

An ecological perspective on data use and citation

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What kind of data typically underpin your publications? (some examples)

- Biodiversity pattern data
 - Species occurrence/abundance
 - Genetic diversity data
 - Associated data on environmental variation (spatial or temporal)
- Biodiversity 'process' data
 - Behavioural data (e.g. animal movement)
 - Experimental data (e.g. plant growth response to simulated climate change)
- Diverse data types
 - May contain little information outside context of original study design
 - Exceptions include simple data units like species distribution records or DNA sequences

How are those data referenced?

1. Citing my own data in my own papers

- Original datasets for 'one off' studies linked to journal paper
 - E.g. Dryad, Ecological Archives, (increasing requirement and 'compliance')
 - Web link citations to BOM, NOAA, GeoScience Aust etc for externally-accessed covariates (topography, climate)
- Repositories for 'generic' data units
 - GenBank (DNA sequences)
 - Atlas of Living Australia (Species location records)
- Data archives for long-term ecological research
 - E.g. LTERN Data Portal

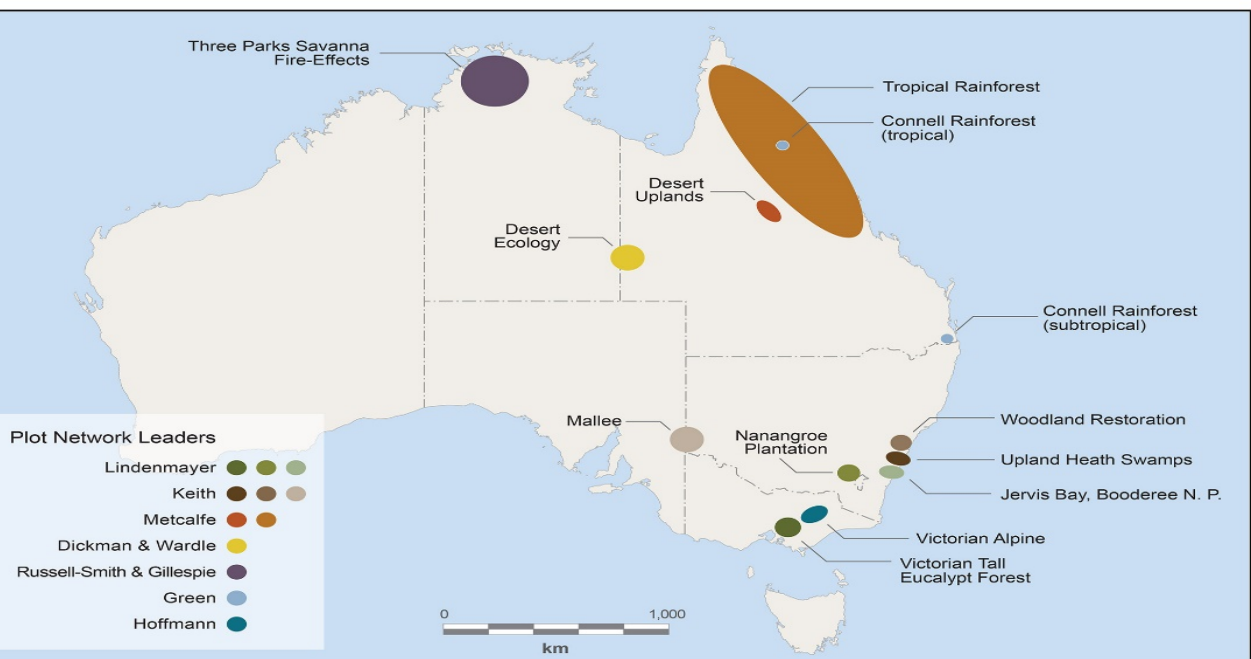
Monitoring Themes and map showing distribution of Plot Networks



