

Ecology of the Richmond Vale Rail Trail Landscapes

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*“Our land abounds in nature's
gifts of beauty rich and rare”*



Biodiversity

If Politics and Law are what manage our Society

And Art is what identifies civilisation

It is accepting our place in the natural world that
defines our spirit

How do we connect with our natural heritage?

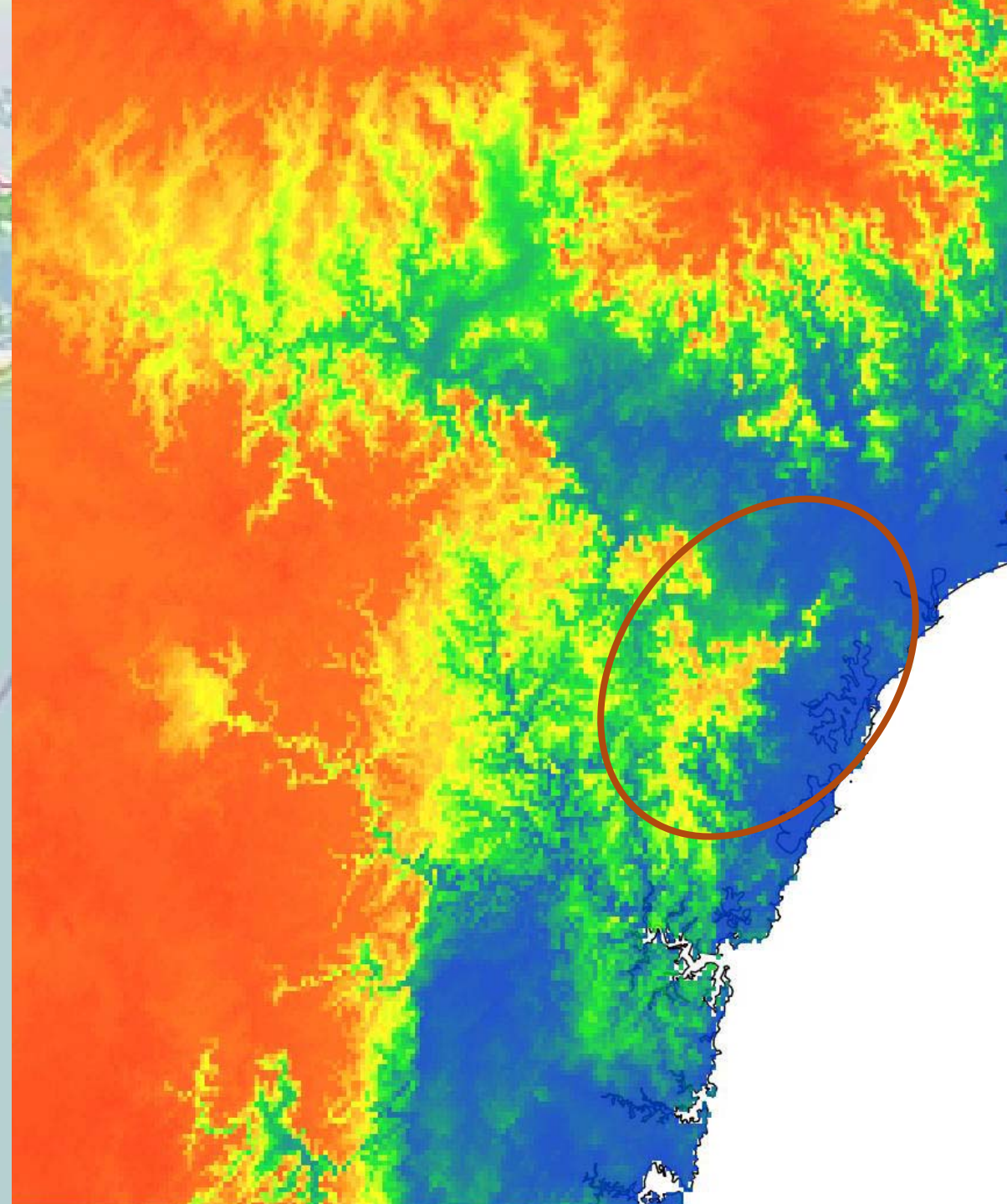
Utilitarian values (ecosystem services)

Intrinsic values

The Richmond Vale Rail Trail Landscape

- ▶ Sugarloaf Range and lower Hunter Valley floodplains (including Hexham Swamp)

Geographical context



Biological diversity is considered at three levels

- ▶ Species diversity → the variety of different species (plants, animals, fungi and micro-organisms);
- ▶ Genetic diversity → the variety of genes contained in all living organisms. It occurs within a species as well as between species;
- ▶ Ecosystem diversity → the different habitats - or places - that exist.

