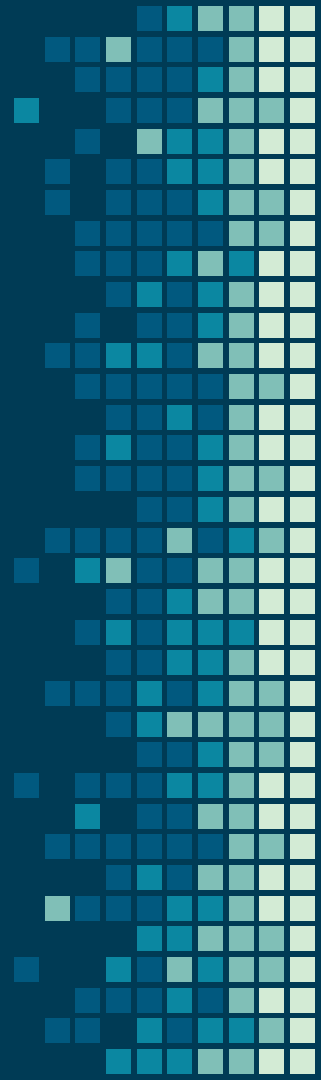


The Devil's in the Details

A GIS Study on DFTD

Maisha Ahmed, Meea Fogal, Bushra Haque, Maria Romano, Peipei Wang

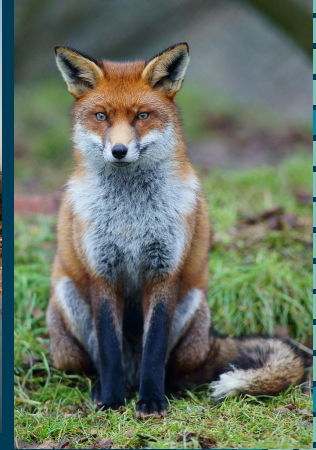


Research Questions:

1. How does the topography of Tasmania influence the prevalence of DFTD and the rate of DFTD spread?
2. Is the incidence of DFTD related to urbanization and human activity?

Methodology

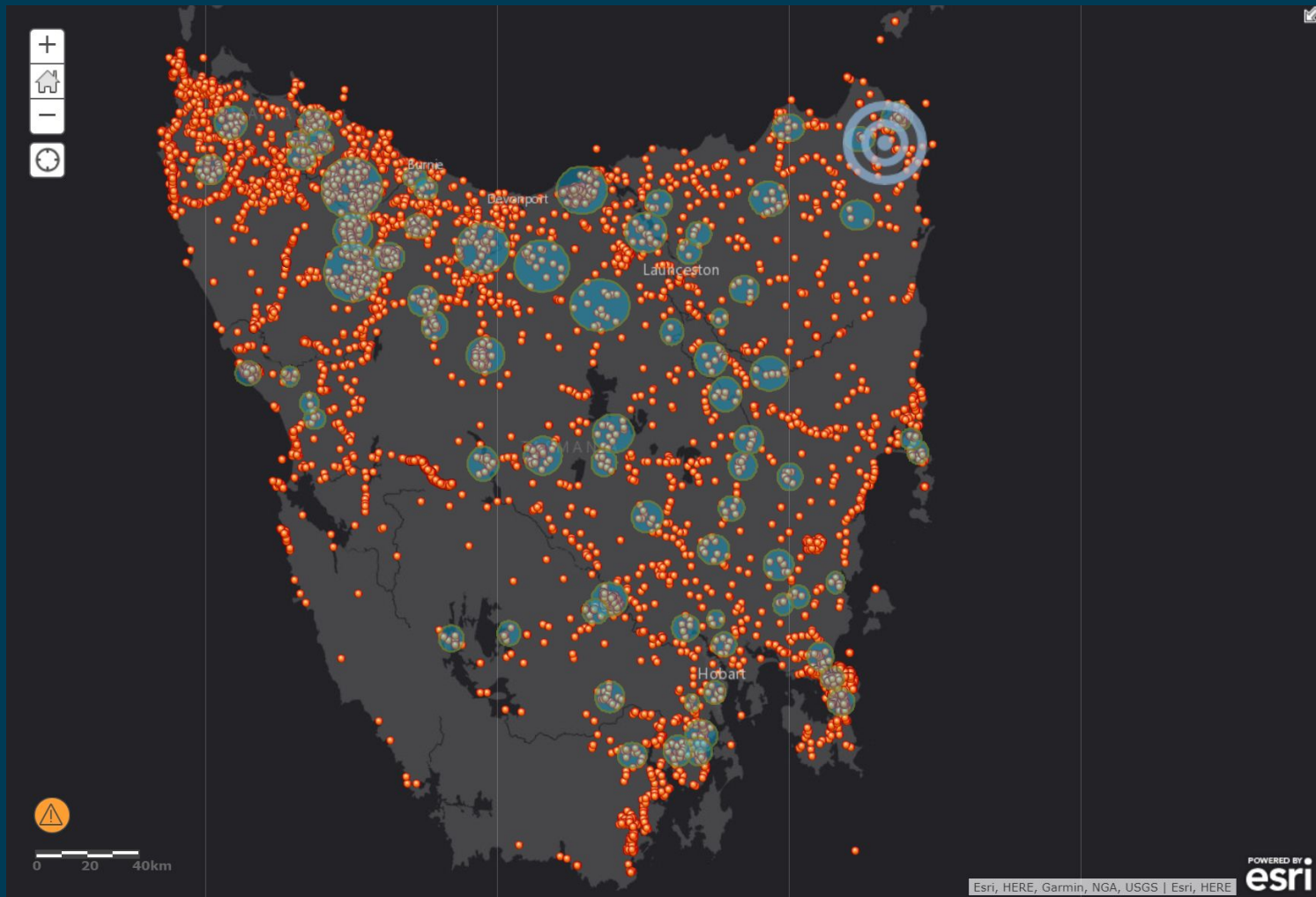
- Software: ArcGIS by esri
- Three maps:
 - Distribution of Tasmanian devil population density/DFTD prevalence
 - Elevation/Red fox population density
 - Human population density/Mines



