

# Plant traits in ecology

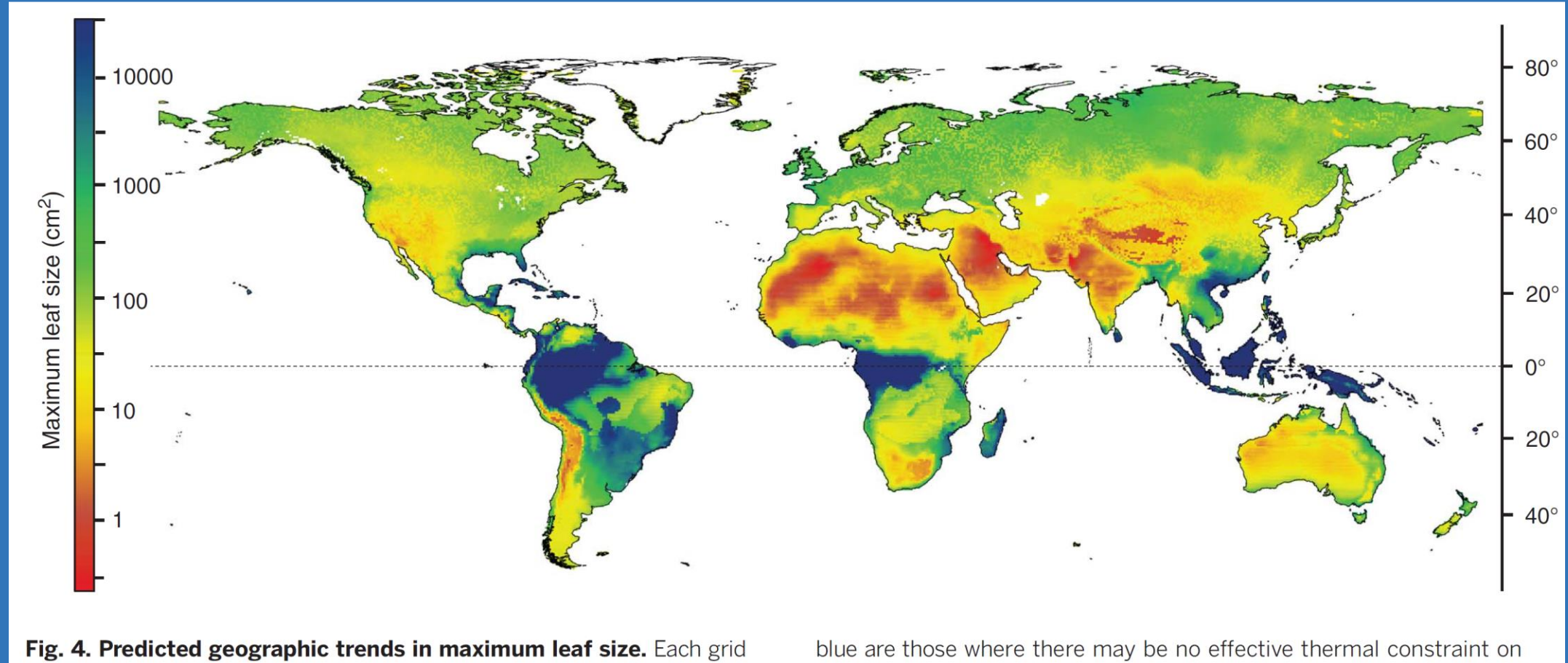
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**Rachael Gallagher, Macquarie University AUSTRALIA**

