Invasive Species in Australia
RShiny Dashboard

Johann Wagner – 20th October 2023

Dashboard: https://0uexv8-johann-wagner.shinyapps.io/invasive_species_dashboard

GitHub: https://github.com/johann-wagner/DS4B-final-project

Introduction

- Invasive animal species **negatively impact** native fauna and flora (DCCEEW, 2021).
- **Decentralised species distribution data** hinders informed decision-making and effective management policies (ABARES, 2023).
- **RShiny visualisations dynamically change** by selecting one of seven species and one of eight state/territories.

Main Aim

Develop an RShiny app that showcases the spatial and temporal (monthly) occurrence of 7 invasive animal species in Australia by state/territory.

European Red Fox[1]

Feral Cats[2]

Spatial Visualisation

Description

The below visualisation spatially showcases the number of records for the selected invasive animal **species** in the selected **state/territory.**

How to zoom in

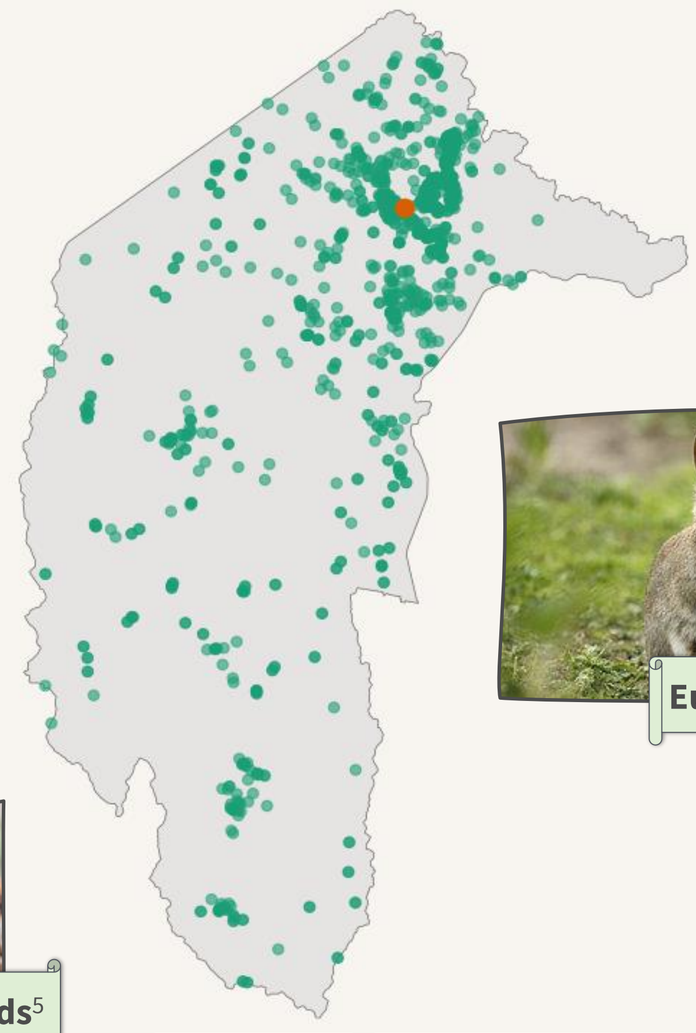
- If you would like to zoom into a specific area, you can hover over the ggplot below and *click-and-drag* a light-blue rectangle.

- Once drawn, *double-click* on the light-blue rectangle to zoom into that specific area.

- To return to the original scale, *double-click* on the visualisation.

European Rabbits in **Australian Capital Territory:**

There are **1,850** records.