TD population
(orange)

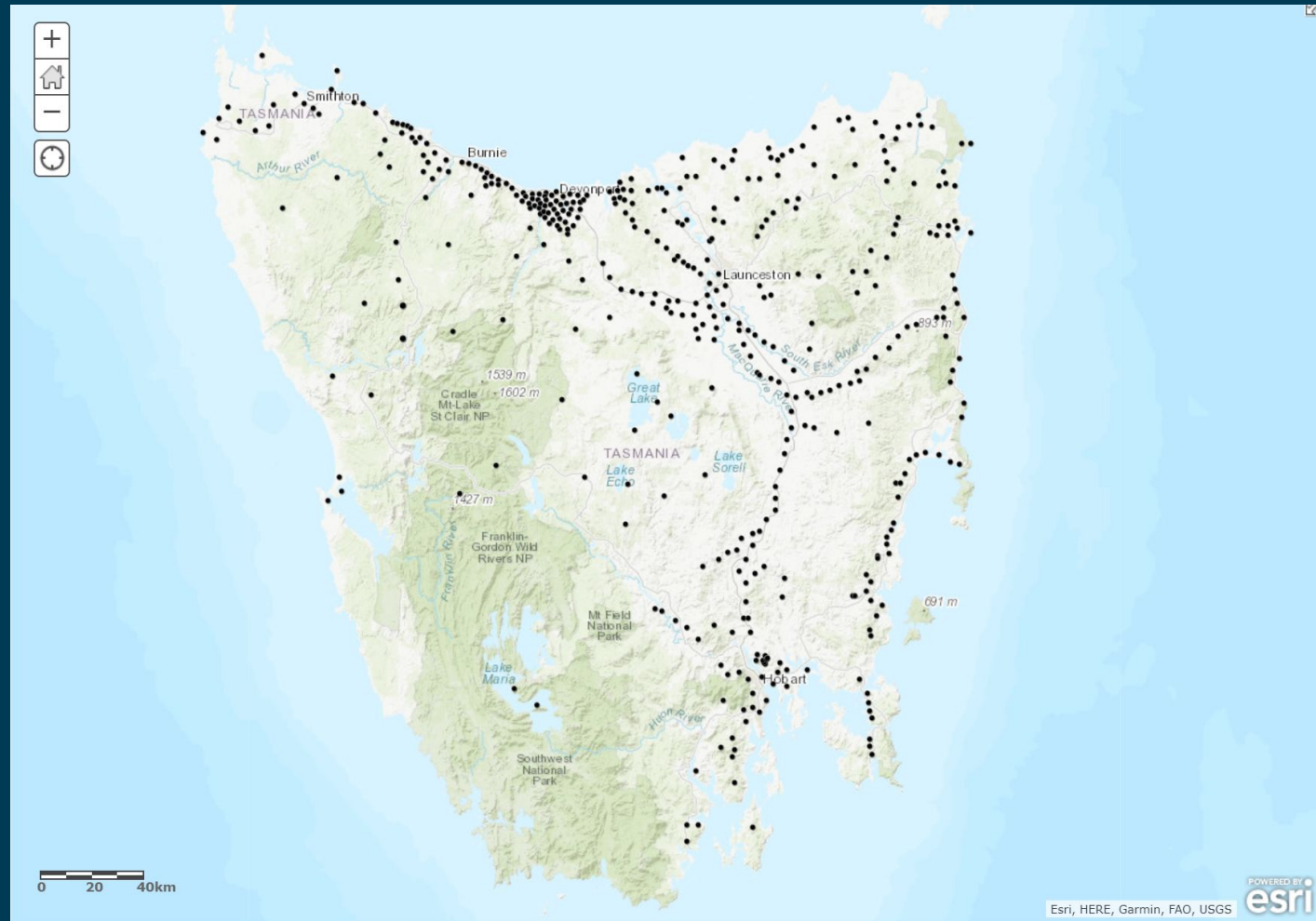
DFTD prevalence
(blue)

