

# ecoEd

Training and engagement for biodiversity informatics  
infrastructures in Australia

Dr Chantal Huijbers, Griffith University, Australia

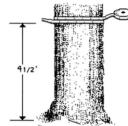
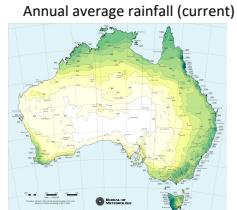
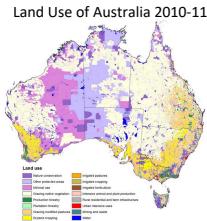
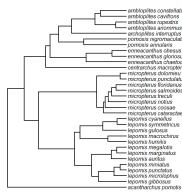


Australian Research Data Commons



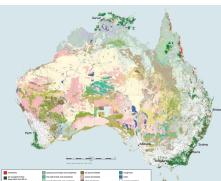
Australian Government  
Department of Agriculture  
and Water Resources  
ABARES

# Biodiversity data: different formats, disparate sources



Circumference of  
trunk at breast height  
(CBH)

Major vegetation groups



ATLAS OF **LIVING**  
AUSTRALIA

sharing biodiversity knowledge



**TERN**  
Terrestrial Ecosystem  
Research Network



**GBIF**

Global Biodiversity  
Information Facility



**WorldClim**



**OBIS**  
OCEAN BIOGEOGRAPHIC  
INFORMATION SYSTEM

**eOL**  
Encyclopedia of Life



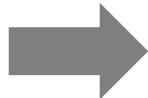
**IMOS**  
Integrated Marine  
Observing System



**BioCollect**

# Data sources

# Tools and Platforms



# Need for training and support across research infrastructures





# ecoEd

- Educate and upskill the next generation of environmental scientists and managers
- Provide a reference point for the environmental science community
- Develop a network of enthusiastic professionals
- Increase the reach and impact of Australia's eResearch infrastructure

# *ecoEd* modules

Environmental  
Metagenomics



10 Eco Data  
Things



Australian Research Data Commons



Multi-criteria  
decision analysis



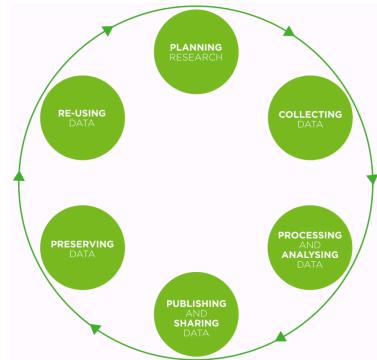
Species  
Distributions &  
Climate Change

Spatial Data for  
Ecology



# 10 Eco Data Things

1. Research Data
2. Potential issues
3. Publishers & Funders
4. Data Management Plans
5. Describing data
6. Data sharing
7. Data discovery
8. DOIs, citation and metrics
9. Licensing data for reuse
10. Spatial data

