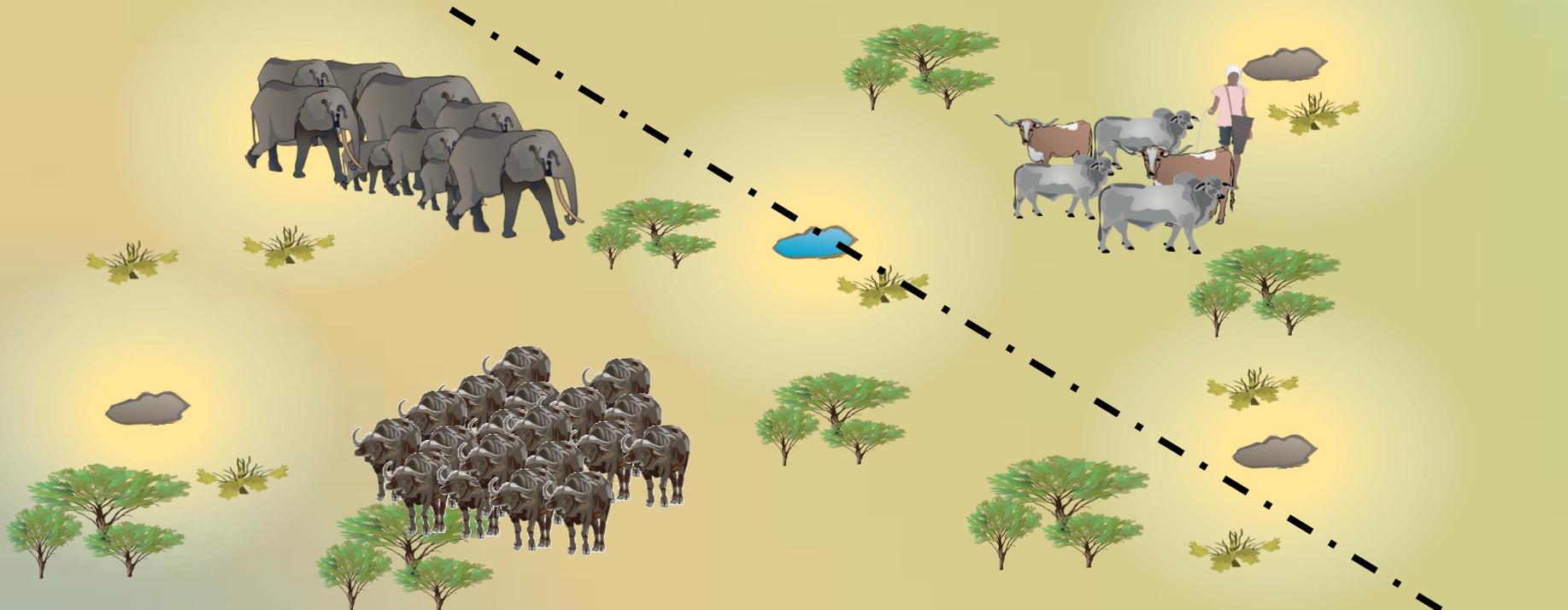


# Surface water availability and agro-pastoral practices shape the human-wildlife interface at the edge of a protected area.



*Hugo Valls Fox, Simon Chamaille-Jammes, Michel de Garine-Wichatitsky, Arthur Perrotton, Nicolas Courbin, Eve Miguel, Chloé Guerbois, Alexandre Caron, Andrew Loveridge, Brent Stapelkamp, Martin Muzamba & Hervé Fritz*

# Research Platform

« Production and Conservation in Partnership »

*Created in 2007*



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# Research Scope & Objectives

## ***Research object:***

Socio-ecological systems including protected areas and their peripheries in southern Africa



## ***Our goal:***

- To improve livelihood of rural households at « wild-domestic interfaces »
- Managing negative interactions, promoting positive ones (sustainable use of NR)

## ***Our purpose:***

- Promote applied, *demand-driven* research through *transdisciplinary holistic approaches and co-construction*
- Post-graduate training and *capacity building*

# Thematic fields

Socio-ecological systems at the wild/domestic interface

Achievements:

