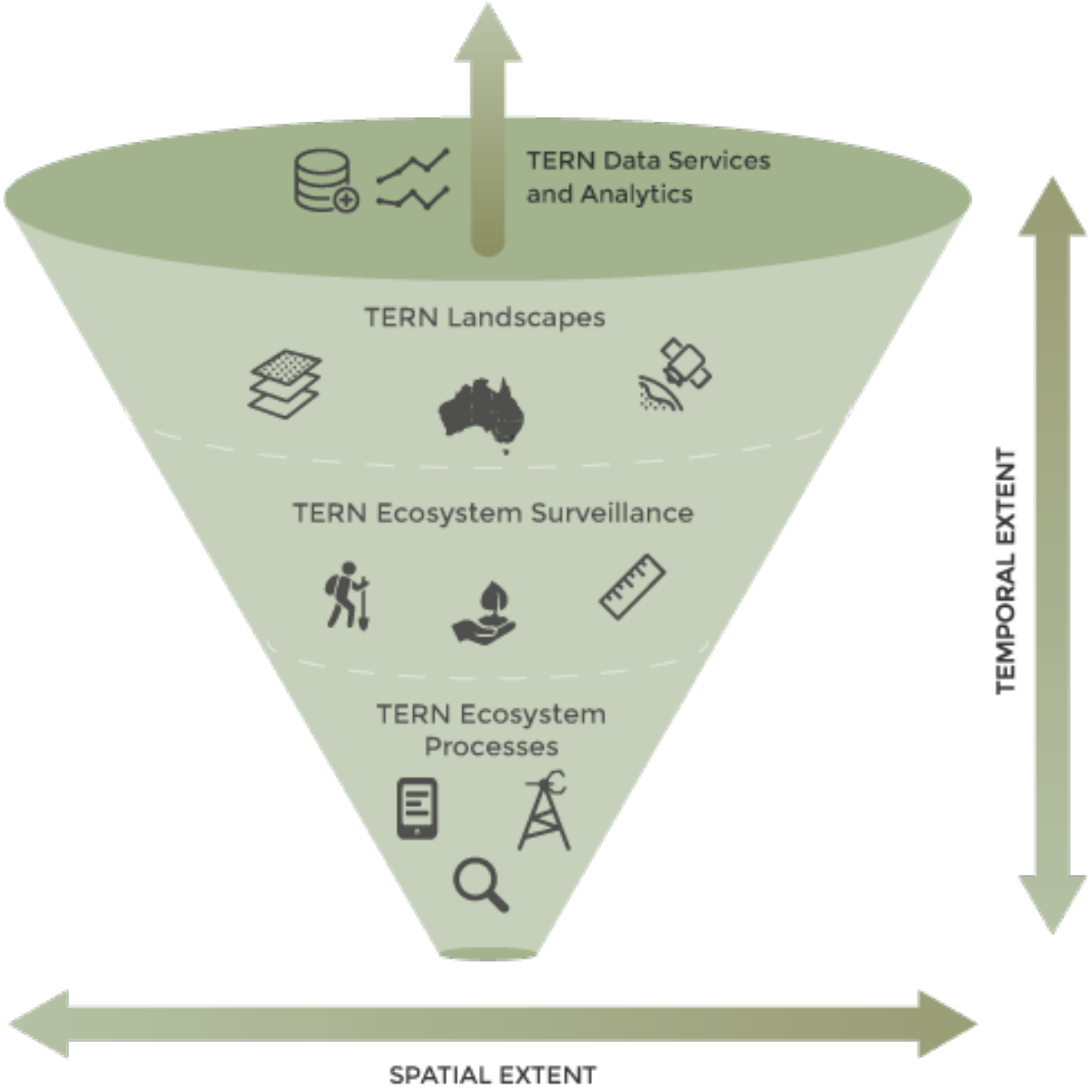
- Introduction to TERN
- FAIR data principles
- Introduction to SHaRED
- Demonstration of SHaRED (FAIR data principles at work)
- Q&A

TERN Purpose[1]

- National collaborative research infrastructure for collecting, collating, storing and sharing Australia's terrestrial ecosystem data sets and knowledge.



[1] TERN is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy from 2009.



TERN in Operation

- Satellite remote sensing products
- Land cover dynamics and phenology
- Vegetation composition and structure
- Fire dynamics and impacts
- Continental Soil & Landscape data

- Plot-based surveillance monitoring
- Soil sample, leaf tissue samples, LAI, Basal area
- Photopoints
- Carbon, energy, water fluxes
- Phenocams, LAI,
- Acoustic sensors
- Flora population

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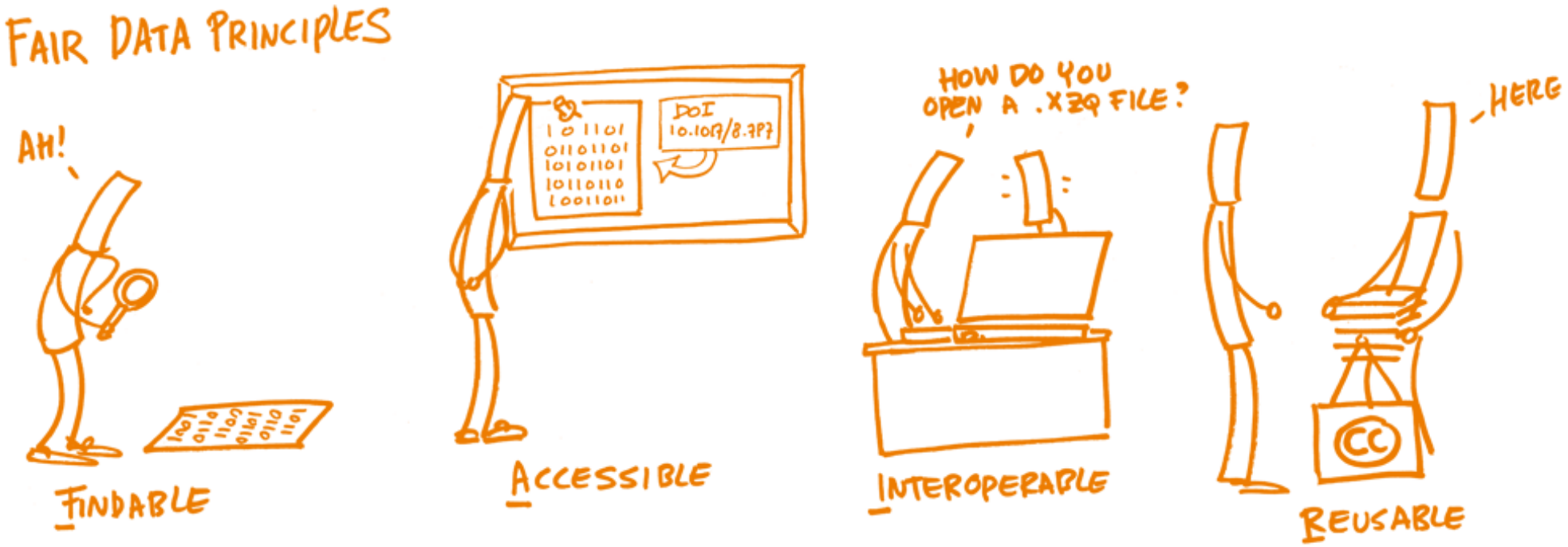
FAIR principles



