

Malleefowl ecology and management: a WA perspective

Dr Blair Parsons
Discipline Lead – Terrestrial Ecology



MWH®

BUILDING A BETTER WORLD

Context

Good knowledge of Malleefowl ecology in WA

Good knowledge of Malleefowl management in WA

Patchy knowledge of Malleefowl ecology in the GVD

Patchy knowledge regarding working in the GVD

No on-ground knowledge!

Presentation Outline

1. Malleefowl in WA:
 - a) How does Great Victoria Desert compare?
 - b) Brief examination of listed threats
2. WA Malleefowl Network
 - a) Summary of meeting to prioritize research and management
 - b) Is this relevant to GVD?
3. Can modelling help us in the GVD?
 - a) Distribution modelling using Malleefowl records
 - b) Recovery of Malleefowl habitat post fire



GVD1 GVD2 GVD3





GVD1

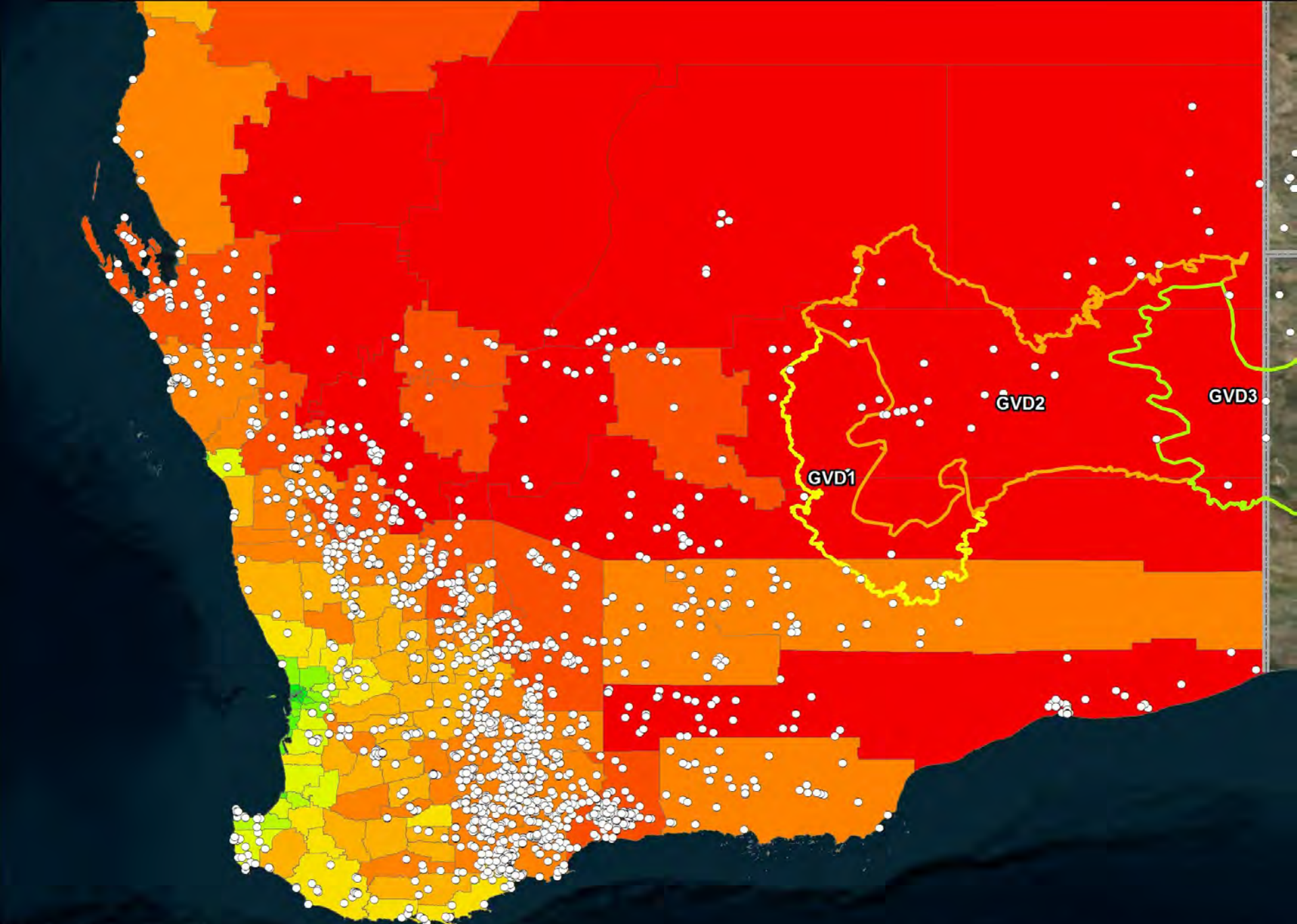
GVD2

GVD3

The landscape

- Population – The GVD is very sparsely populated

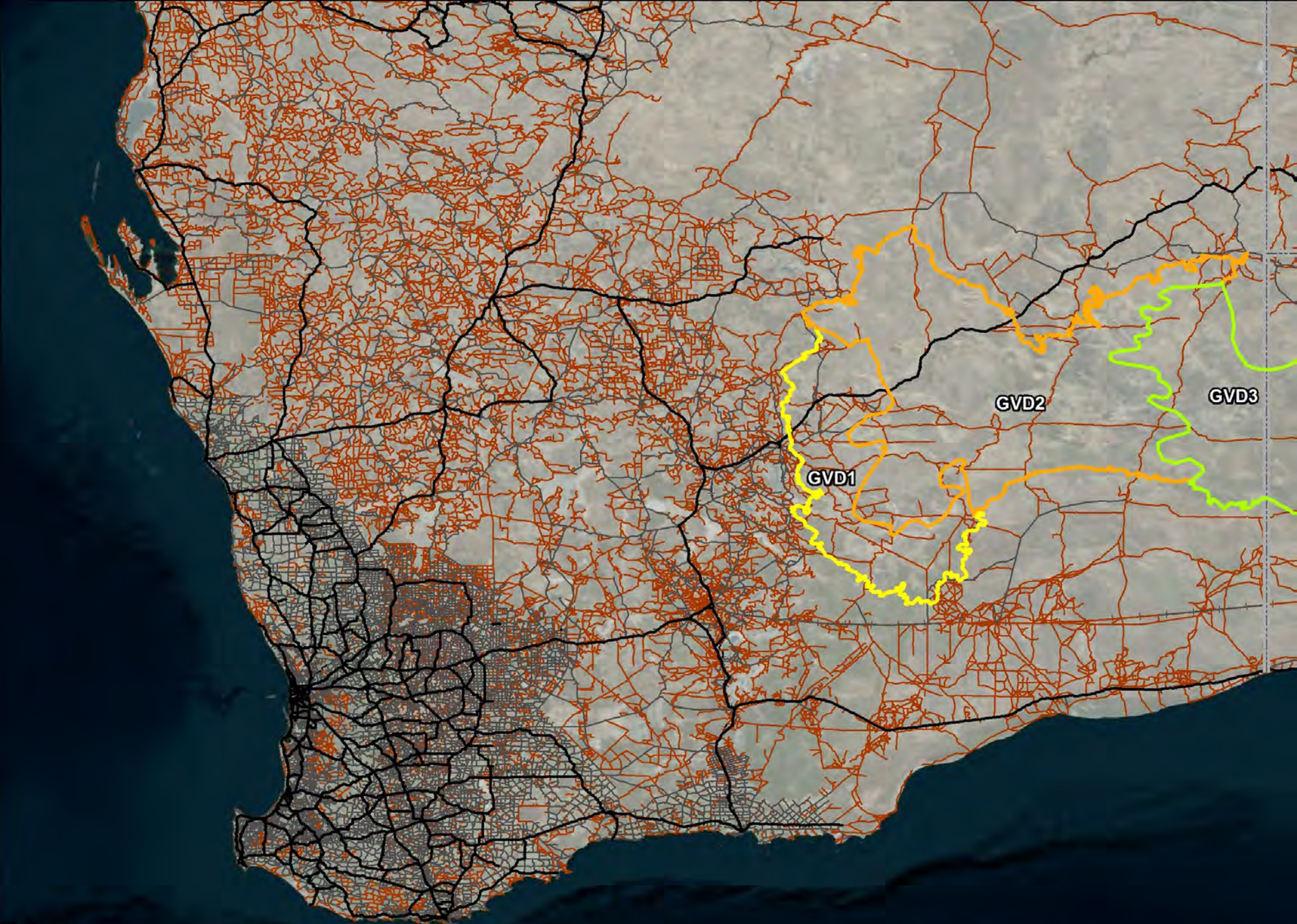




○ Malleefowl records

The landscape

- Population – The GVD is very sparsely populated
