

Red Fox (*Vulpes vulpes*)

Photo Credit Scott Rolph CC BY NC



Myrtle Rust (*Austropuccinia psidii*)

Photo Credit Geoff Pegg CC BY NC



Red Imported Fire Ant (*Solenopsis invicta*) Photo

Credit A Rector CC BY NC



I acknowledge the Traditional Owners of the land that we're meeting on today and pay my respect to their Elders past and present.

 Atlas of Living
Australia
ala.org.au

Community
contributions to invasive
species surveillance in
Australia





Leveraging biodiversity data & infrastructure for biosecurity



Capture new data through a Myrtle Rust campaign



Emerging trends & challenges from the biodiversity sector

Atlas of Living Australia ala.org.au

Australia's national biodiversity data infrastructure

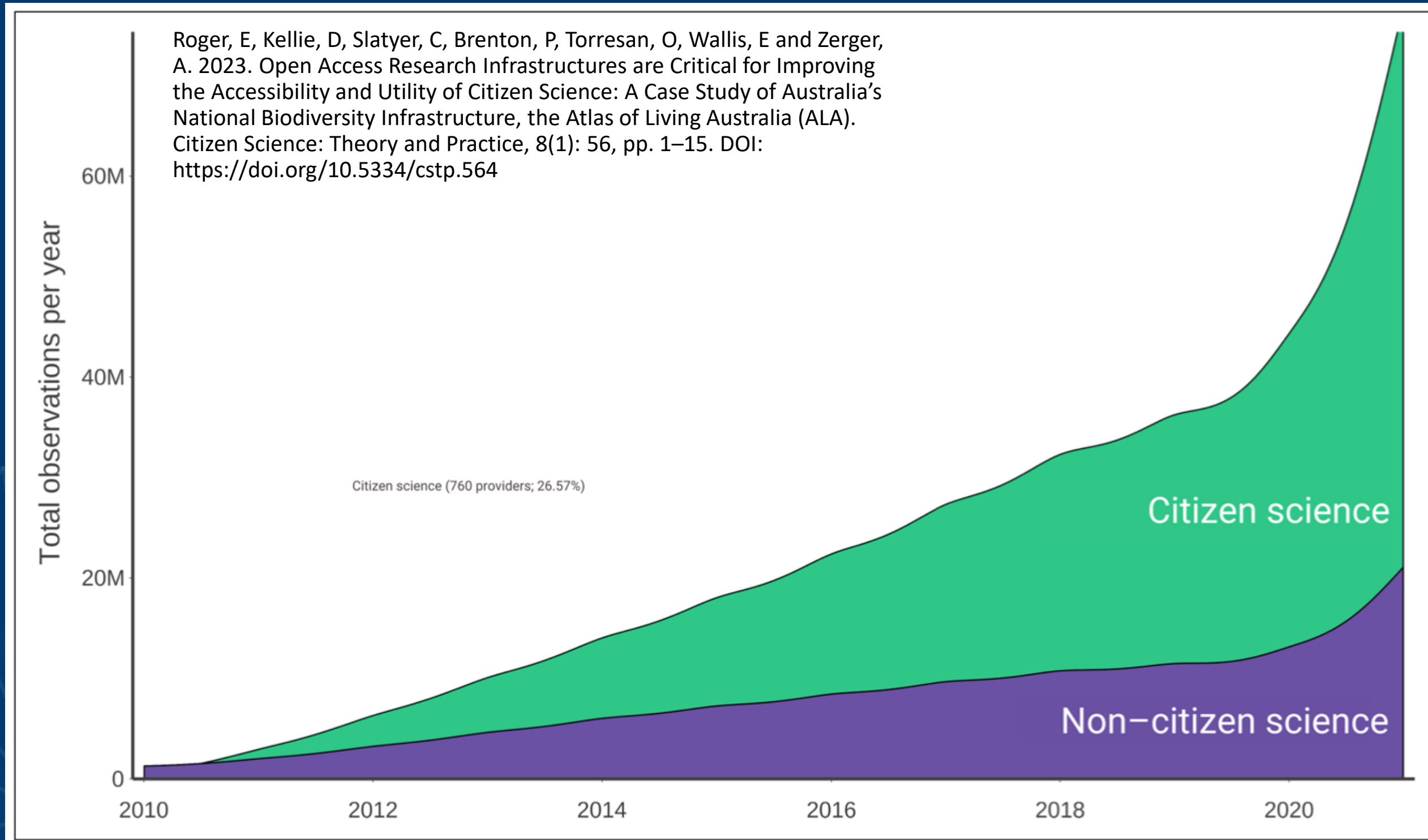
Data Types



Data Providers



Occurrence data in the ALA



150,000,000+

Total species occurrence records



>850

Data partners: across research, government and community groups

Invasive alien species in the ALA

Cane Toad
(*Rhinella marina*)

37,984 records



Photo by Adriana Labate (CC BY NC)

Siam weed
(*Chromolaena odorata*)
19,268 records



Photo by efraninn (CC BY NC)

Myrtle Rust
(*Austropuccinia psidii*)