**Initial location of
DFTD**
(target symbol)



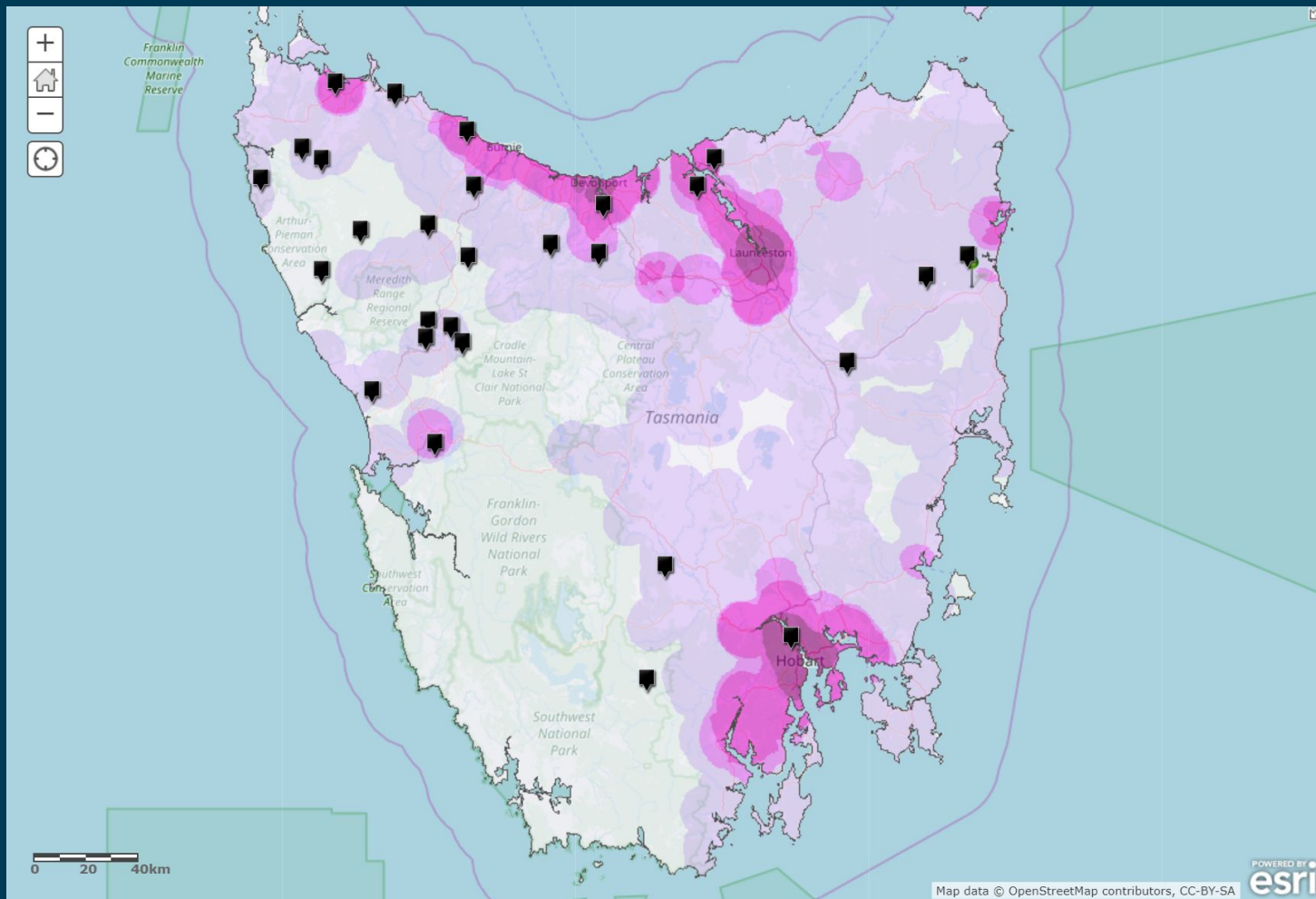
Topography
(light to dark green
showing low to high
elevation, respectively)

Red fox population
(black)