- 100 postgraduate
- 100 publications



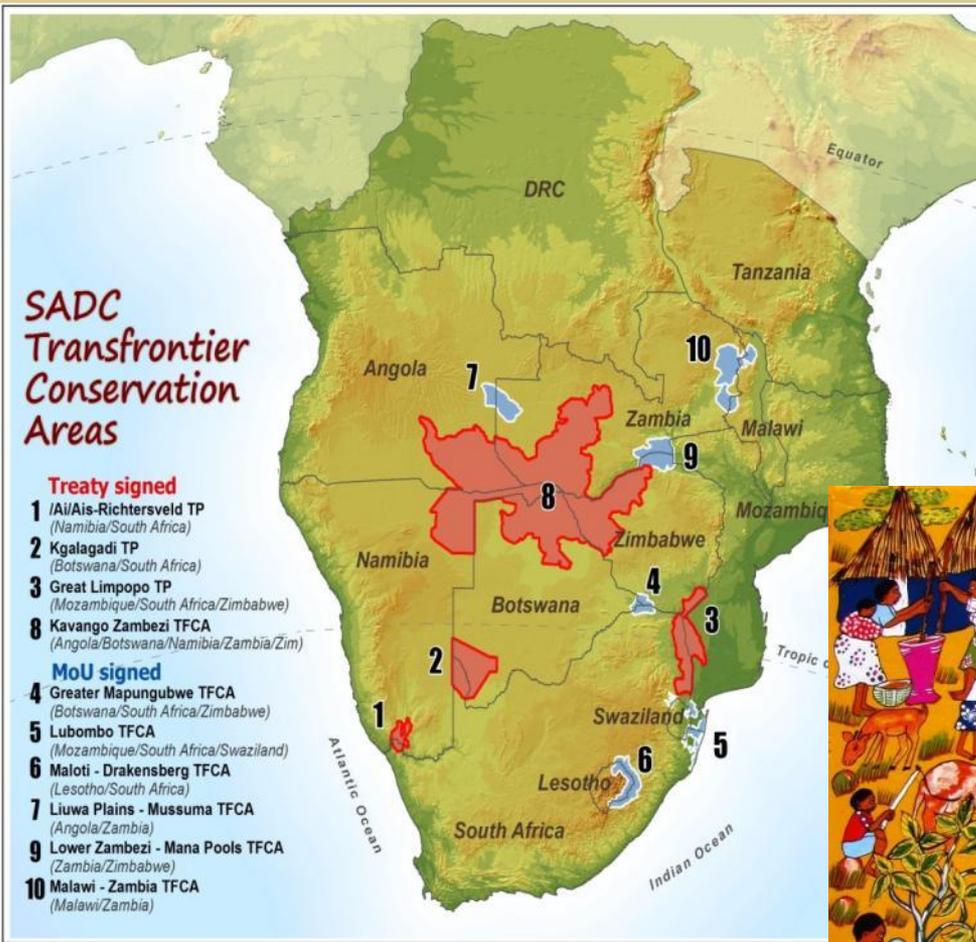
Health & Environment

Ecology & Sustainability

Agriculture & Conservation

NR Governance & Institutions

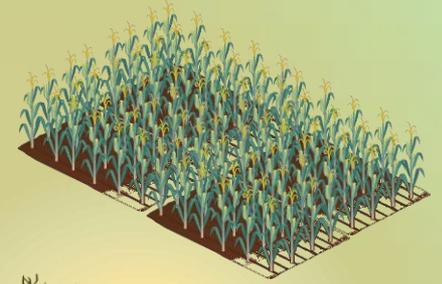
# Long-term study in TFCAs



Cattle sampling	GL-TFCA	GPS collars
# 50	CHOUMPANI	# 5
# 50	MALIPATI	# 5
# 50	PESVI	# 5
	KRUGER NP	# 7
	<b>KAZA - TFCAs</b>	
# 50	TINDE	
# 110	DETE	# 11
	HWANGE NP	# 3