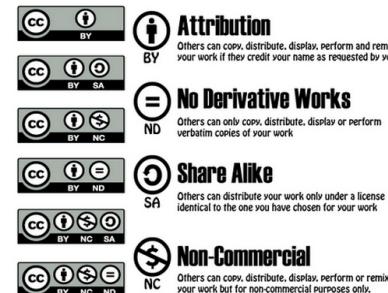


Top 4 researcher motivations .....  
for sharing data

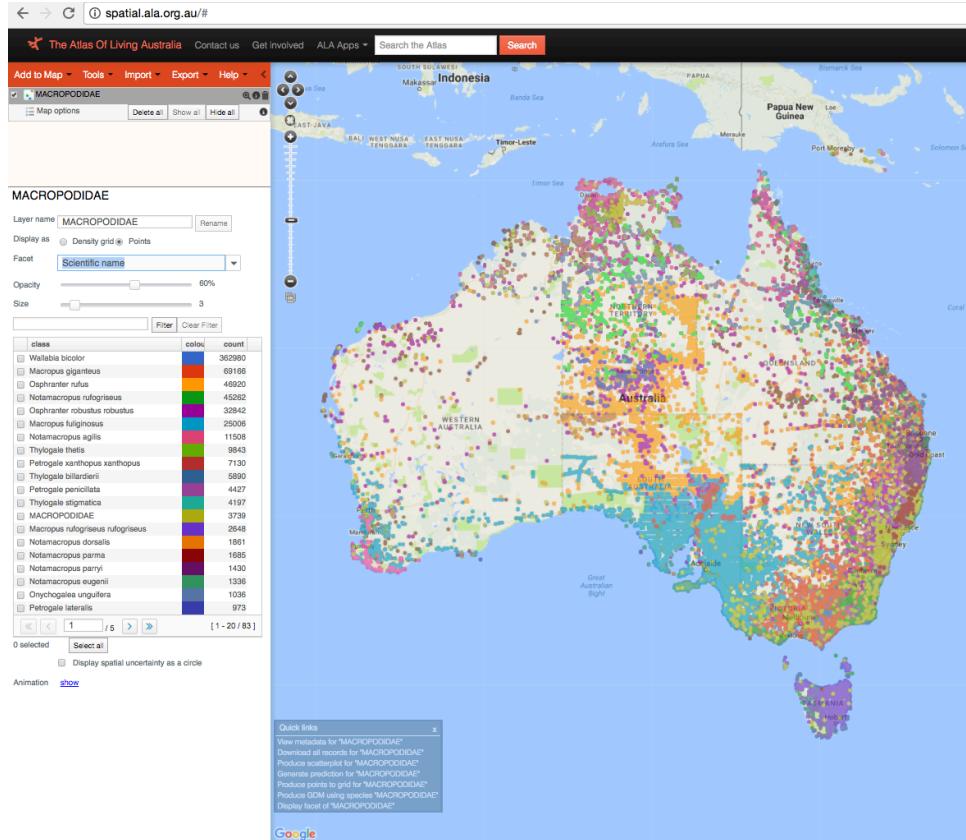


Top 4 reasons why researchers .....  
are hesitant to share their data

- 1 50% - Intellectual property or confidentiality issues
- 2 31% - Ethical concerns
- 3 23% - I am concerned about misinterpretation or misuse of my research
- 4 22% - I am concerned that my research will be scooped



# Biodiversity Data Quality (Atlas of Living Australia)



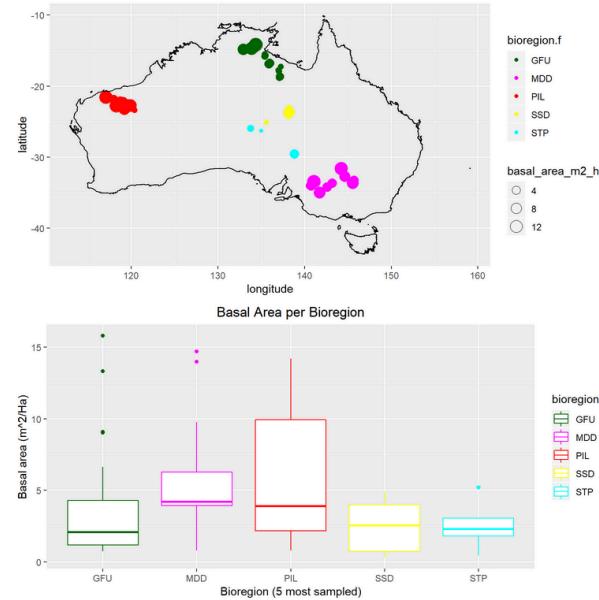
The screenshot shows the main homepage of the Atlas of Living Australia. At the top, there is a banner with the text: "The Atlas of Living Australia is a collaborative, national project that aggregates biodiversity data from multiple sources and makes it freely available and usable online." Below the banner, there are four key statistics: Occurrence Records (78,329,886), Species (122,632), Data downloads (1,696,373), and Registered users (43,089). There are three main content sections: "Australian iconic species" (featuring images of a koala, a lionfish, and a lorikeet), "Explore by location" (allowing users to browse species by pre-defined region or location), and "Mapping & analysis" (providing links to the Spatial Portal and search records for species occurrences).

spatial.ala.org.au

# Spatial Data for Ecology (TERN)



[tern.org.au](http://tern.org.au)



Visualisation and analysis using Ausplots R package

# Species Distributions & Climate Change (BCCVL)



Beta  
Datasets ▾ Experiments Training Support Share

Training ▾

## New Species Distribution Modelling Experiment

Do you have a dataset you would like to see available in the BCCVL? - Contact us and we'll try and make it happen.