7,806 records

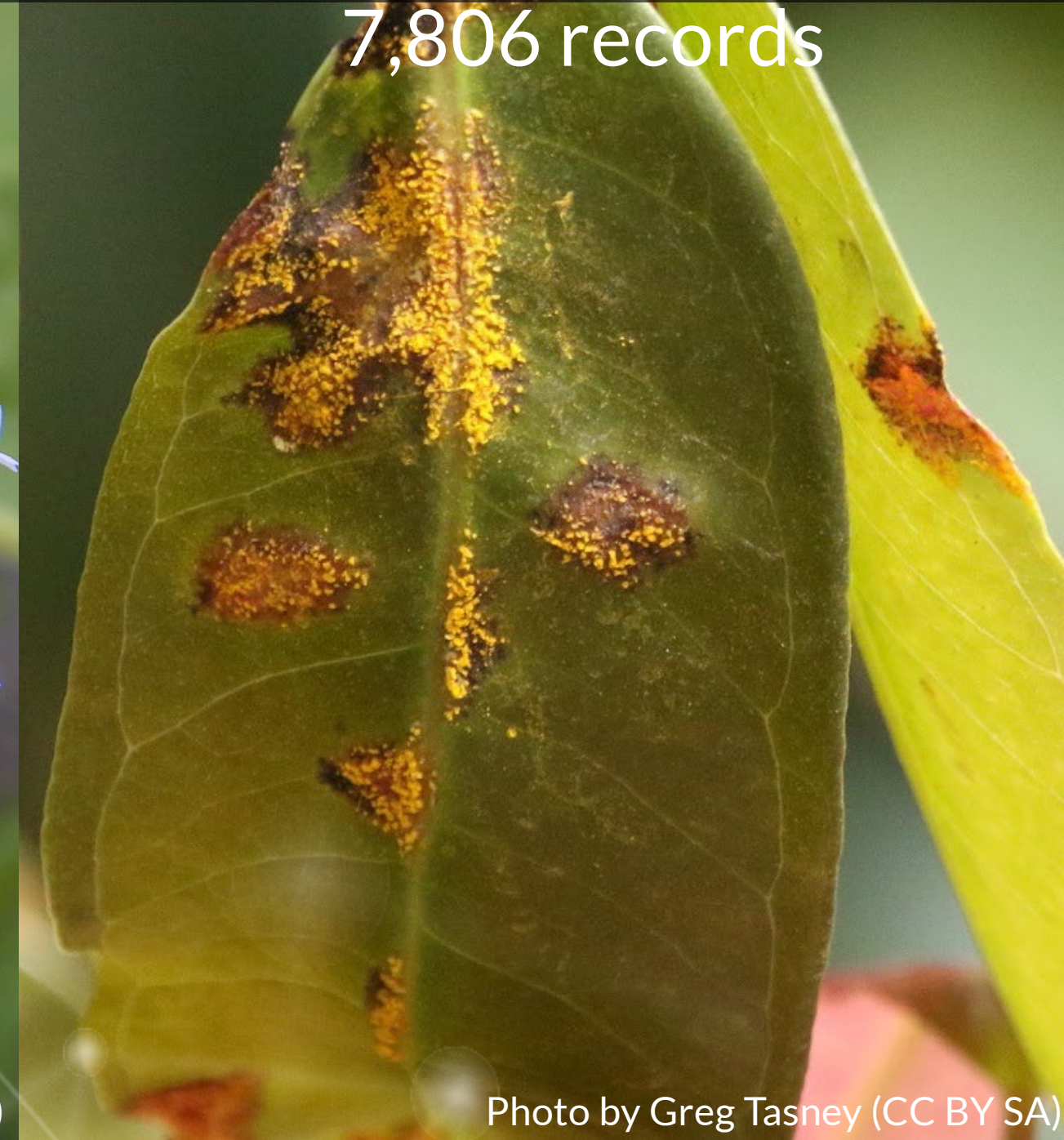


Photo by Greg Tasney (CC BY SA)

First public reports of new incursions

The Asian Shore Crab (*Hemigrapsus sanguineus*) is considered a biosecurity threat to Australia, and was detected in Victoria in 2020.



Asian Shore Crab (*Hemigrapsus sanguineus*)
Photo Credit Wayne Martin CC BY NC

ALA's Biosecurity Alerts Service

Data providers submit data to the ALA

Data aggregated and made open & accessible

Data user identifies list of species for Alerts

Biosecurity alerts delivered to your inbox

Data utilised by Biosecurity Managers



Biosecurity Alerts Service



Developed in collaboration with:



Australian Government
Department of Agriculture,
Fisheries and Forestry

ALA's Biosecurity Alerts Service

29. *Cabomba*

Queensland

Coordinates: -27.234059, 153.016681

Time & date: 2024-04-14 23:17

Source: iNaturalist Australia



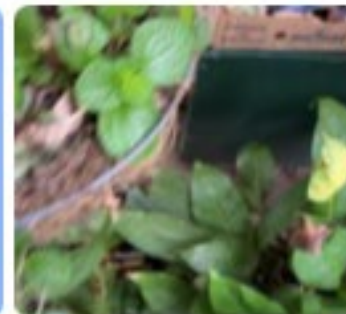
30. *Miconia crenata*

Queensland

Coordinates: -16.819382, 145.63324

Time & date: 2024-06-29 00:29

Source: iNaturalist Australia



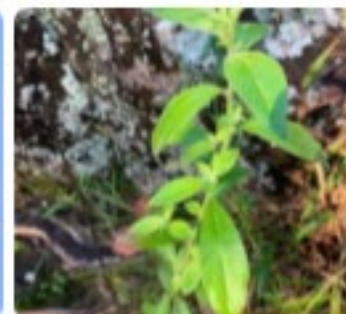
31. *Ludwigia peruviana*

Queensland

Coordinates: -26.569992, 152.904938

Time & date: 2024-06-23 20:28

Source: iNaturalist Australia



32. *Opuntia microdasys*

Common name: Bunny-ears

Queensland

Coordinates: -27.402396, 153.356168

Time & date: 2024-03-28 00:49

Source: iNaturalist Australia



- Open to anyone in biosecurity sector
- 69 biosecurity-related agencies
- Alerts sent for 863 taxa
- Almost 7000 unique alerts

What's being found?



Serrated Tussock (*Nassella trichotoma*)
Image by Marlowe Potter CC BY NC



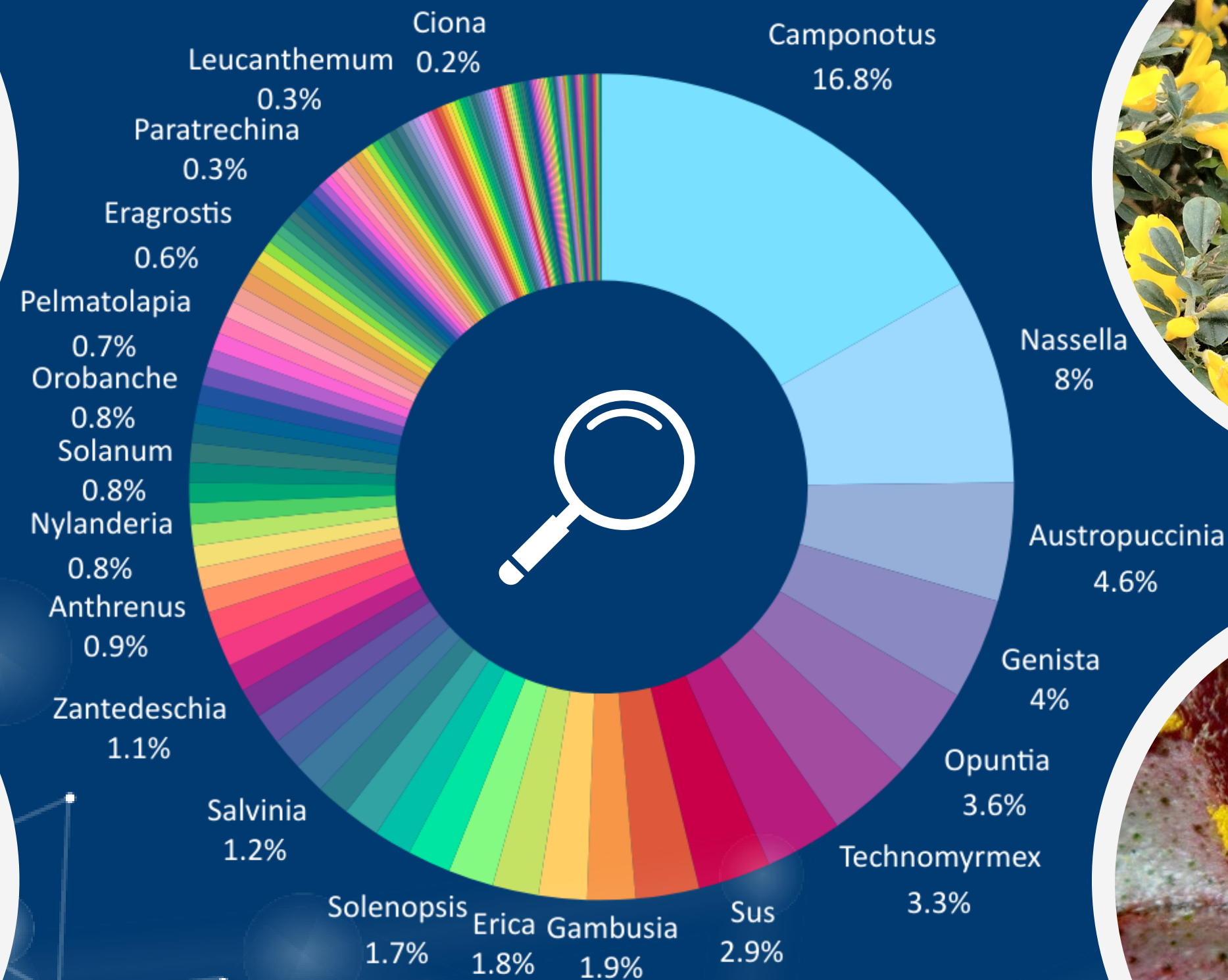
Montpellier Broom (*Genista monspessulana*)
Image by Jesus Garcia CC BY NC



