

Baobabs (and canaries) in the coal mine: large-scale tree mortality and avian population threats from elephants

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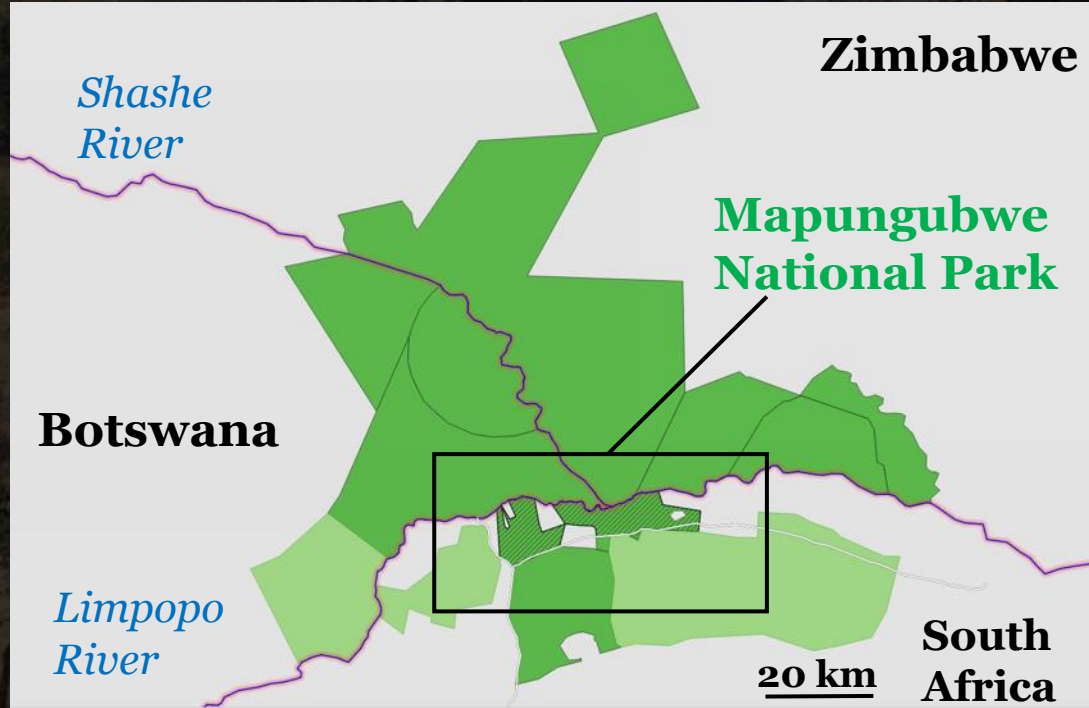
Background:



Arid savanna

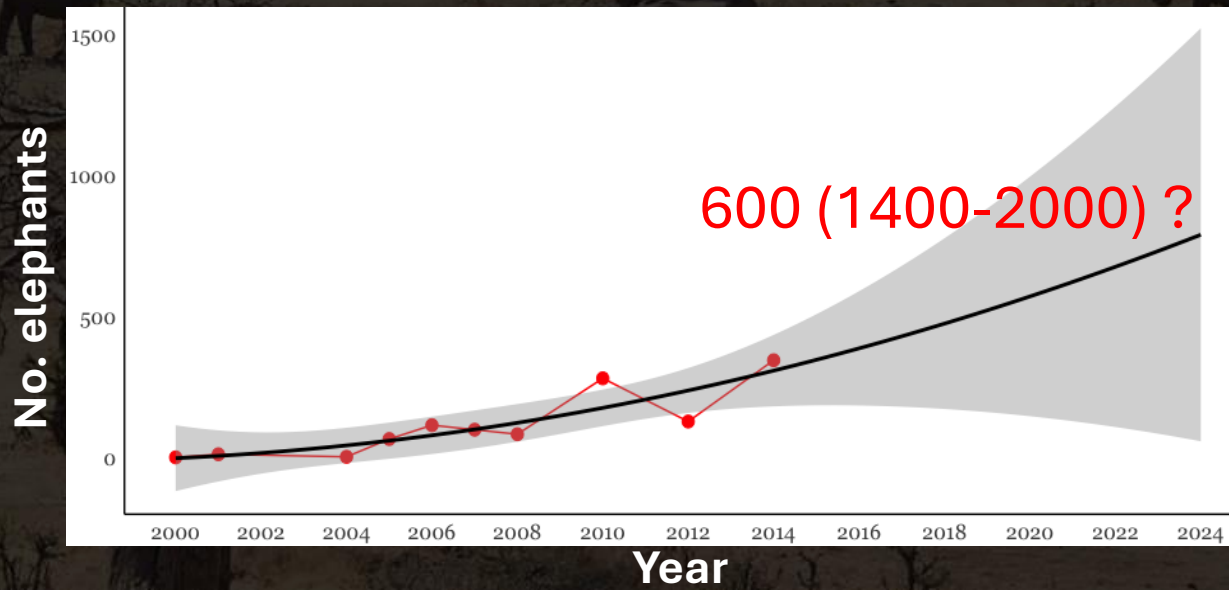
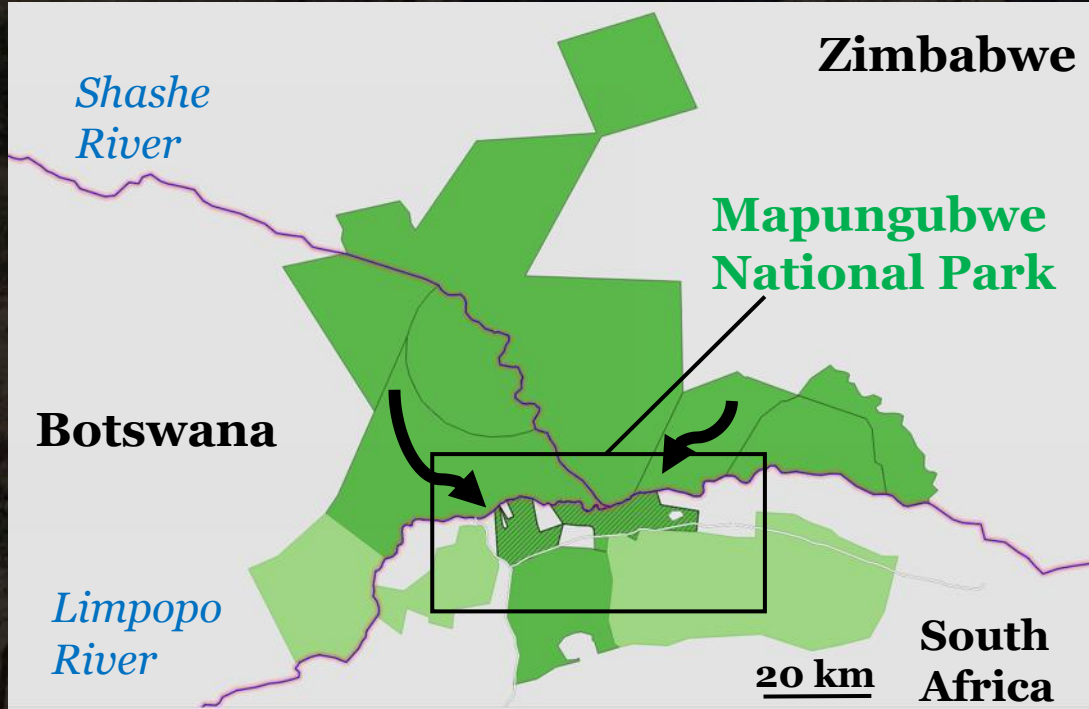