Drivers of Ecosystem diversity

- ▶ Underlying geology → soils and landscapes (topography)
- ▶ Climate → regional and local
- ▶ Evolutionary history (an ancient land with ancient passengers)
- ▶ Together these drive the evolution of biodiversity



Major themes driving the ecology

High level of biodiversity

1. Northern limit of the Sydney Basis Bioregion
Endemism associated with metasediments and their landscapes
2. Eastern boundary of the Hunter Valley floodplain
Climate and altitude boundary
3. Connection with the Northeast Bioregion
Volcanic and metamorphic geology; sub-tropical influence

A brief note on the source of ecological data

► Atlas of Living Australia

- A data base of all observations of animals, plants and natural communities (Museums, Herbariums, Literature and Research)
- Combined with GIS layers for climate, soils, moisture, landforms
- Public portal

Occurrence Records 71,449,694 **Species** 120,002 **Data downloads** 1,573,881 **Registered users** 39,095



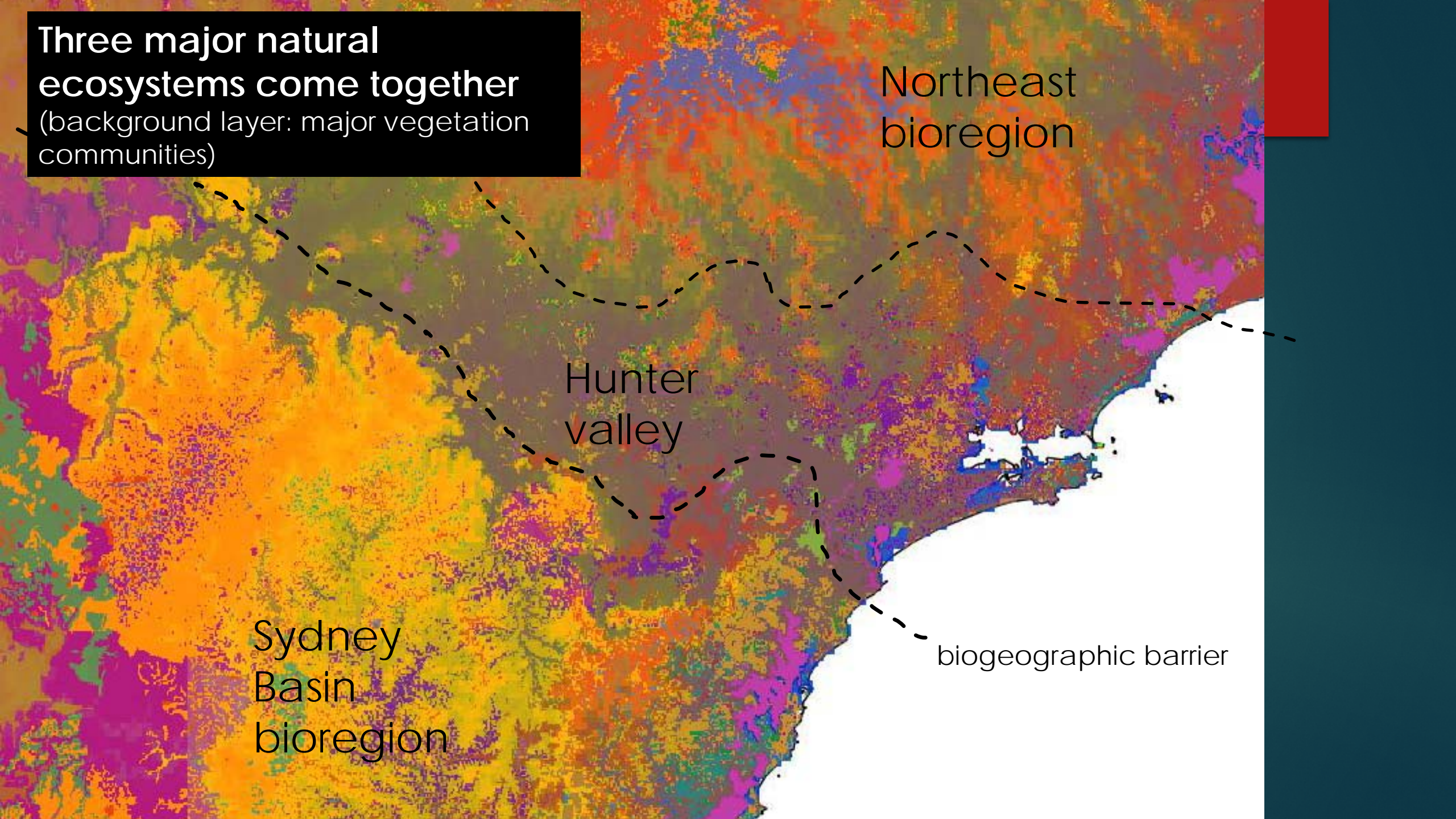
**Three major natural
ecosystems come together**
(background layer: major vegetation
communities)