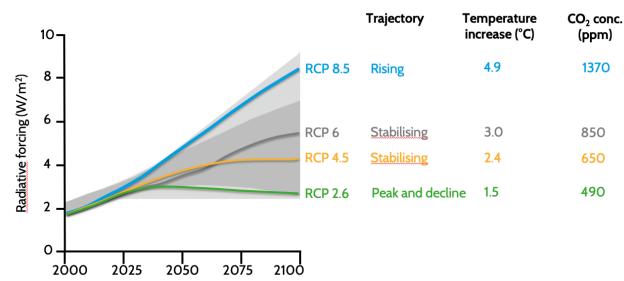
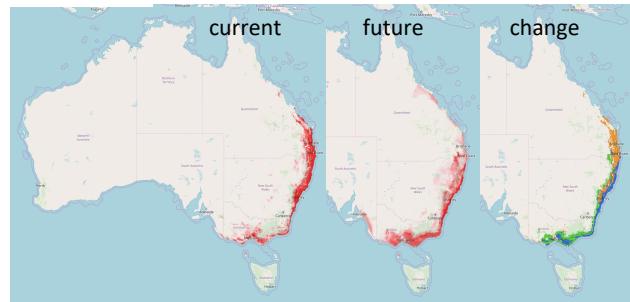
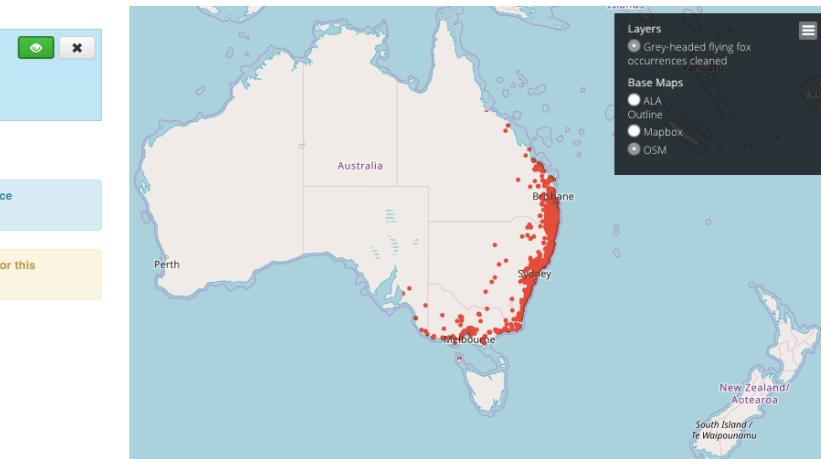
◀ Previous Description Occurrences Absences Climate & Environmental Data Constraints Algorithms Run Next ▶

Select the occurrences.