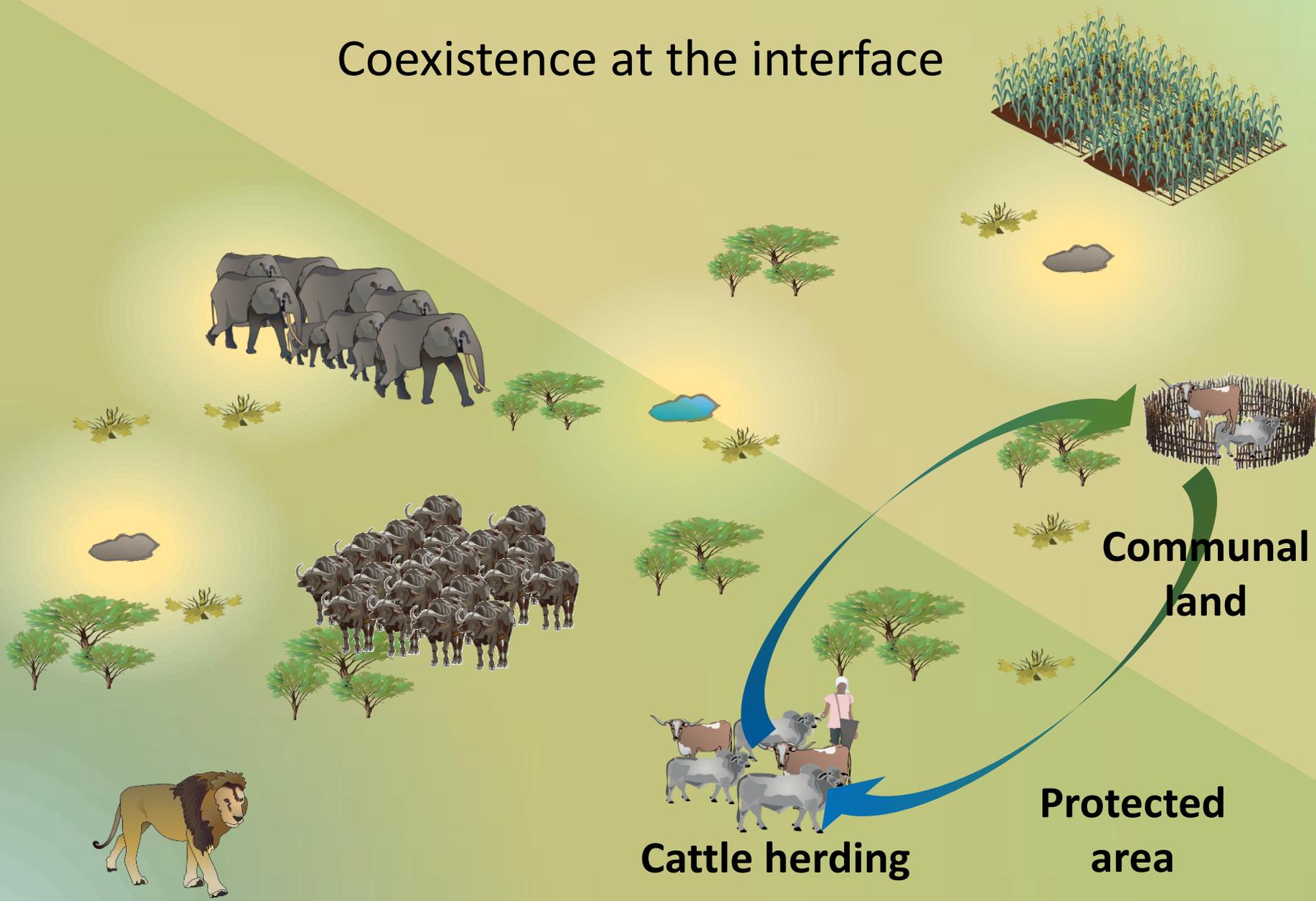
# Coexistence at the interface



**Communal  
land**

**Protected  
area**

# Coexistence at the interface

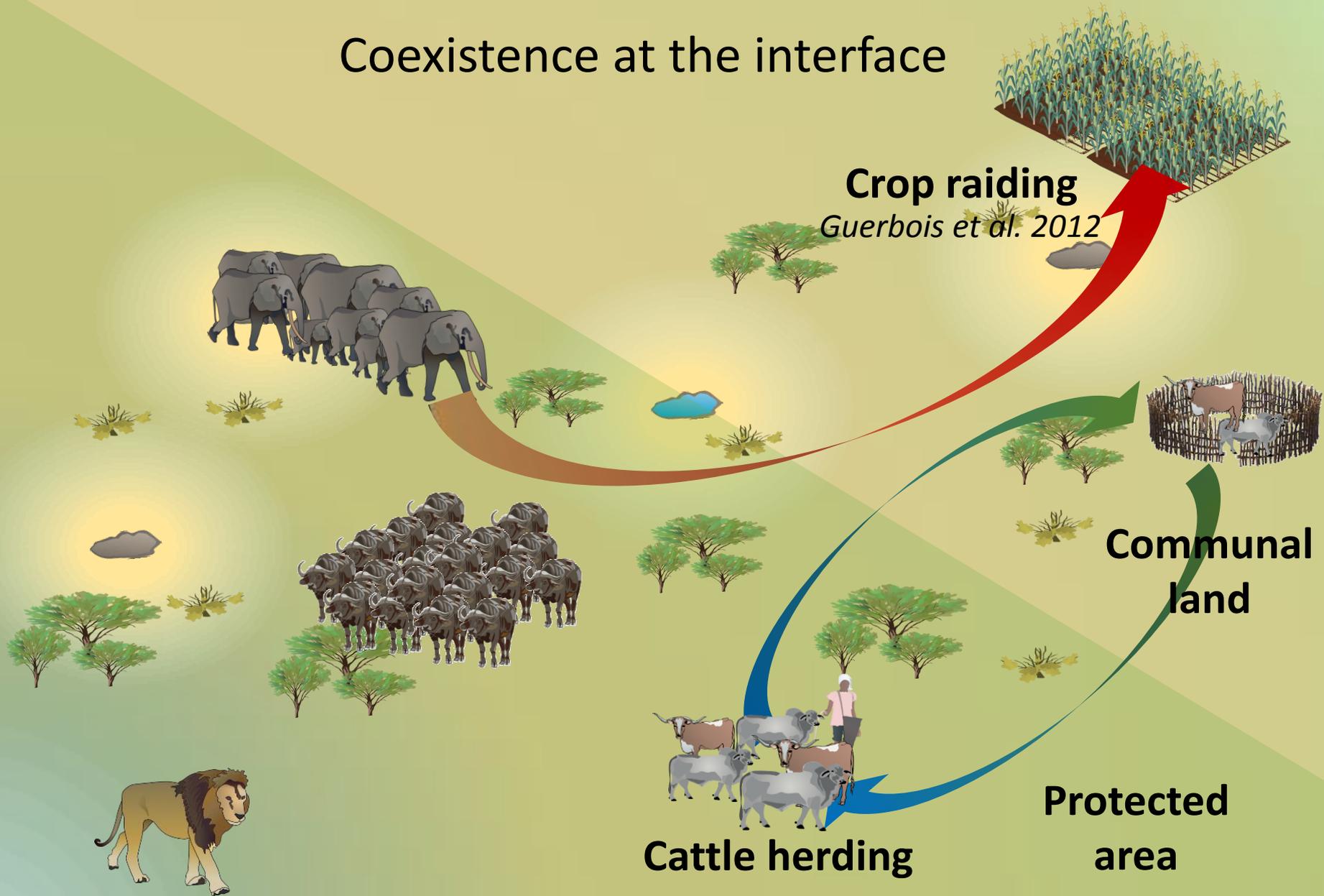