Northeast
bioregion

Hunter
valley

Sydney
Basin
bioregion

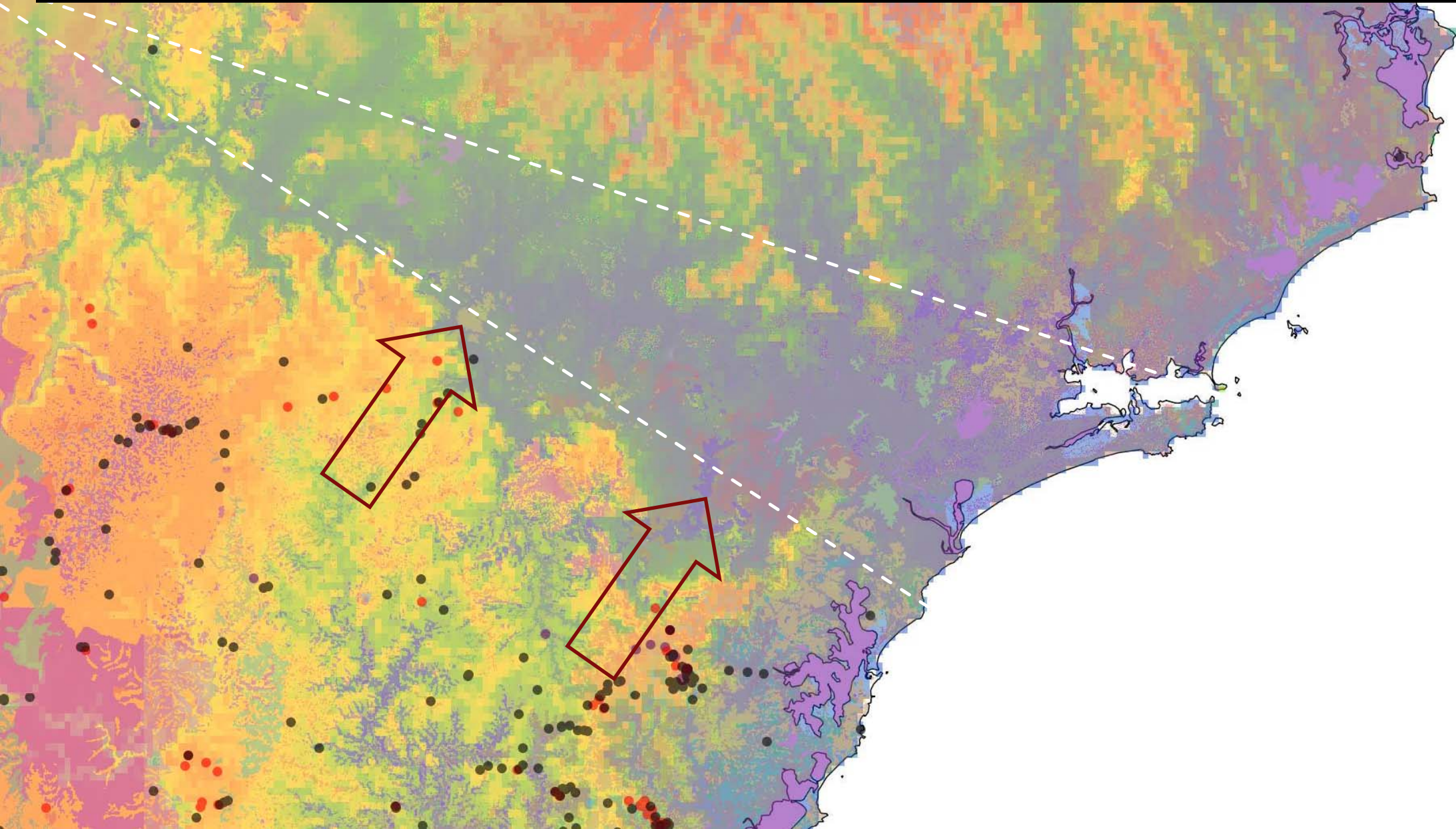
biogeographic barrier



These barriers have major impacts on the evolution of animal and plant communities