**Daniel Falster, University of New South Wales**

**Ian Wright, Macquarie University**

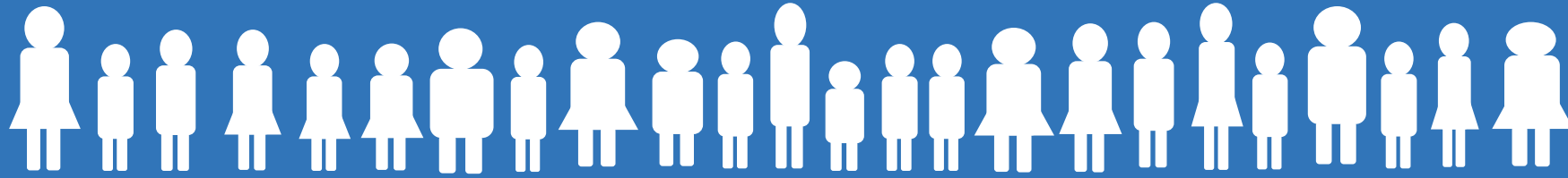
# Plant traits in ecology



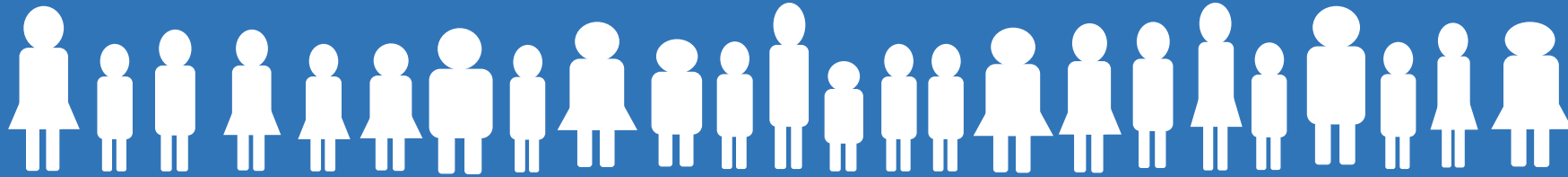
**Test (map) theoretical predictions of key traits**  
**Wright et al. (2018) *Science***

**Who collects trait data (in ecology)?**

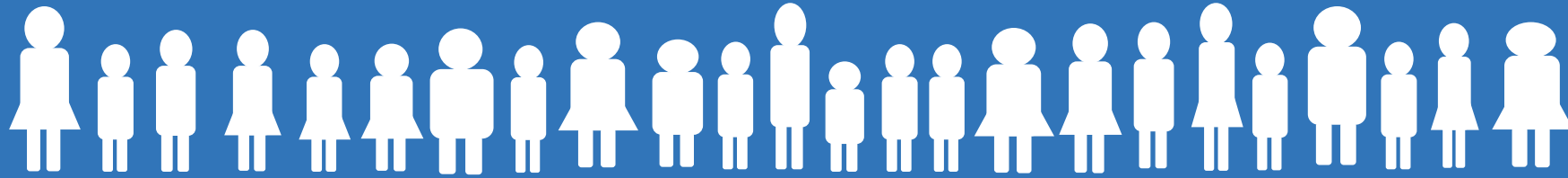
# Who collects trait data (in ecology)?



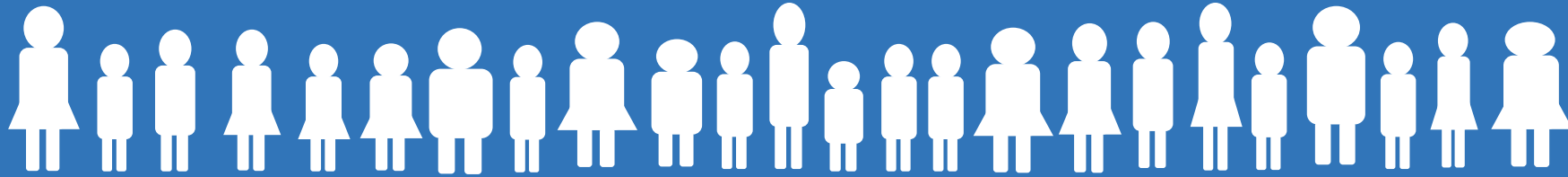
Community ecologists  
Ecosystem modellers  
Conservation biologists