LTER
Long Term Ecological
Research Network

	Vegetation structure	Plant species composition	Plant species abundance	Individual plants	Carbon	Plant phenology	Invertebrates	Herpetology	Birds	Mammals	On plot weather	Hydrology	Soil	Fire	Cyclones	Invasive plants	Invasive animals	Grazing domestic livestock	Logging forestry	Land clearing	Fragmentation	Restoration	Genetics	Climate change	Behaviour
Victorian Tall Eucalypt Forest	●	●	●	●	●		●		●	●				●					●		●		●	●	
Nanangroo Plantation	●	●	●					●	●	●						●		●	●	●					
Jervis Bay Booderee National Park	●	●	●					●	●	●					●		●						●		
Upland Heath Swamps	●	●	●	●							●	●	●	●		●				●					●
Woodland Restoration	●	●	●	●			●		●		●	●	●	●		●		●		●		●			●
Desert Uplands	●	●	●						●					●		●		●		●					●
Desert Ecology	●	●	●	●	●								●	●	●			●						●	●
Three Parks Savanna Fire-Effects	●	●	●	●	●			●	●	●				●		●								●	●
Connell Rainforest	●	●	●	●											●										●
Victorian Alpine	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●			●		●	●	●

A sustainable set of long-term data collection procedures and archives from plots across Australian ecosystems measuring selected flora, fauna and biophysical processes, suitable for key ecosystem science questions and for developing and testing ecosystem models



Data Portal: Publishing the data so appropriate for re-use

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LTER
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Research

Keith

Centre for Ecosystem Science, University of New South Wales

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The Upland Heath Swamps Plot Network Soil Properties Data Package contains detailed soil analysis from 60 established swamp monitoring sites in upland swamps scattered throughout ...

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1 PUBLISHED 2014-11-04 LAST UPDATED 2015-07-09 DOCID Item.71.20

Victorian Alpine Plot Network (Alpine/sub alpine Australian Tundra Experiment): Vegetation Change and Phenology in Response to Increased Temperature, South-east Highlands, Australia, 2004–2014

This data package shows the effects of experimental warming on plants in the Victorian Alpine region between 2004–2014. These data are from the Australian Tundra Experiment (ATEX) ...

Vegetation structure Plant species composition Plant species abundance Individual plants Climate change ...

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Hoffmann; Wahren; Camac

The University of Melbourne; La Trobe University; Quantitative & Applied ...

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Metcalf; Vanderduys

CSIRO Ecosystem Sciences; CSIRO

LTERN Data Portal

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Metadata Data 3

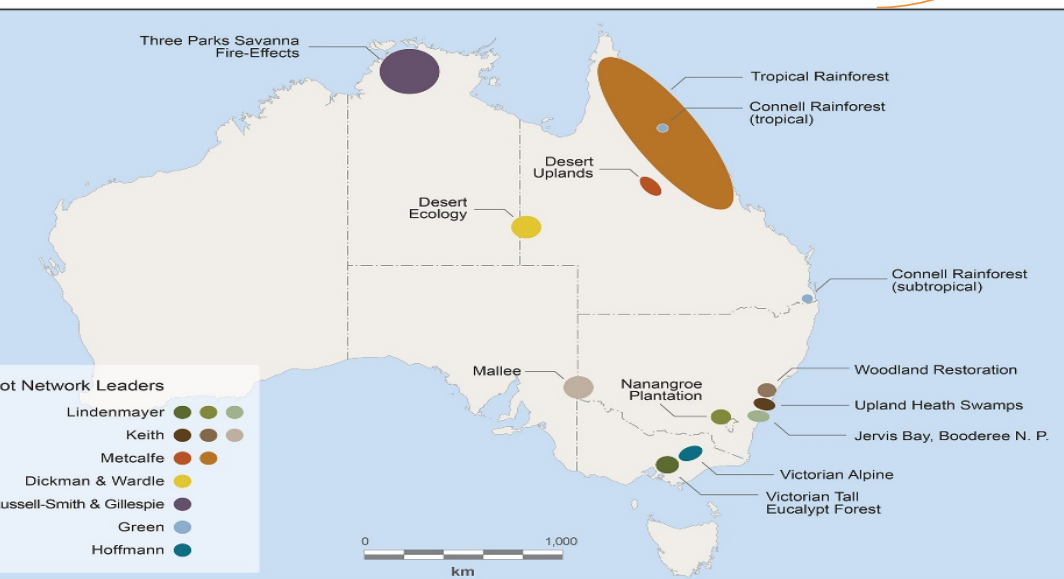
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Identifier