FAIR principles

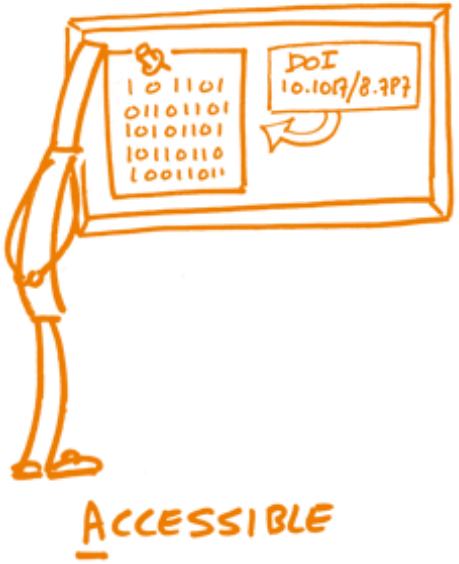
FINDABLE

- F1. (meta)data are assigned a globally unique and persistent identifier
- F2. data are described with rich metadata (defined by R1 below)
- F3. metadata clearly and explicitly include the identifier of the data it describes
- F4. (meta)data are registered or indexed in a searchable resource

FAIR principles

ACCESIBLE

- A1. (meta)data are retrievable by their identifier using a standardized communications protocol
- A1.1 the protocol is open, free, and universally implementable
- A1.2 the protocol allows for an authentication and authorization procedure, where necessary
- A2. metadata are accessible, even when the data are no longer available



FAIR principles

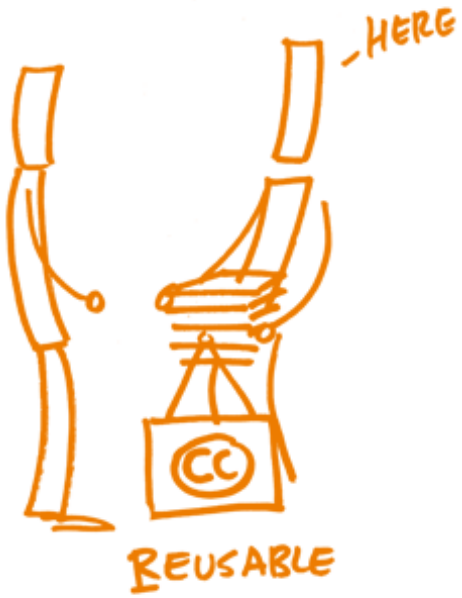
INTEROPERABLE

- I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- I2. (meta)data use vocabularies that follow FAIR principles
- I3. (meta)data include qualified references to other (meta)data

FAIR principles

REUSABLE

- R1. meta(data) are richly described with a plurality of accurate and relevant attributes
- R1.1. (meta)data are released with a clear and accessible data usage license
- R1.2. (meta)data are associated with detailed provenance
- R1.3. (meta)data meet domain-relevant community standards

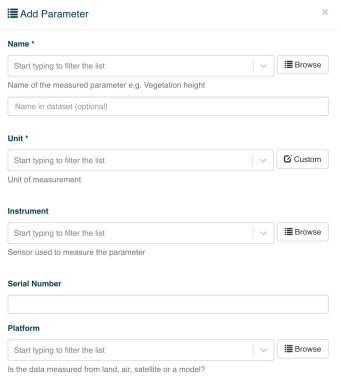


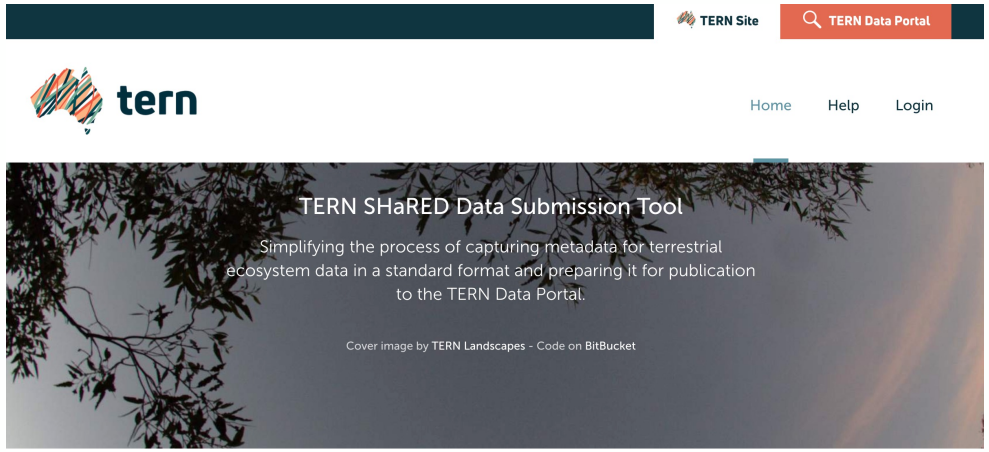
Why FAIR matters?