Eastern Black Carpenter Ant (*Camponotus pennsylvanicus*)
Image by Thomas Shahan CC BY NC



Myrtle rust (*Austropuccinia psidii*)
Image by Peter de Lange NCO



Responsive management: *Opuntia puberula*

ALA Biosecurity Alert of *Opuntia puberula* triggered a site visit

- two plants were located, samples taken, and plants eradicated.
- A pot plant found, indicates plant was likely illegally dumped.
- This is the 11th detection of this species in South East Qld.
- The presence of a prohibited and highly invasive *Opuntia* species in a public area presents a significant biosecurity risk to Queensland.

“There is no doubt that the biosecurity alert system has improved our statewide surveillance capability, mainly due to the capture of iNat detections from 18,000 users in Qld.

- Steve Csurhes, Biosecurity Queensland”



Opuntia puberula

Photo Credit Darren Fielder CC-BY-NC

Significant detections

Freshwater Gold Clam (*Corbicula fluminea*)
Image by codystory CC BY NC



Tree Cholla (*Cylindropuntia imbricata*)
Image by scotstewart CC BY NC



Yellow Crazy Ant (*Anoplolepis gracilipes*)
Image by Nigel Main CC BY



Honey fungus (*Armellaria Mellea*)
Image by Ian Bevege CC BY



Siam weed (*Chromolaena odorata*)
Image by daniellemurcia CC BY NC

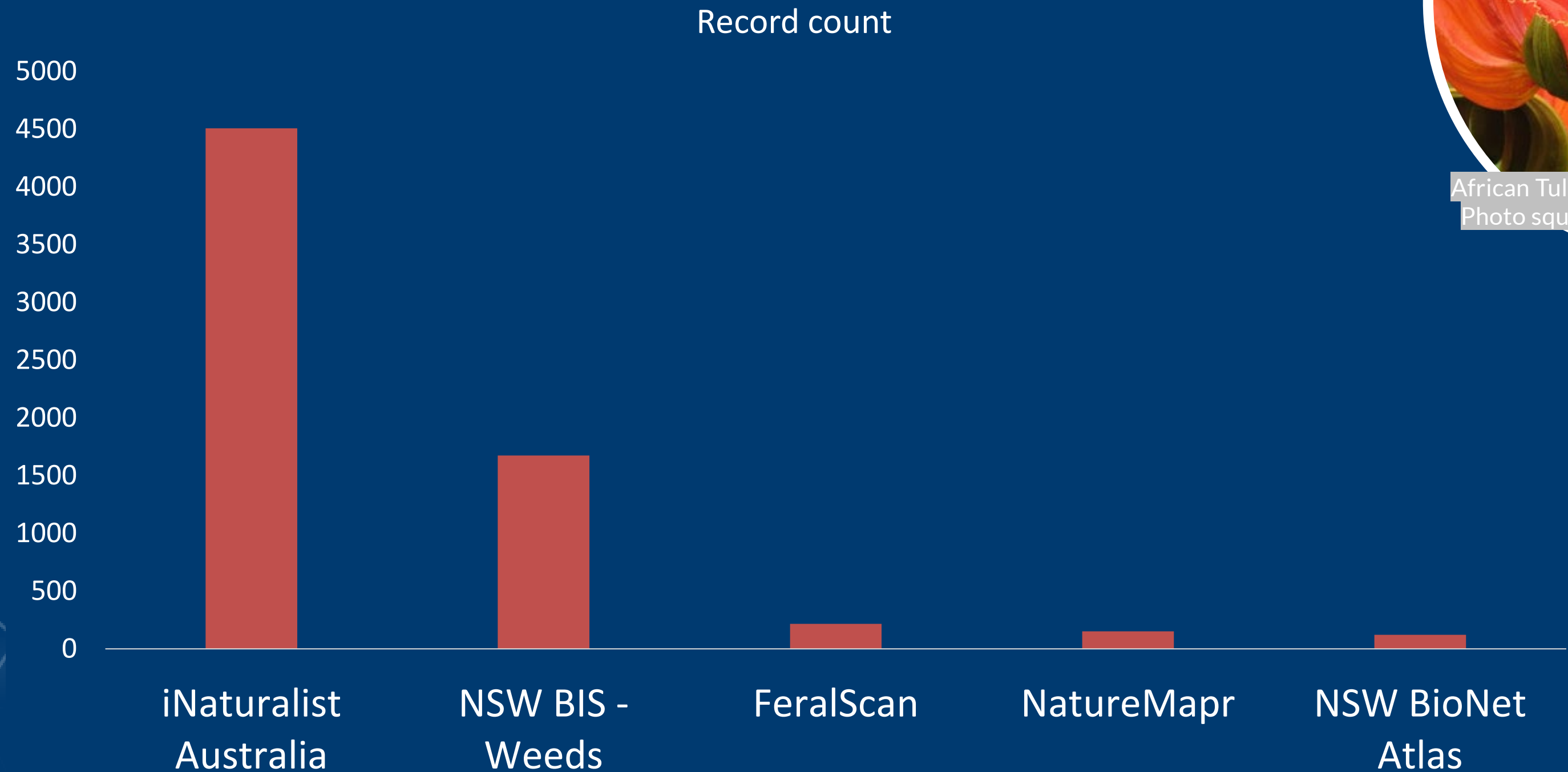


Western Conifer Seed Bug
(*Leptoglossus occidentalis*)
Image by Leo-Guy de Repentigny CC BY NC