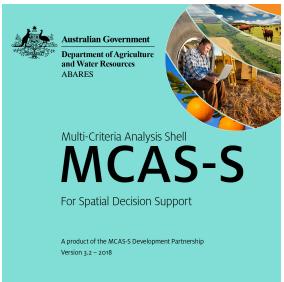
Species Occurrence Datasets

Grey-headed flying fox occurrences cleaned

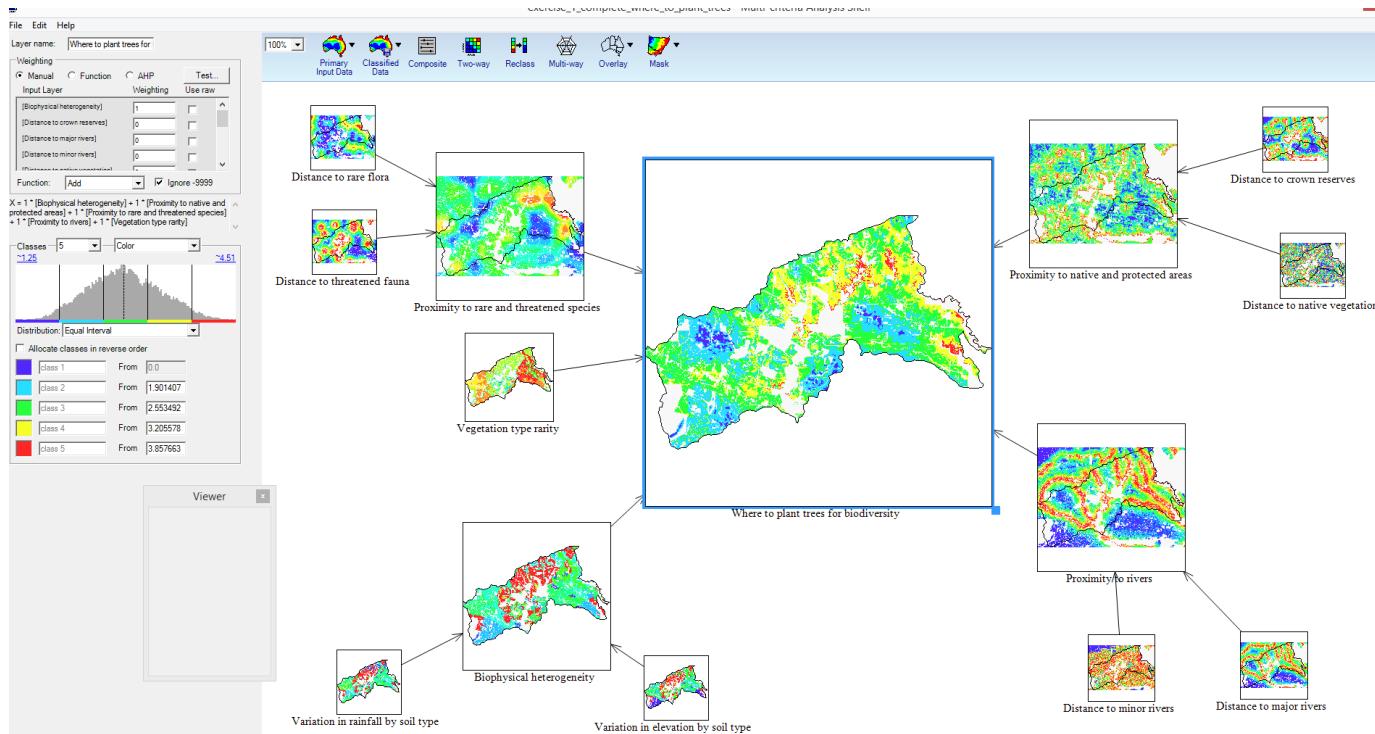
Pteropus poliocephalus  
Rows: 2914



# Multi-Criteria Analysis (ABARES)



**Australian Government**  
**Department of Agriculture  
and Water Resources**  
**ABARES**



# Environmental Metagenomics (Galaxy)

Analyse differences in microbial populations of soil samples based on raw DNA sequencing data

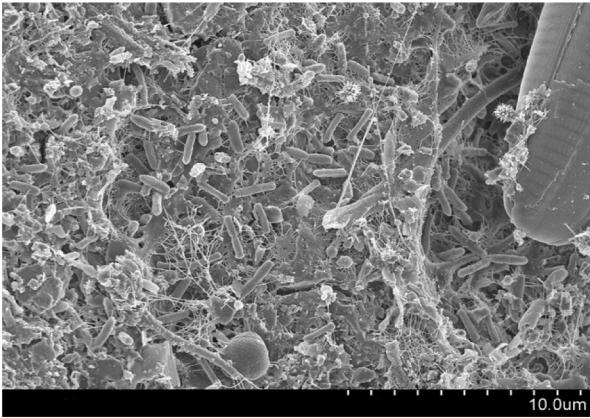


Image courtesy of the Lewis Lab at Northeastern University. Image created by Anthony D'Onofrio, William H. Fowle, Eric J. Stewart and Kim Lewis.

Metagenomics

Search Galaxy-Australia-training/t...