**Cattle herding**

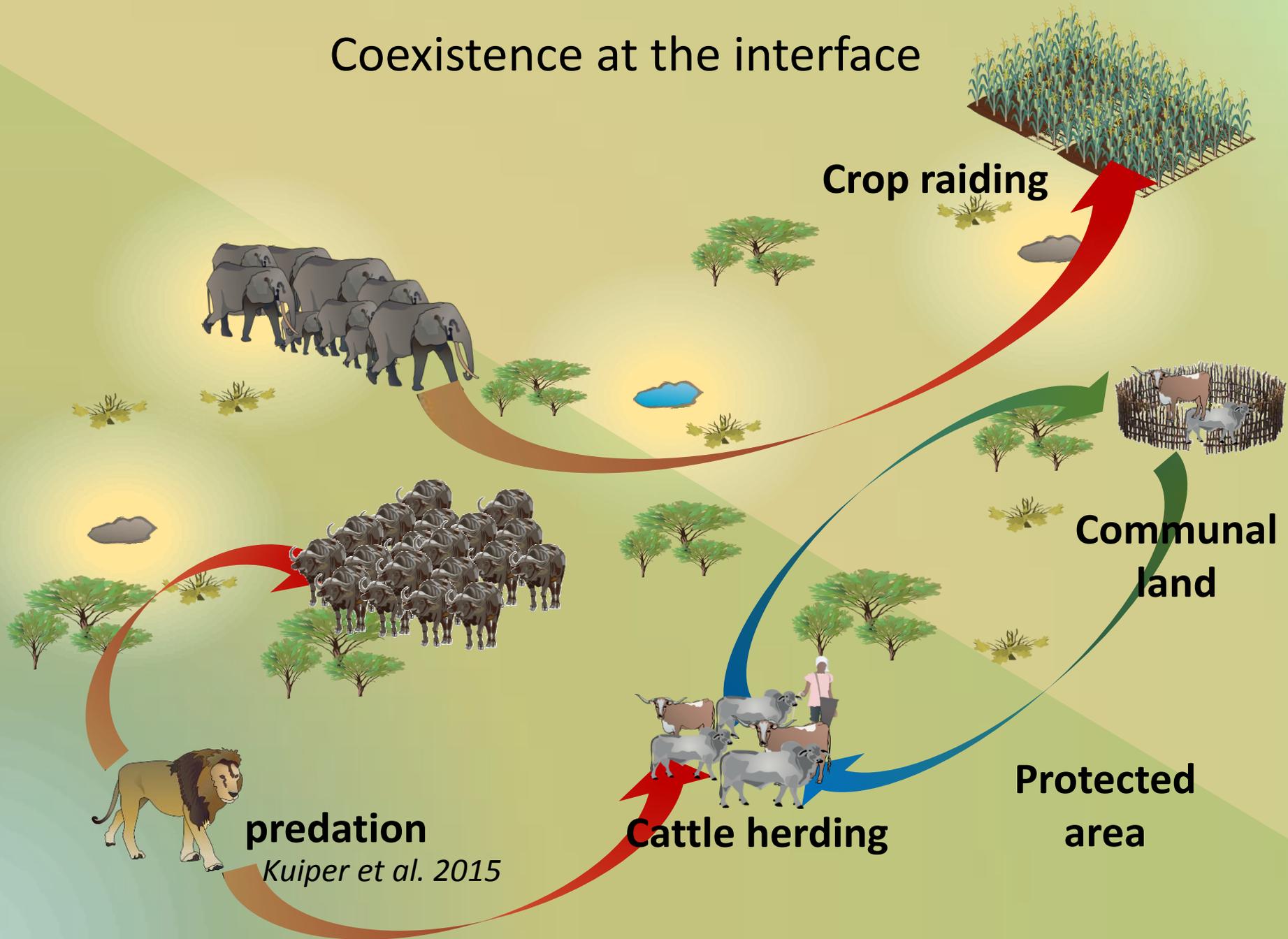
**Communal  
land**

**Protected  
area**

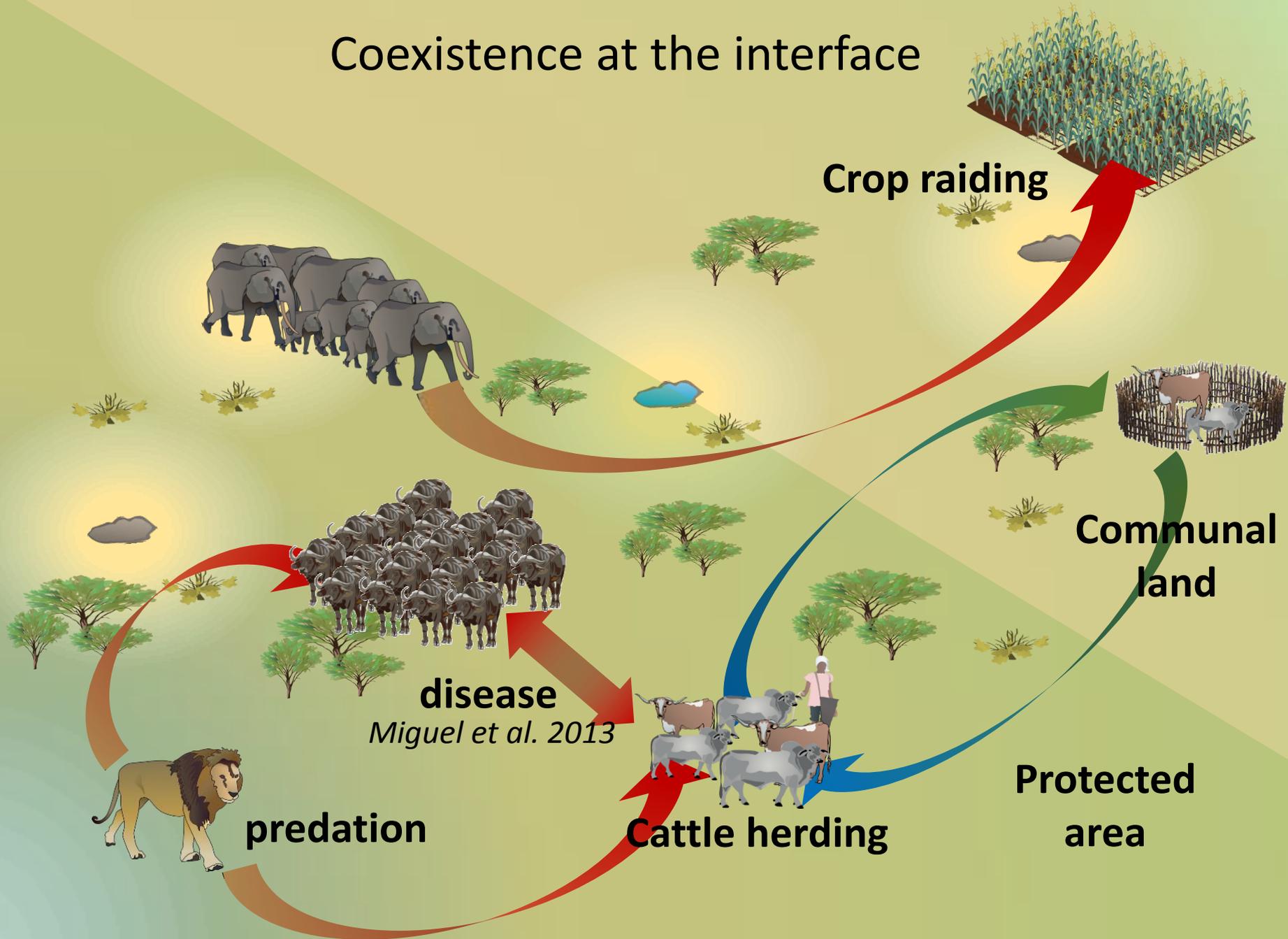
# Coexistence at the interface



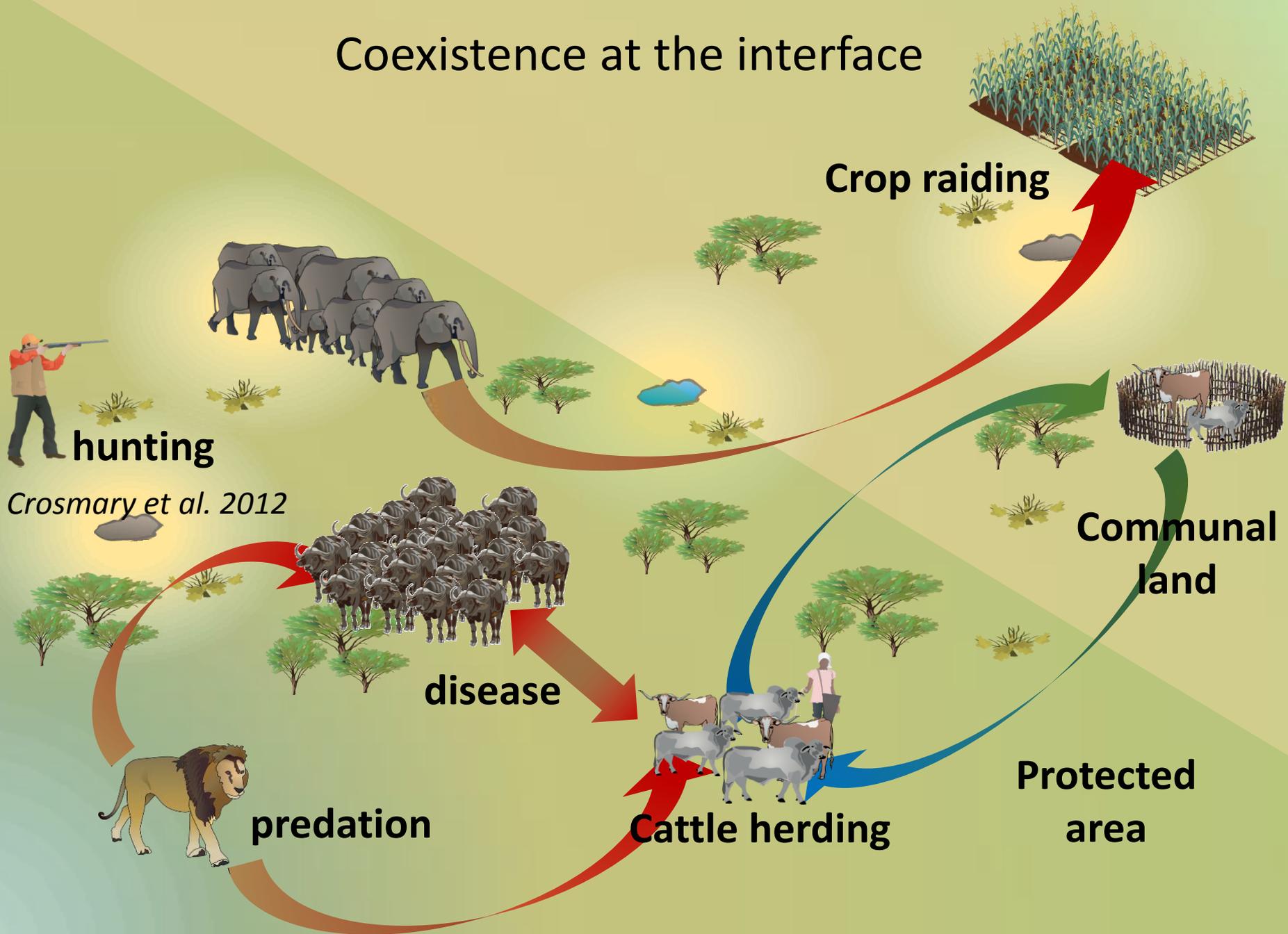