# Who collects trait data (in ecology)?



Community ecologists  
Ecosystem modellers  
Conservation biologists



## Who archives, shares or standardizes their trait data?



# Austraits

**Austraits is about collaboration.**

# Austraits is about collaboration.

To build a comprehensive dataset of plant traits for the Australian flora

GALLAGHER + WRIGHT



# Austraits is about collaboration.

Trait data collated from published & peer-shared datasets

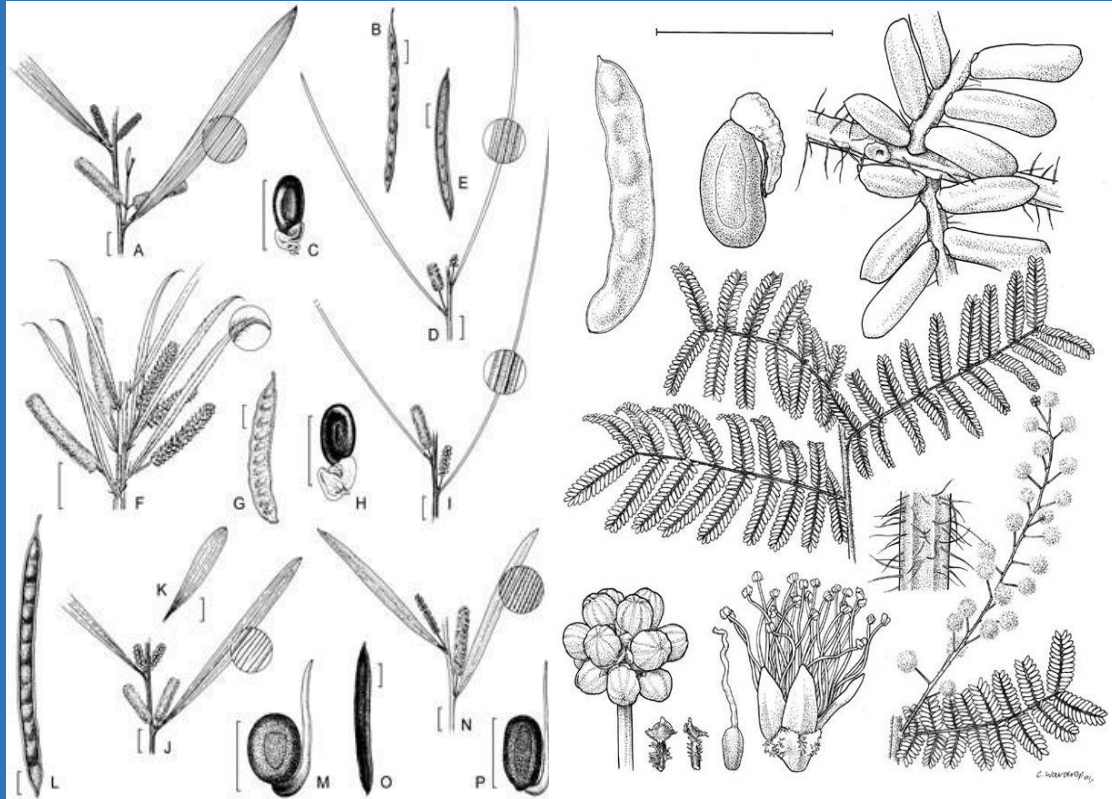
GALLAGHER + WRIGHT + 88 DATA CUSTODIANS



# Austraits is about collaboration.

Trait data mined from taxonomic treatments & species descriptions

GALLAGHER + WRIGHT + 88 DATA CUSTODIANS + ALLEN + 7 HERBARIA + CSIRO



e.g.

- Flora of Australia
- Flora of South Australia
- WA Florabase
- Flora of NSW
- EUCLID, WATTLE

# Austraits is about collaboration.

Make the process transparent and the data easily accessible for all users

GALLAGHER + WRIGHT + 88 DATA CUSTODIANS + ALLEN + 7 HERBARIA + CSIRO + FALSTER + ANDREW

**Austraits is about collaboration.**

**TRANSPARENT?**

# Austraits is about collaboration.

## TRANSPARENT?

- Script every step and build a workflow pipeline

# Austraits is about collaboration.

## TRANSPARENT?

- Script every step and build a workflow pipeline  
e.g. Harmonizing trait names and units

# Austraits is about collaboration.

## TRANSPARENT?

- Provide standardized metadata and configuring

# Austraits is about collaboration.

## TRANSPARENT?

- Provide standardized metadata and configuring

### source:

key: Butler\_2011

bibtype: Article

author: Don W. Butler, Sean M. Gleason, Ian Davidson, Yusuke Onoda, Mark Westoby

year: 2011

title: 'Safety and streamlining of woody shoots in wind: an empirical study across 39 species in tropical Australia'

journal: New Phytologist

volume: 193

pages: 137--149

publisher: Wiley-Blackwell

doi: 10.1111/j.1469-8137.2011.03887.x

url: <http://dx.doi.org/10.1111/j.1469-8137.2011.03887.x>



# Austraits is about collaboration.

## TRANSPARENT?

- Provide standardized metadata and configuring traits

### people:

- name: Don Butler  
institution: Queensland Herbarium  
role: collector
- name: Mark Westoby  
institution: Macquarie University  
role: lab\_leader
- name: Rachael Gallagher  
institution: Macquarie University  
role: contributor