- Framework for Data management
  - Improve human and machine actionable data representation
  - Help data management, data sharing and reuse
  - Strong importance for both metadata and data
  - Make data more valuable for reuse

SHaRED Features

- Support AAF and Google Account
- Support ISO 19115-3 metadata standard
  - widely used with strong community support
- Metadata entry are part of set of questionnaire
  - Use controlled vocabularies
  - Select geographical region
  - Describe associated people
- Upload files
  - Upload files
  - Link URL of data services
  - All data submitted is published under CC-BY 4.0
- Request DOI
- Submit

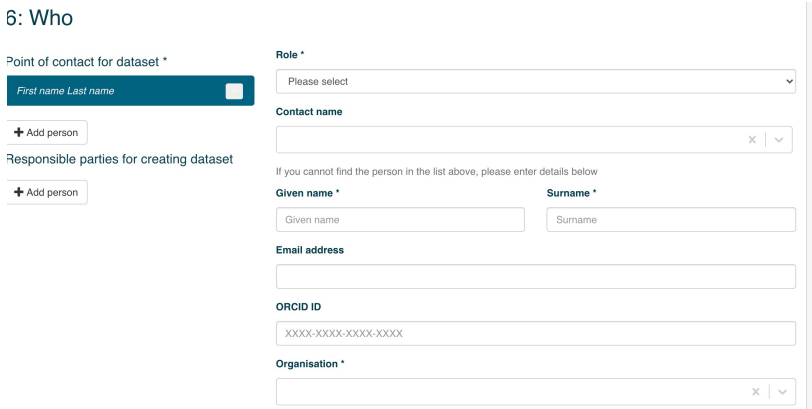




ICS › 35 › 35.240 › 35.240.70

ISO/TS 19115-3:2016

Geographic information — Metadata — Part 3: XML schema implementation for fundamental concepts



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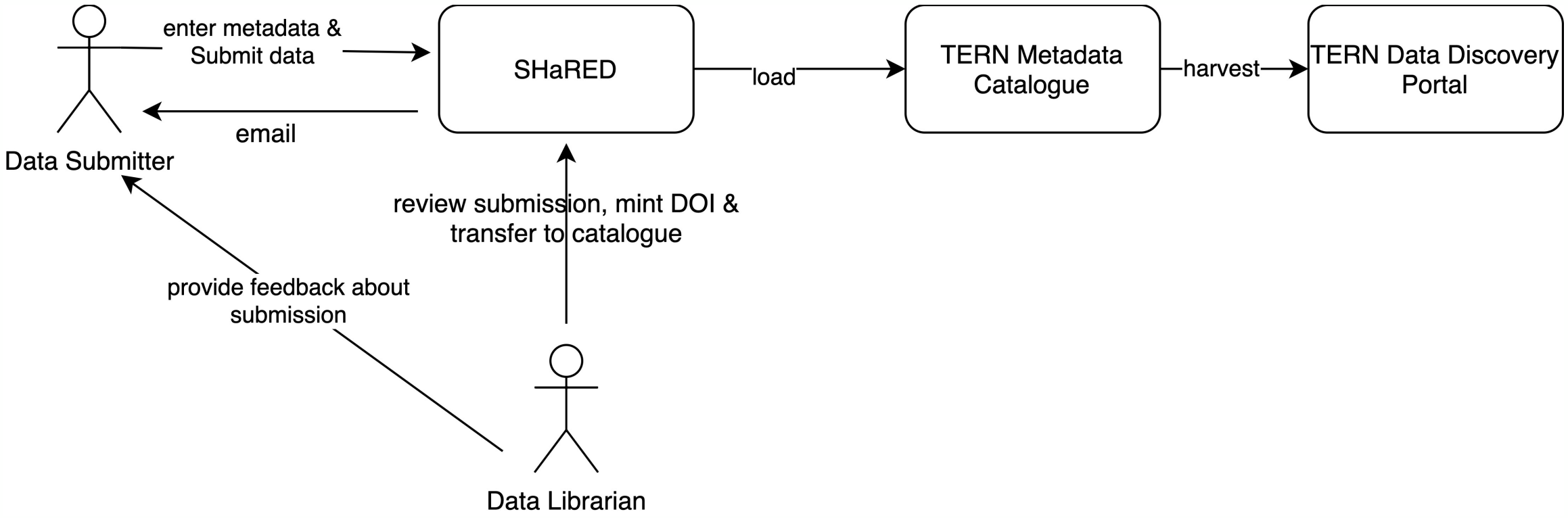
SHaRED - Data Submission tool