- Infrastructure - limited

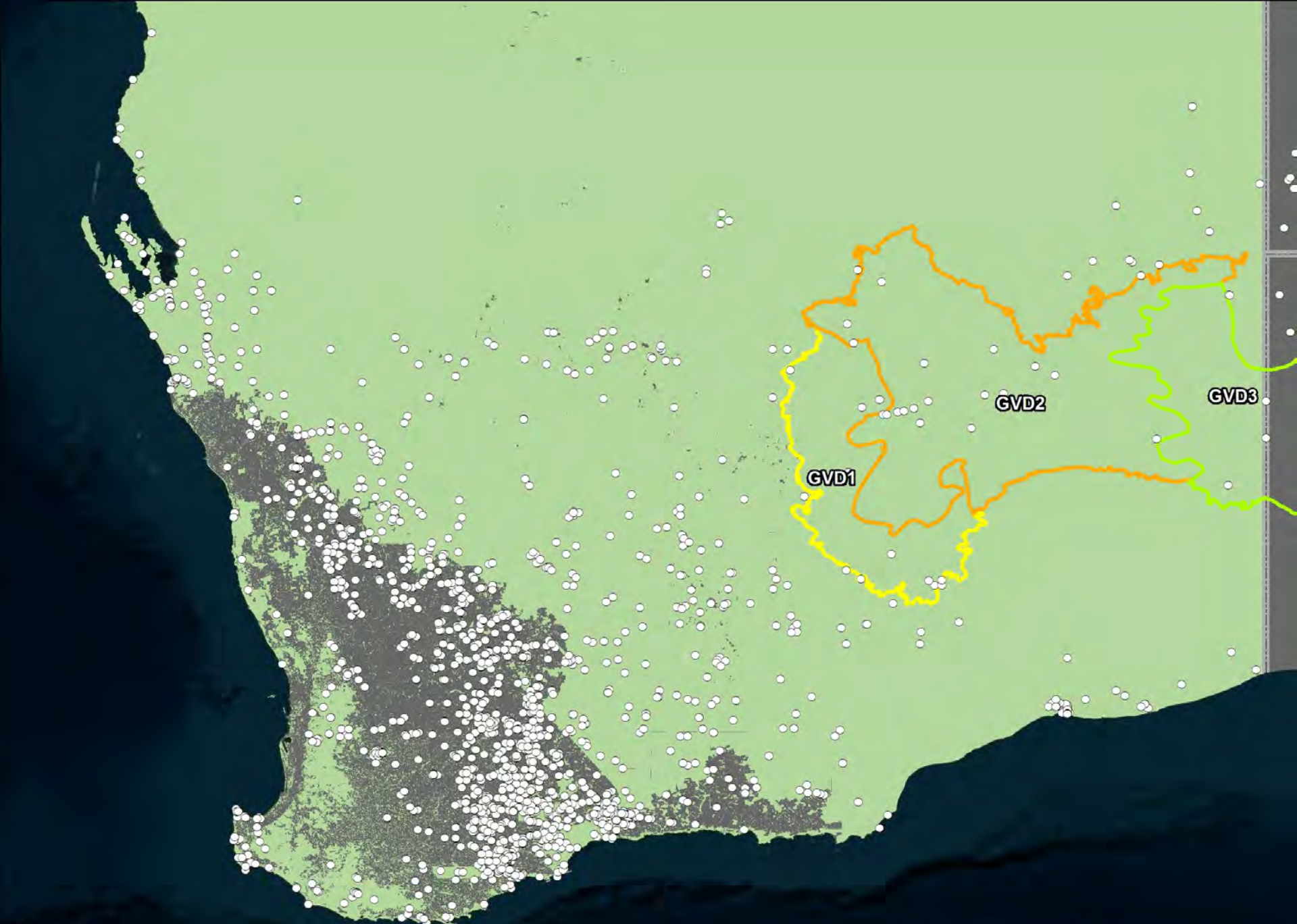


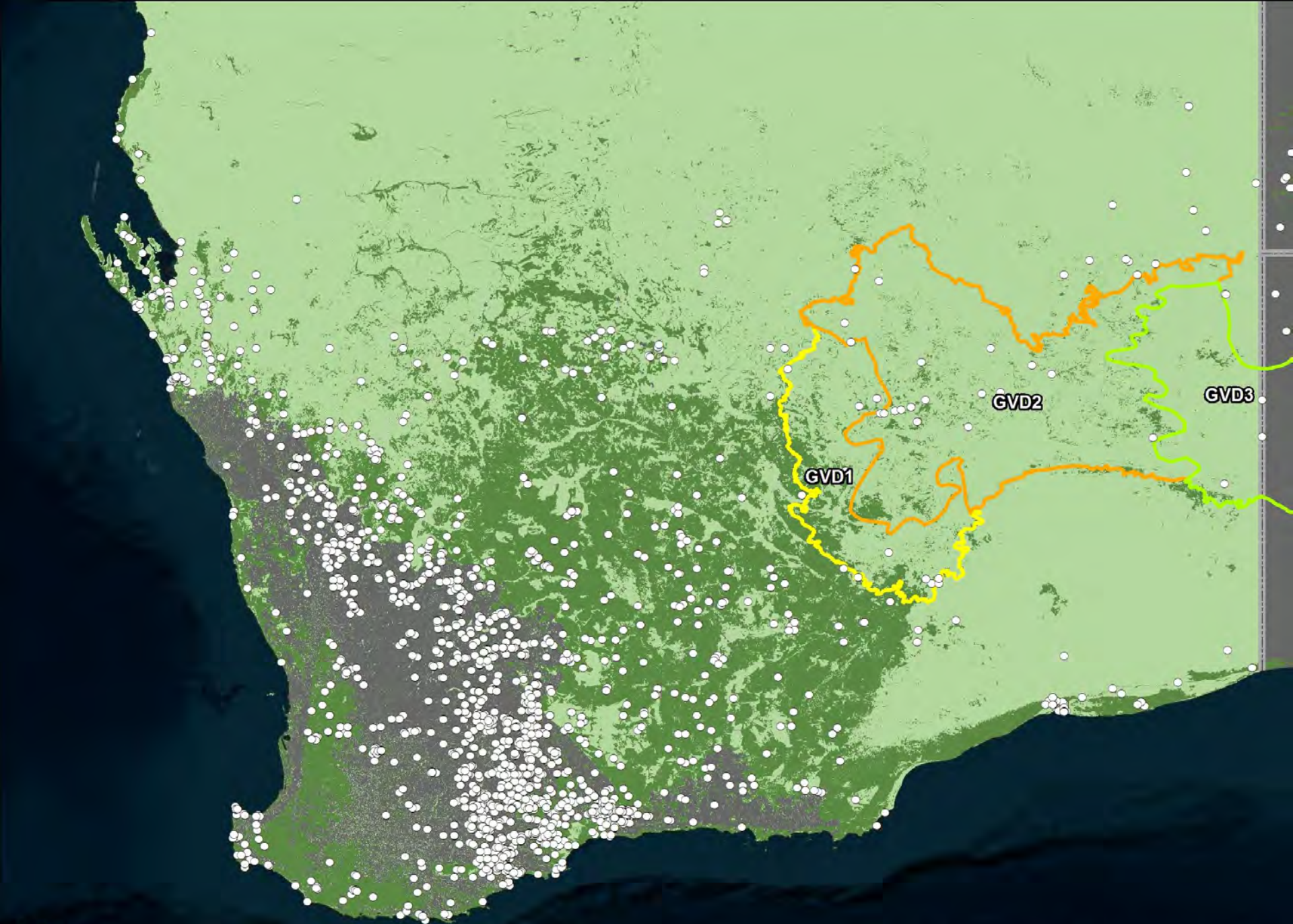


Threatening processes

1. Fragmentation?

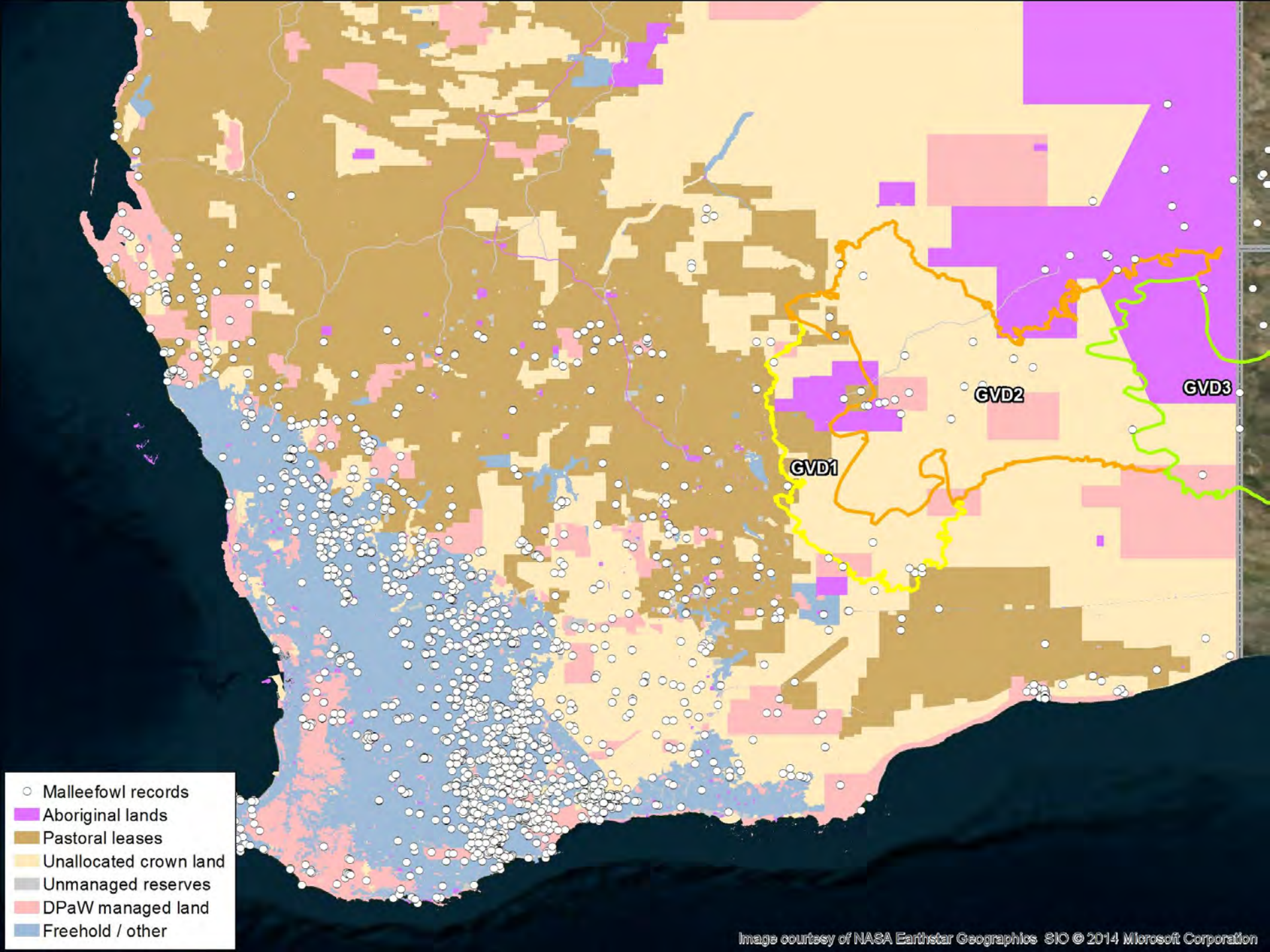






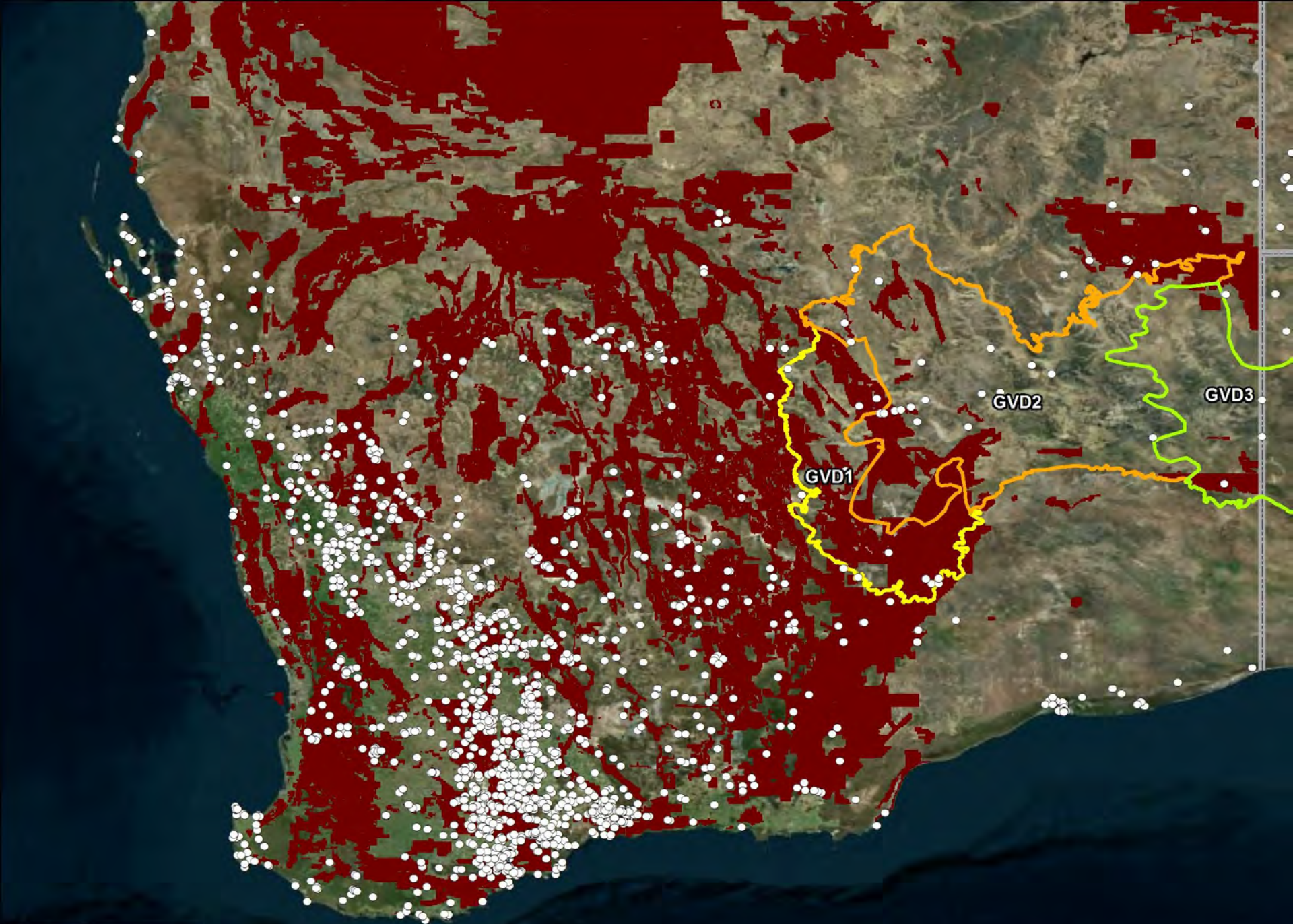
Threatening processes

- **Fragmentation**
 - a) Significant albeit largely inactive in southwest
 - b) A non issue east of the agricultural zone
 - c) Denser vegetation is patchily distributed in GVD
- **Predation?**
 - a) Difficult to map
 - b) for further discussion...
- **Grazing?**