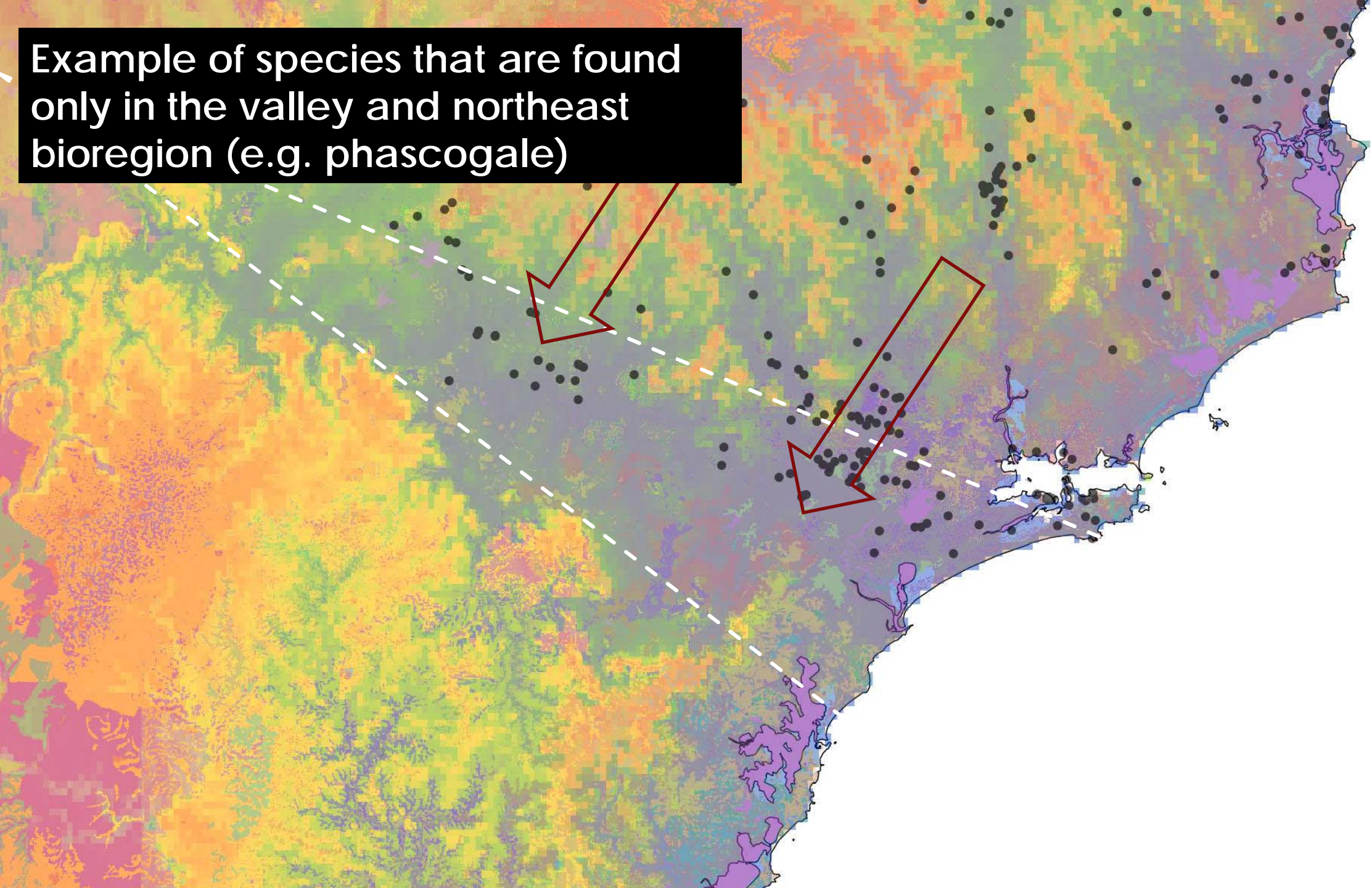
- ▶ Species that do not pass northwards over the Hunter Valley barrier
- ▶ Species that do not pass southward over the Hunter Valley barrier
- ▶ Species that are not effected by the barrier