Background:



Early 2000's: fences came down

Background:



(Huang *et al.*, 2024; Selier and Page, 2014)

Aims:

1) State of tree mortality
(baobabs)

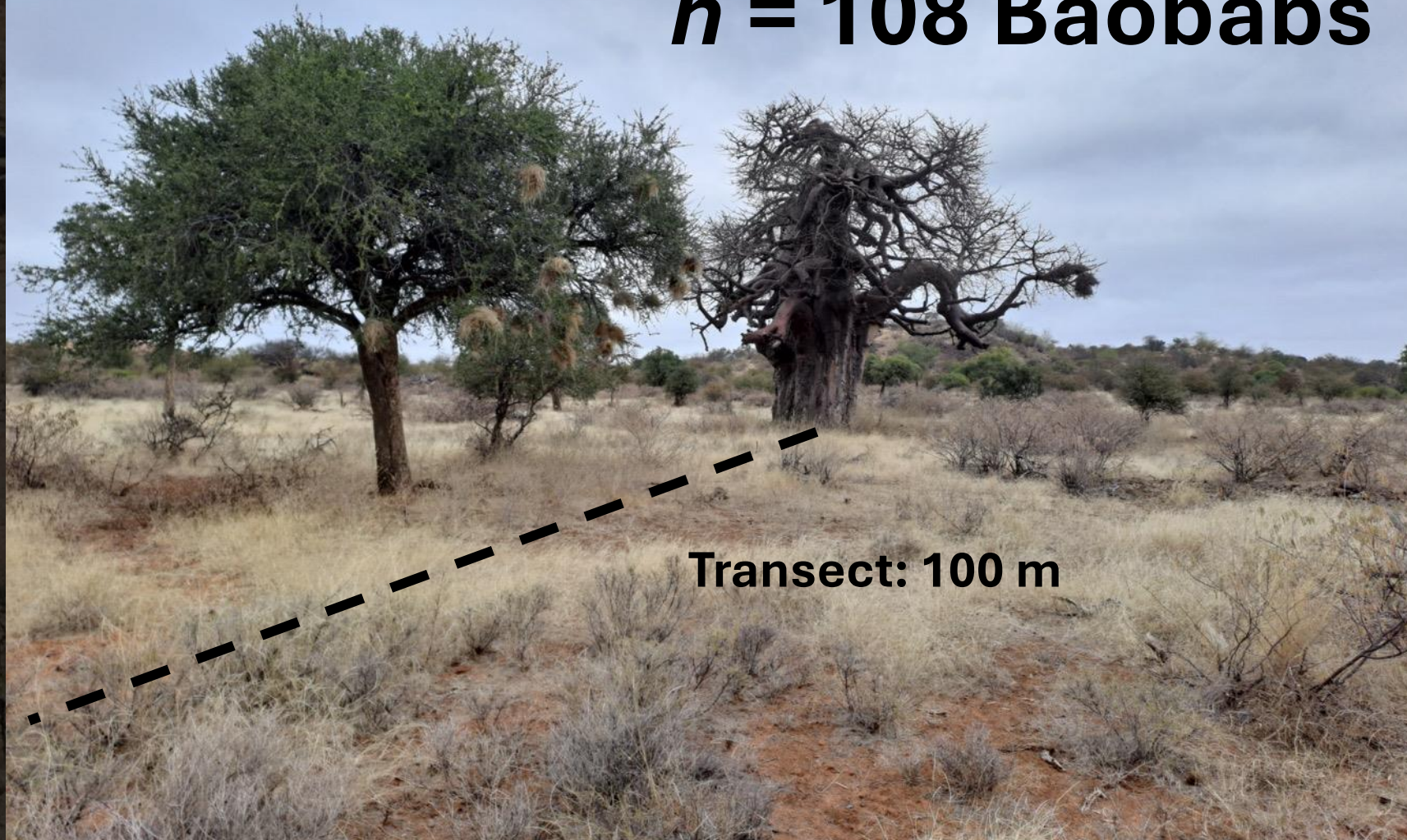
2) Nesting avian
repercussions



Methods:

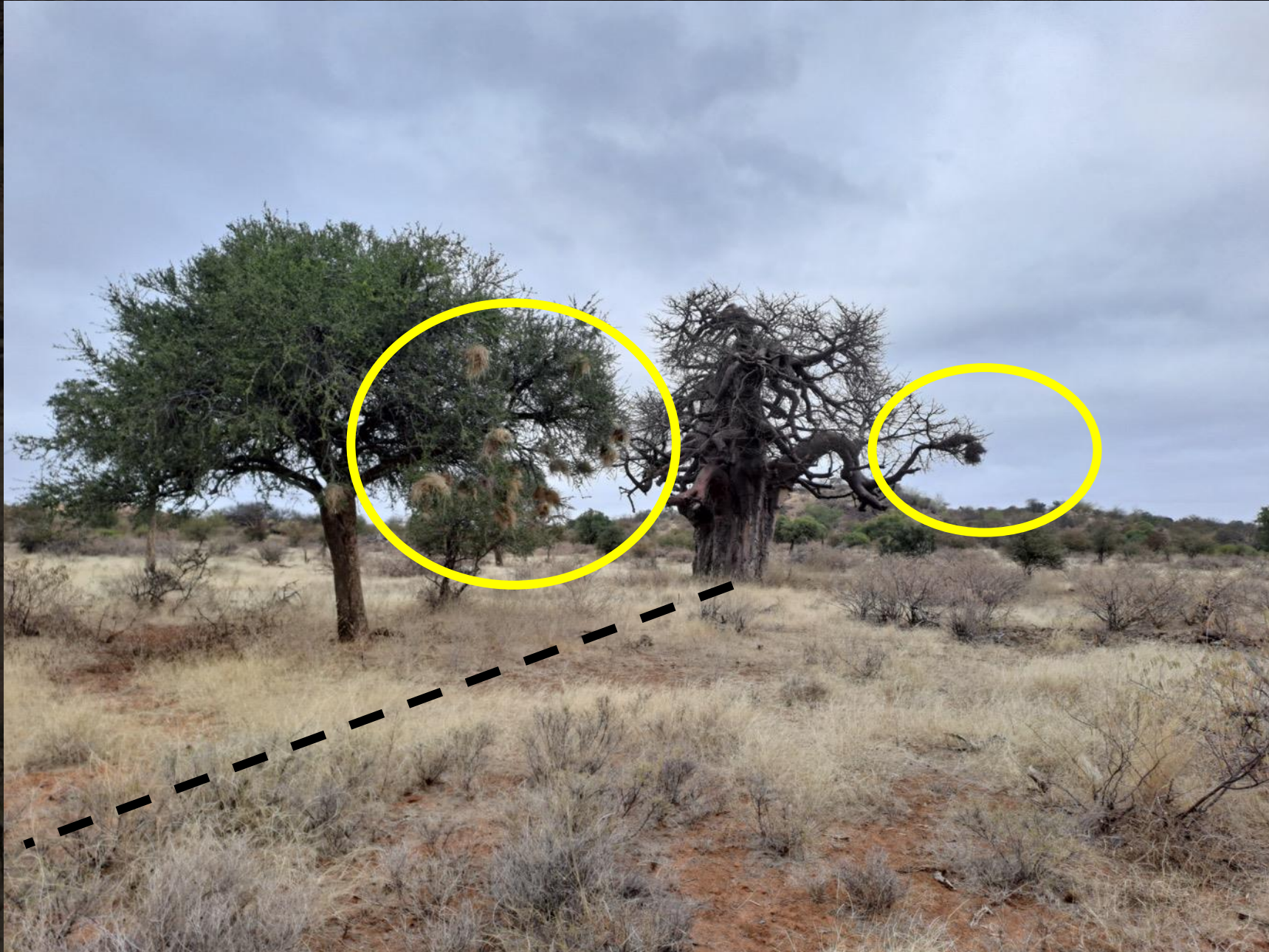
$n = 1800$

$n = 108$ Baobabs



Transect: 100 m

Methods:



Methods:

Dry season

Wet season



Methods:



Findings:

Aim 1: Tree mortality

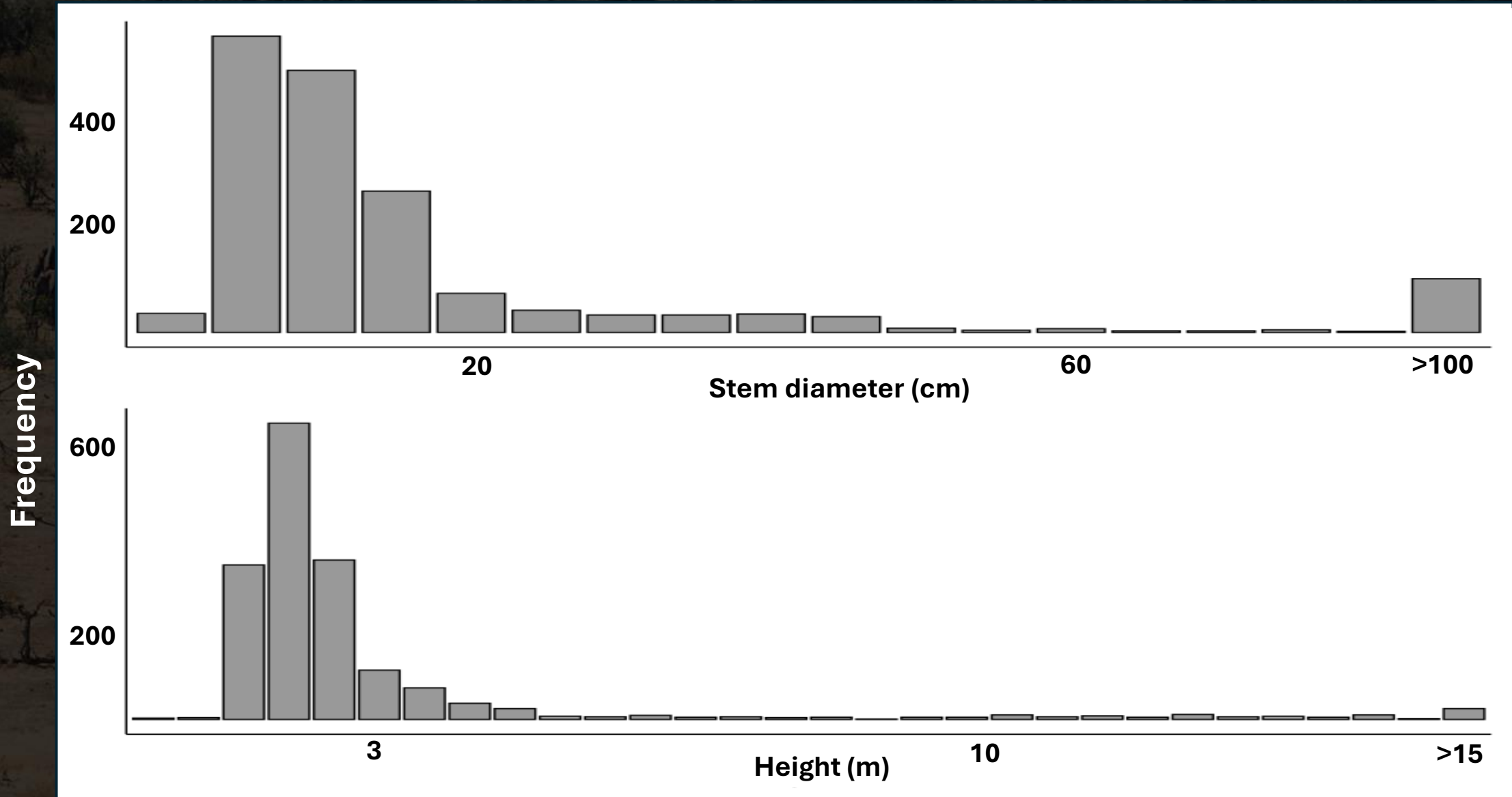


Findings:

Dead trees (2023)