Threatening processes

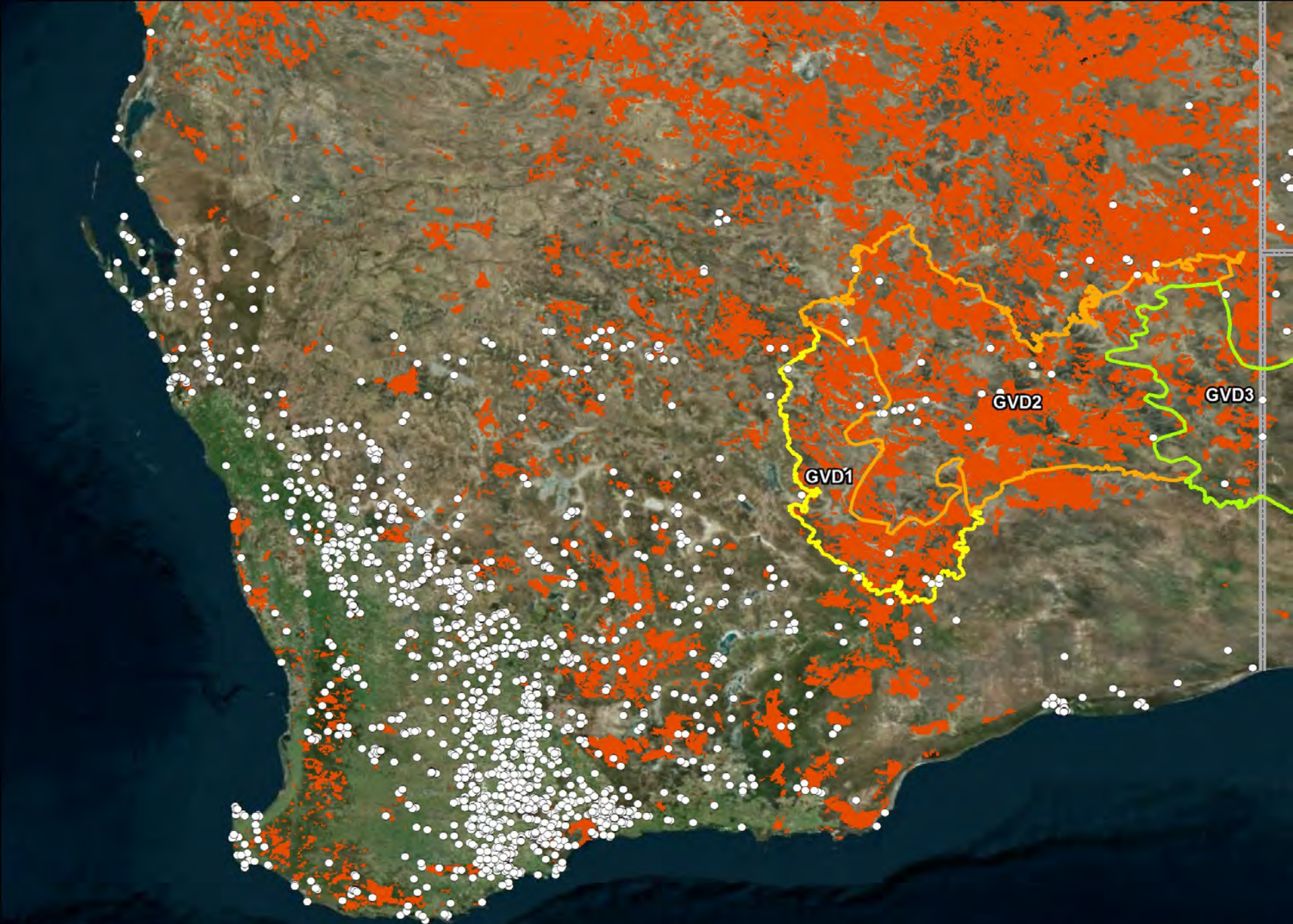
- **Fragmentation**
- **Predation**
- **Grazing**
 - a) stock – a non issue in GVD
 - b) camels, rabbits – apparently sparse
- **Mining?**



○ Malleefowl records

Threatening processes

- **Fragmentation**
- **Predation**
- **Grazing**
- **Mining**
 - a) contrast in intensity from west to east
 - b) exploration footprints potentially extensive
 - c) mining footprints limited
- **Fire?**



○ Malleefowl records

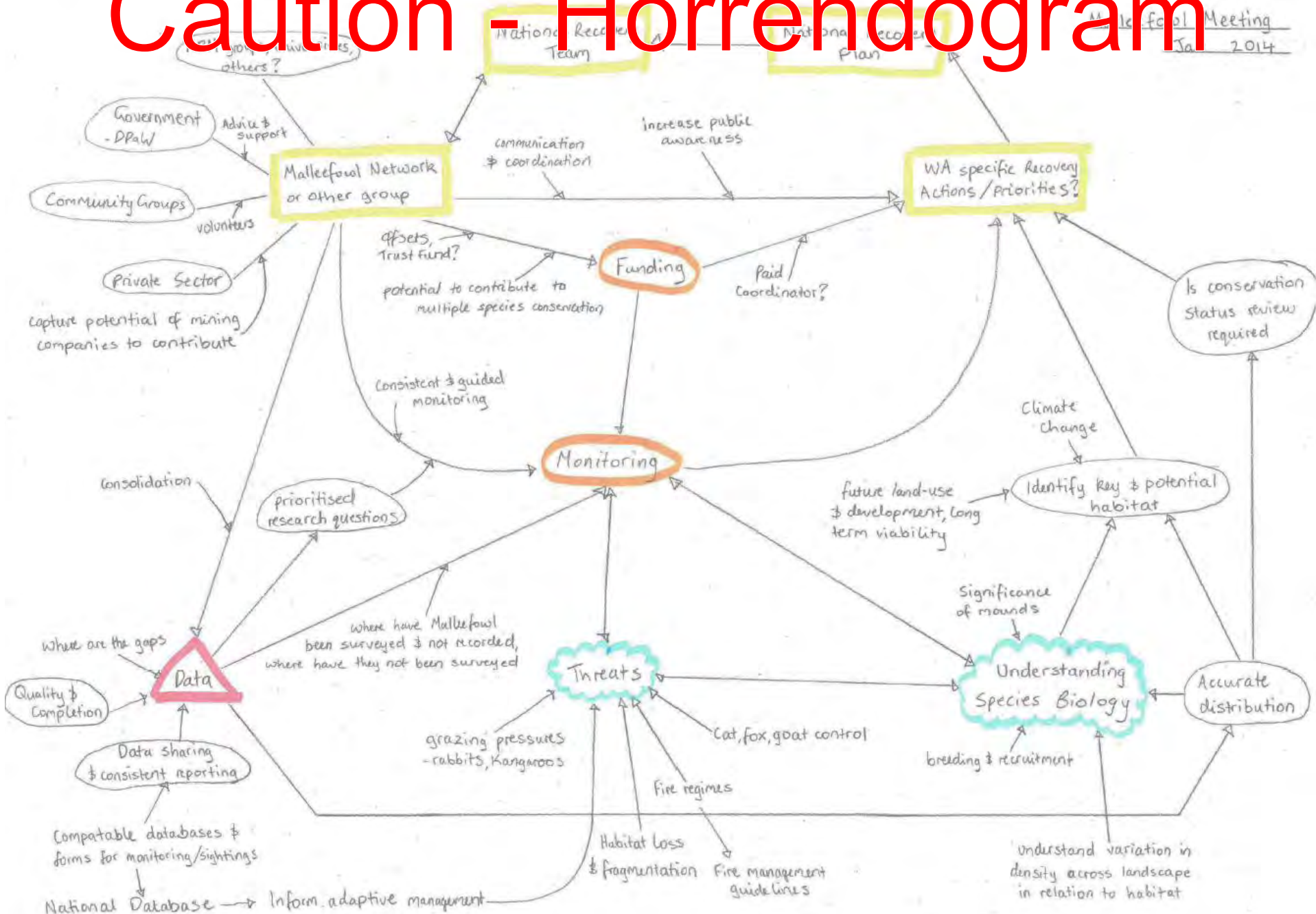
Threatening processes

- **Fragmentation**
- **Predation**
- **Grazing**
- **Mining**
- **Fire** (15 yr snapshot)
 - a) Extent of fire in GVD is large
 - b) Intensity? Timing? Frequency?

WA Malleefowl Network: A meeting in January...