1 Stars · 3 Forks

Download and Delete Data in Galaxy

Quality control

Genome assembly

Genome annotation

Variant calling - bacteria

Variant calling - human

Antibiotic-resistant genes

Using MLST

Sample identification

RNA-seq - bacteria

RNA-seq - eukaryotes

Metagenomics

Galaxy workflows - introduction

Workflow - genome assembly

Workflow - genome annotation

Workflow - variant calling, bacteria

Workflow - Bacterial RNA-seq

Workflow - Metagenomics

Short read data

Reference genomes

Help!

FOLLOW THE TUTORIAL

Follow the steps in the first half of this tutorial that covers metagenomics analyses using amplicon data:

[Click here for the link to the Galaxy Training Network tutorial](#)

The workflow for this tutorial looks like this:

Workflow part 1

usegalaxy.org.au/

# ecoEd modules

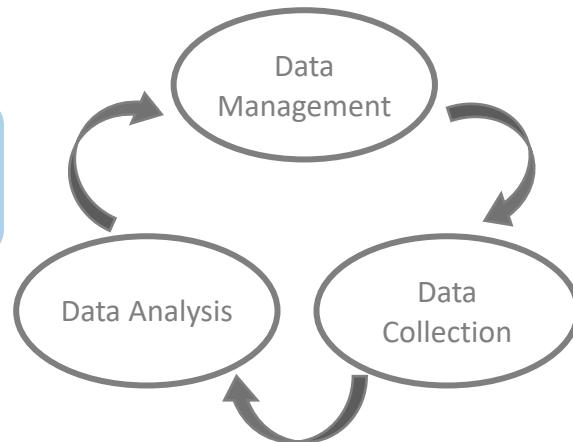
10 Eco Data Things



Australian Research Data Commons



Multi-criteria  
decision  
analysis



Data Quality

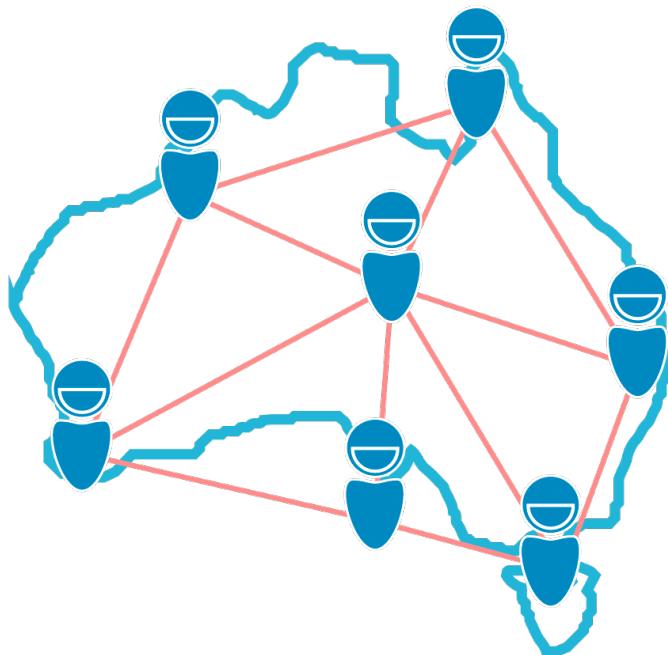


Biodiversity &  
Climate  
Change

Spatial Data  