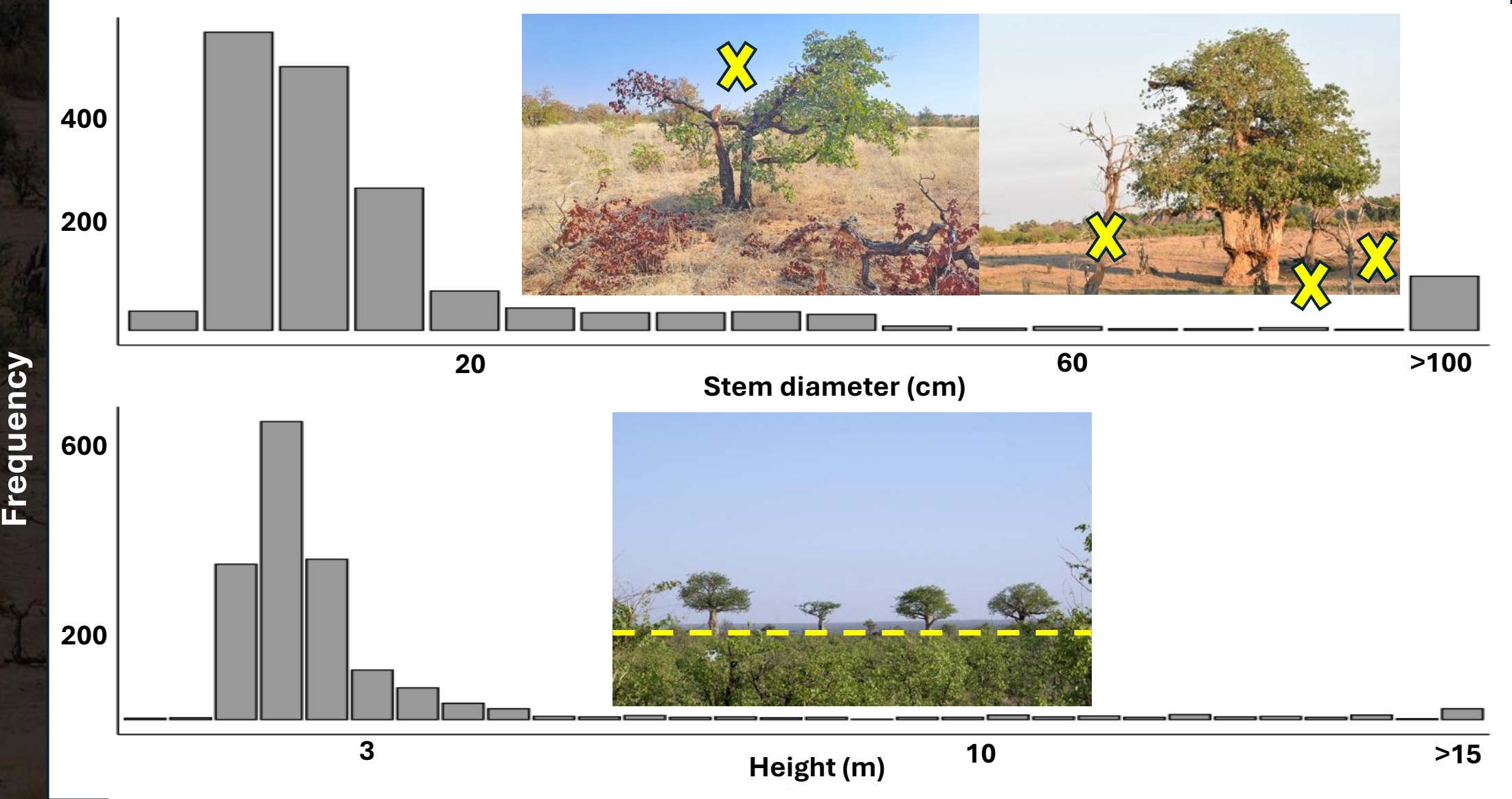


Findings:



Size class distributions – all woody plants

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Size class distributions – all woody plants

Findings:

Bark stripping (99%)



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Bark stripping (99%)



Stem goring (40%)

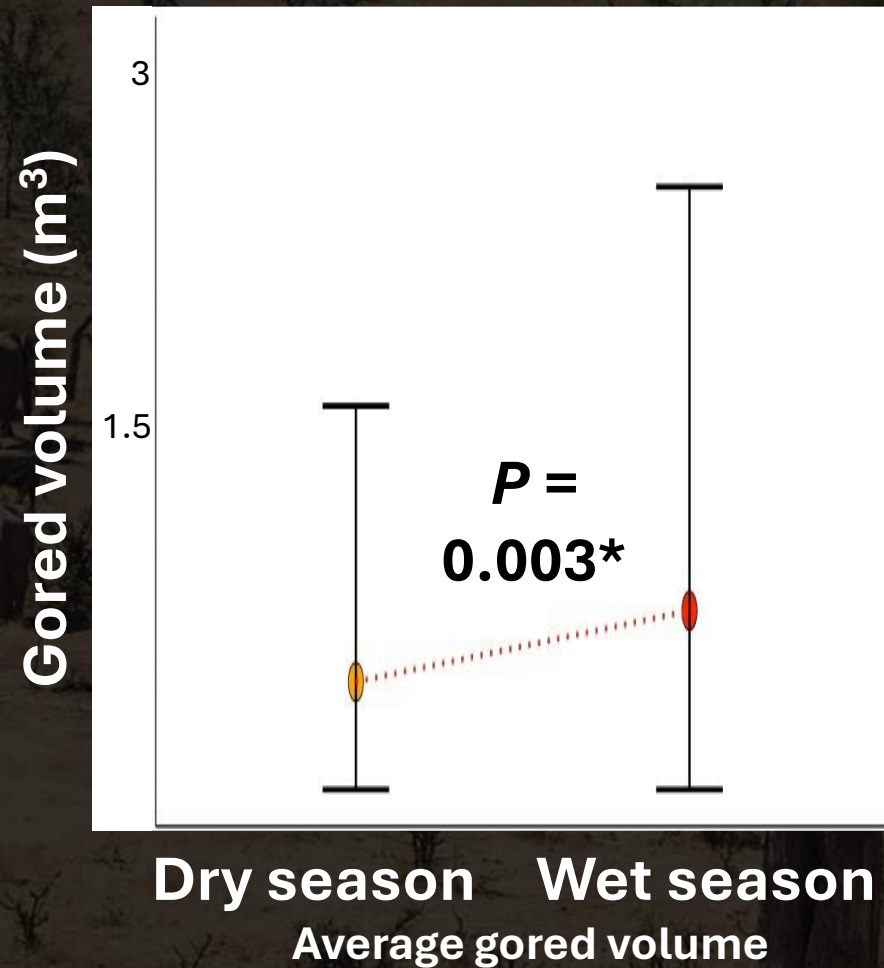


Findings:



Findings:

5-month period



Findings:

5-month period



Findings:



Regeneration?

Findings:

2009



Supplied by Duncan Breen

2023

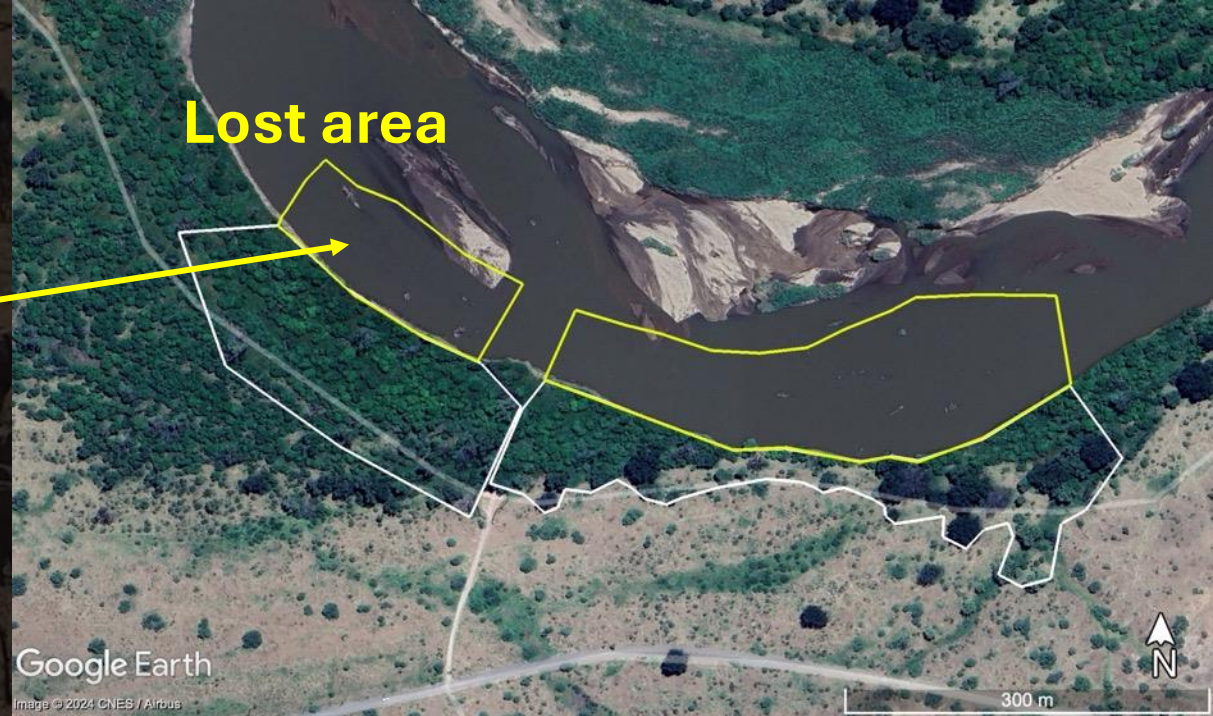


Findings:

2006



2023



Floods

Findings:

**All riparian trees:
34% stem damaged**



Findings:

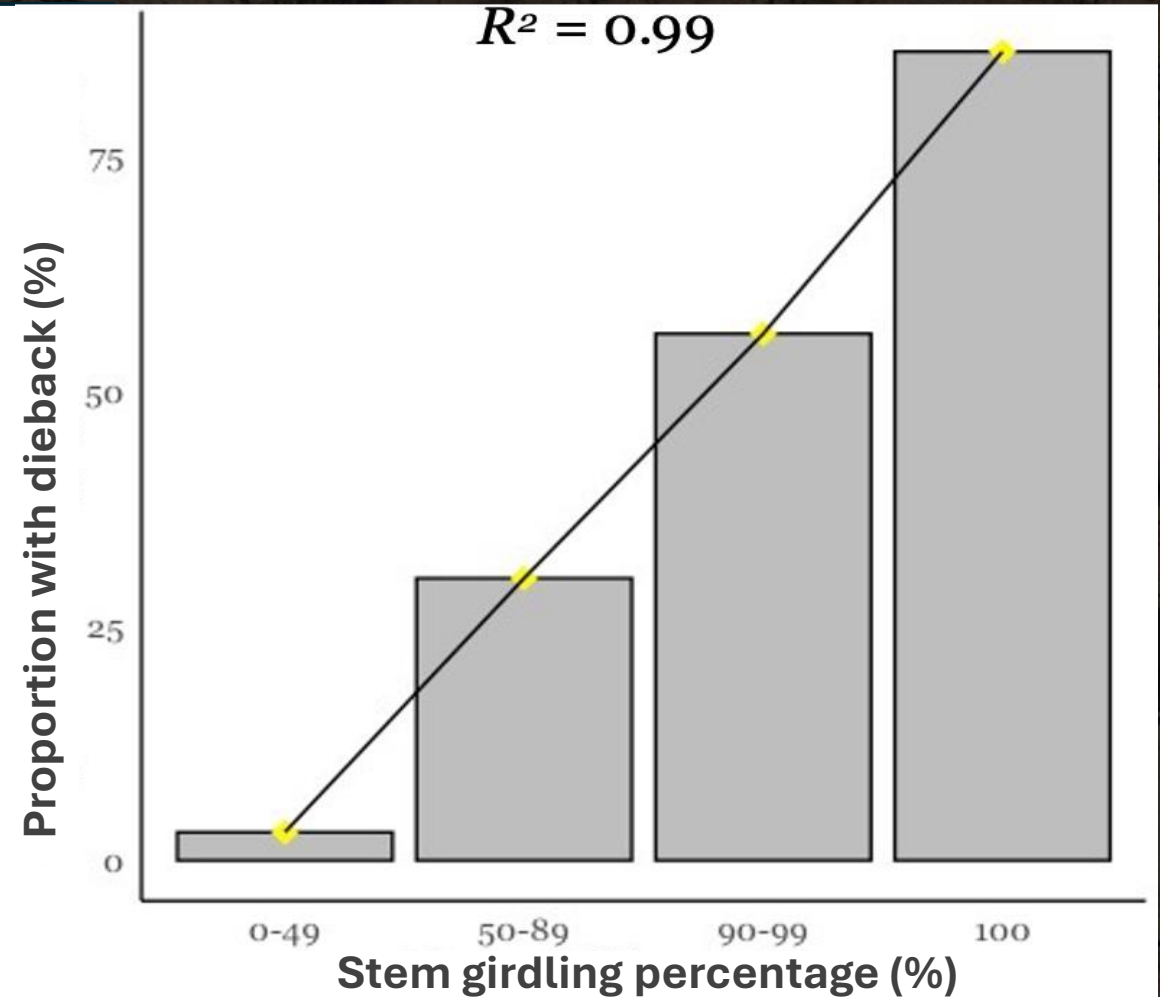
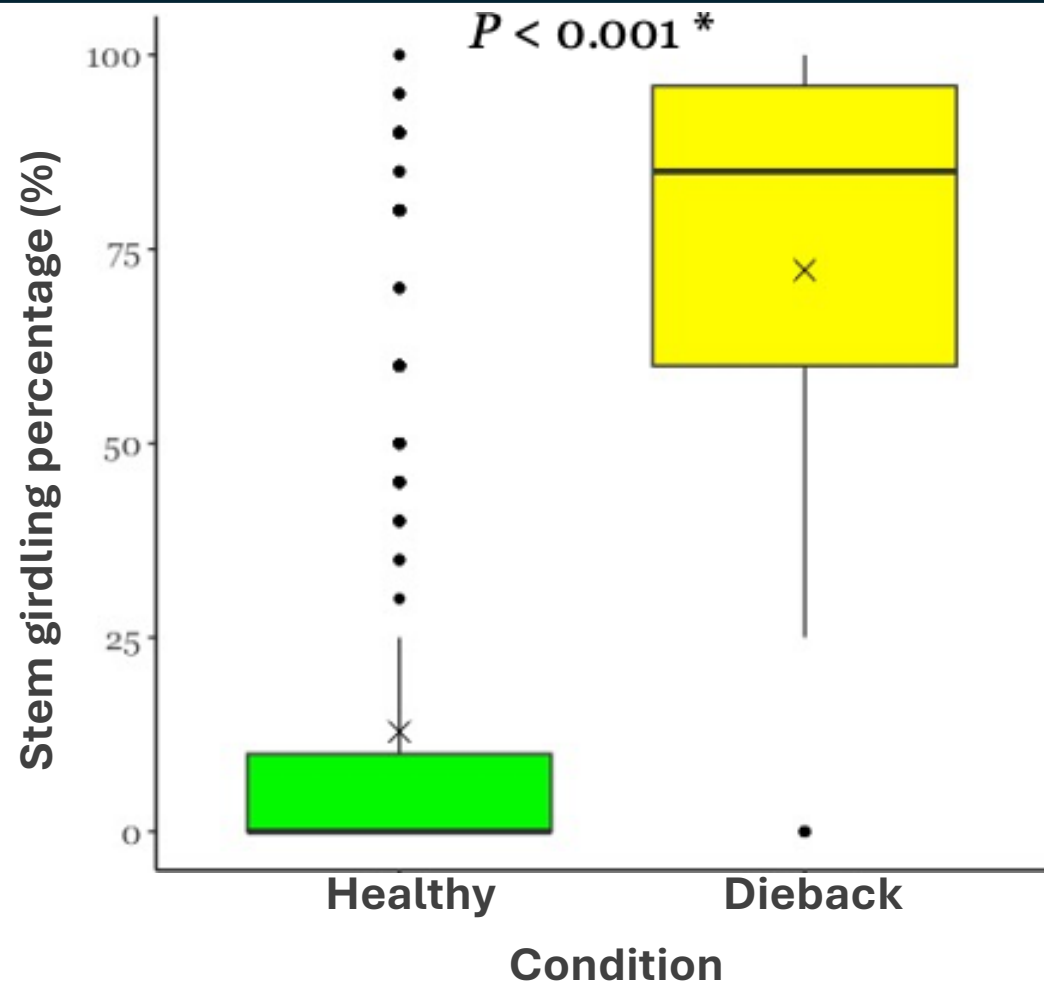