- **Top issues and priorities regarding conservation and management of Malleefowl in WA?**
- **Who?**
 - a) Community Groups, mining companies, agencies, NGOs, consultants, universities
- **What was the outcome?**

Caution - Horrendogram



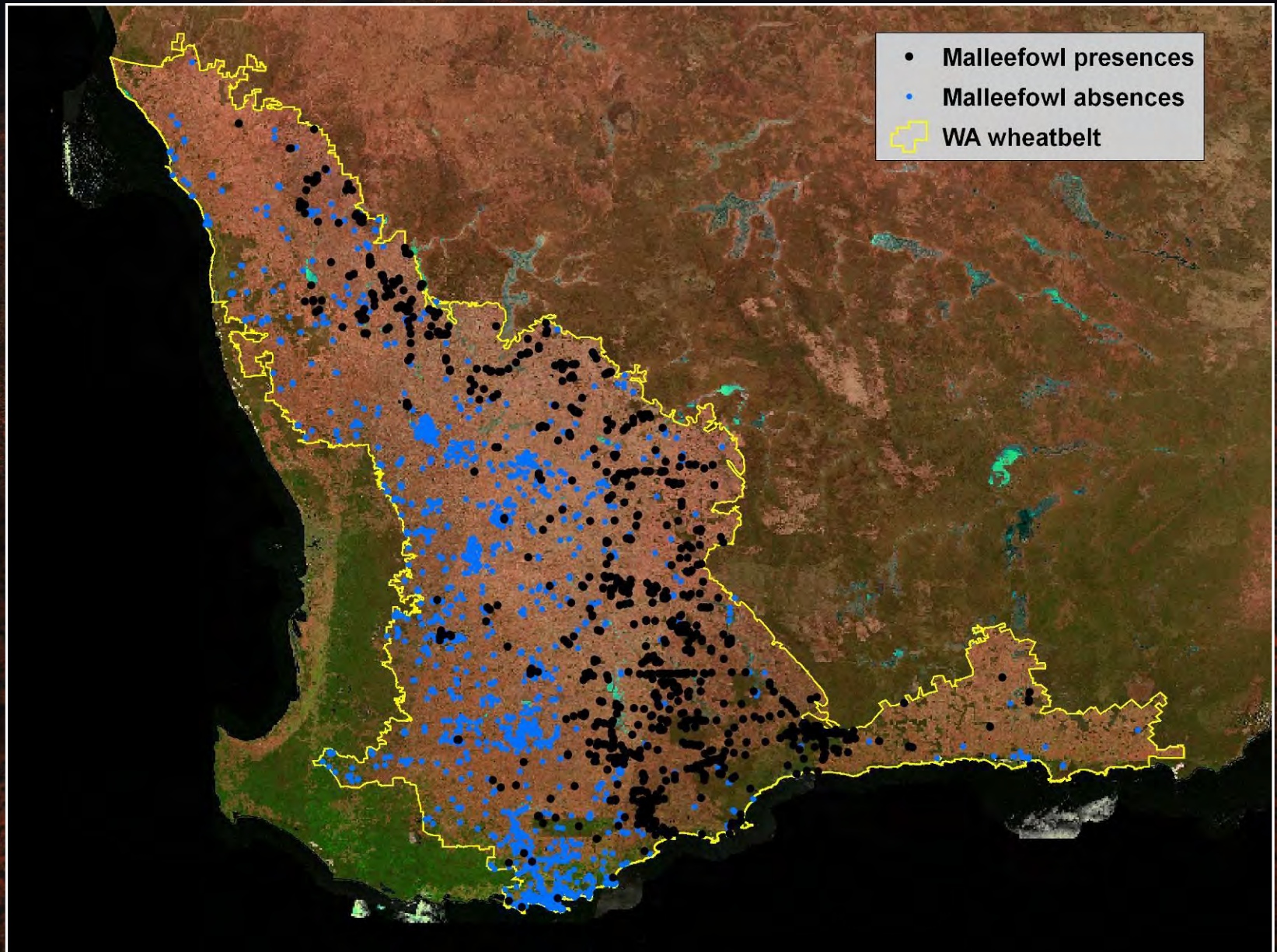
WAMN: A meeting in January...

- **Top issues / priorities regarding conservation / management of Malleefowl in WA?**
- **Who?**
 - a) Community Groups, mining companies, agencies, NGOs, consultants, universities
- **What was the wish list?**
 - a) WA specific research, priorities, actions
 - b) Feedback on monitoring etc
 - c) Coordination/collaboration/data sharing
 - d) Better understanding of MF distribution
 - e) Re-assessment of listing

What is relevant to GVD...and can modelling help?

- **Relevant items**
 - a) Specific research, priorities, actions
 - b) Guidance and feedback on monitoring
 - c) Better understanding of MF distribution
 - d) Re-assessment of listing
- **Some examples**
 - a) distribution modelling using Malleefowl records
 - b) recovery of Malleefowl habitat post fire