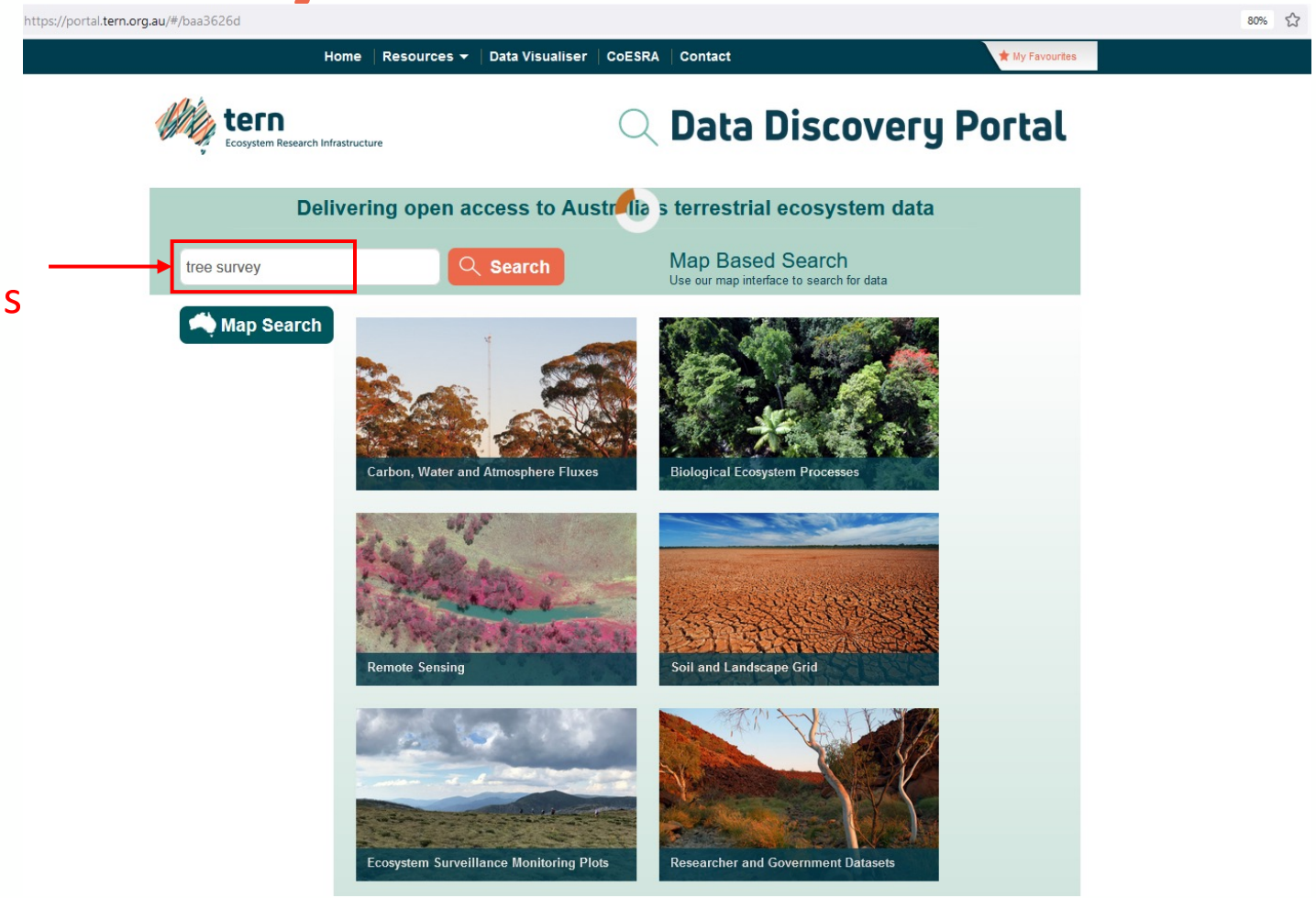


SHaRED live example

TERN Data Discovery Portal

https://portal.tern.org.au

Search keywords



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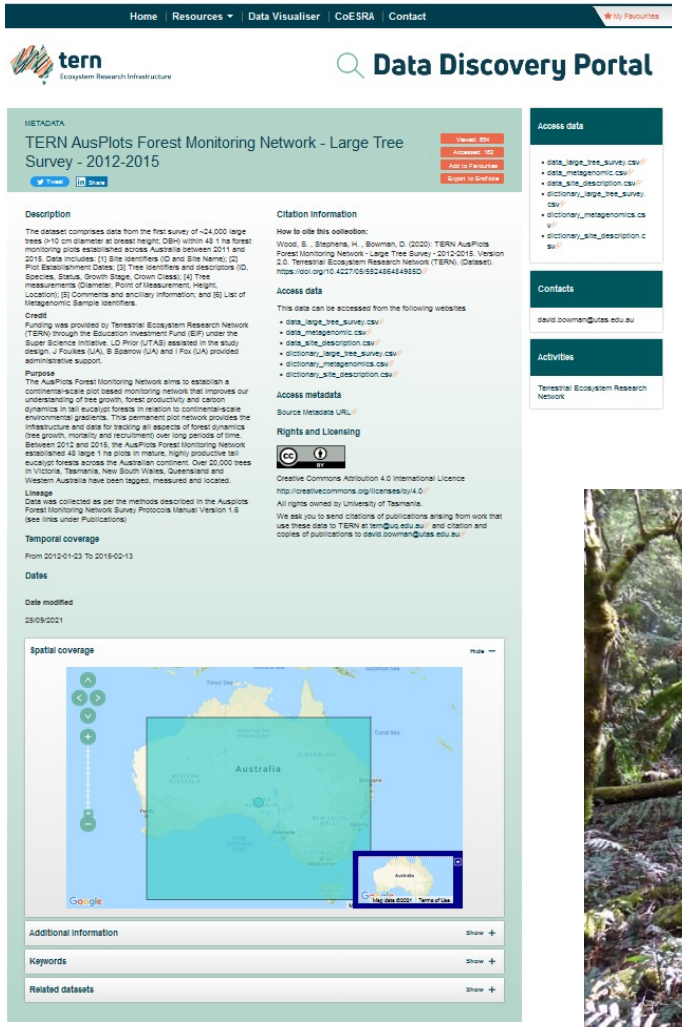
Metadata on TERN Data Discovery Portal



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Metadata on TERN Data Discovery Portal

Title

Abstract

Credit

Purpose

METADATA

TERN AusPlots Forest Monitoring Network - Large Tree Survey - 2012-2015

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Viewed: 645
Accessed: 147
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Description

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Lineage

Citation information

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Access metadata

Source Metadata URL

Rights and Licensing

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From 2012-01-23 To 2015-02-13

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Example of data – tree measurements

	B	C	D	E	F	I	J	K	P	Q	T
1	Site_Name	Latitude	Longitude	Date	Subplot	Tree_ID	Genus_Species	Tree_Condition	Diameter	Point_Of_Measurement	Height
23	Frankland	-34.8246	116.786	20/11/2012	3	21	Trymalium odoratissimum	Alive	12.4	1.3	8.1
24	Frankland	-34.8246	116.786	20/11/2012	4	22	Eucalyptus guilfoylei	Alive	12.1	1.3	8.6
25	Frankland	-34.8246	116.786	20/11/2012	4	D	Allocasuarina decussata	Dead	52.1	1.3	
26	Frankland	-34.8246	116.786	20/11/2012	4	23	Eucalyptus guilfoylei	Alive	27.7	1.3	19
27	Frankland	-34.8246	116.786	20/11/2012	5	24	Eucalyptus guilfoylei	Alive	13.7	1.3	12.6
28	Frankland	-34.8246	116.786	20/11/2012	5	25	Allocasuarina decussata	Alive	42.5	1.3	22.6
29	Frankland	-34.8246	116.786	20/11/2012	5	26	Allocasuarina decussata	Alive	52.7	1.3	22.2
30	Frankland	-34.8246	116.786	20/11/2012	5	27	Allocasuarina decussata	Alive	40.7	1.3	18.7
31	Frankland	-34.8246	116.786	20/11/2012	5	28	Eucalyptus guilfoylei	Alive	20.3	1.3	16
32	Frankland	-34.8246	116.786	20/11/2012	5	29	Eucalyptus guilfoylei	Alive	82.9	1.3	27.5
33	Frankland	-34.8246	116.786	20/11/2012	5	30	Eucalyptus guilfoylei	Alive	37.8	1.3	27.2
34	Frankland	-34.8246	116.786	20/11/2012	5	31	Eucalyptus guilfoylei	Alive	26	1.3	22.3
35	Frankland	-34.8246	116.786	20/11/2012	5	32	Eucalyptus guilfoylei	Alive	36	1.3	24.6
36	Frankland	-34.8246	116.786	20/11/2012	5	33	Eucalyptus guilfoylei	Alive	13.1	1.3	11.3
37	Frankland	-34.8246	116.786	20/11/2012	5	34	Eucalyptus guilfoylei	Alive	31.5	1.3	27.3
38	Frankland	-34.8246	116.786	20/11/2012	5	35	Eucalyptus guilfoylei	Alive	15	1.3	14.6
39	Frankland	-34.8246	116.786	20/11/2012	5	36	Allocasuarina decussata	Alive	38.1	1.3	13.9
40	Frankland	-34.8246	116.786	20/11/2012	6	37	Allocasuarina decussata	Alive	39.5	1.3	18.9
41	Frankland	-34.8246	116.786	20/11/2012	6	38	Eucalyptus guilfoylei	Alive	25	1.3	24.9
42	Frankland	-34.8246	116.786	20/11/2012	6	39	Eucalyptus guilfoylei	Alive	19	1.3	15.3

