Climate Change Ecology and Biogeography

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My team seeks to understand where species are located, why they are there, and how environmental and climate change may impact them. Our work is used by government and decision-makers to improve biodiversity outcomes in a rapidly changing world.

We use Species Distribution Models to:

- Map suitable habitat for species
- Assess impacts of climate change
- Identify risk from invasive species
- Guide surveys of threatened species
- Locate climate refugia
- Inform conservation decisions

We identify refugia from climate change

- Places that may continue to harbour certain species as climate changes

We develop tools for decision-makers to visualise climate change impacts on species

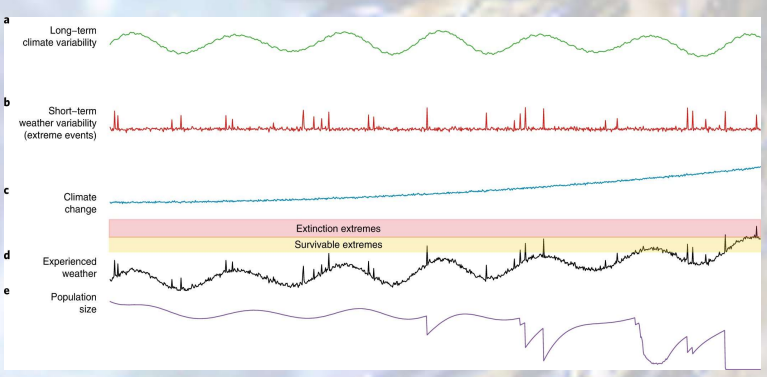
- Refugia for threatened species
- Which Plant Where web tool for urban plantings

We map what is where

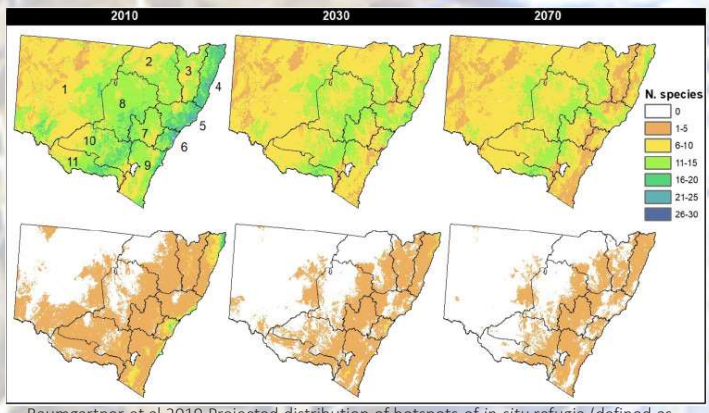
- Hotspots of geographically restricted and evolutionarily distinct tetrapod lineages
- Tree species of the world

And how land-use and climate change may impact global distributions

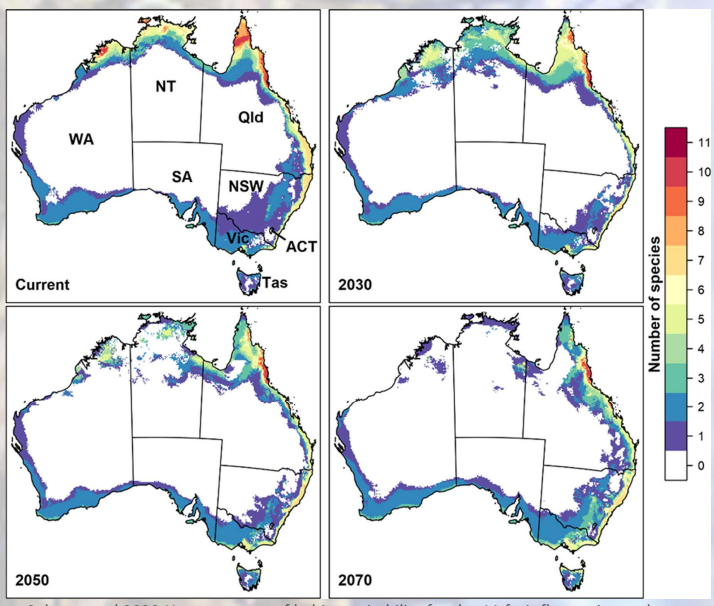
Our main tools are R and Geographic Information Systems.



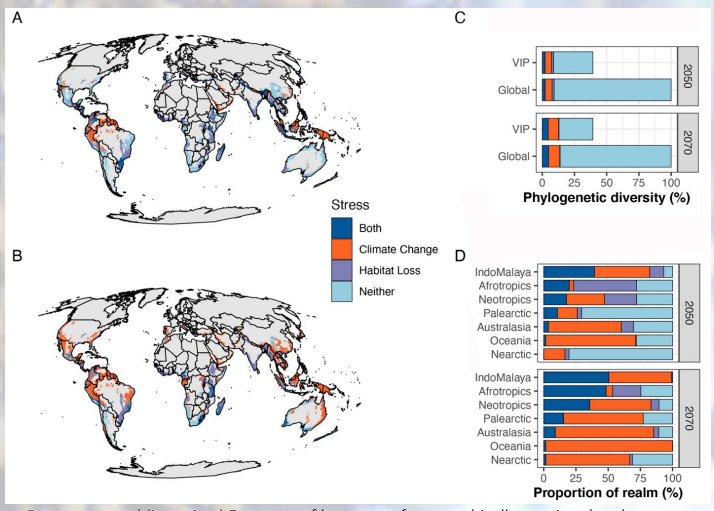
Harris et al 2018 The press-pulse framework, showing the components of climate change and climate variability experienced by biological systems.



Baumgartner et al 2019 Projected distribution of hotspots of *in-situ* refugia (defined as grid cells with climate suitable for >1 threatened species)



Sultana et al 2020 Hotspot maps of habitat suitability for the 11 fruit fly species under climate change.



Beaumont et al (in review) Exposure of hotspots of geographically restricted and evolutionarily distinct tetrapod lineages to land use impacts and climate change.