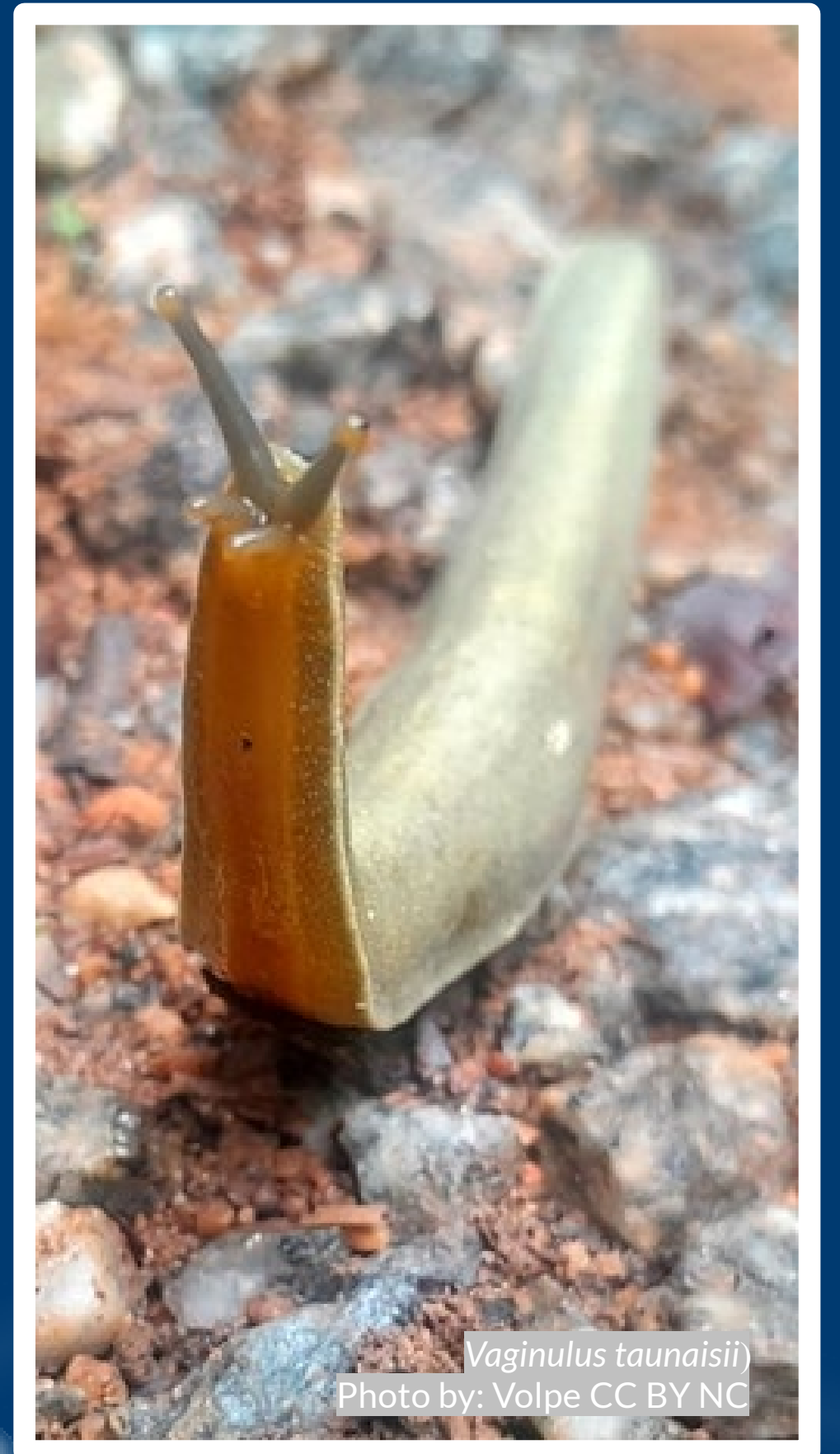
Red Imported Fire Ants
(*Solenopsis invicta*)
Image by Matthew Friant CC BY NC

Where did the data come from?



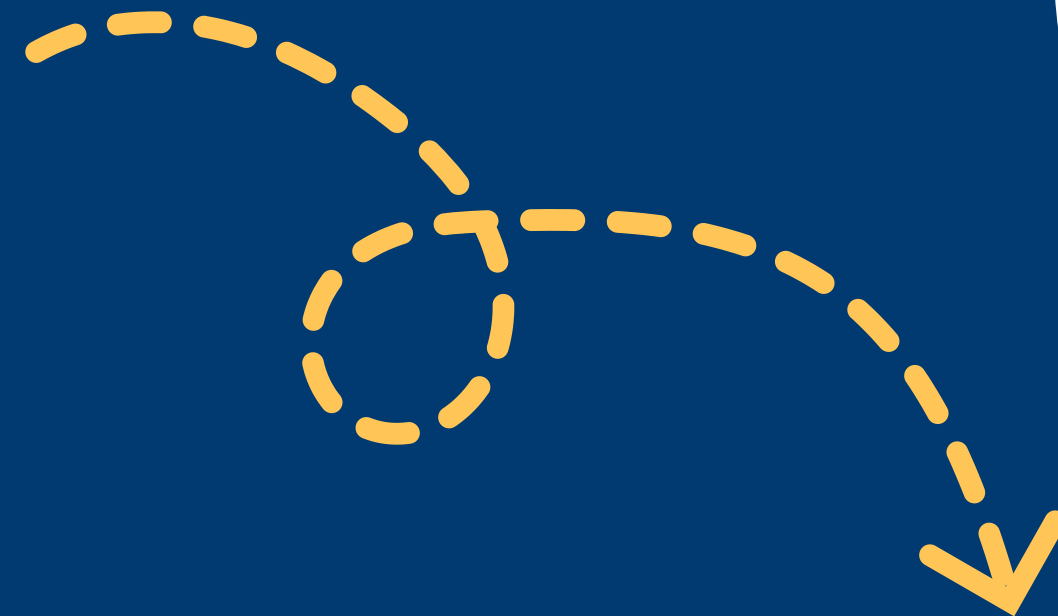
Barriers to leveraging community invasives data

1. Skepticism about accuracy & value of citizen science data
2. Inconsistent or inaccessible names for pests, weeds and diseases (e.g. *Vaginula olvaceous*)
3. Few citizen science programs encouraging reporting of invasive species
4. New data types are being collected, but aren't, yet, being shared & aggregated



Citizen scientist reporting of invasive species

ALA had approximately
570 myrtle rust records
prior to the campaign



About myrtle rust:

- Myrtle rust is an invasive fungal disease
- Infects Myrtaceae species, driving some to near extinction.