for Ecology



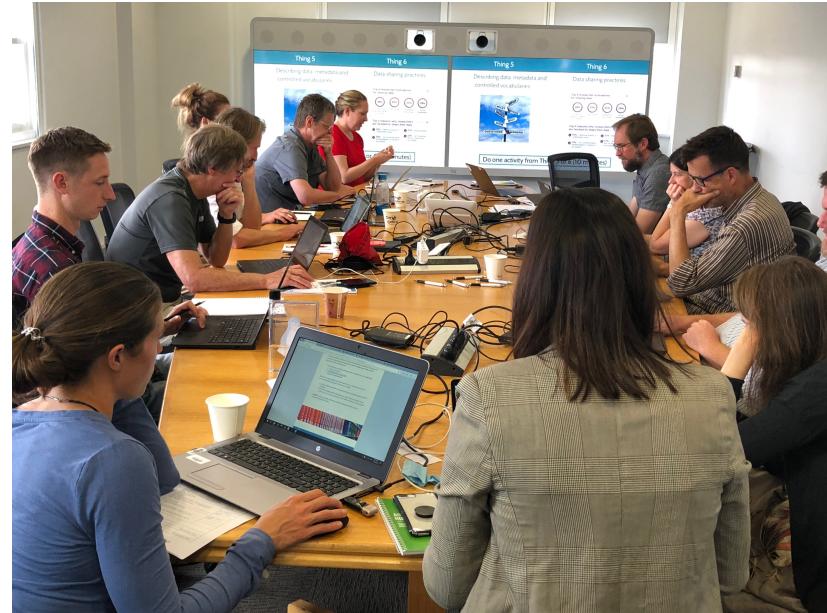
# ecoEd Champions



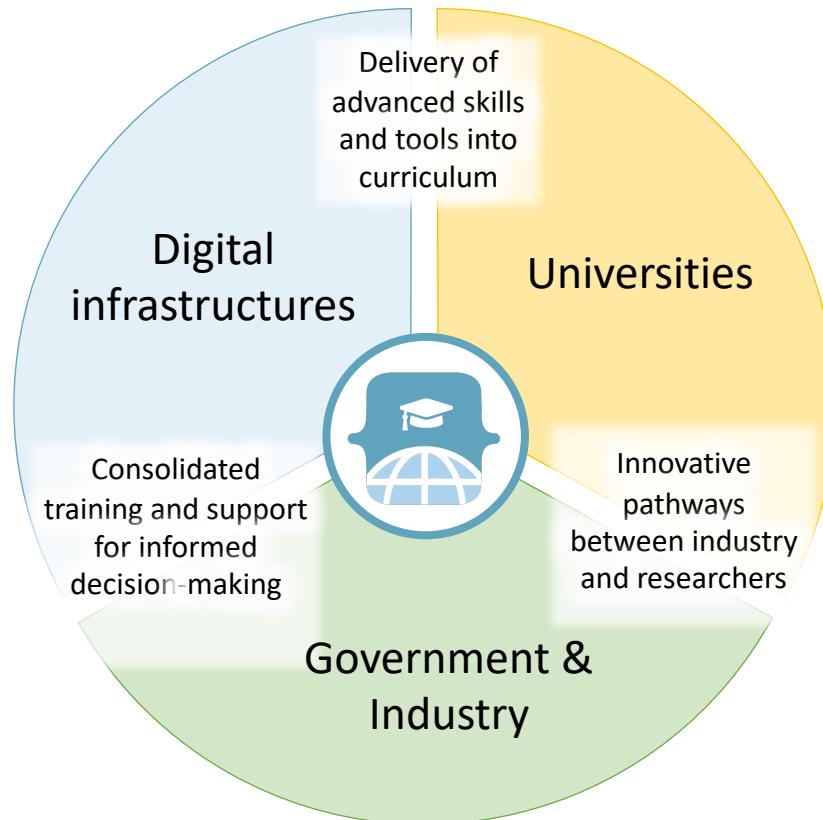
- Enthusiastic communicators
- Deliver training in their institution and related organisations
- Act as a trusted advisor
- Feedback
- Exchange knowledge and ideas

# *ecoEd* Champions training

- 14 Champions from 12 institutions across Australia and NZ
- Fully funded face-to-face training days
- Co-branded teaching material (presentation, workshop handout, teacher information)
- Guide Champions in re-delivery within their own institutions



# ecoEd: integration between infrastructure, academia and industry



*“The clarity of the ecoEd lectures is fantastic, they are well-structured and easy to understand and integrate in my own lectures”*

– A/Prof Bertram Ostendorf, University of Adelaide

**Full talk: Friday 11:00-12:30, SS48, Strengthening community of practice**

[www.ecoed.org.au](http://www.ecoed.org.au)

Follow us on Twitter: @ecoEd\_

Contact: c.huijbers@griffith.edu.au



Australian Research Data Commons