# Coexistence at the interface



# Coexistence at the interface

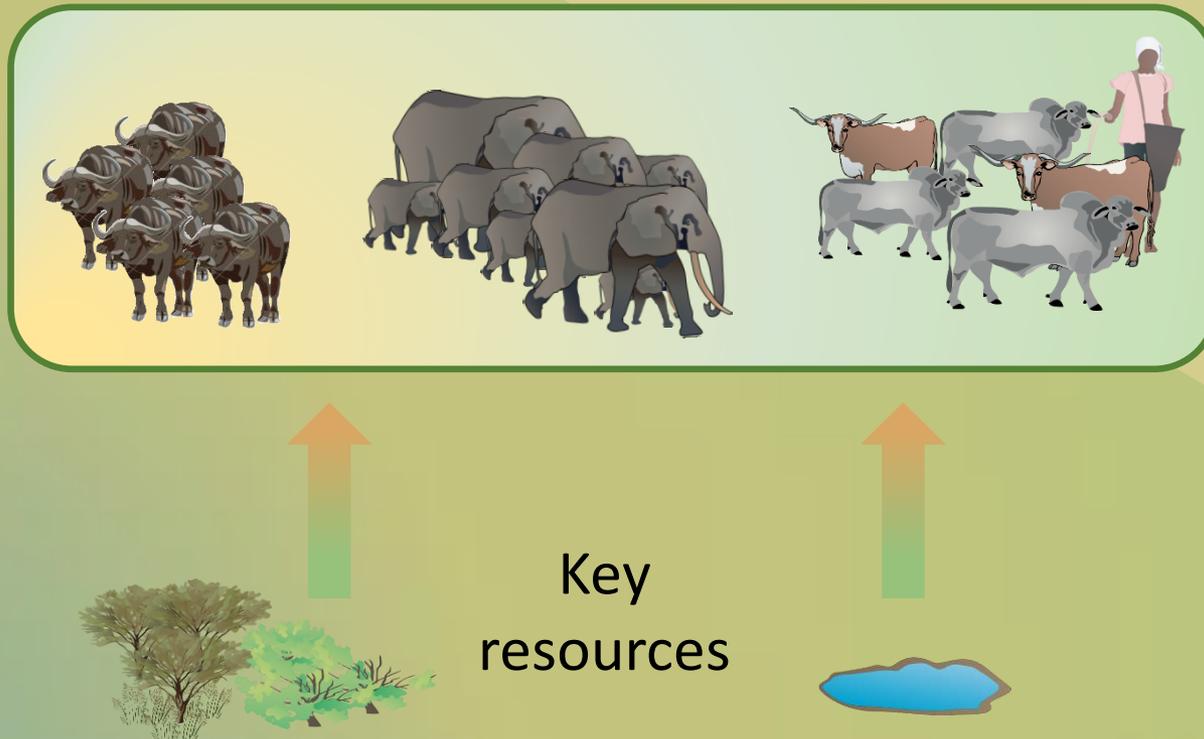


# Coexistence at the interface

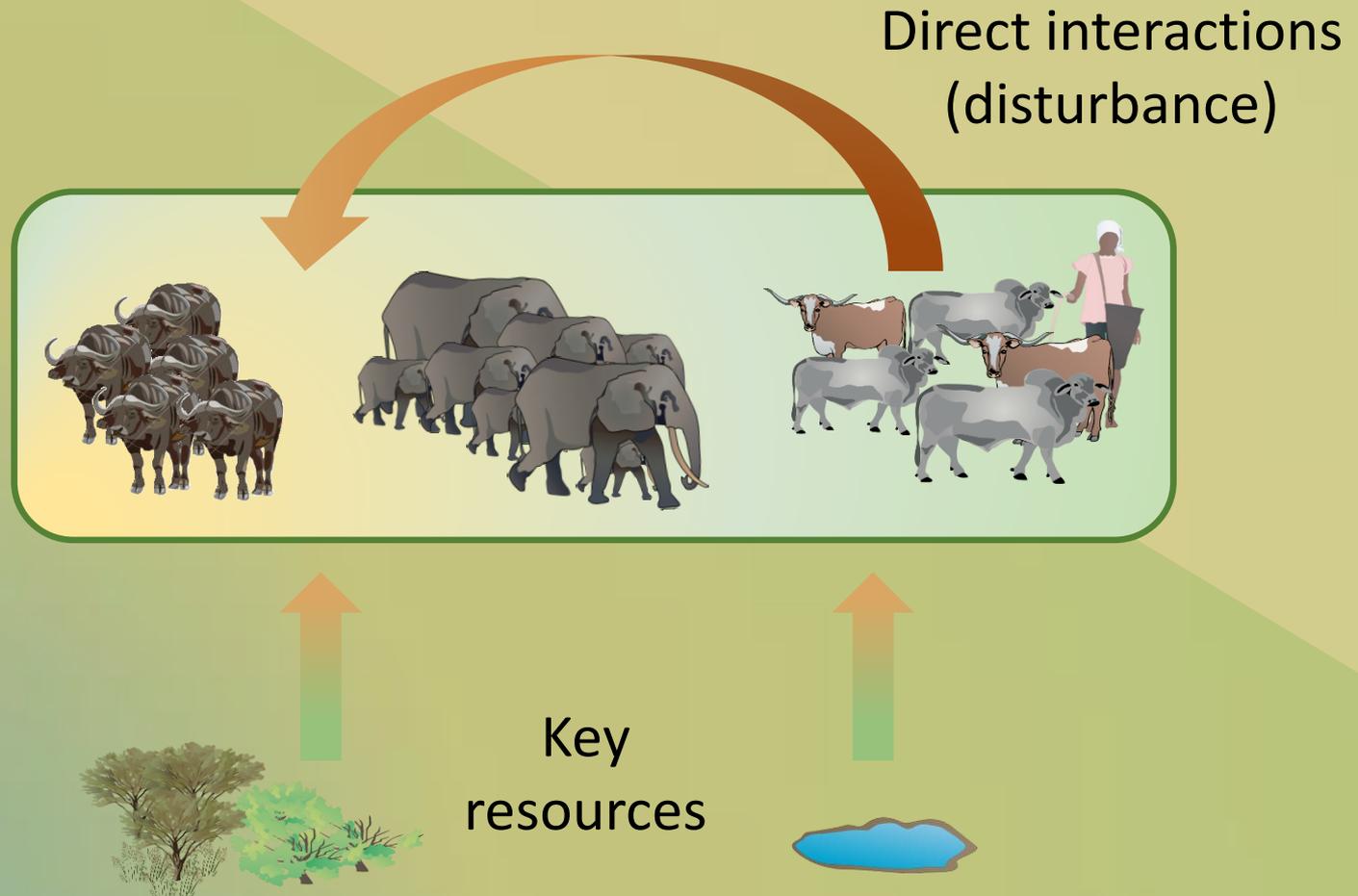