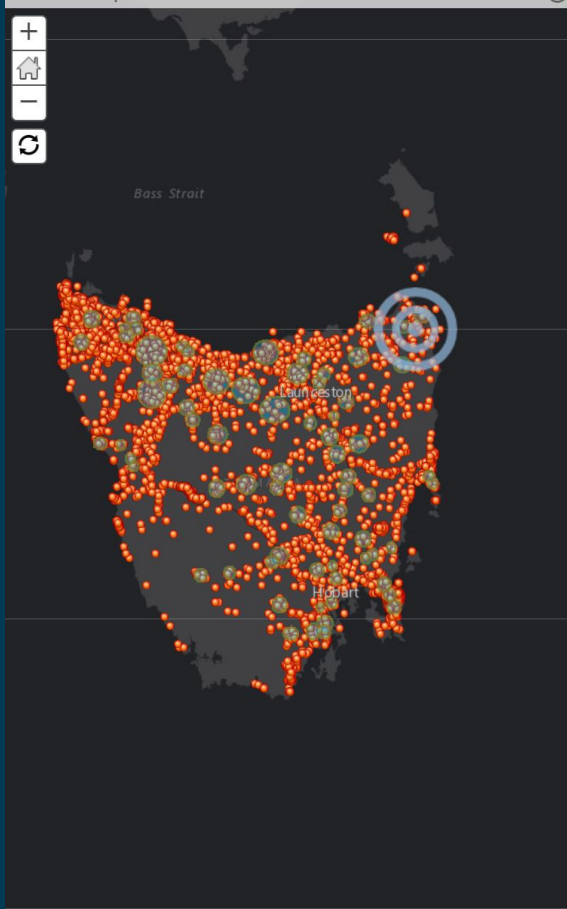


**Human population
density
(purple)**

**Mines
(black)**



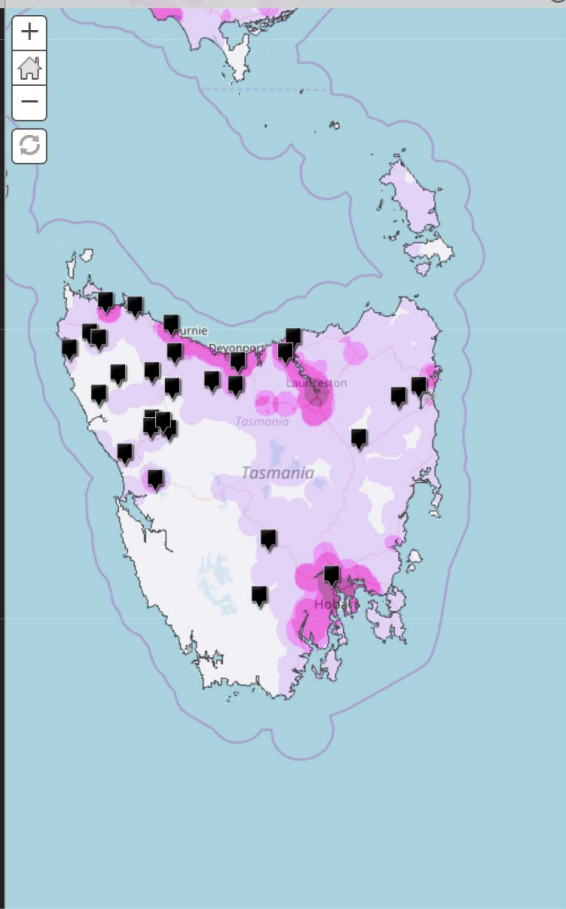
Population Distribution/DFTD Incidence



Esri, HERE, Garmin, NGA, USGS

POWERED BY
esri

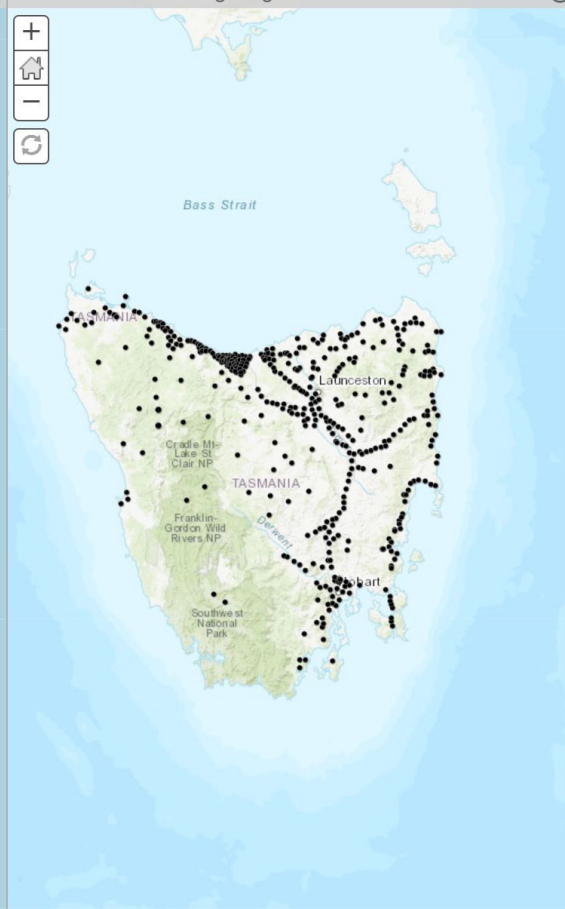
Human Distribution/Mine Distribution



Map data © OpenStreetMap contrib...