DOCID Item.200.35

Data Creators

Individual	Professor Ary Hoffmann
Position	Plot Leader
Organization	The University of Melbourne
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Phone	VOICE 03 8344 2282
Email Address	ary@unimelb.edu.au
Individual	Dr Henrik Wahren
Organization	La Trobe University
Address	Department of Botany La Trobe University Bundoora, Vic 3086 Australia



Archiving of/ access to long-term data?

Trends in Ecology & Evolution

CellPress

Attitudes are mixed!

Opinion

Archiving Primary Data: Solutions for Long-Term Studies

James A. Mills,^{1,#,*} Céline Teplitsky,^{2,#,*} Beatriz Arroyo,³
Anne Charmantier,⁴ Peter. H. Becker,⁵ Tim R. Birkhead,⁶
Pierre Rize,⁷ Daniel T. Blumstein,⁸ Christophe Ronenfant⁹

Perception of risk

- Careers invested in long-term data collection and analysis
- Misinterpretation of data outside context of study design
- Politically/environmentally sensitive information

How are those data referenced?

2. Synthesis / meta-analysis studies



Counting for Complementarity to Maximize Monitoring Power for Species Management

L. T. TULLOCH,*‡ IADINE CHADÈS,† AND HUGH P. POSSINGHAM*
 Centre of Excellence for Environmental Decisions, the NERP Environmental Decisions Hub, Centre for Biodiversity Conservation Science, University of Queensland, Brisbane, Queensland 4072, Australia
 Queensland Centre for Applied System Sciences, Ecosciences Precinct, 41 Boggo Road, Dutton Park, Queensland 4001, Australia

Sources of time-series data for study species

	Source study species	Our study species
al (1988)	<i>Petrogale lateralis</i>	<i>M. irma</i>
		<i>M. eugenii</i>
al (1998)	<i>Petrogale lateralis</i>	<i>M. irma</i>
		<i>M. eugenii</i>
al (2002)	<i>Petrogale lateralis</i>	<i>M. irma</i>
	<i>Macropus eugenii</i>	<i>M. eugenii</i>
	<i>Trichosurus vulpecula</i>	<i>T. vulpecula</i>
	<i>Bettongia penicillata</i>	<i>Bettongia penicillata</i>
010)	<i>Petrogale lateralis</i>	<i>M. irma</i>
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ARTICLE

doi:10.1038/nature143

Global effects of land use on local terrestrial biodiversity

Tim Newbold^{1,2*}, Lawrence N. Hudson^{3*}, Samantha L. L. Hill^{1,3}, Sara Contu³, Igor Lysenko⁴, Rebecca A. Senior^{1†}, Luca Börger⁵, Dominic I. Bennett^{4†}, Aróvrios Choimes^{3,4}, Ben Collen⁶, Julie Dav^{4†}, Adriana De Palma^{3,4}, Sandra Díaz⁷.

Data source paper citations in Methods supplement

<http://www.predicts.org.uk/>

What can we do better?

- Take risks out of data archiving
 - For individuals
 - Avoid perverse outcomes (environmentally sensitive records)