# The importance of key resources

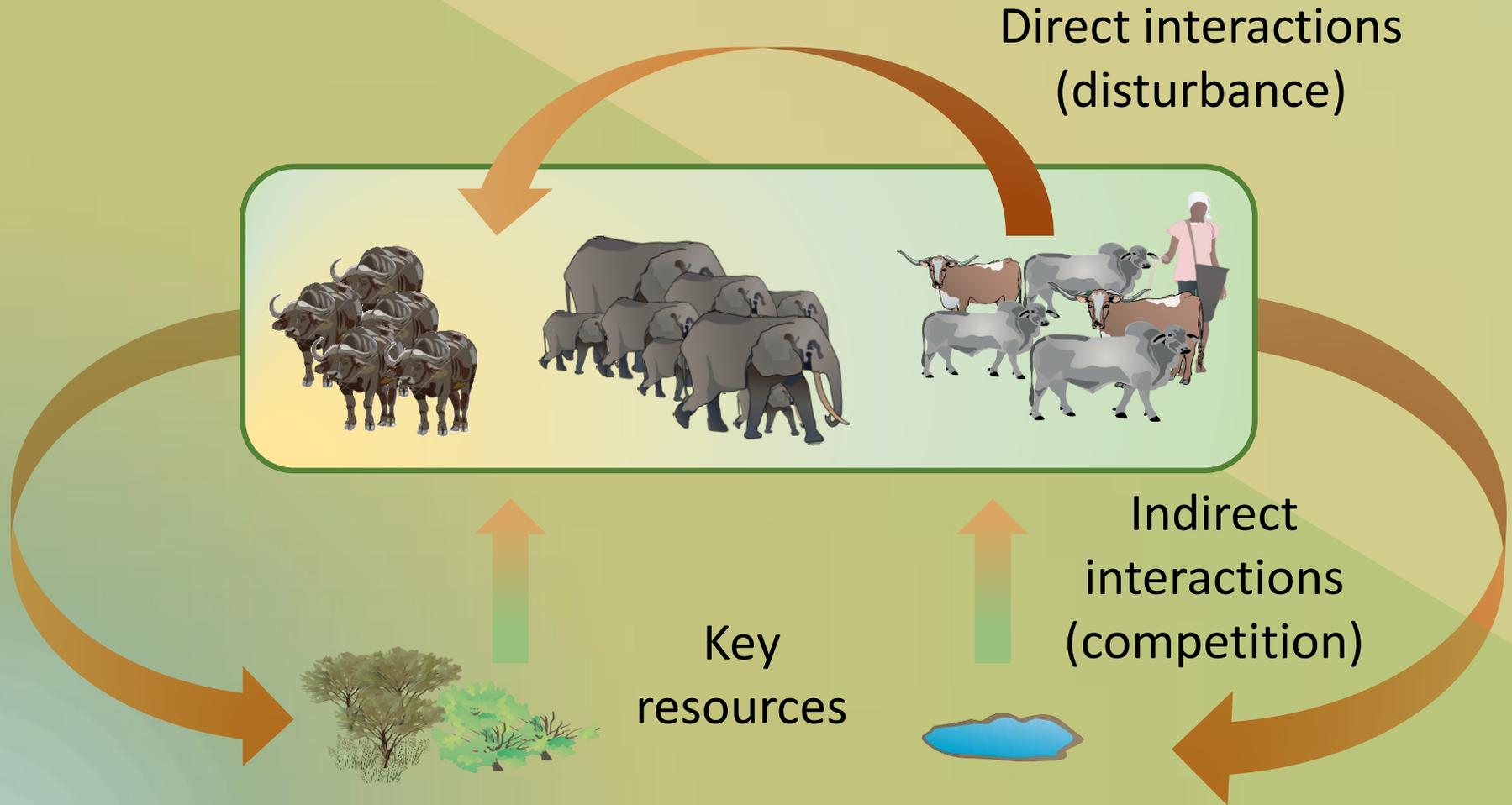
- Determine animal distribution (*Redfern et al 2003, Ogutu et al 2014*)
- Determine animal abundance (*Illius & O'Connor 2000*)