### dataset:

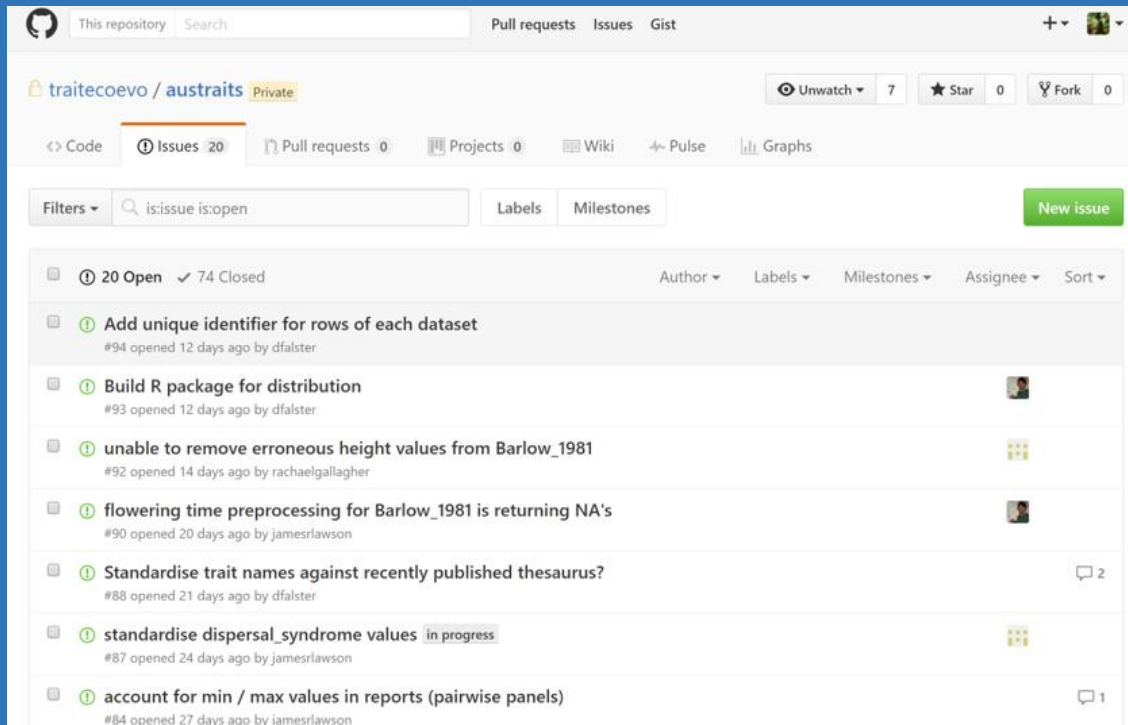
- year\_collected\_start: 2008
- year\_collected\_end: 2008
- description: LMA, height and leaf size data for 43 species collected by Don Butler
- collection\_type: field
- sample\_age\_class: adult
- sampling\_strategy: unknown
- original\_file: Butler\_2011.pdf
- notes: .na

# Austraits is about collaboration.

## TRANSPARENT?

- Document all changes made to the raw data

## Version control via GitHub



The screenshot displays the GitHub interface for the repository 'traitecoevo / austraits'. The repository is marked as 'Private' and has 7 watchers, 0 stars, and 0 forks. The 'Issues' tab is active, showing 20 open issues. The search filter is set to 'is:issue is:open'. The list of issues includes:

- #94: Add unique identifier for rows of each dataset (opened 12 days ago by dfalster)
- #93: Build R package for distribution (opened 12 days ago by dfalster)
- #92: unable to remove erroneous height values from Barlow\_1981 (opened 14 days ago by rachaelgallagher)
- #90: flowering time preprocessing for Barlow\_1981 is returning NA's (opened 20 days ago by jameslawson)
- #88: Standardise trait names against recently published thesaurus? (opened 21 days ago by dfalster)
- #87: standardise dispersal\_syndrome values (in progress) (opened 24 days ago by jameslawson)
- #84: account for min / max values in reports (pairwise panels) (opened 27 days ago by jameslawson)