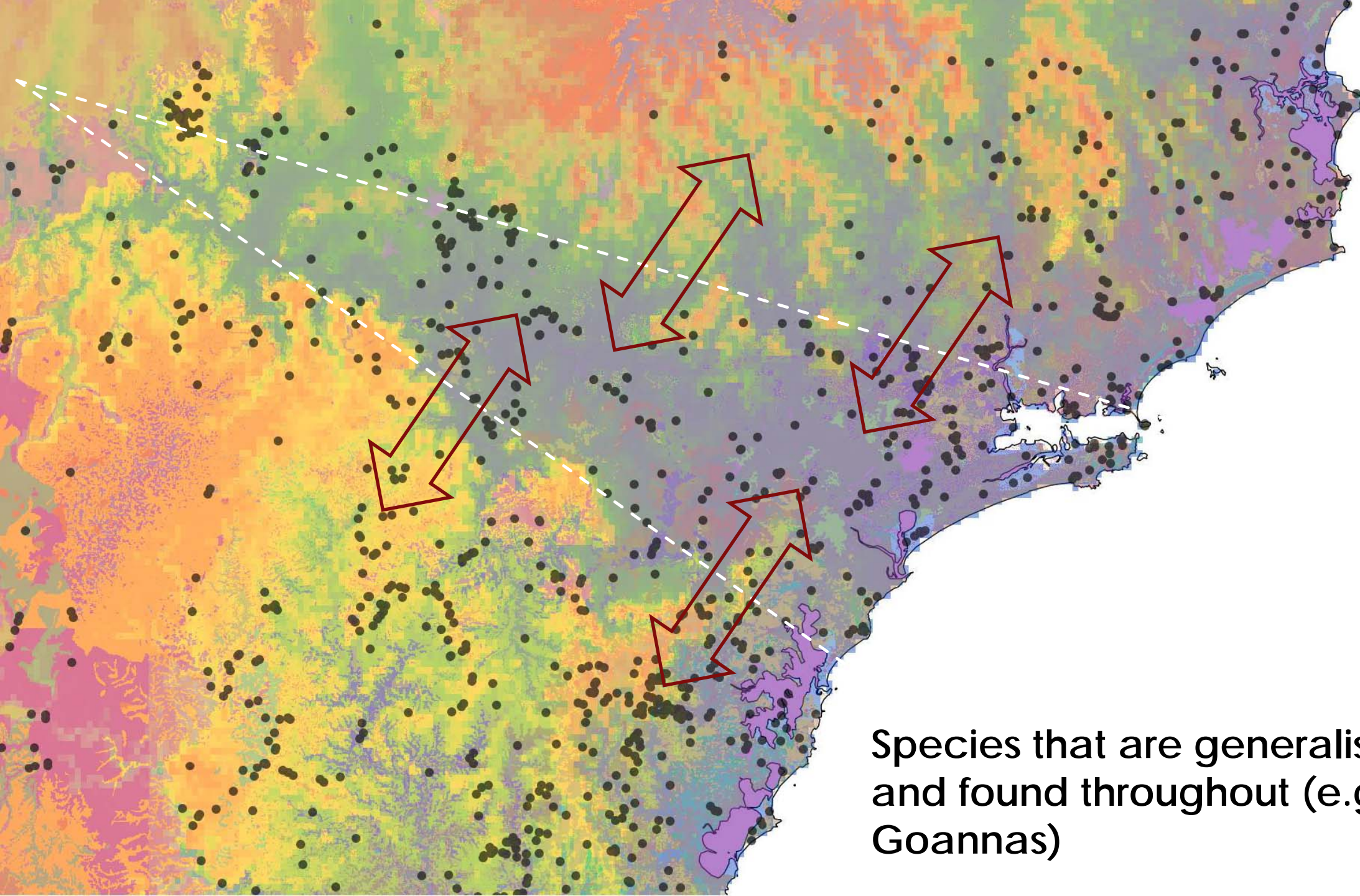
Species that reach their northern geographic limit at the Hunter Valley
e.g. *Heleioporus australiacus*, *Pseudophryne australis*, *Lit littlejohnii*