Project aims:

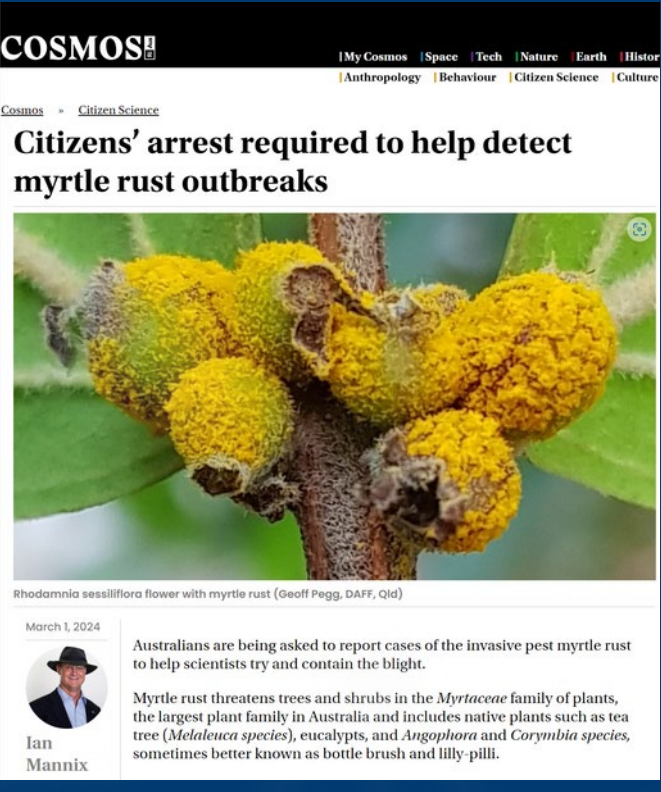
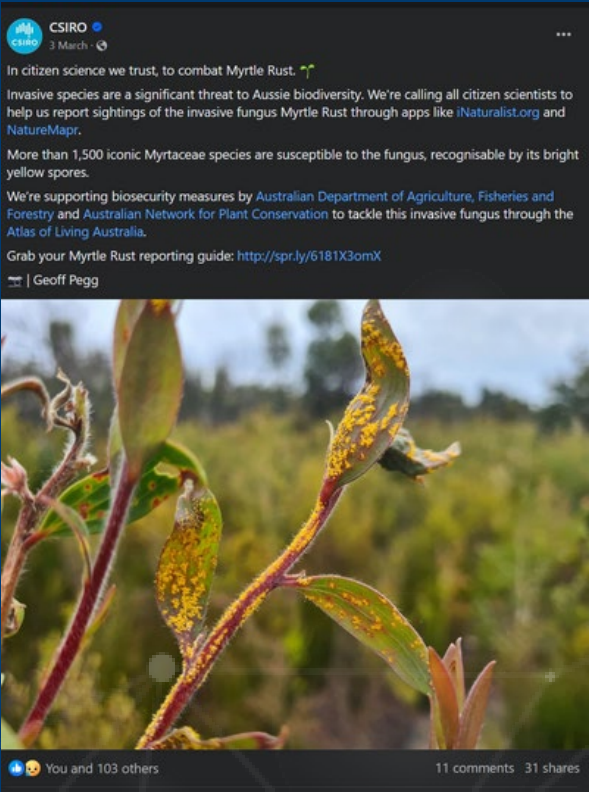
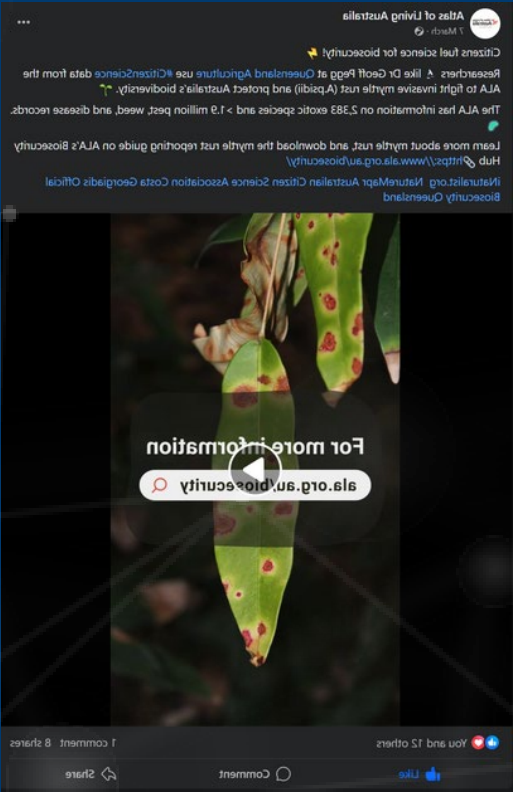
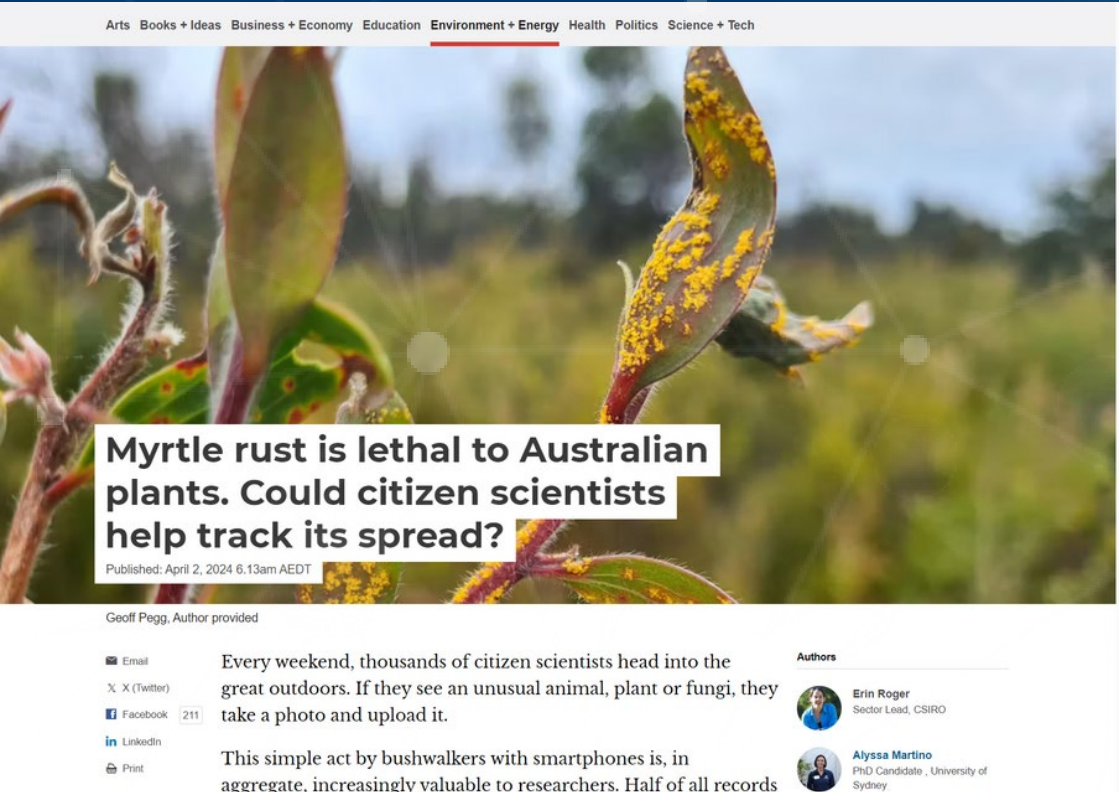
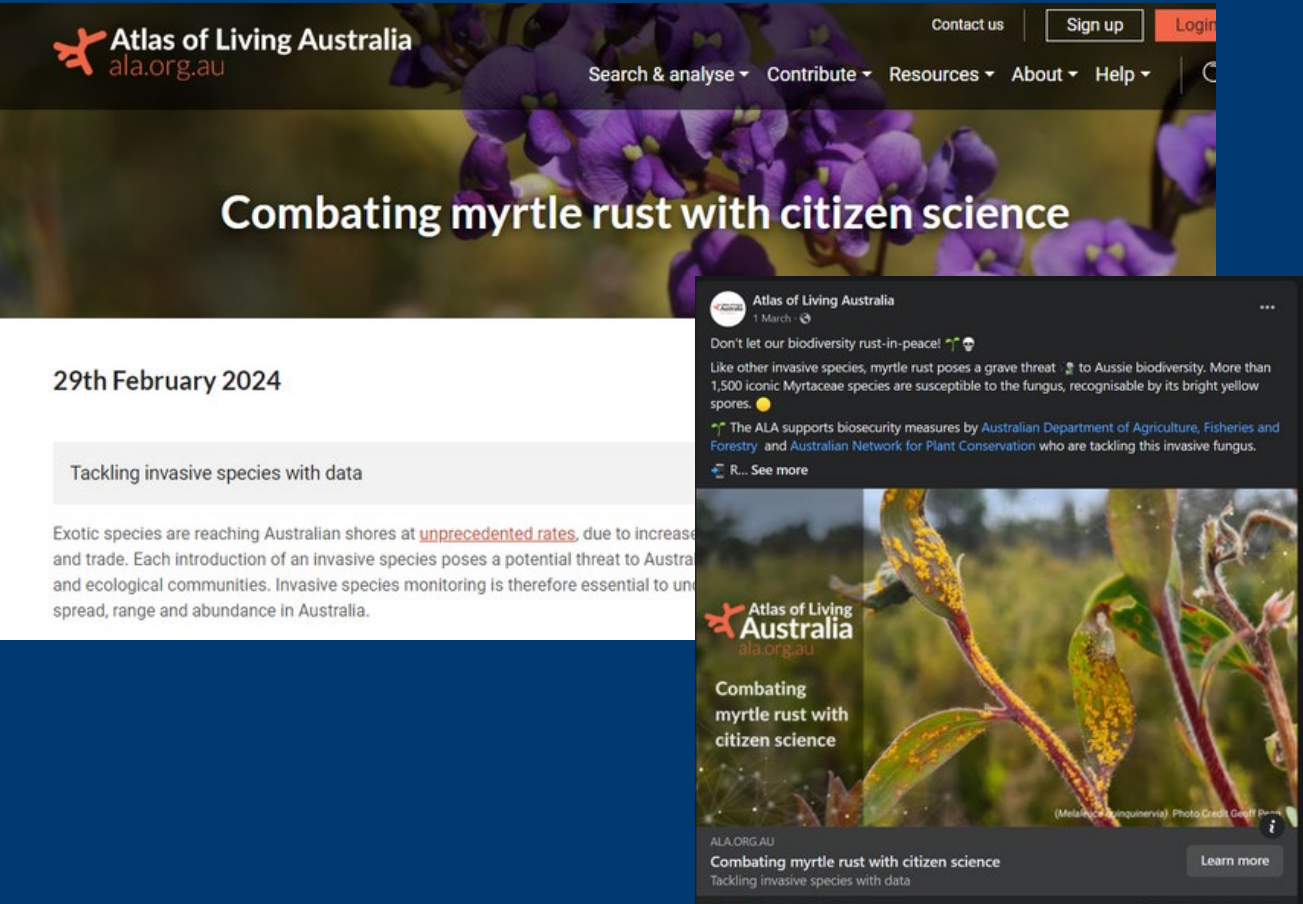
- Increase myrtle rust records in the ALA, including through citizen science
- Raise awareness of myrtle rust in Australia.