- Simplify and educate

More LTERN data portal
info

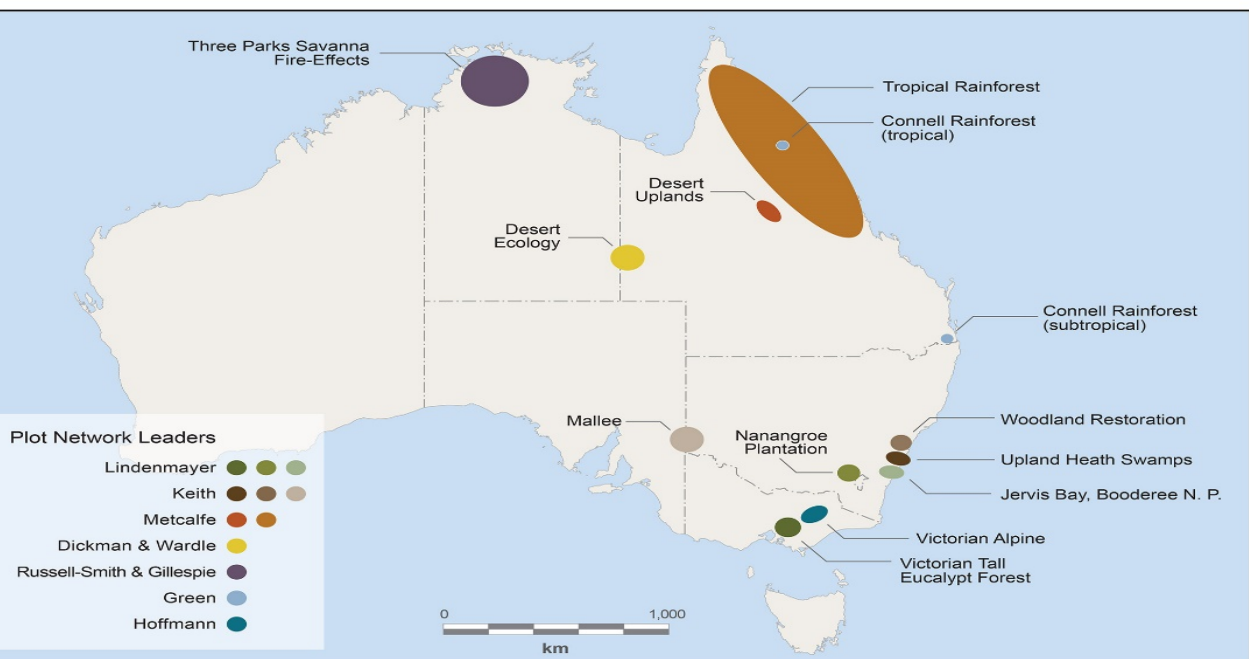
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Woodland Restoration	●	●	●	●			●		●		●	●	●	●		●		●		●		●		●	
Desert Uplands	●	●	●	●					●					●		●		●		●				●	
Desert Ecology Research Group	●	●	●	●	●	●	●	●	●	●	●			●				●	●				●	●	
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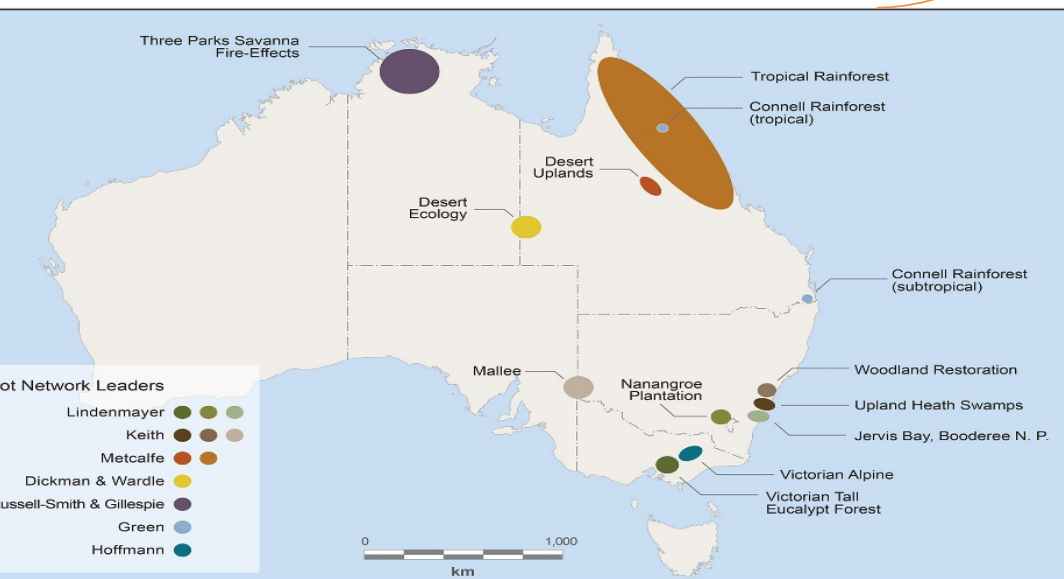
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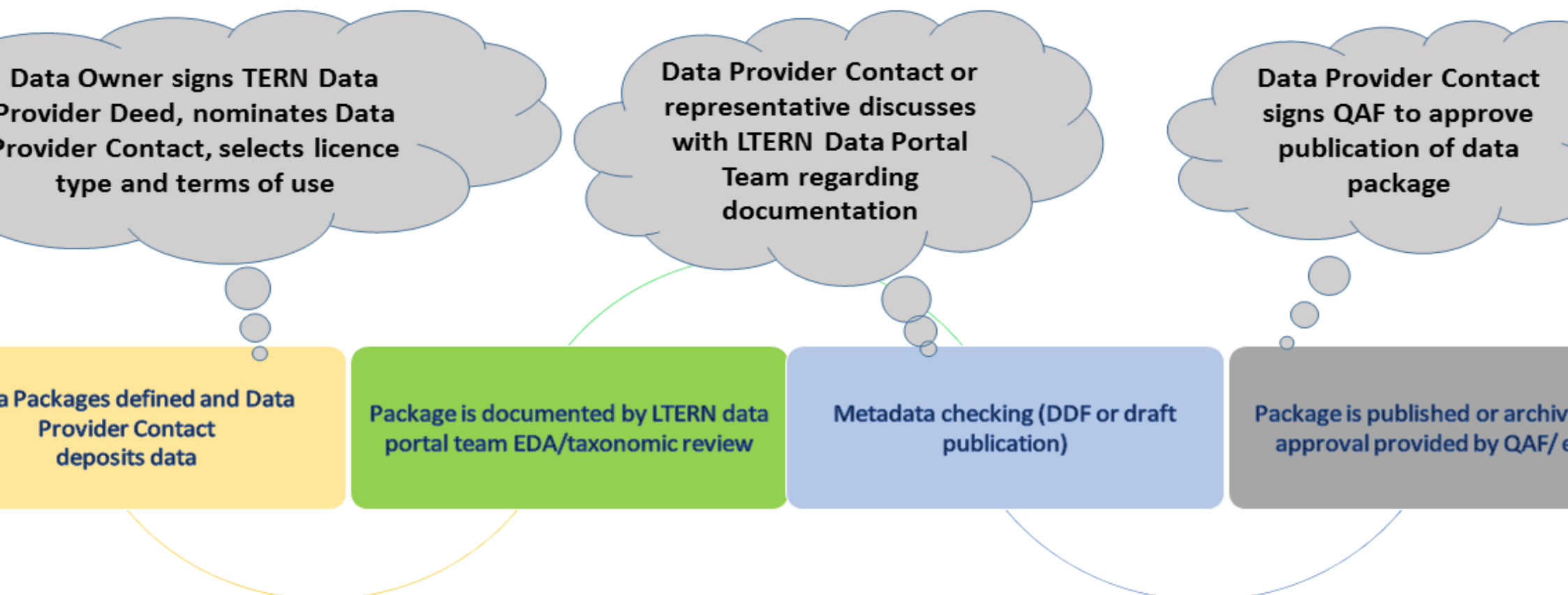
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Individual	Dr Henrik Wahren
Organization	La Trobe University
Address	Department of Botany La Trobe University Bundoora, Vic 3086 Australia





Workflow from deposit to publish



on and Usage Conditions



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TERN Data Portal follows the Australian National Data Services (ANDS) data citation guidelines (<http://ands.org.au/cite-data/>)

TERN Data Portal

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Metadata

Data **1**

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Table

ATEX Plot Microclimate log   Download (10.16 MiB)