Example of data – dictionary

	A	B	C
1	Field Name	Data Type	Description
2	Ausplot_ID	Text	9 digit code: State (2 letters); Plot type (1 letter); Bioregion (3 letters); Plot number (3 numbers). e.g. WAFWAR001 = Western Australia; Forest;
3	Site_Name	Text	Site Name based on either: Region; Forest Block or National Park name; Research Plot ID. [see Manual]
4	Latitude	Number	Latitude coordinate of the 0,0 corner of the plot (decimal degrees)
5	Longitude	Number	Longitude coordinate of the 0,0 corner of the plot (decimal degrees)
6	Date	Date	Date of the Large Tree Survey Census. [see Manual]
7	Subplot	Number	Subplot Name (1,2,3.....25). [see Manual]
8	Ausplot_X	Number	Distance from 0,0 corner (bottom left hand corner) of plot on X axis, in meters (m). [see Manual]
9	Ausplot_Y	Number	Distance from 0,0 corner (bottom left hand corner) of plot on Y axis, in meters (m). [see Manual]
10	Tree_ID	Text	Unique tree identifier (sequential number 1-999). Suffix 'a', 'b','c'.....'f' denotes multiple stems of one individual tree. D=Dead. [see Manual]
11	Genus_Species	Text	Genus and Species of tree (e.g. Eucalyptus grandis). Unidentified trees code in Comments field. [see Manual]
12	Tree_Condition	Text	Condition Codes: A=Alive, D=Dead, R= Basal Resprout (R). [See Manual]
13	Tree_Status	Text	Tree Status Codes: 0=Dead,A=Alive,B= Broken,C=Leaning,D=Fallen,E=Fluted,F=Hollow,G=Rotten,H=Multi-stem,I=Few Leaves,J=Burnt,K=Snappe
14	Mode_Of_Death	Text	3 Letter Death Codes: [1] Physical Mechanism (A=Standing,B=Broken,C=Uprooted, K=Vanished, etc.); [2] Number of Trees in Event (P=Died Alo
15	Growth_Stage	Text	Growth Stage Codes: R=Regeneration, Y=Regrowth, M=Mature, O=Senescense, S1=Dead, branches present; S2, branches missing; S3 Dead, no c
16	Crown_Class	Text	Crown Class Codes: S=Suppressed, I=Intermediate, C=Co-dominant, D=Dominant, E=Emergent, OG=Open Growth. [see Manual]
17	Diameter	Number	Diameter of tree at Point of Measurement (Point_Of_Measurement), in centimeters (cm). [see Manual]
18	Point_Of_Measurement	Number	Point of Measurement; height of diameter measurement (Diameter), in meters (m). [see Manual]
19	Diameter_2	Number	Diameter of tree at Alternative Point of Measurement (Point_Of_Measurement_2), in centimeters (cm). [see Manual]
20	Point_Of_Measurement_2	Number	Alternative Point of Measurement; height of alternative diameter measurement (Diameter_2), in meters (m). [see Manual]
21	Height	Number	Top height of tree, in meters (m). [see Manual]
22	Bole_Height	Number	Height of first large branch, in meters (m). [see Manual]
23	Height_Of_Break	Number	Visually estimated height of broken tree (Tree_Status=B), in meters (m). [see Manual]
24	Historic_ID	Text	Unique tree identifier from existing plot infrastructure. [see Manual]
25	Comment	Text	Comment from field observations. If specie was unidentified, it includes the specimen voucher code.
26			

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Metadata on TERN Data Discovery Portal

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Persistent URL in geonetwork

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Source Metadata URL

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Metadata on Geonetwork

https://geonetwork.tern.org.au/geonetwork/srv/eng/catalog.search#/metadata/0e503109-2fb6-4182-969f-2d570abdbabd

Persistent URL in geonetwork

TERN Geospatial Catalogue | Search | Map | Sign in | English

Back to search | Previous | Next | Download | Display mode

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Completed

Download and links

Wood, S. W., Prior, L. D., Stephens, H. C., & Bowman, D. M. (2015). Macroecology of Australian Tall Eucalypt Forests: Baseline Data from a Continental-Scale Permanent Plot Network. PloS one, 10(9), e0137811. https://doi.org/10.1371/journal.pone.01378

Open link

Spatial extent

- Tall eucalypt forests including south-west Western Australia, Central and Southern Victoria, Northern and Southern New South Wales, Tasmania and Far North Queensland
- ["115.8457|-43.10183|153.09181|-17.11074"]