Distribution modelling: we need good data





GVD2

GVD1

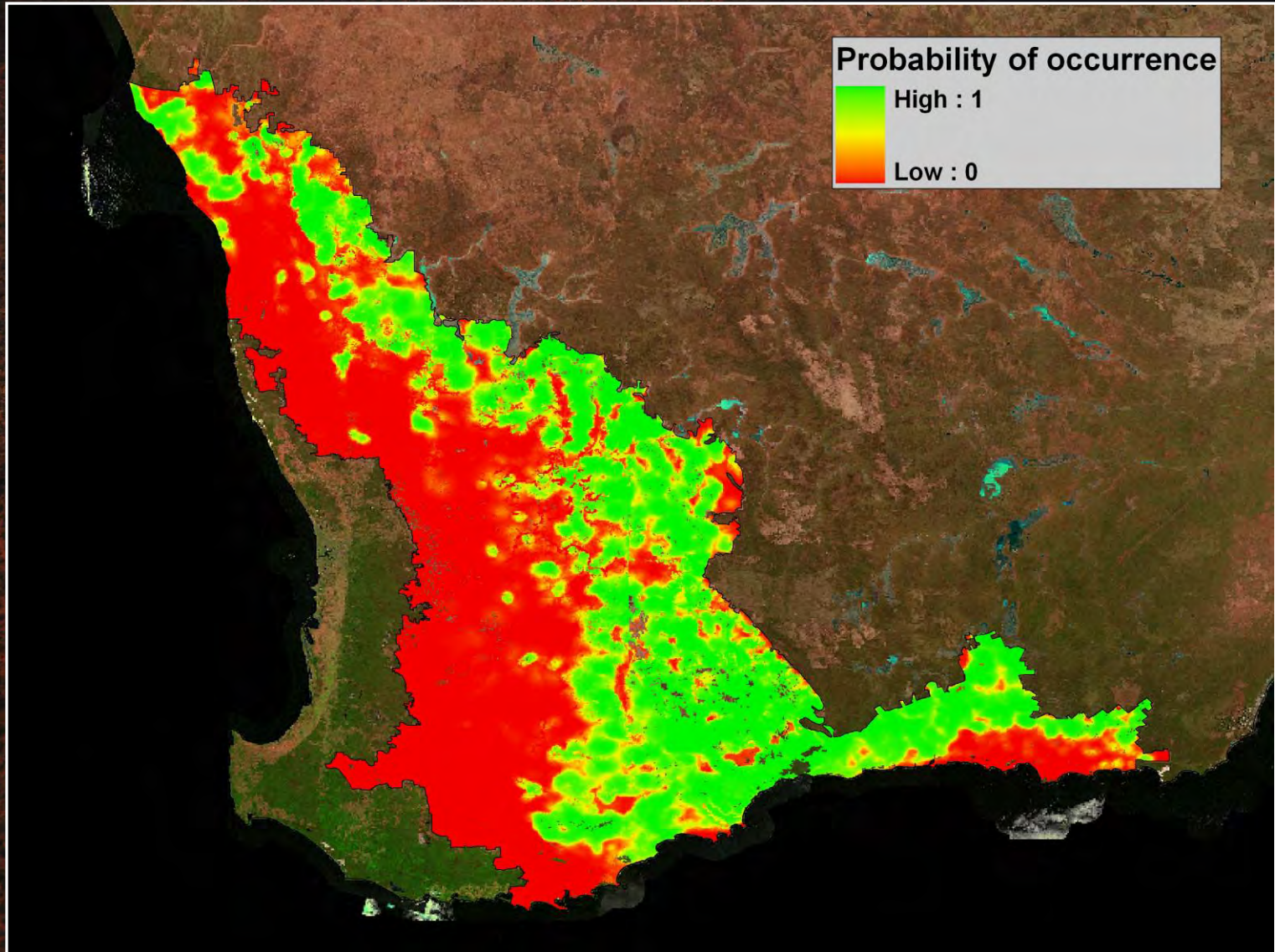
GVD3

Distribution modelling

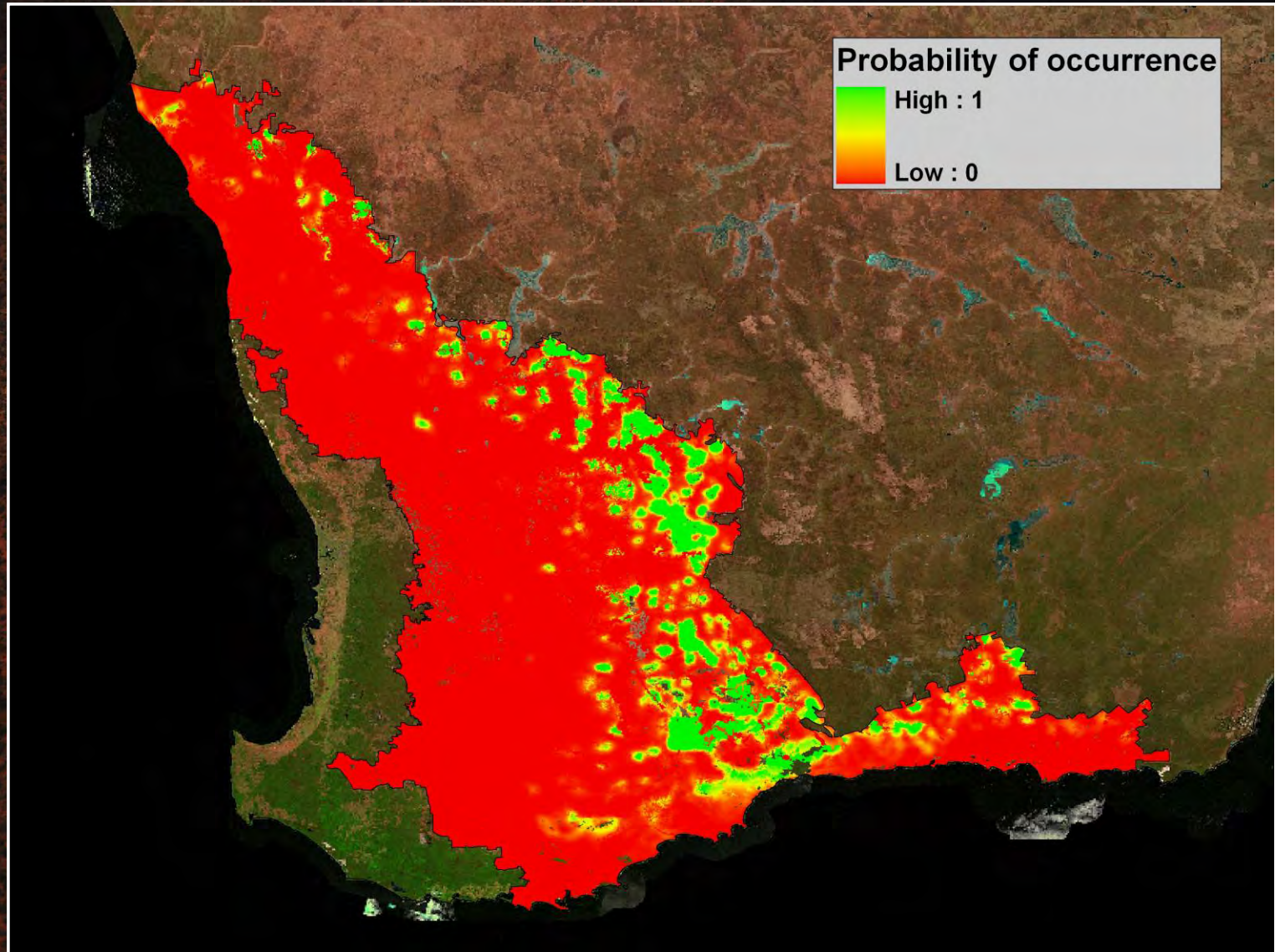
We need relevant variables

- **For wheatbelt work**
 - **Vegetation (ie. landscape context)**
 - **Distance to the nearest X ha remnant (50, 75, 100, 200, 500 ha)**
 - **% mallee/shrubland in landscape (1, 2, 5 km radii)**
 - **Soil qualities e.g. flood risk, surface texture, permeability**
 - **Climate, eg. mean annual rainfall, temperature**
 - **What would work in the GVD?**

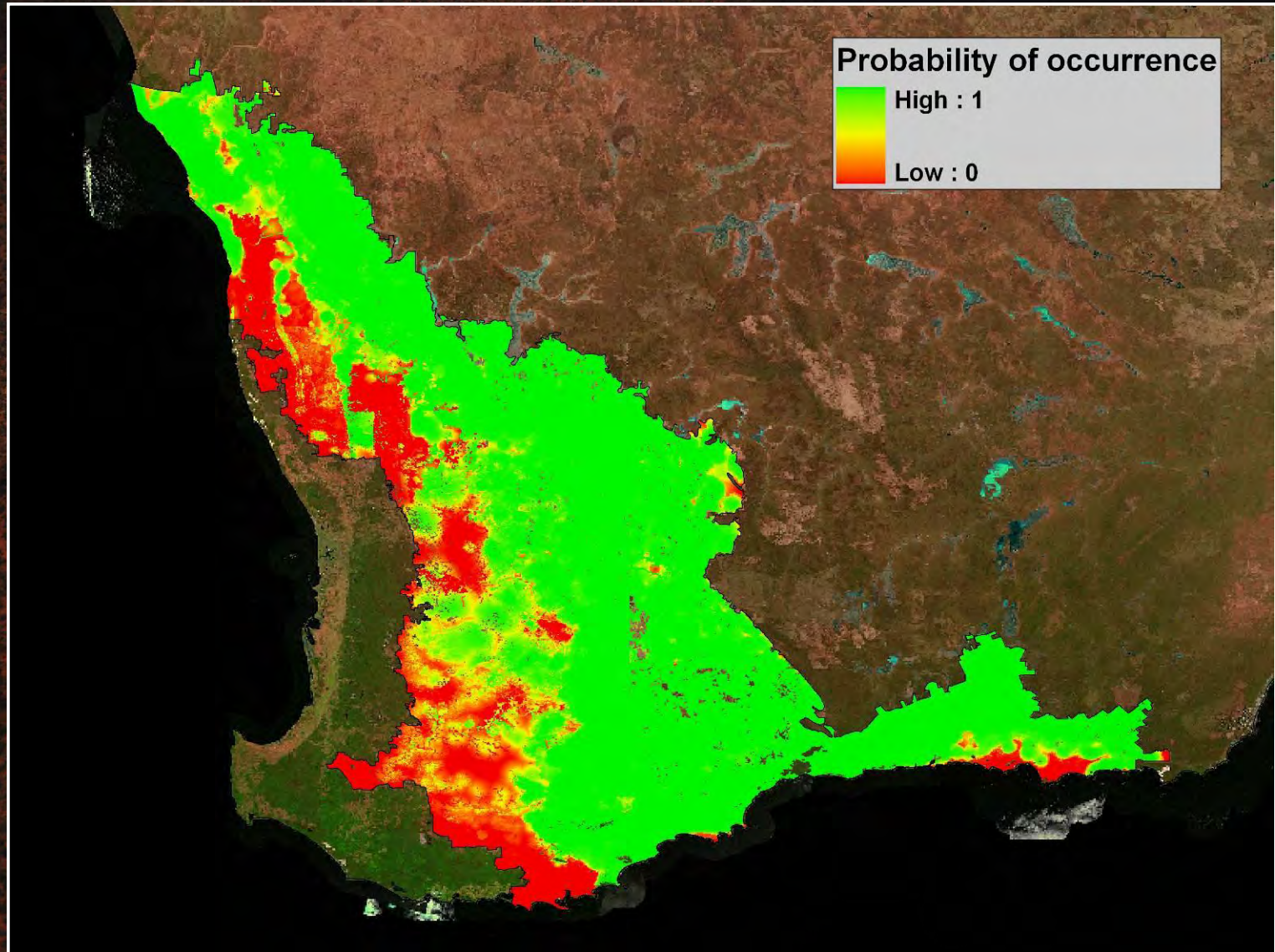
GLM of Malleefowl occurrence: Spatial prediction