# Austraits is about collaboration.

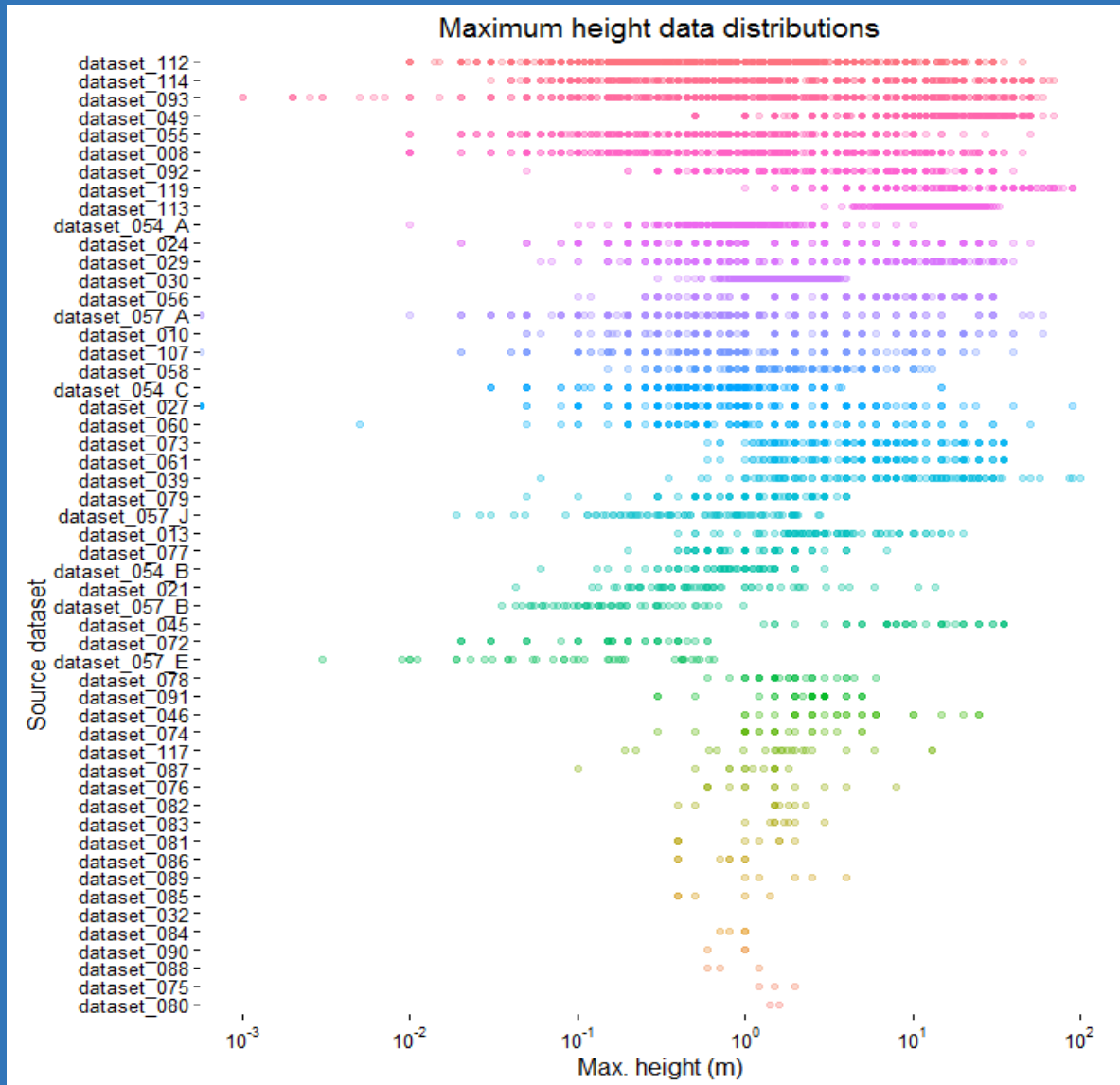
## TRANSPARENT?

- Make the data easily accessible for all users
  - Public release of Austraits v.1.0
  - Publish a data descriptor (in prep)
  - R package
  - Online portal → ATLAS OF LIVING AUSTRALIA

# What data is currently in Austraits?

- 330,000 trait observations across 17,000 species
- 120 individual datasets
- 102 raw traits: 65 numerical, 37 categorical

# Key traits: maximum height (m)



# Challenges?

## 1. MAKE CLEANING EFFORTS COMMUNAL



# Challenges?

1. **MAKE CLEANING EFFORTS COMMUNAL**
2. **SHARING EXPERTISE & APPROACHES**

**Steering Committee & Technical Team**

**Ecological Society of America Meeting,  
New Orleans August 4-5 APPLY!**



# OPEN TRAITS

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## Open Traits Workshop

**Venue:** TBD, New Orleans  
**Dates:** August 4-5, 2018

# Thanks

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**Australian Research Council**