Myrtle Rust campaign (2023)



Campaign:

- Engagement with experts
- ALA blogs and newsletter
- 5 x dedicated ALA social media posts
- CSIRO social media shares
- Facebook and Instagram lives with Costa
- Cosmos and Conversation articles
- Media coverage



Raised awareness of Myrtle Rust in Australia

Socials

@costasworld



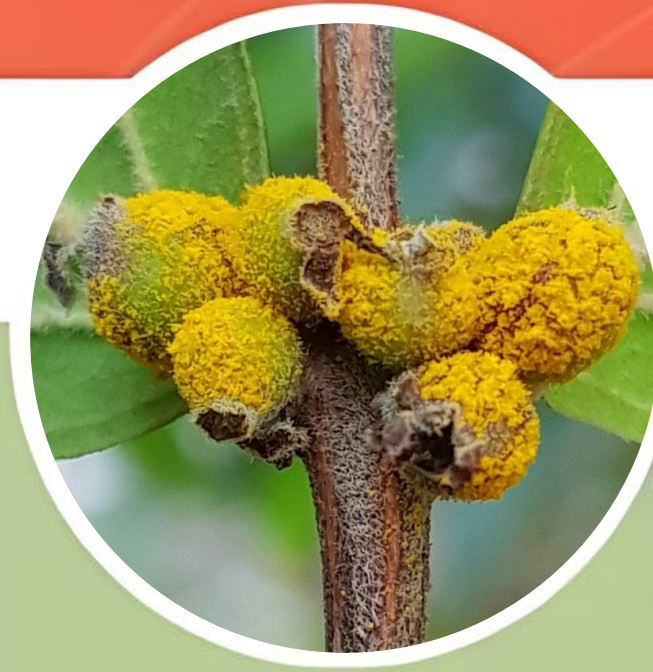
5x IG live chats
1x FB livestream



@atlasoflivingaustralia



FB 290 engagements, 73 shares, 40k reach
LI 141 engagements, 22 shares, 3.2k reach
X 161 engagements, 60 re-tweets, 435k reach