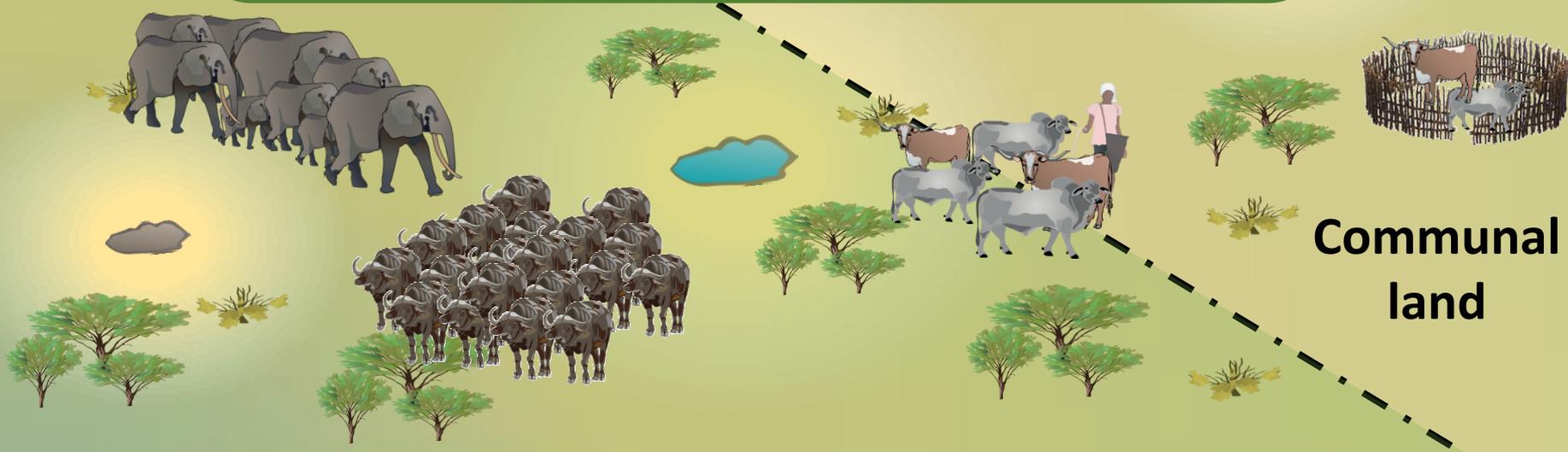
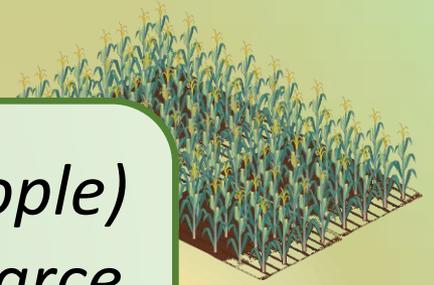
# The importance of key resources



# The importance of key resources



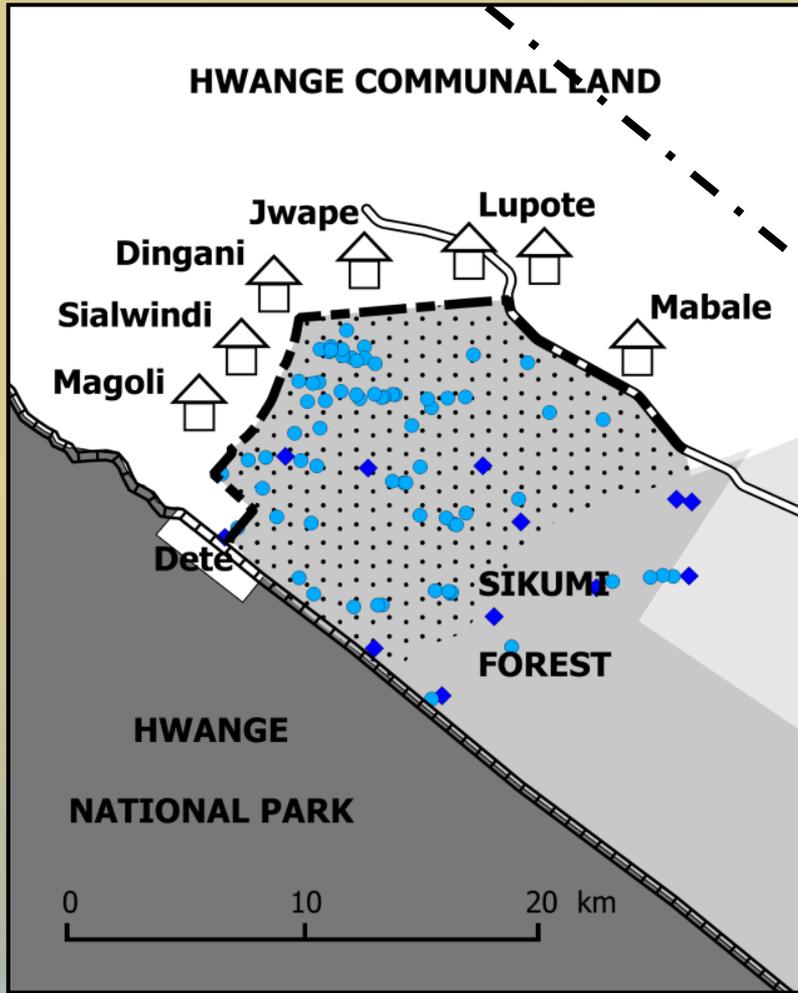
*Can wildlife avoid cattle (and people) when surface water becomes scarce on the edge of the protected area ?*



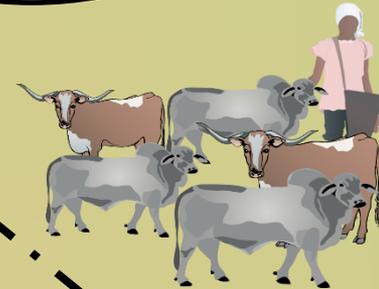
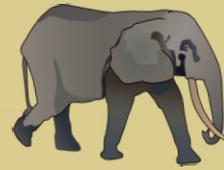
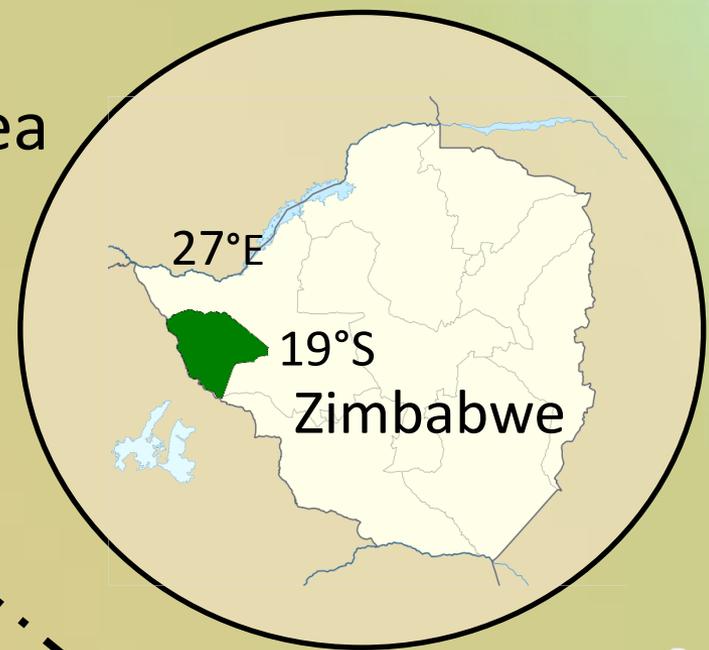
**Communal  
land**