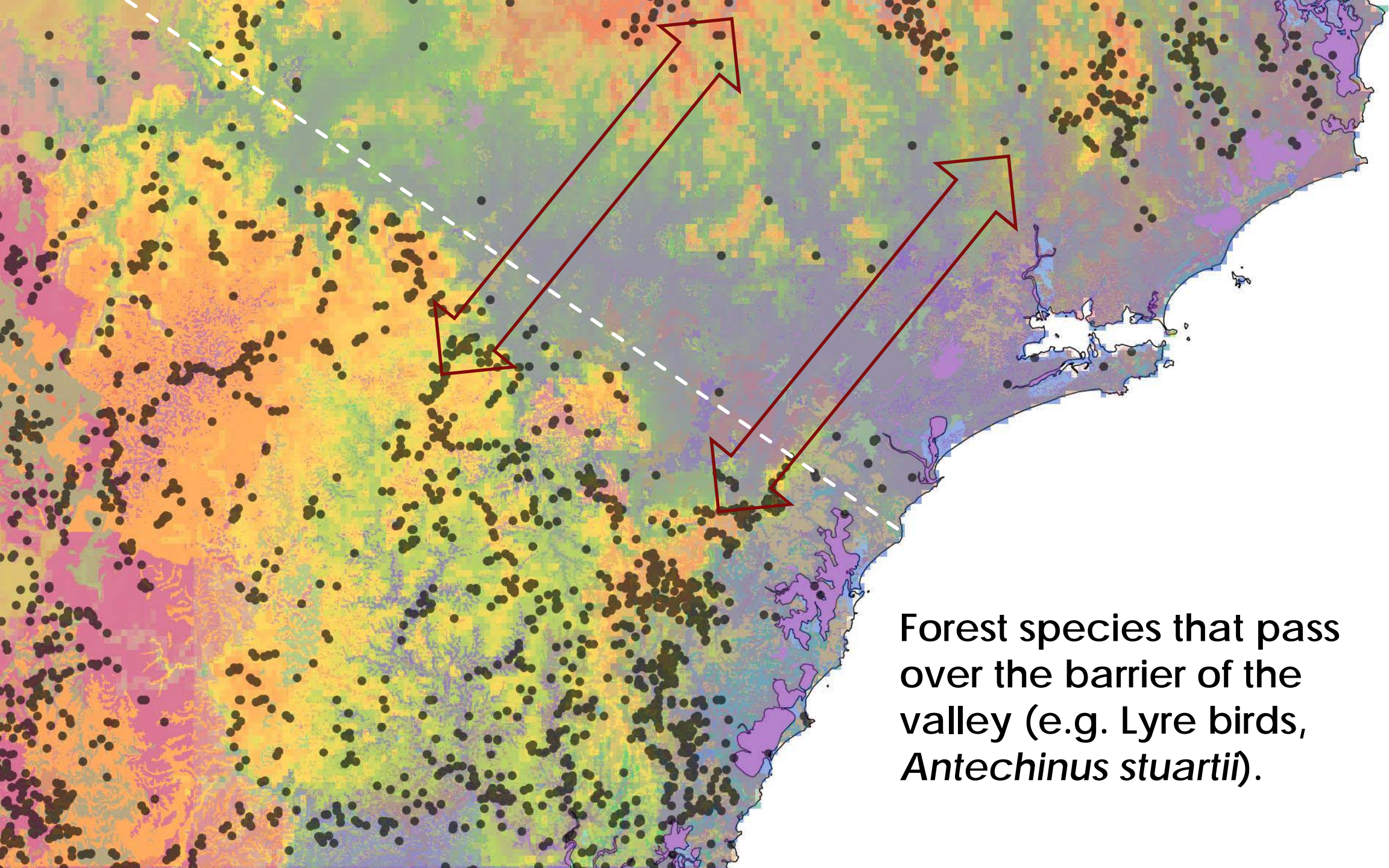
east bioregion

Example of species that are found only in the valley and northeast bioregion (e.g. phascogale)