Myrtle rust (*Austropuccinia psidii*)
Photo credits Geoff Pegg CC BY NC

@csiro



FB, LI, X, IG combined 1,536
engagements, 20.3k reach

Earned media

1x Cosmos article, >8k reads
1x Conversation article >7k reads
20x media mentions (radio/online)
365k potential audience reach



Gumtree Guardians

22 new members
23 new observers
74 new observations
34 new observations for priority
host species



Increased Myrtle Rust occurrence data

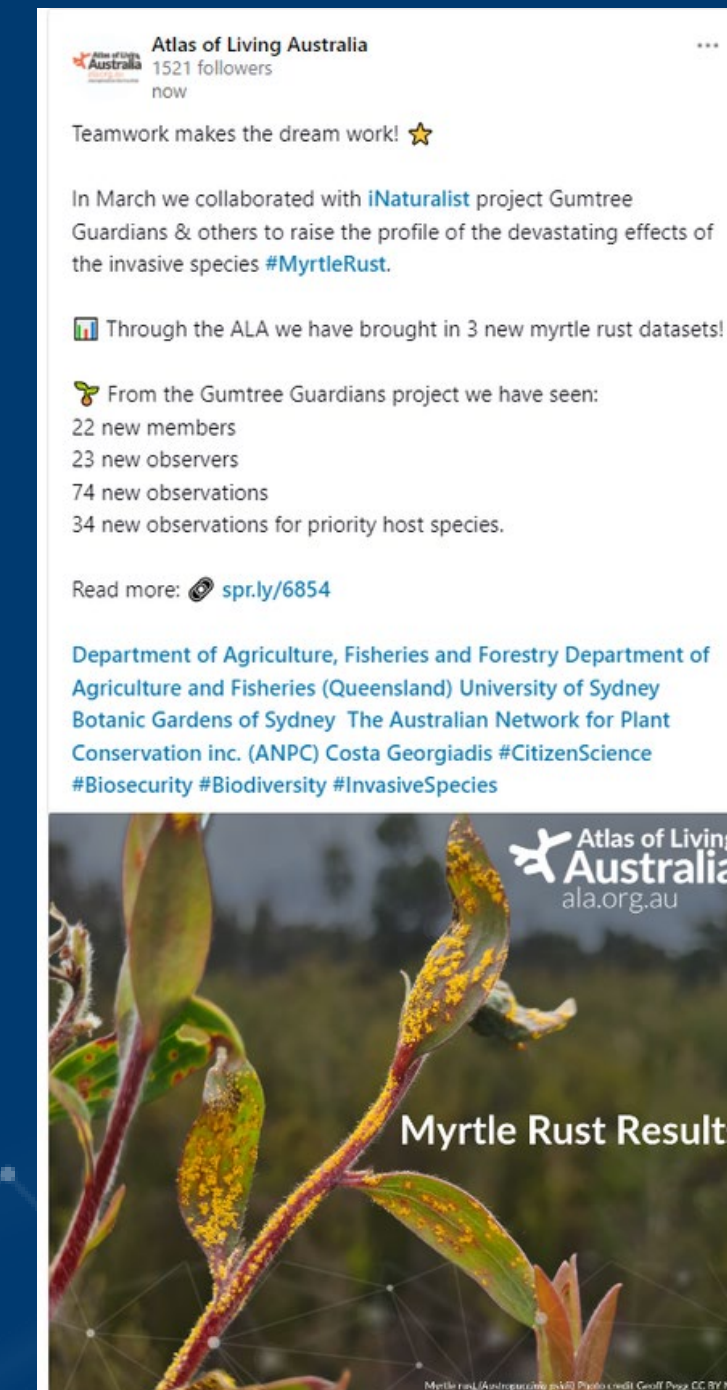
The ALA now has
7,806 records of myrtle rust

3 New Datasets in ALA:

- Myrtle Rust Surveys of Eastern Australia (6852 records, Queensland Herbarium)
- Historical Observations of Myrtle Rust in Victoria (39 records, David Smith)

In progress:

- Myrtle Rust reports Qld (15044 records, Qld DAF)



Insights

1. Biosecurity data needs may be different than biodiversity needs
 - Include associations and impacts
 - Occur in cultivated areas and private lands
2. Regional differences in spread and impacts require flexibility of approach
 - E.g. Queensland vs Victoria
3. A lot of data already exists / is being lost
 - In iNaturalist, host species recorded, but not presence of myrtle rust
 - Not all jurisdictions are recording reports from public
 - Individual researchers / professional organisations aren't sharing data
4. Engagement was lower than other comparable initiatives.



Emerging trends: Machine-generated data

Camera traps



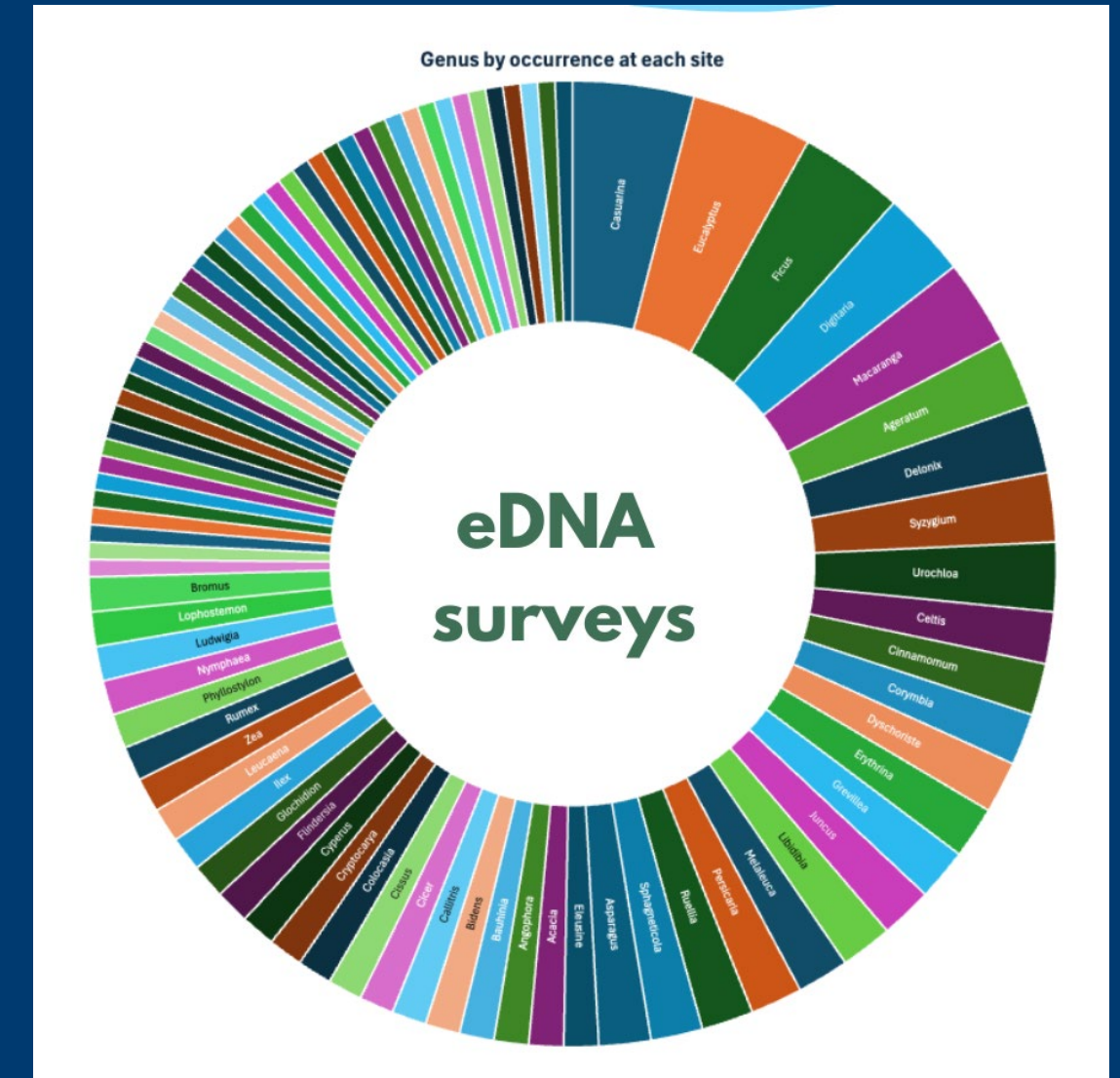
Red Fox, *Vulpes vulpes*
Photo by: Mononymous CC-BY-NC on iNaturalist