POWERED BY
esri

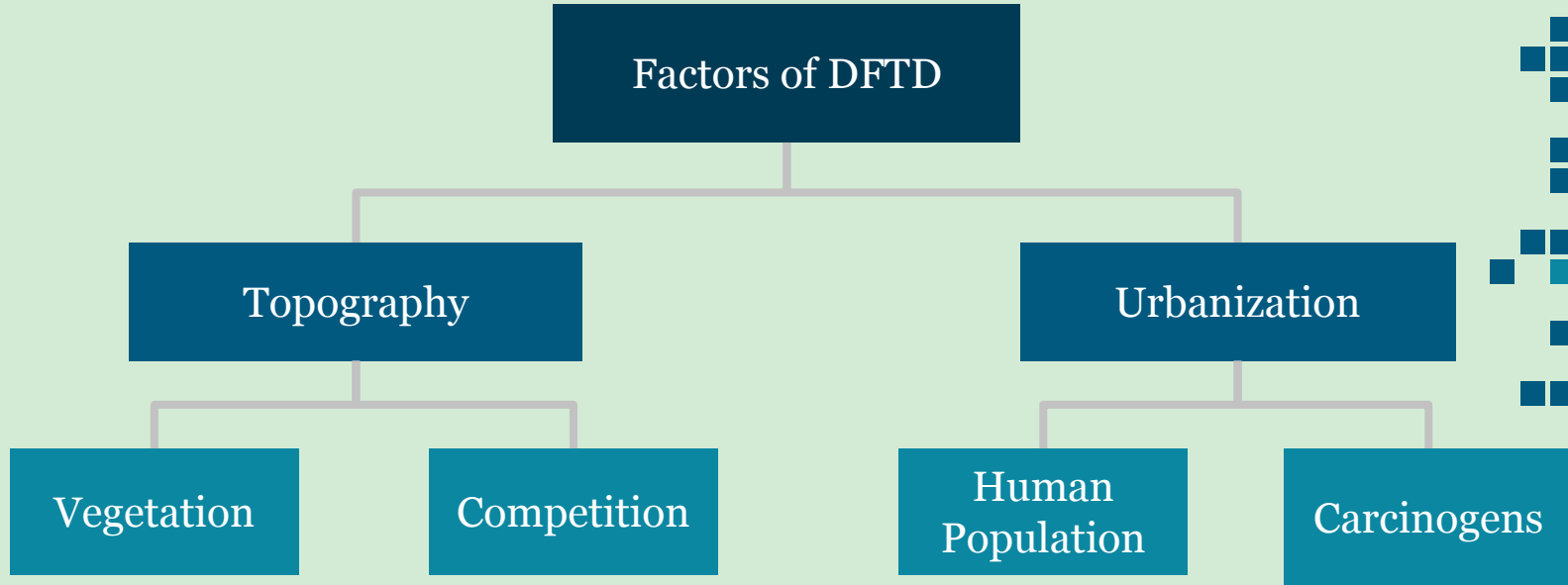
Fox Sightings in Tasmania