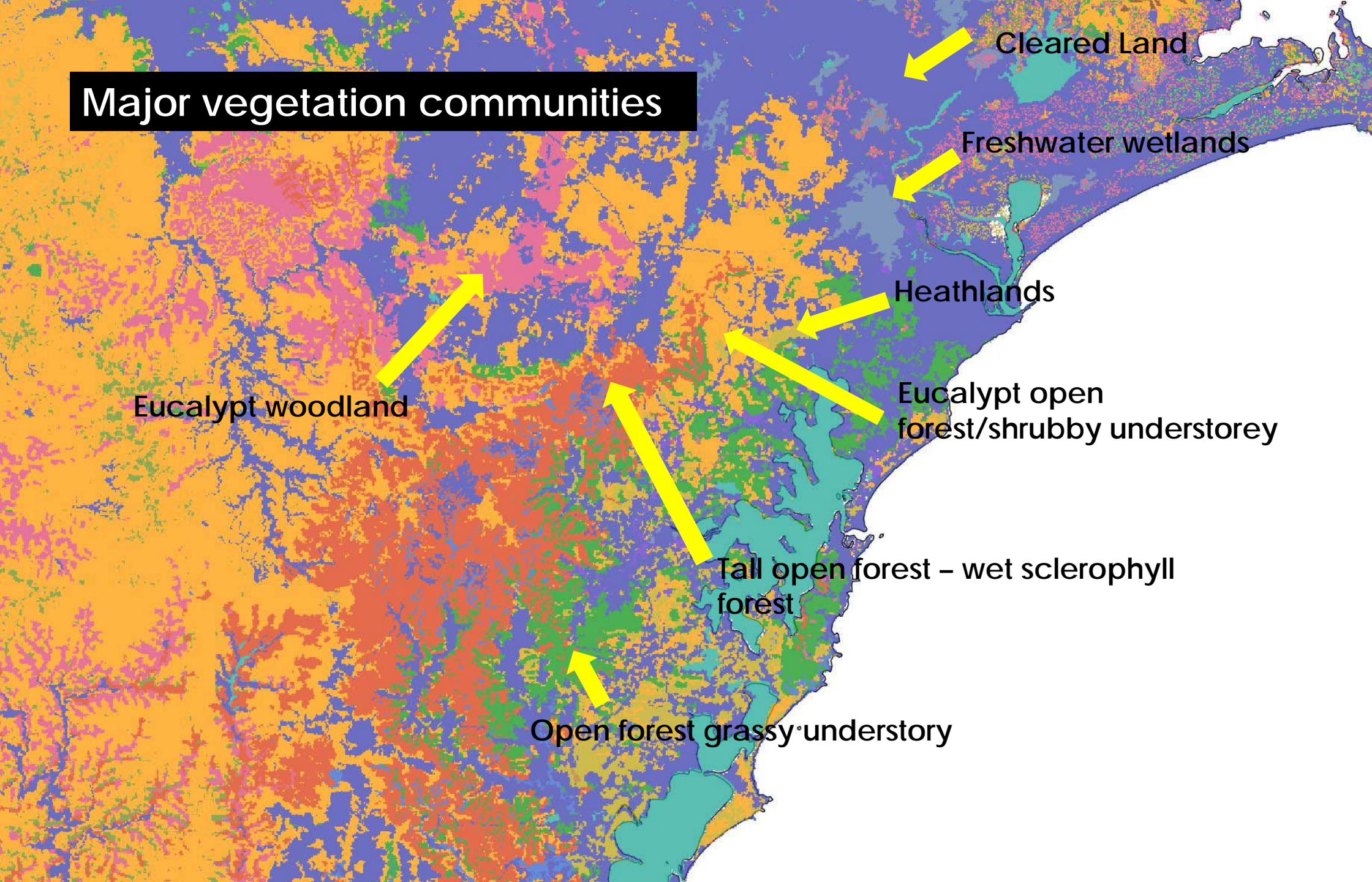


Species that are generalist
and found throughout (e.g.
Goannas)



Forest species that pass over the barrier of the valley (e.g. Lyre birds, *Antechinus stuartii*).