European Rabbits[4]

Cane Toads[5]

Temporal Visualisation

Description

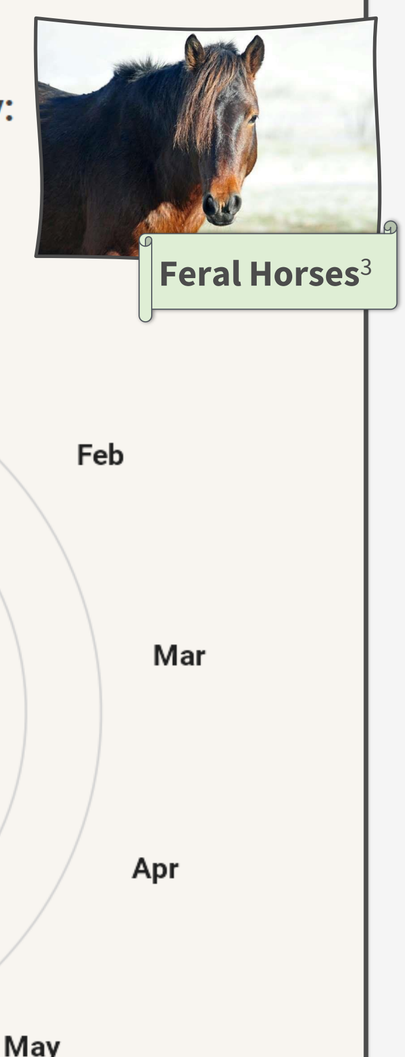
The below visualisation temporally showcases the proportion of records for the selected invasive animal in the selected state/territory by month. Each coloured bar represents the proportion of records in that specific month with colour showing the relative magnitudes of the proportions.

- A brighter, yellow colour indicates a relatively higher proportion.

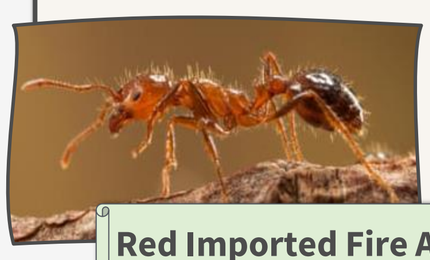
- A darker, red colour indicates a relatively lower proportion.

European Rabbits in **Australian Capital Territory:**

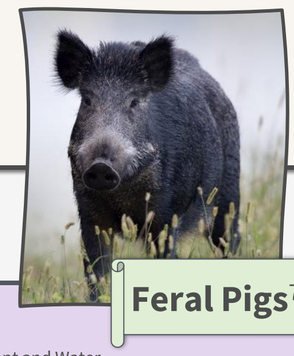
January has the highest proportion of records.



Feral Horses[3]



Red Imported Fire Ants[6]



Feral Pigs[7]

Caveats / Conclusions

- **Spatial:** Most of the seven species cluster around urban areas. Potentially, due to the measurement accessibility near urban areas/roads, rather than actual species behaviour.
- **Temporal:** Similarly, uncertainty whether temporal patterns are due to human measurement frequency or actual temporal species behaviour. High variety of temporal distributions across state/territories.

References (Text)

Atlas of Living Australia website at http://www.ala.org.au. Accessed 2023-10-18.

DCCEEW, 2021. Feral animals in Australia. Department of Climate Change, Energy, the Environment and Water. https://www.dcceew.gov.au/environment/invasive-species/feral-animals-Australia. Accessed 2023-10-18.

ABARES, 2023. Distribution and impacts of established pest animals and weeds. Australian Bureau of Agricultural and Resource Economics and Sciences. https://www.agriculture.gov.au/abares/research-topics/invasive-species/distribution-and-impacts#national-vertebrate-pests-and-weeds-distributions. Accessed 2023-10-18.

References (Images)

1) https://www.weeklytimesnow.com.au/subscribe/news/1/?sourceCode=WTWEB_WRE170_a_GGL&dest=https%3A%2F%2Fwww.weeklytimesnow.com.au%2Fagribusiness%2Ffarm-magazine%2Fhow-to-fight-farm-pests%2Fnews-story%2Fd0c0d98397a1602a9aef1045a6ef187b&memtype=anonymous&mode=premium
2) https://www.dupontvet.com/blog/feral-cat-colonies/
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5) https://lens.monash.edu/@science/2022/08/26/1384866/the-ultimate-invader-high-tech-tool-promises-scientists-an-edge-over-the-cane-toad-scourge
6) https://www.theguardian.com/environment/2023/sep/11/red-fire-ant-colonies-sicily-italy-europe-spread-study
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