GLM of Malleefowl occurrence: lower 95% confidence limit



GLM of Malleefowl occurrence: upper 95% confidence limit

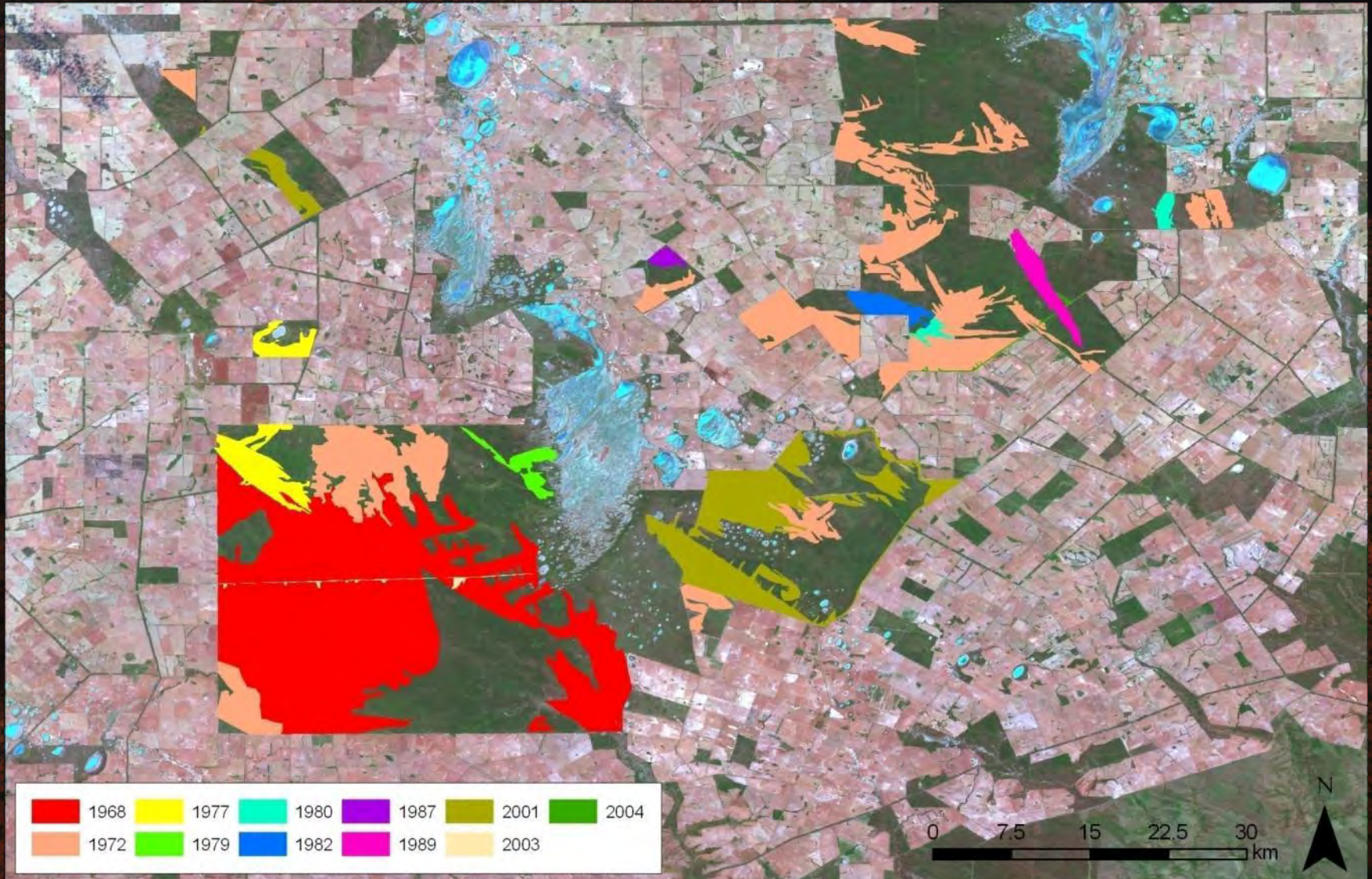


Modelling response of Malleefowl habitat to fire

- Can determine structural response of Malleefowl habitats to fire using a space-for-time approach
 - Mallee (southern wheatbelt)
 - Acacia shrublands (adj. northern wheatbelt)
- Could provide an assessment of threat of fire to persistence of Malleefowl
- Could be used to evaluate effectiveness of management actions



Mallee study area: Lake Magenta/Dunn Rock NR



Mallee – 4 yrs since last fire



Mallee – 6 yrs since last fire



Mallee – 18 yrs since last fire



Mallee – 25 yrs since last fire



Mallee – 30 yrs since last fire



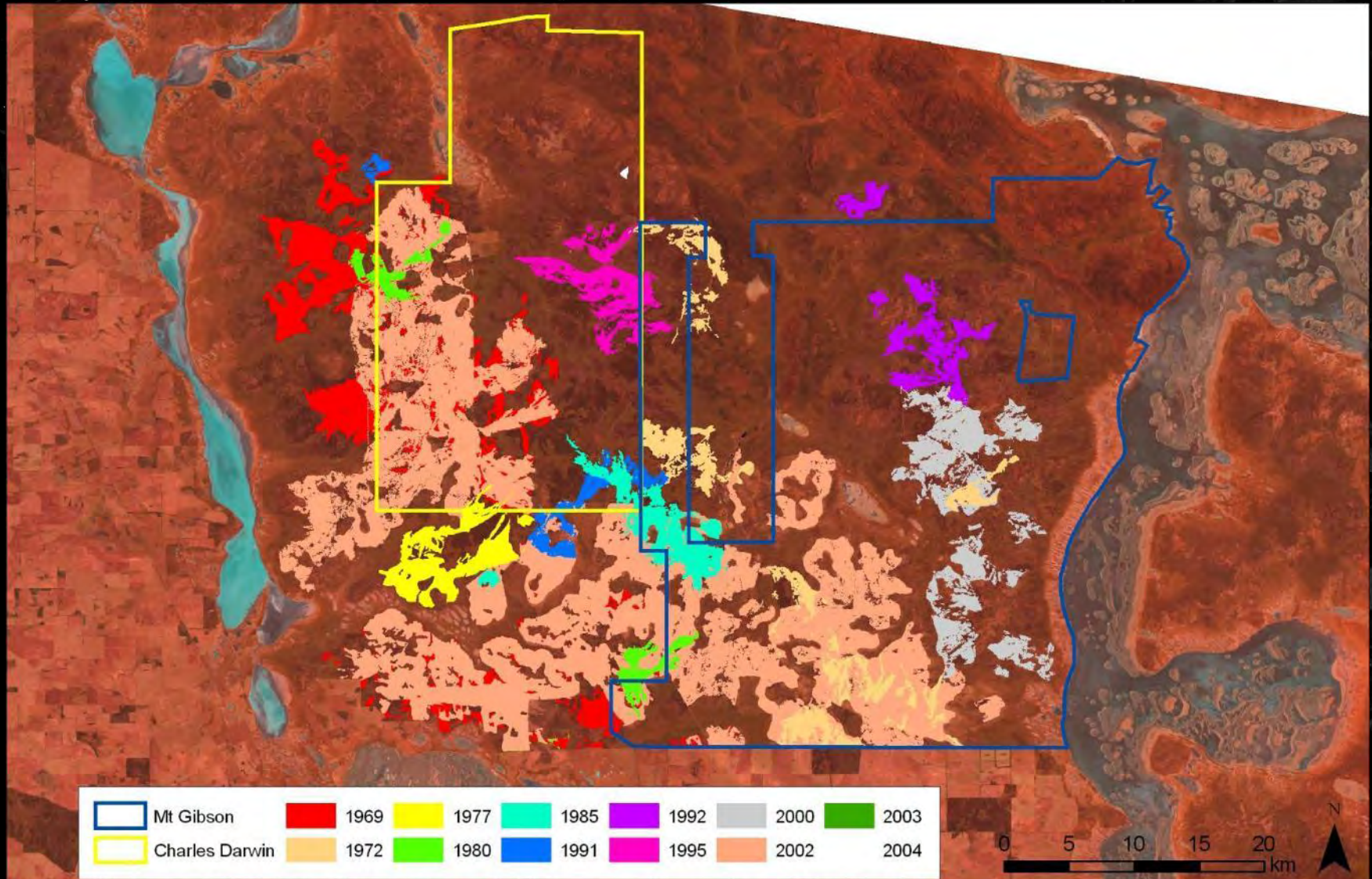
Mallee – 39 yrs since last fire



Mallee – long unburnt (> 45 yrs)