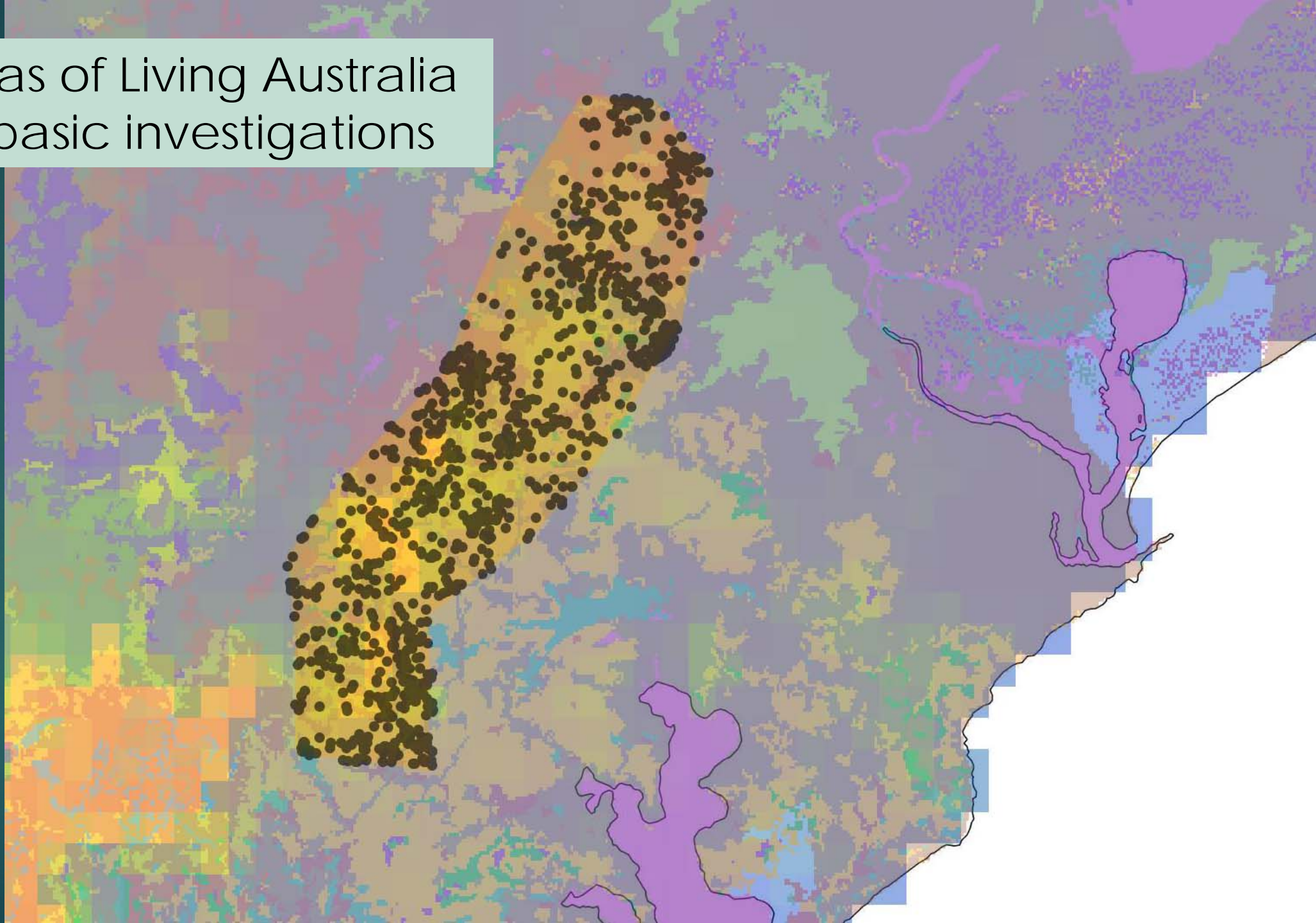
Major vegetation communities



What is the actual biodiversity of the Sugarloaf Range?



Using the Atlas of Living Australia
to do some basic investigations



What do we know

252 square kilometre area delineated

Number of species (animals and plants)	1,951
Number of records	58,000
Number of threatened species	713
Number of migratory species (EPBC Act)	33

There are no endemics

Plants

1,211	Angiosperms (flowering plants)
17	Gymnosperms (cone bearing plants)
93	Ferns
10	Bryophytes
18	Fungi

Animals

29	Amphibians
44	Reptiles
364	Birds
73	Mammals



Conclusions

- ▶ The ecology of the RVRT landscape is rich
 - ▶ This is a consequence of the landscape position, geology and climate of the area
- ▶ At the local scale the species diversity is considerable and provides a wonderful opportunity to experience the wonders of our local natural heritage
- ▶ It will help us to define Our Spirit



Thank You