All riparian trees:
34% stem damaged

Largest trees
73% stem damaged
(26% dying)

Findings:

Bark stripping → canopy dieback



Findings:

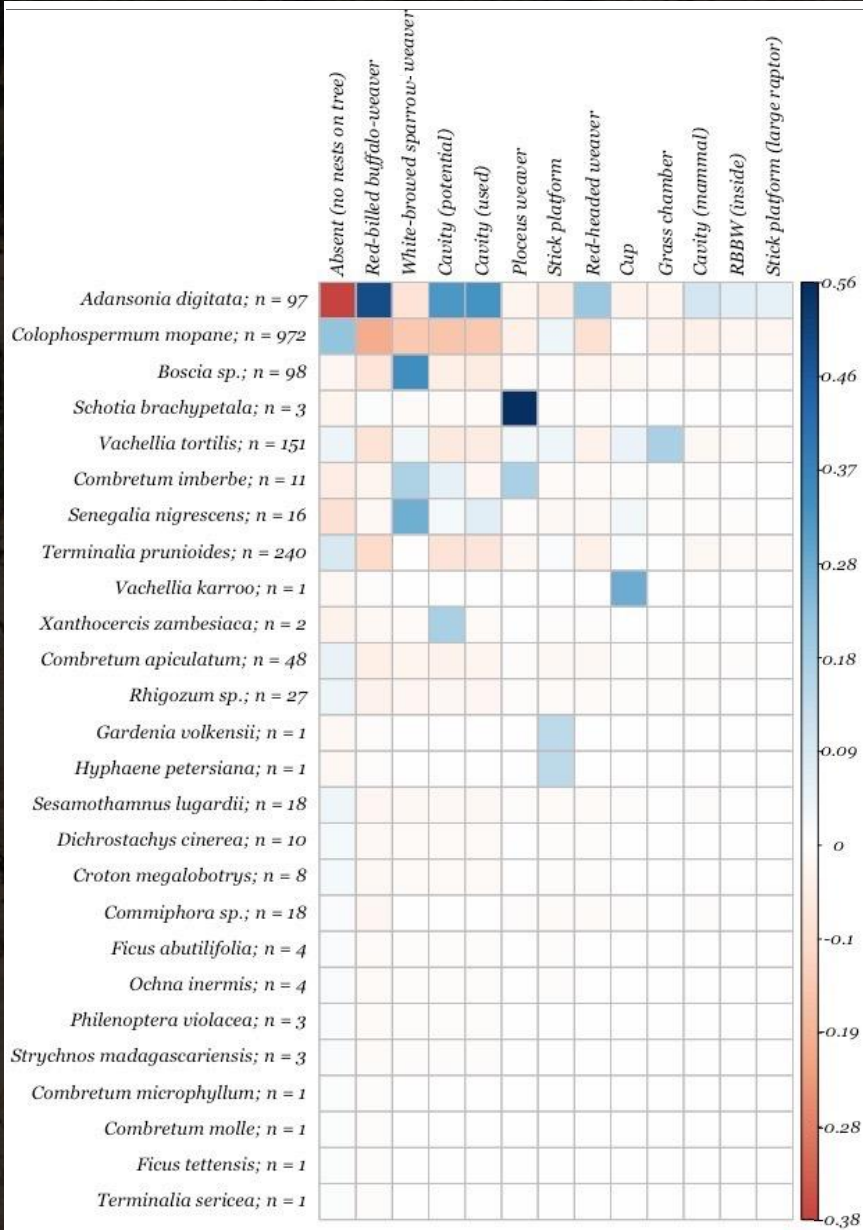
Aim 2: Nesting assemblages



Findings:

Nest types

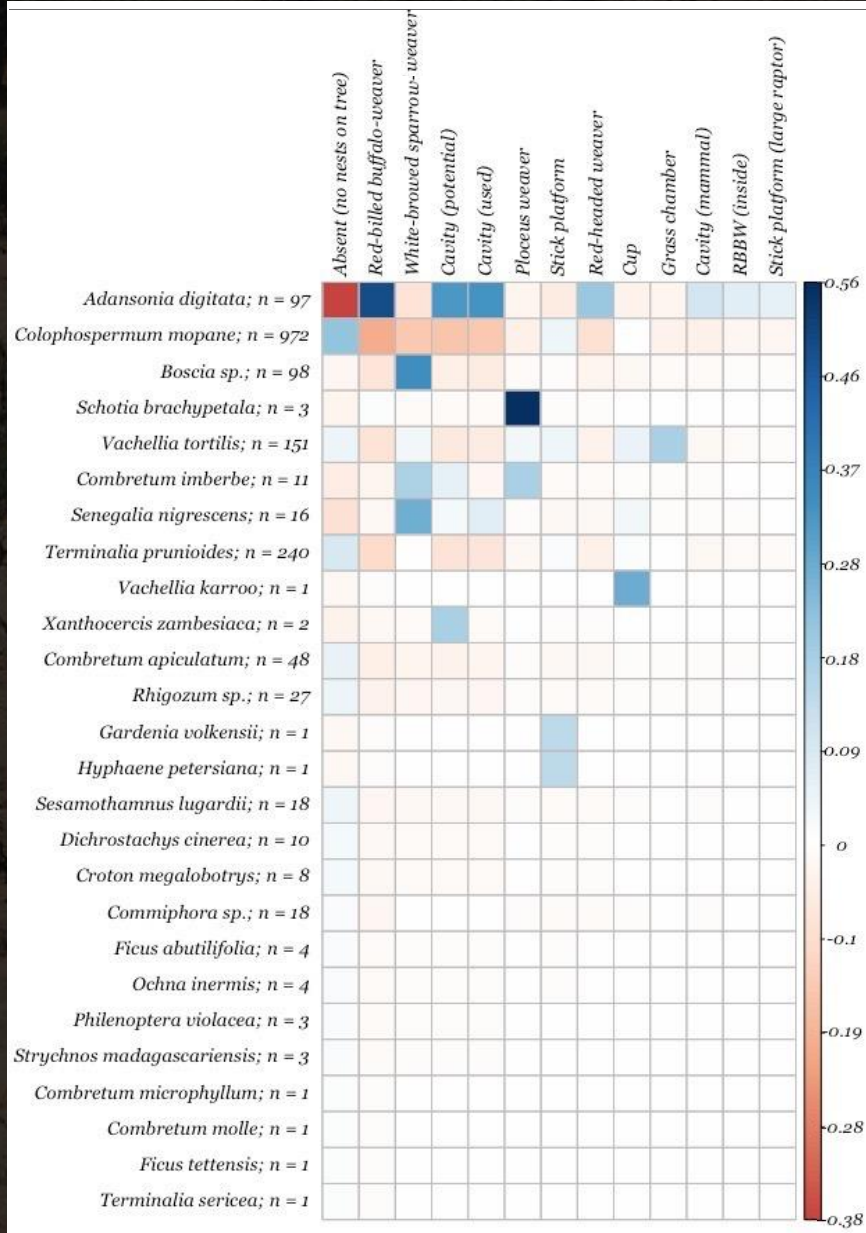
Tree species



Correlation plot

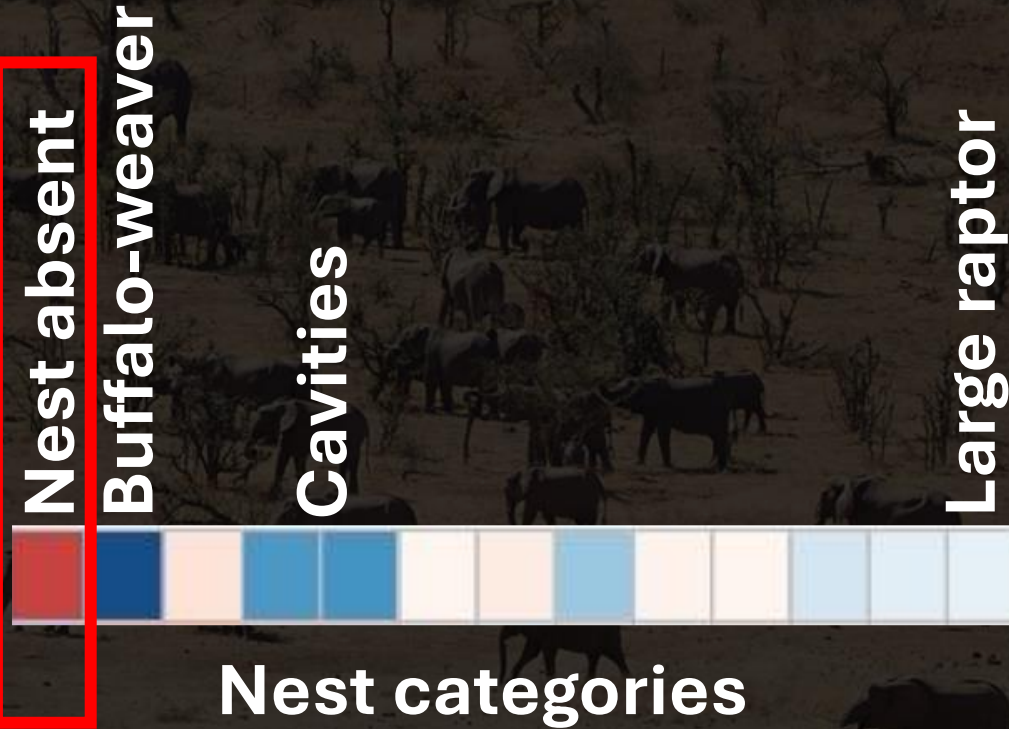
Findings:

Nest types



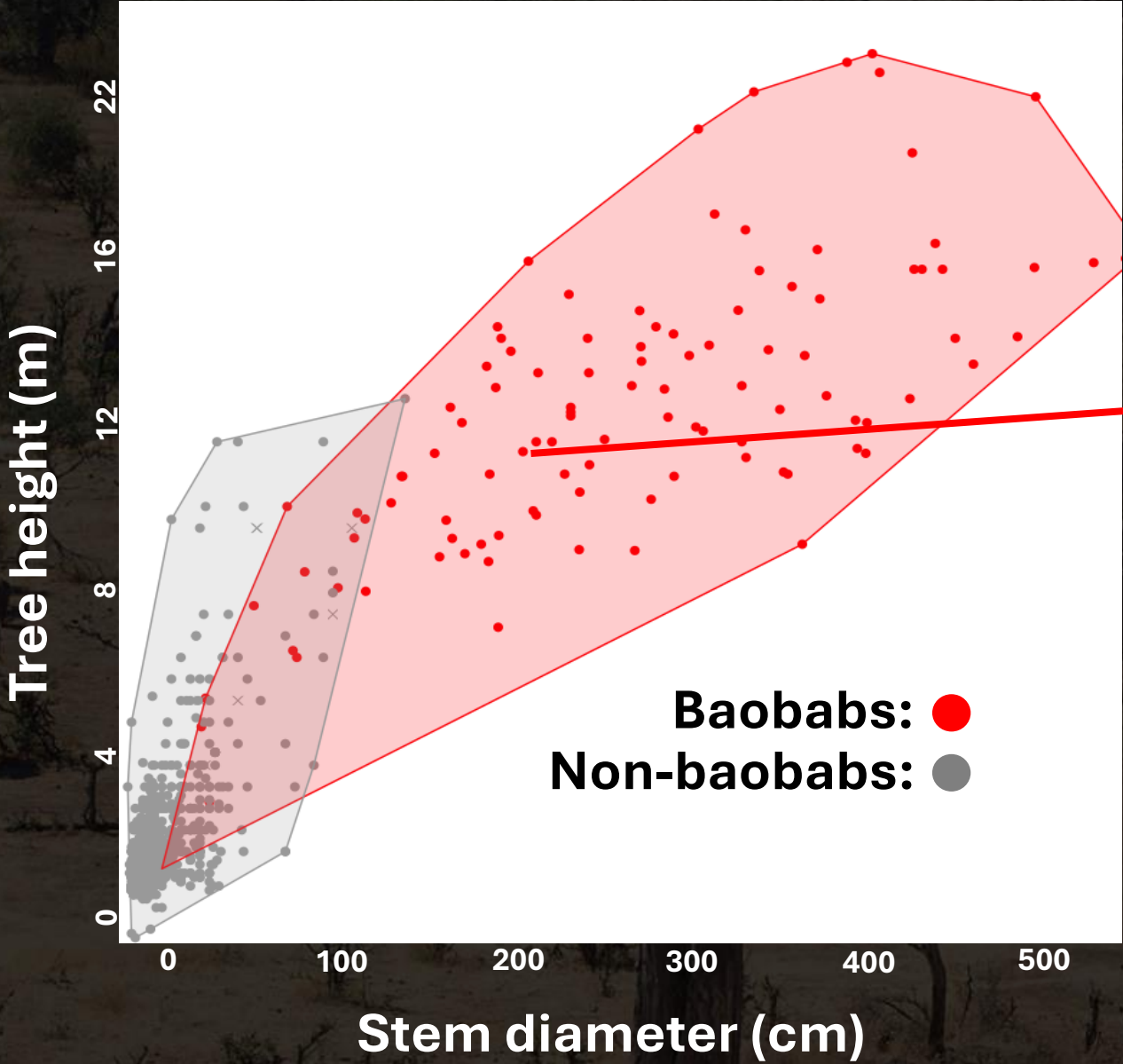
Correlation plot

Baobab



Nest categories

Findings:



Findings:

Cavity assemblage = ecologically diverse

Meyer's Parrots



Barn Owls



Findings:

Red-billed buffalo-weavers = Facilitator species

Southern white-faced owls



Wahlberg's Eagles



Findings:

IUCN spp. need large trees



Martial Eagle:
Endangered



**Lappet-faced
Vulture:**
Endangered

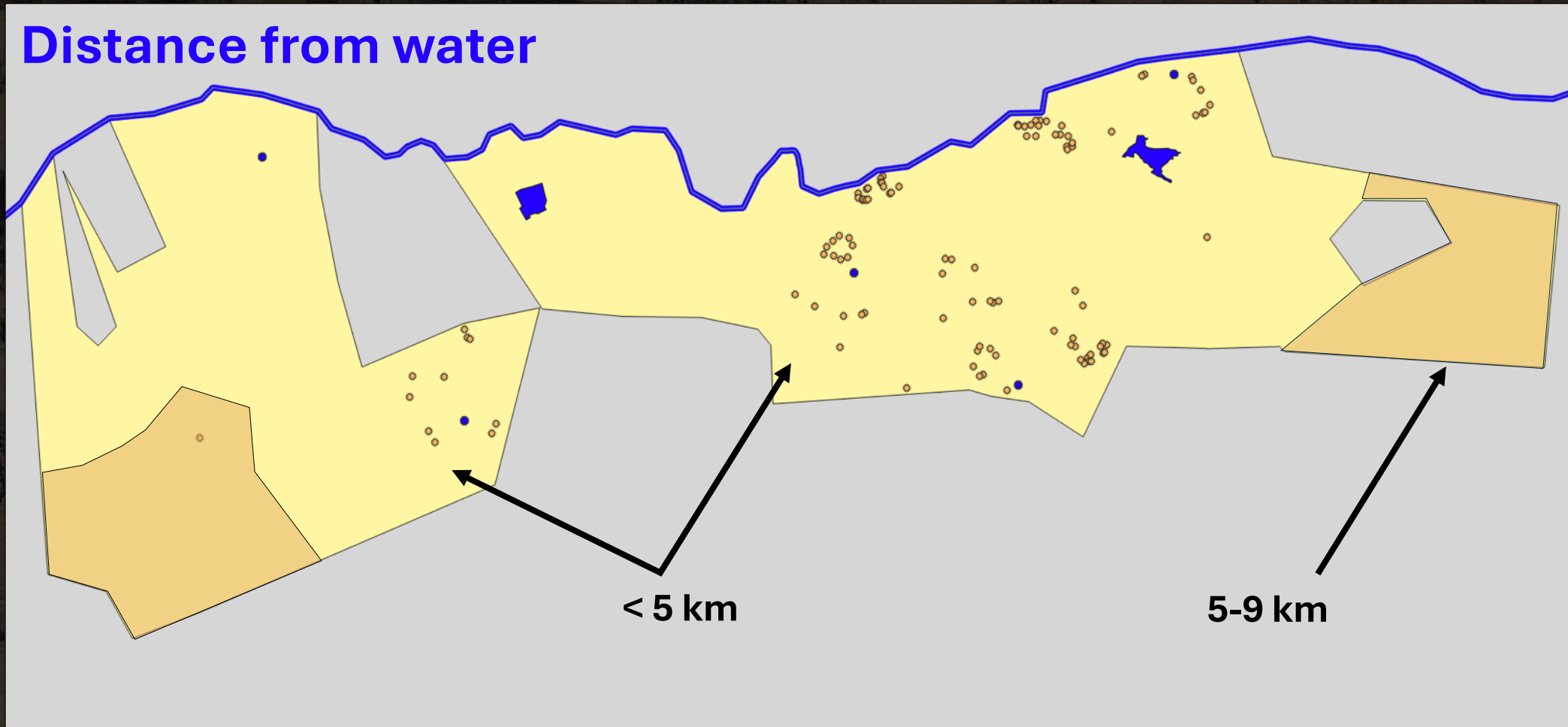


**White-backed
Vulture:**
**Critically-
Endangered**

Future of large trees in Mapungubwe?



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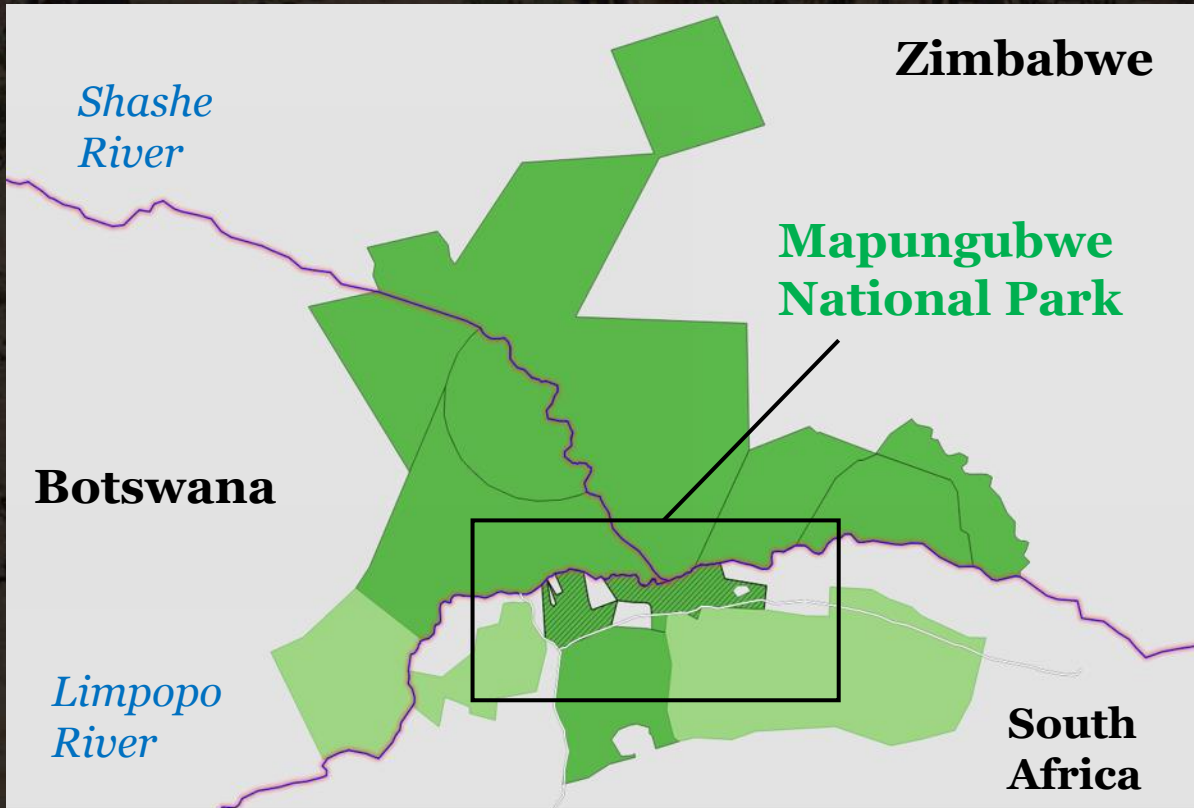
Future of large trees in Mapungubwe?

- Wire mesh protection (GLMMs for the best trees)



Future of large trees in Mapungubwe?

- Wire mesh protection (GLMMs for the best trees)
- Botanical + avian reserves



Acknowledgments

Supervisor team



Mr Steven Khoza



Ms Victoria Roetger



Questions?