Spatial extent

Temporal extent

Period

2012-01-23 ▸▸ 2015-02-13

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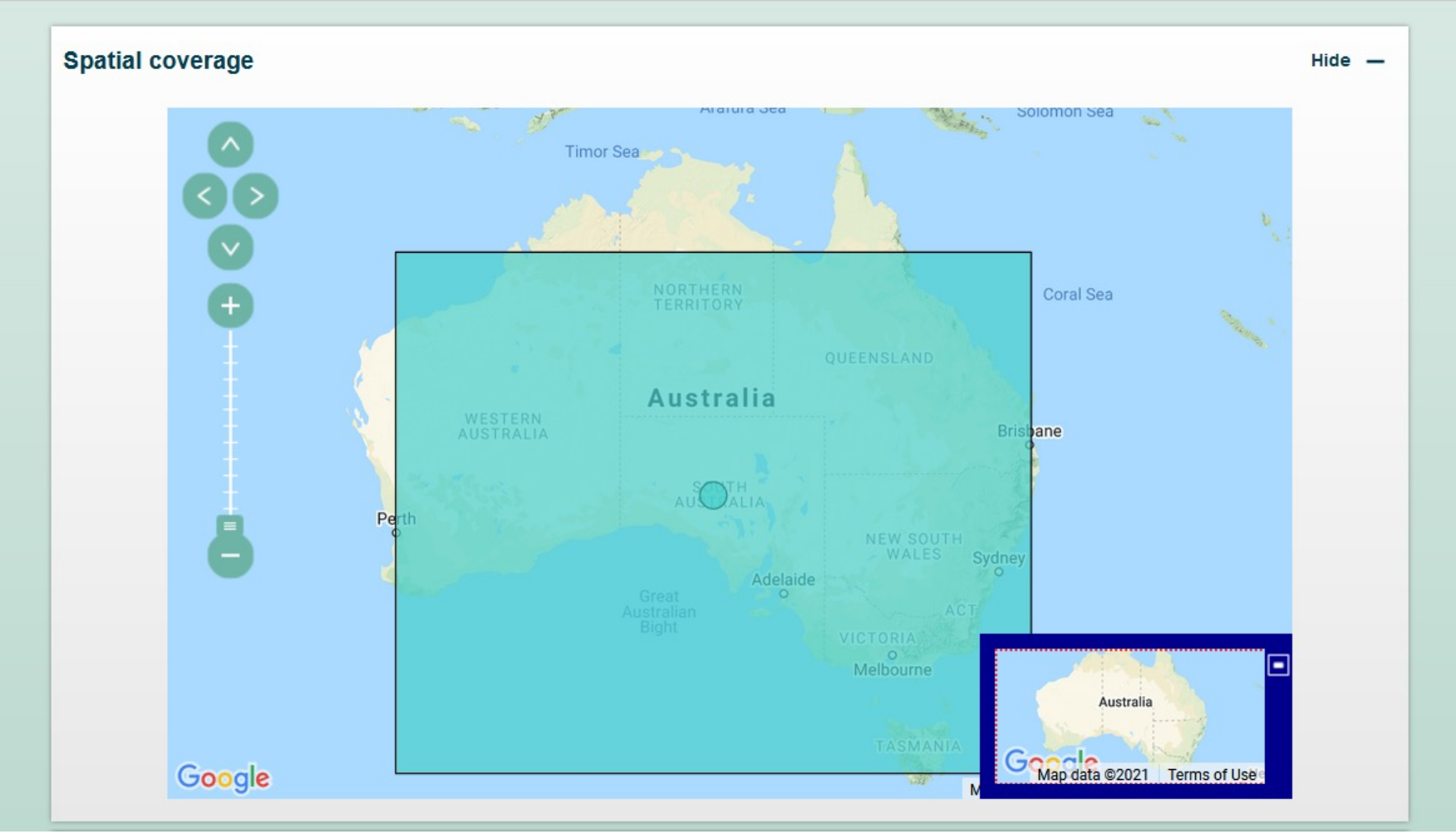

Metadata on TERN Data Discovery Portal

Researchers

Organizations

Methods

Additional information

Hide —

Researchers

- Bowman, David
- Stephens, Helen
- Wood, Samuel

Research Groups

- School of Plant Science, University of Tasmania
- Terrestrial Ecosystem Research Network (TERN)
- School of Natural Science, University of Tasmania
- Terrestrial Ecosystem Research Network

Distributed by

- Data Librarian

Activities

- Terrestrial Ecosystem Research Network

Methods

- **Species identification**
  Field identification of all trees >10 cm diameter at breast height to genus and species level. Voucher specimens from unknown species (prefix UNN) were collected and submitted to local herbarium. [see Manual]
- **Tree Description**
  All trees >10 cm diameter at breast height were described by field observation. The following information was collected for each tree: [1] Tree Condition (i.e. Live or Dead); [2] Tree Status (Multi-stem, Buttressed, Burnt, Hollow, etc.); [3] Growth Stage (Regeneration, Regrowth, Mature, Senescent, etc.); [4] Crown Class (Suppressed, Intermediate, Co-dominant, Dominant, etc.); [5] Mode of Death (Standing, Broken, Anthropogenic, Burnt, Lightning, etc.). [see Manual]
- **Diameter measurement**
  For all trees >10 cm diameter at breast height, the diameter was measured (in centimeters) at an ascribed point of measurement with a diameter

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Methods

All trees >10 cm diameter at breast height were described by field observation. The following information was collected for each tree: [1] Tree Condition (i.e. Live or Dead); [2] Tree Status (Multi-stem, Buttressed, Burnt, Hollow, etc.); [3] Growth Stage (Regeneration, Regrowth, Mature, Senescent, etc.); [4] Crown Class (Suppressed, Intermediate, Co-dominant, Dominant, etc.); [5] Mode of Death (Standing, Broken, Anthropogenic, Burnt, Lightning, etc.). [see Manual]