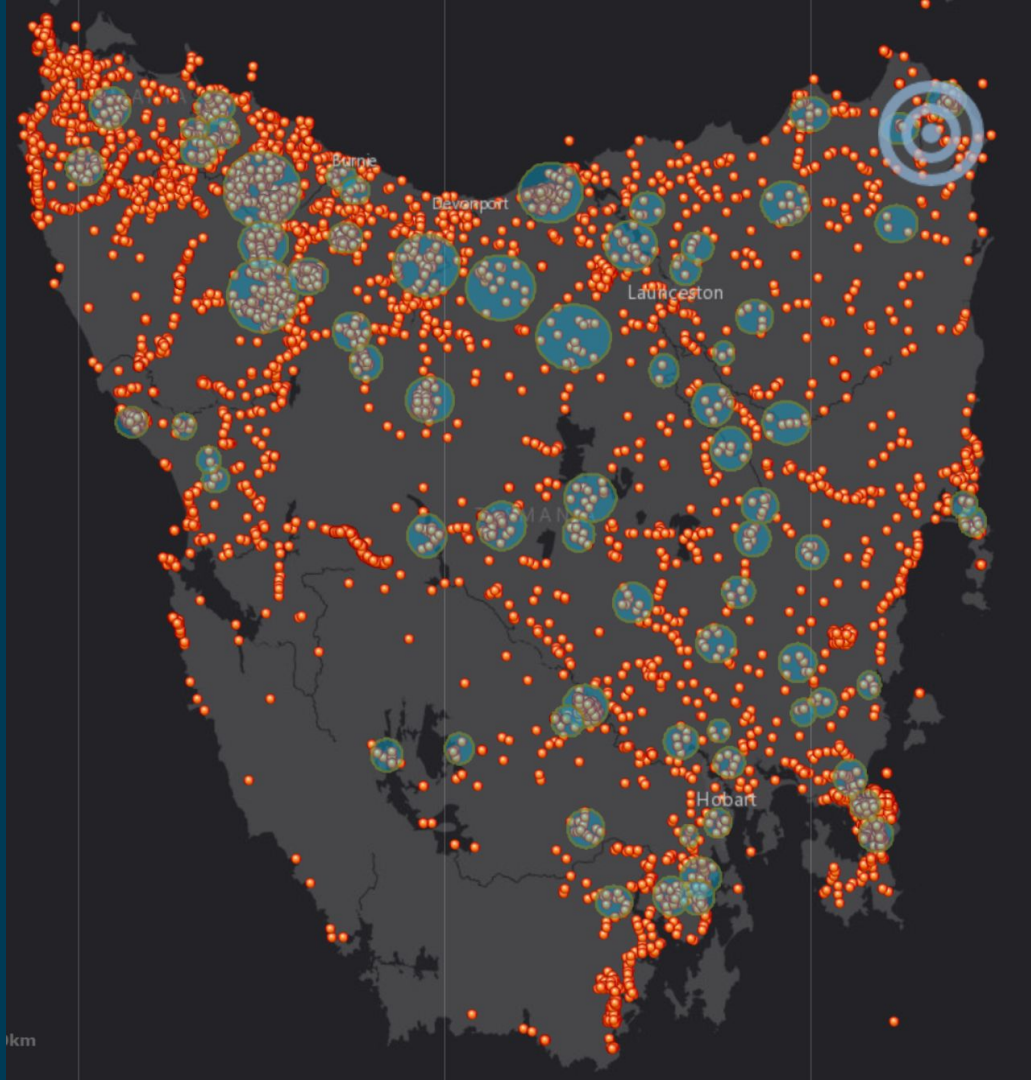
Esri, HERE, Garmin, FAO, NOAA, U...