Ecoacoustics



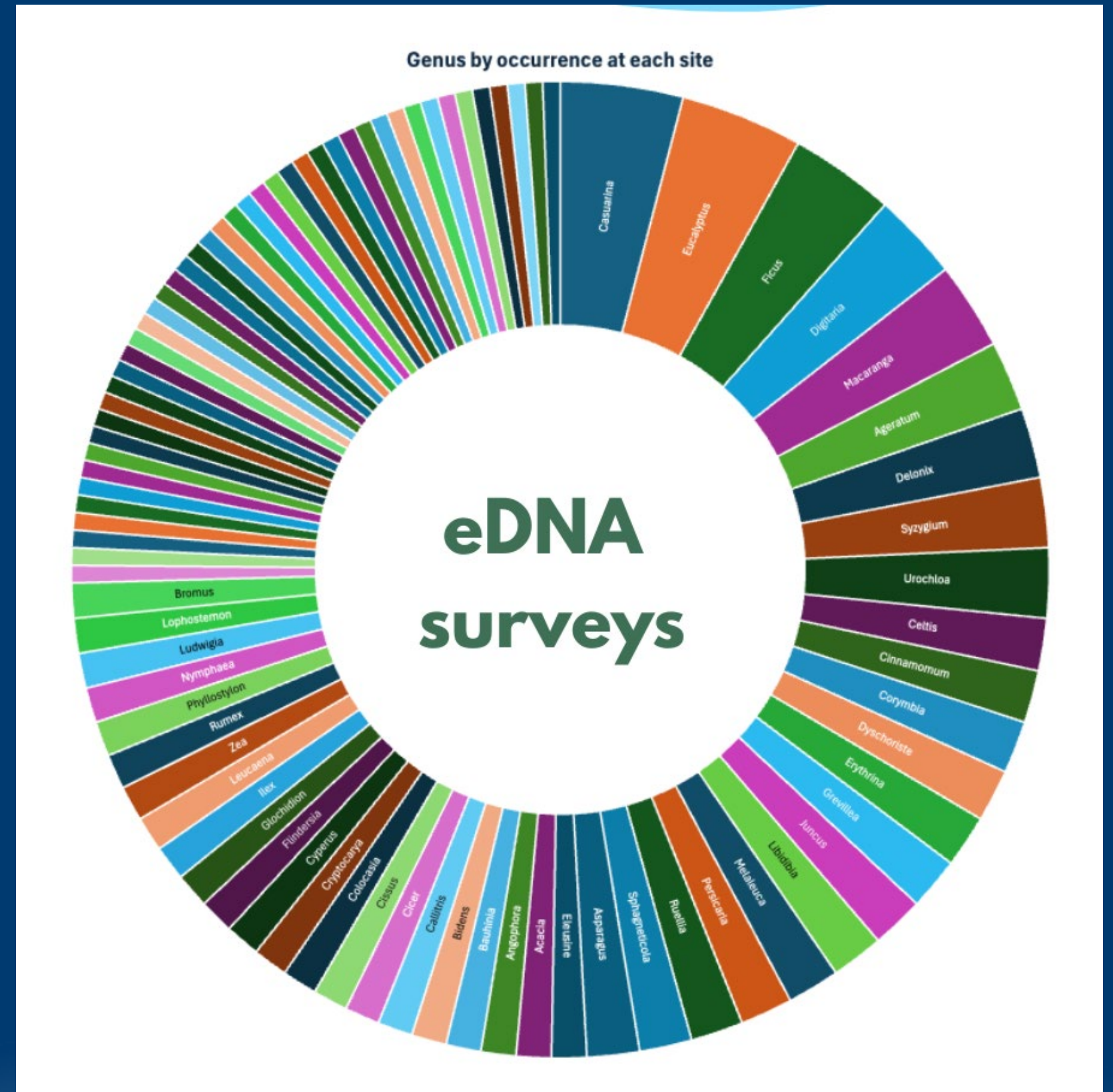
Cane Toad, *Rhinella marina*
Photo by: Connor Margetts CC-BY on iNaturalist

eDNA

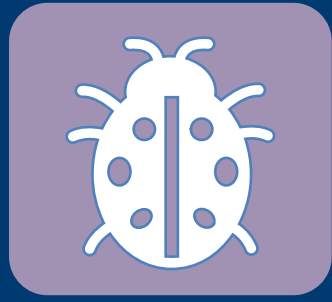


eDNA

- 88 genera, 77 species of plants
- 64% of taxa were weeds



Raise community contributions to biosecurity by:



Leveraging existing biodiversity networks & reporting



Fostering a culture of data sharing (and share your data!)



Recognize and support foundational work (taxonomy etc)



Joining & promoting ALA's Biosecurity Alert Service!

Atlas of Living Australia ala.org.au



Special thanks to:

Erin Roger, Cam Slatyer, Geoff Pegg, Qld DAF; Alyssa Martino, Sydney University & Gum Tree Guardians; Bob Makinson ANPC; Brett Summerell, RBG; David Smith Forest Pathologist; Costa Georgiadis, the ALA team and all citizen scientist contributing invasive species data!

Developed in collaboration with:



Australian Government
**Department of Agriculture,
Fisheries and Forestry**