- **Diameter measurement**
  For all trees >10 cm diameter at breast height, the diameter was measured (in centimeters) at an ascribed point of measurement with a diameter tape. The standard point of measurement was a height of 1.3 m, except in the case of buttressed or 'problem trees' whereby strict rules governed an alternative point of measurement. [see Manual]
- **Tree Height measurement**
  For a subset of trees measured for diameter, the height to the top of the tree was measured (in meters) using trigonometric principles using a Vertex Hypsometer. The hypsometer calculates tree height using (a) horizontal distance to the tree and (b) angle to the top of the tree. Tree heights were collected across the observed diameter range for each plot.[see Manual]
- **Height of Break**
  Visually estimated height of broken tree (Tree_Status=B), in meters. [see Manual]
- **Tree location**
  For all trees >10 cm diameter at breast height, the distance from the 0,0 corner (in meters) along the X and Y axis was collected using a 100 m measuring tape and a electronic rangefinding device.
- **Bole Height measurement**
  For a subset of trees measured for diameter, the height to the top of first substantial branch (i.e. Bole Height) was measured (in meters) using trigonometric principles using a Vertex Hypsometer. The hypsometer calculates Bole Height using (a) horizontal distance to the tree and (b) angle to the first substantial branch on the tree. Bole heights were collected across the observed diameter range for each plot.[see Manual]
- **Sampling Design**
  Gradient Designs | Repeated Measures | Self-selected (Landscape Scale) Sampling
- **Flora Sampling Technique**
  Quadrat/Plot/Grid

Publications

Publications

- Wood, S. W., Prior, L. D., Stephens, H. C., & Bowman, D. M. (2015). Macroecology of Australian Tall Eucalypt Forests: Baseline Data from a Continental-Scale Permanent Plot Network. PloS one, 10(9), e0137811. https://doi.org/10.1371/journal.pone.01378
- Wood, S. W., Stephens, H. C., Foulkes, J, Ebsworth, E & Bowman, D. M. (2015). Ausplots Forest Monitoring Network Survey Protocols Manual Version 1.6
- Wood, W. W., Stephens, H. C. & Bowman, D. M. (2015) Ausplots Forest Monitoring Network Establishment Report

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Linked publication

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RESEARCH ARTICLE

Macroecology of Australian Tall Eucalypt Forests: Baseline Data from a Continental-Scale Permanent Plot Network

Sam W. Wood, Lynda D. Prior, Helen C. Stephens, David M. J. S. Bowman

Published: September 14, 2015 • https://doi.org/10.1371/journal.pone.0137811

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Abstract

Tracking the response of forest ecosystems to climate change demands large (≥1 ha) monitoring plots that are repeatedly measured over long time frames and arranged across macro-ecological gradients. Continental scale networks of permanent forest plots have identified links between climate and carbon fluxes by monitoring trends in tree growth, mortality and recruitment. The relationship between tree growth and climate in Australia has been recently articulated through analysis of data from smaller forest plots, but conclusions were limited by (a) absence of data on recruitment and mortality, (b) exclusion of non-eucalypt species, and (c) lack of knowledge of stand age or disturbance histories. To remedy these gaps we established the Ausplots Forest Monitoring Network: a continental scale network of 48 1 ha permanent plots in highly productive tall eucalypt forests in the mature growth stage. These plots are distributed across cool temperate, Mediterranean, subtropical and tropical climates (mean annual precipitation 850 to 1900 mm per year; mean annual temperature 6 to 21°C). Aboveground carbon stocks (AGC) in these forests are dominated by eucalypts (90% of AGC) whilst non-eucalypts in the understorey dominated species diversity and tree abundance (84% of species; 60% of stems). Aboveground carbon stocks were negatively related to mean annual temperature, with forests at the warm end of the temperature range storing approximately half the amount of carbon as forests at the cool end of the temperature range. This may reflect thermal constraints on tree growth detected through other plot networks and physiological studies. Through common protocols and careful sampling design, the Ausplots Forest Monitoring Network will facilitate the integration of tall eucalypt forests into established global forest monitoring initiatives. In the context of projections of rapidly warming and drying climates in Australia, this plot network will enable detection of links between climate and growth, mortality and carbon dynamics of eucalypt forests.

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Parameters

Platforms

Taxonomic Group

GCMD Science

ANZSRC - FOR

Keywords Hide —

Parameters

- Tree Diameter (centimeter)
- Tree Condition (unitless)
- Tree Status (unitless)
- Growth Stage (unitless)
- CROWN (unitless)
- Bole Height (meter)
- Tree Height (meter)
- Soil Metagenomic Sample Identifier (unitless)

Platforms

- AusPlots
- Ecology Plot

Taxonomic Group

- Acacia melanoxylon | Allocasuarina decussata | Allocasuarina torulosa | Corymbia intermedia | Eucalyptus andrewsii | Eucalyptus coccifera | Eucalyptus cypellocarpa | Eucalyptus dalrympleana | Eucalyptus delegatensis |
- Eucalyptus diversicolor | Eucalyptus fastigata | Eucalyptus grandis | Eucalyptus jacksonii | Eucalyptus microcorys | Eucalyptus obliqua | Eucalyptus ovata | Eucalyptus pilularis | Eucalyptus radiata |
- Eucalyptus regnans | Eucalyptus resinifera | Eucalyptus sieberi | Eucalyptus viminalis | Monotoca glauca | Pomaderris apetala | Syncarpia glomulifera

GCMD Science

- BIODIVERSITY FUNCTIONS
- ENVIRONMENTAL ASSESSMENTS
- ENVIRONMENTAL GOVERNANCE/MANAGEMENT

ANZSRC - FOR

- ECOLOGY
- PLANT BIOLOGY

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Metadata on TERN Data Discovery Portal

- Bole Height (meter)
- Tree Height (meter)
- Soil Metagenomic Sample Identifier (unitless)

Platforms →

Platforms

- AusPlots
- Ecology Plot

Taxonomic Group →

Taxonomic Group

- Acacia melanoxylon | Allocasuarina decussata | Allocasuarina torulosa | Corymbia intermedia | Eucalyptus andrewsii | Eucalyptus coccifera | Eucalyptus cypellocarpa | Eucalyptus dalrympleana | Eucalyptus delegatensis |
- Eucalyptus diversicolor | Eucalyptus fastigata | Eucalyptus grandis | Eucalyptus jacksonii | Eucalyptus microcorys | Eucalyptus obliqua | Eucalyptus ovata | Eucalyptus pilularis | Eucalyptus radiata |
- Eucalyptus regnans | Eucalyptus resinifera | Eucalyptus sieberi | Eucalyptus viminalis | Monotoca glauca | Pomaderris apetala | Syncarpia glomulifera

GCMD Science →

GCMD Science

- BIODIVERSITY FUNCTIONS
- ENVIRONMENTAL ASSESSMENTS
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- ECOLOGY
- PLANT BIOLOGY