POWERED BY
esri

Results



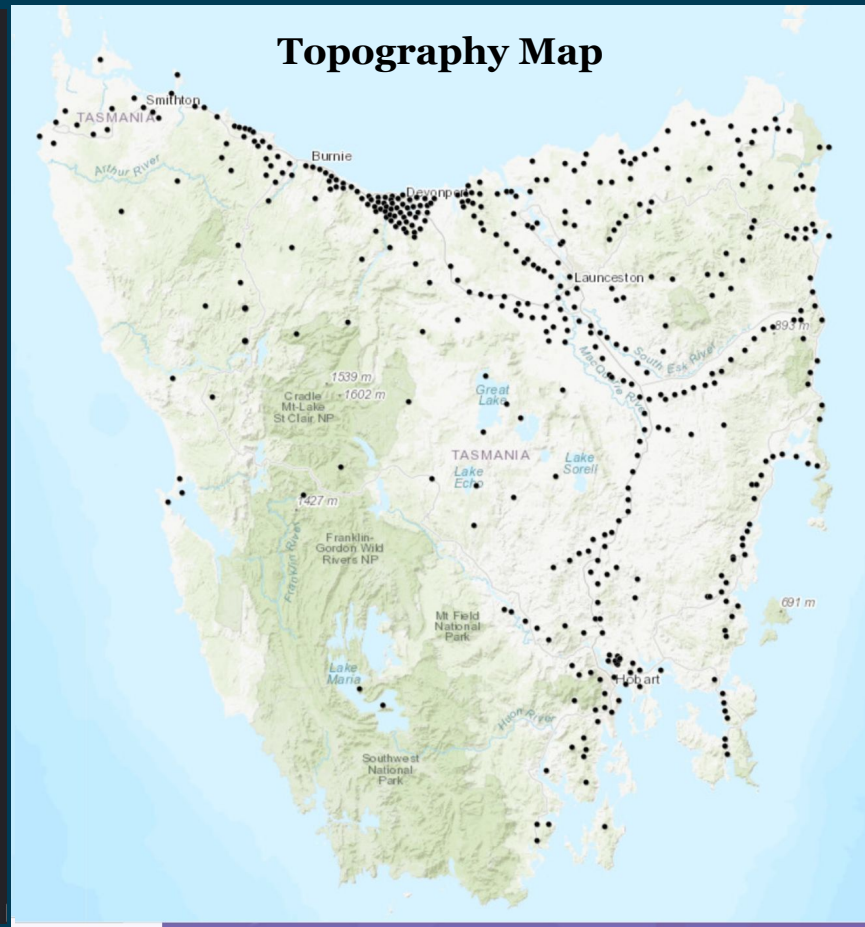
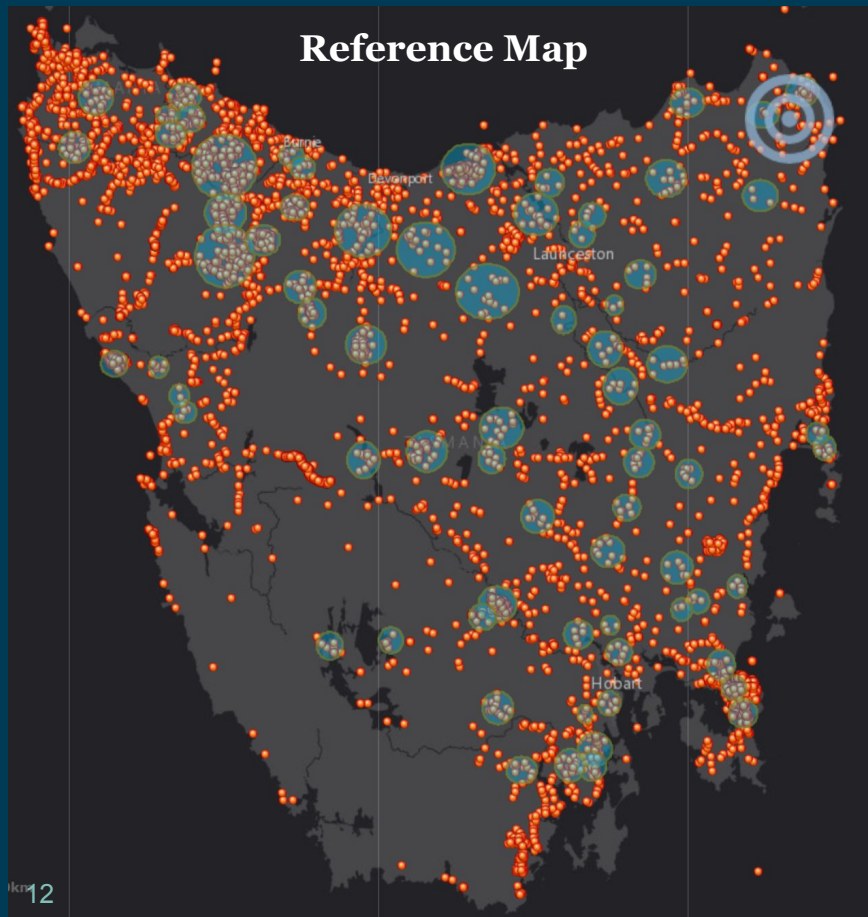
- **The first case of DFTD was reported 1996 in northeast Tasmania**
- **Spread in the northwest and southeast directions**
- **Continuous pattern**
- **Single origin**



Effects of Topography

- Vegetation of Tasmania
 - Dry forests are preferred by Tasmanian devils
 - Only exist in low elevations
- Competition with foxes
 - Similar den sites and food