Acacia shrublands study area: Mt Gibson / Charles Darwin Reserve



Acacia shrubland – 3 yrs since last fire



Acacia shrubland – 12 yrs since last fire



Acacia shrubland – 27 yrs since last fire



Acacia shrubland – 30 yrs since last fire



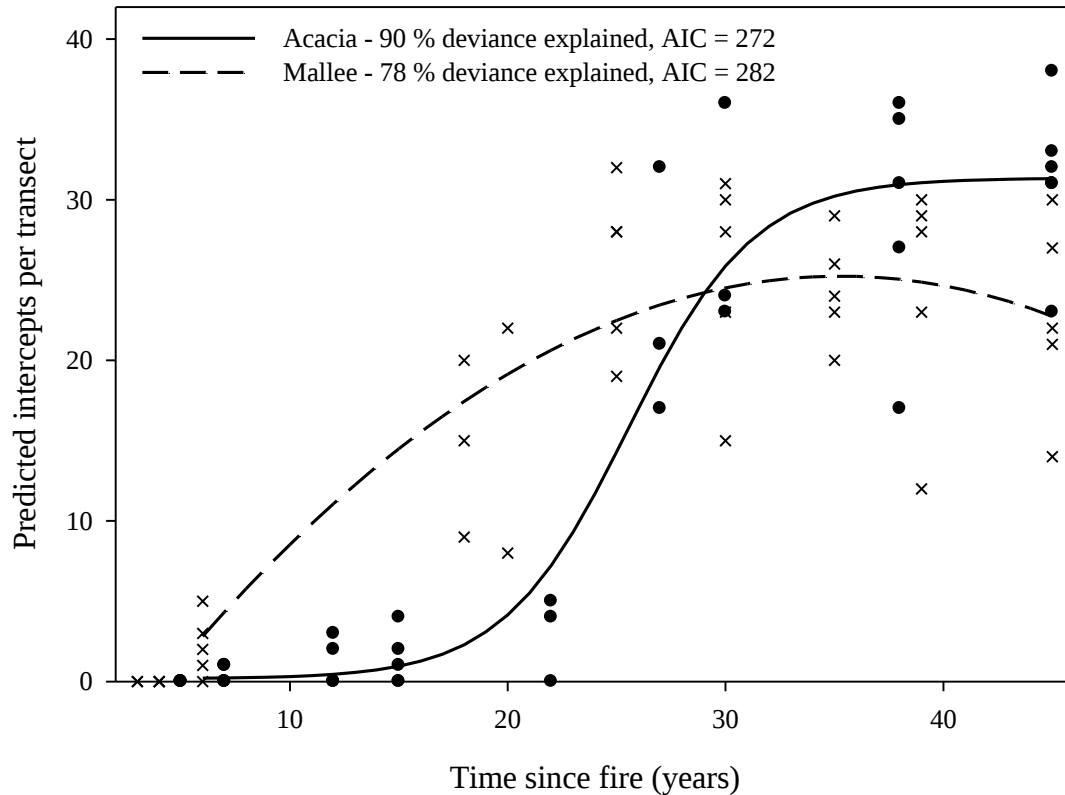
Acacia shrubland – 38 yrs since last fire



Acacia shrubland - long unburnt

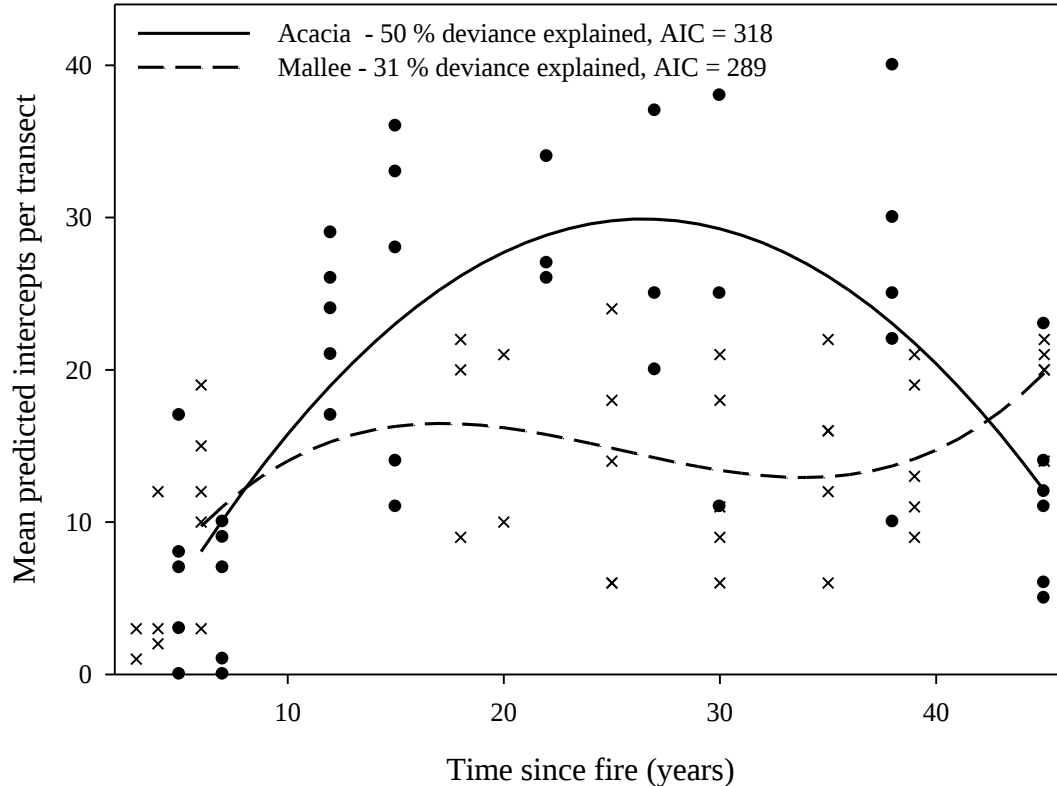


Regeneration of habitat following fire: 2 – 4 m layer



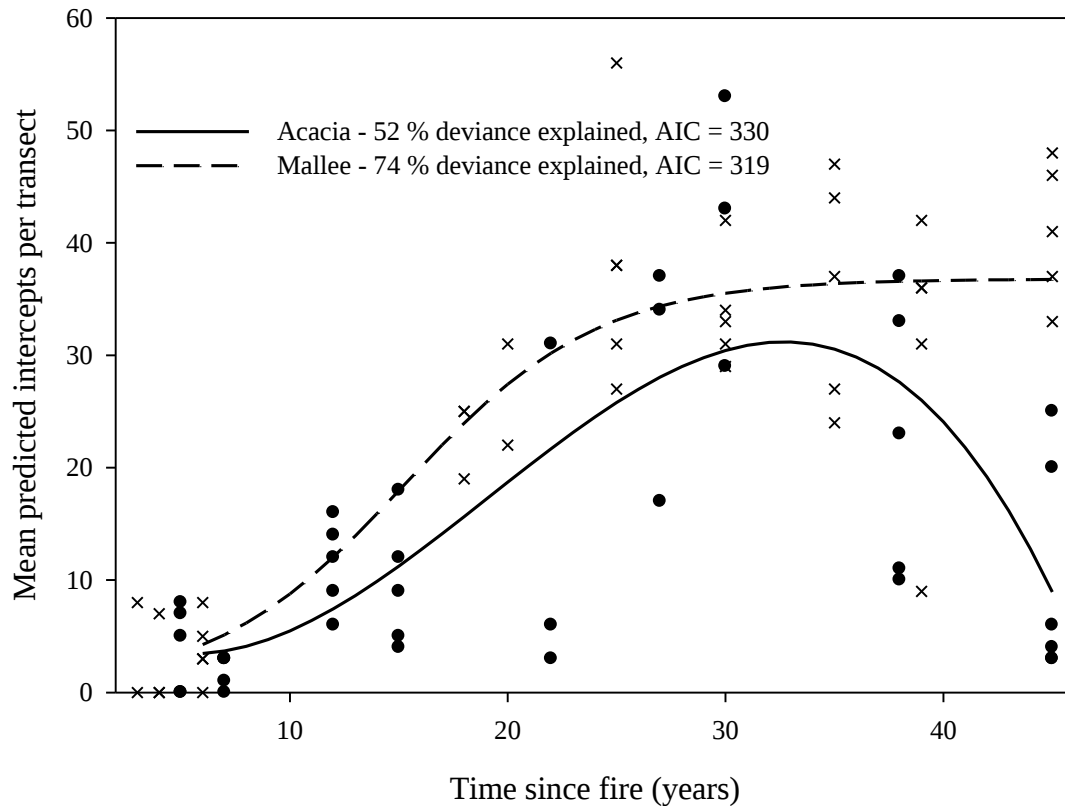
- Mallee developed a shrubby canopy after 15 years
- Acacia took longer to develop canopy

Regeneration of habitat following fire: 1 – 2 m layer



- **Mallee:**
developed and retained 1-2 m layer beyond time scale of this study
- **Acacia shrubland:**
1-2 m layer increased to 25 yrs, diminished thereafter

Regeneration of habitat following fire: litter layer



- **Mallee built up and maintained a litter layer beyond 45 years**
- **Acacia litter layer diminished after about 25 - 30 years**

For discussion...

- **Key threats, knowledge gaps and management gaps:**
- Threat – Inappropriate fire regime?
- If we assume that land use in the GVD will remain largely as is, maybe fire management (eg. reduce extent, frequency of events) and monitoring might be enough to ensure the persistence of Malleefowl

Thanks for listening...



MWH.

BUILDING A BETTER WORLD

Contact:

blair.parsons@mwhglobal.com