User Defined →

User Defined

- environment
- Tall Open Forests
- Biogeography | Long-Term Community Monitoring | Long-Term Species Monitoring | Macroecology
- Ecosystem Assessment And Management (9605)
- Environmental And Natural Resource Evaluation (9606)
- Flora, Fauna and Biodiversity at Regional or Larger Scales (960805)

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Metadata on TERN Data Discovery Portal

METADATA

Recovery of woody, not herbaceous native flora ten years post old-field restoration

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Description

Abstract

We selected nine study sites, each incorporating three vegetation states: (a) fallow cropland, representing the restoration starting point, (b) planted old field (actively restored site), and (c) reference York gum (E. loxophleba) woodland. Plant species richness and cover All annual and perennial plant species were recorded in spring 2017 within each plot and identified to genus and species level where possible. Nomenclatures follow the Western Australian Herbarium (2017). A point intercept method previously demonstrated to provide objective and repeatable measures of cover (Godínez-Alvarez, Herrick, Mattocks, Toledo & Van Zee 2009; Prober, Standish & Wiehl 2011) was used to quantify cover of individual plant species, total vegetation cover and substrate types (i.e., bare ground, litter cover, plant cover). Ground cover, individual species, and canopy cover intercepting at every 2 m along four parallel, evenly spaced 50 m transects across each plot were recorded using a vertically placed dowel (8 mm wide, 2 m tall), resulting in 100 intercepting points per plot. For planted old fields, transects were placed parallel to planting rows, with two centred on rows and two centred between rows. This approximately represented the relative abundance of planted rows and non-planted inter-rows. If a species was recorded in the plot but did not intercept the dowel on any transect it was assigned 0.5 points. This method provided a measure of relative abundance (percentage cover) of plant species across the plot. To calculate species richness and cover across different life history and growth forms, species were classified into the following groups: total, native trees, native shrubs, native non – planted shrubs, native grasses, native perennial forbs, native annual forbs, exotic grasses and exotic annual forbs using the Western Australian Herbarium (2017) classification. Woody debris and leaf litter surveys Leaf-litter dry mass was estimated by collecting leaf-litter from five randomly placed 25 cm x 25 cm quadrats along two 50 m transects across each plot. Litter was stored in paper bags for transportation and then oven dried for 36 hours at 60 °C. The dried litter was weighed to 3 decimal points. Cover of fine and coarse woody debris and litter depth was estimated at every meter along two 20 m transects for each plot. Woody debris was classified by diameter. Length, max and min diameter was measured for all logs with a diameter greater than 10 cm.

Citation information

How to cite this collection:

Parkhurst, T. (2021): Recovery of woody, not herbaceous native flora ten years post old-field restoration. Version 1.0.0. Terrestrial Ecosystem Research Network (TERN). (Dataset). https://doi.org/10.25901/c050-ca34

Access data

Links to data

This data can be accessed from the following websites

- FloristicsSpeciesRichnessData.csv
- FloristicsCoverData.csv
- data_dictionaryRichness.csv
- FloraSpeciesAbundanceData.csv
- data_dictionaryCover.csv

Access metadata

Source Metadata URL

Rights and Licensing

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Example of data – species richness

	A	B	C	D	E	F	G	H	I	J	K	L
1	StudyLocation	Treatment	NoSpecies	NoSpeciesNative	TreesNative	ShrubsNative	ShrubsNativeNOTPlanted	ShrubsNativePlanted	GrassNative	PerennialForbsNative	AnnualForbsNative	ExoticSpecies
2	SL1	C	4	1	0	1	1	1	0	0	0	3
3	SL1	R	11	5	3	2	1	1	0	0	0	6
4	SL1	W	29	20	1	7	7		3	4	5	9
5	SL10	C	19	12	0	1	1	1	3	2	6	7
6	SL10	R	30	20	2	8	6	2	4	4	2	10
7	SL10	W	25	24	1	10	10		4	4	5	1
8	SL2	C	17	5	0	2	2	2	1	1	1	12
9	SL2	R	11	6	1	3	1	2	0	1	1	5
10	SL2	W	29	22	1	8	8		3	3	7	7
11	SL3	C	15	6	0	2	2	2	2	0	2	9
12	SL3	R	25	12	1	5	4	1	2	0	4	13
13	SL3	W	45	31	1	5	5		4	7	14	14
14	SL4	C	26	12	0	2	2	2	2	1	7	14
15	SL4	R	33	18	1	6	6	0	3	0	8	15
16	SL4	W	39	29	1	14	14		5	4	5	10
17	SL5	C	22	10	0	2	2	2	2	1	5	12
18	SL5	R	13	12	1	8	4	4	1	2	0	1
19	SL5	W	43	35	3	15	15		4	2	11	8
20	SL6	C	14	6	0	0	0	0	3	0	3	8
21	SL6	R	40	22	3	10	7	3	2	1	6	18
22	SL6	W	56	44	3	17	17		4	8	12	12
23	SL7	C	14	5	0	2	2	2	0	1	2	9
24	SL7	R	24	15	1	4	4	0	2	4	4	9
25	SL7	W	31	21	1	6	6		2	4	8	10
26	SL9	C	19	15	0	4	4	4	4	2	5	4
27	SL9	R	34	27	2	15	5	10	3	3	4	7
28	SL9	W	19	18	1	10	10		1	3	3	1

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Ecosystem Research Infrastructure

NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

We at TERN acknowledge the traditional owners and their custodianship of the lands on which TERN operates. We pay our respects to their ancestors and their descendants, who continue cultural and spiritual connections to country.

TERN is enabled by NCRIS.

Our work is a result of collaborative partnerships with many universities and institutions.

To find out more please go to **tern.org.au.**

Acknowledge the use of ARDC infrastructure

TERN Services and useful resources

TERN Resources:

- Data Submission – https://shared.tern.org.au
- Metadata Catalogue - https://geonetwork.tern.org.au/
- Data Discovery – https://portal.tern.org.au
- EcoImages portal – https://ecoimages.tern.org.au/
- TERN Knowledge Base – https://ternaus.atlassian.net/wiki/spaces/TERNSup/overview
- FAIR Principles - https://ardc.edu.au/resources/working-with-data/fair-data/

COMING SOON

- EcoPlots portal – https://ecoplots.tern.org.au/

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