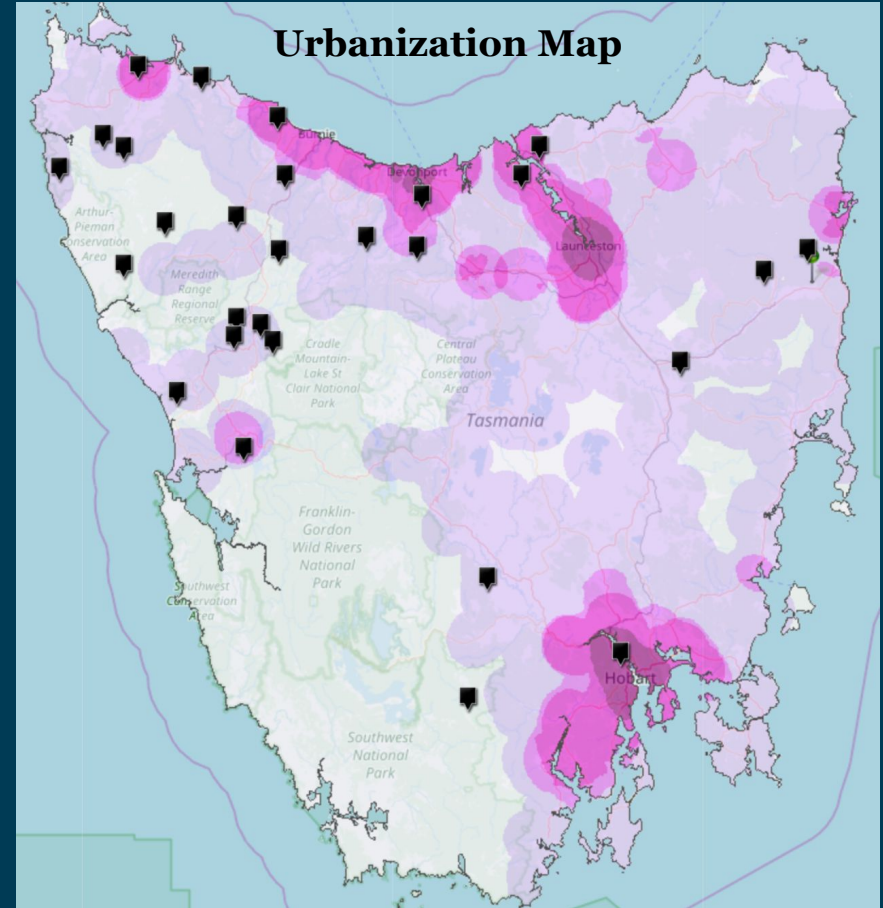
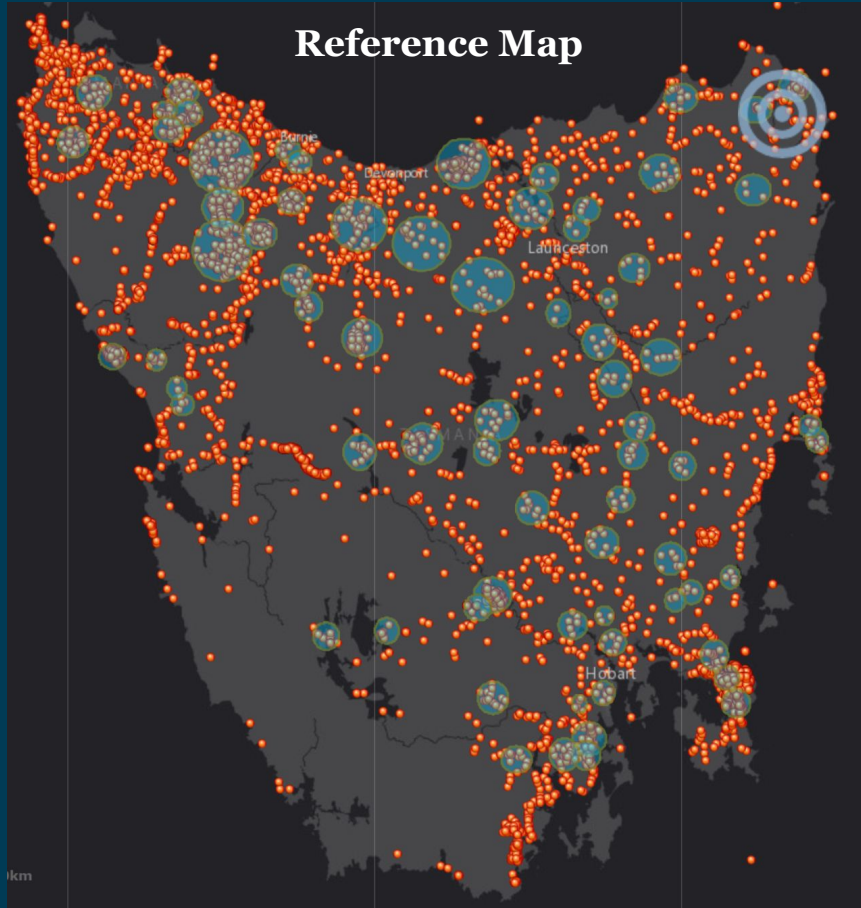
Effects of Topography



Effects of Urbanization

- Correlation between human population and Tasmanian devil population
- Increased carcinogens due to:
 - Mining industry
 - Agriculture and forestry industry

Effects of Urbanization



Limitation & Future Steps

- Lack of data
 - 1. Update population and DFTD prevalence
 - 2. Further research on climate
 - 3. Further research on genetic variability

Summary

Tasmanian Devil Population and DFTD Prevalence

- First case of DFTD reported in 1997 in the northeast
- Spread to the south, southwest and west directions in a continuous pattern
- DFTD has a single origin



Topography of Tasmania

- Tasmanian devils most commonly reside in regions of level low elevation due to growth of dry forests
 - Causing a high average DFTD spread rate
- DFTD allows for the red fox to increase in population density



Urbanization in Tasmania

- Population strongly correlates with human population distribution
- Increases accessibility of travelling and thus chance of DFTD spread
- Introduces carcinogens due to mining and agriculture industries

ArcGIS

We were able to address our research questions and draw conclusions utilizing ArcGIS as a research tool that efficiently represented our data.

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