**Protected  
area**



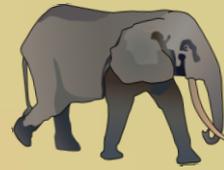
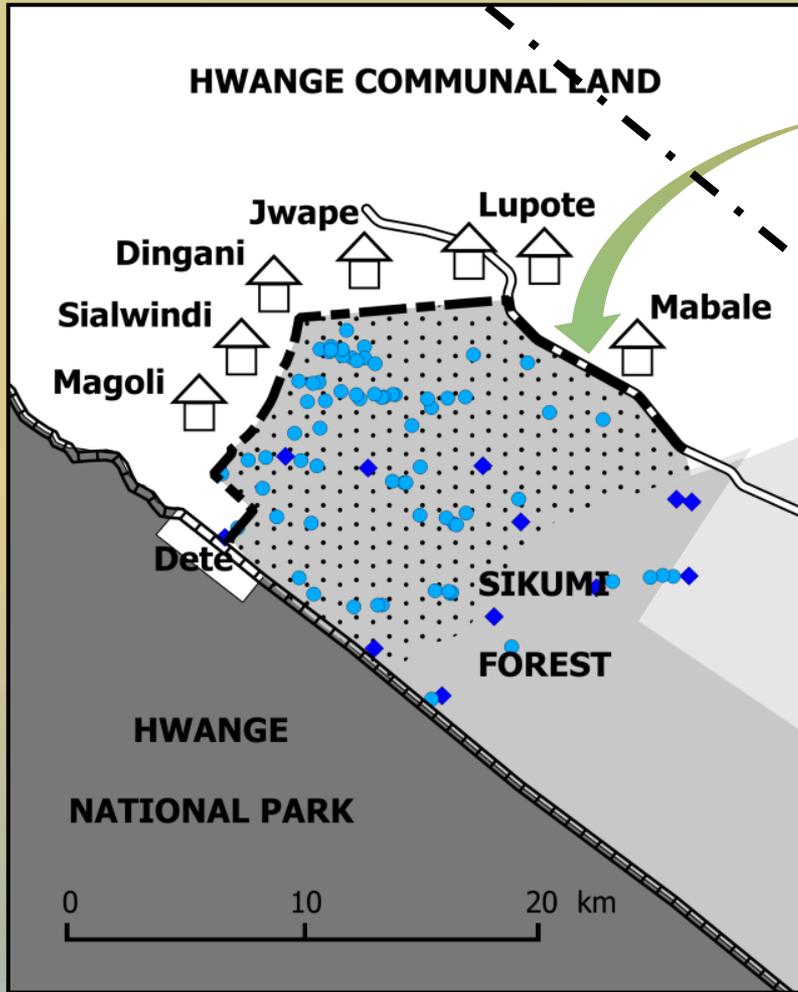


Study area



Dry season

# Study area

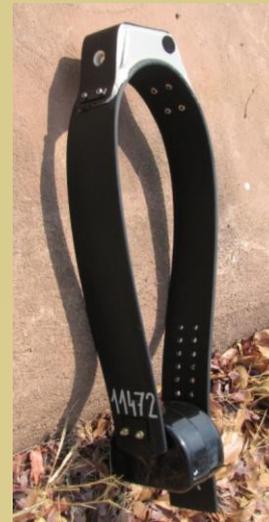




## GPS satellite collars

VHF  
Communication

GPS Unit

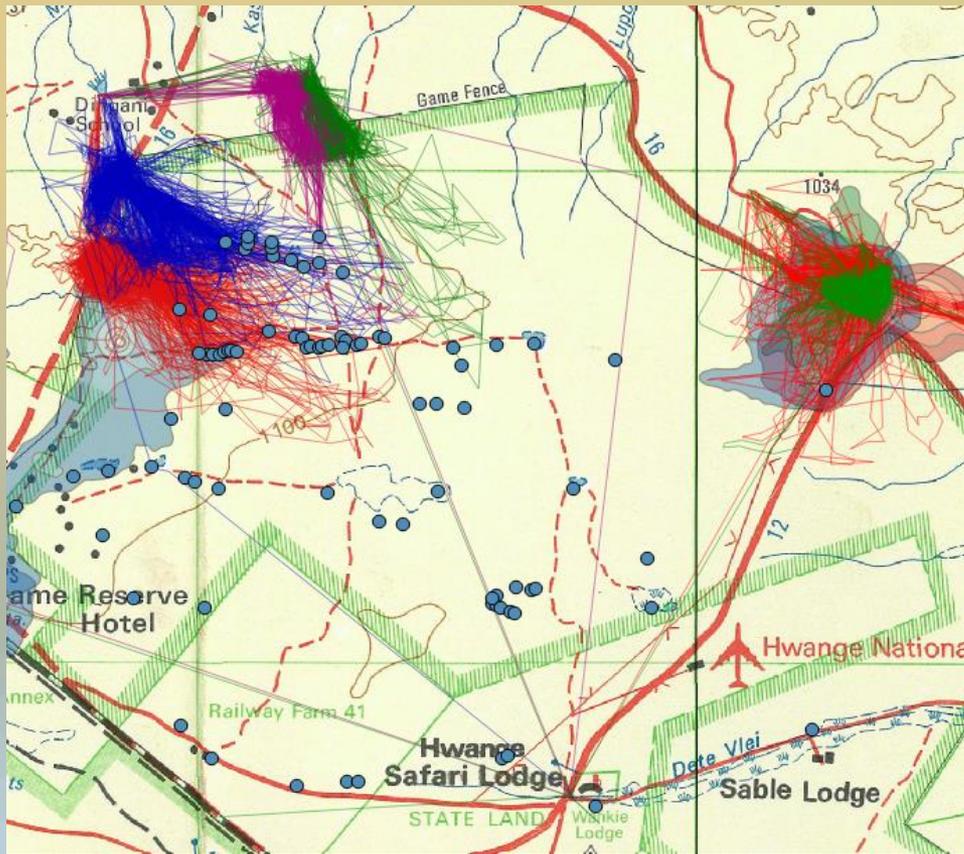


Battery Pack



# Modeling cattle presence

## 1. GPS collar data

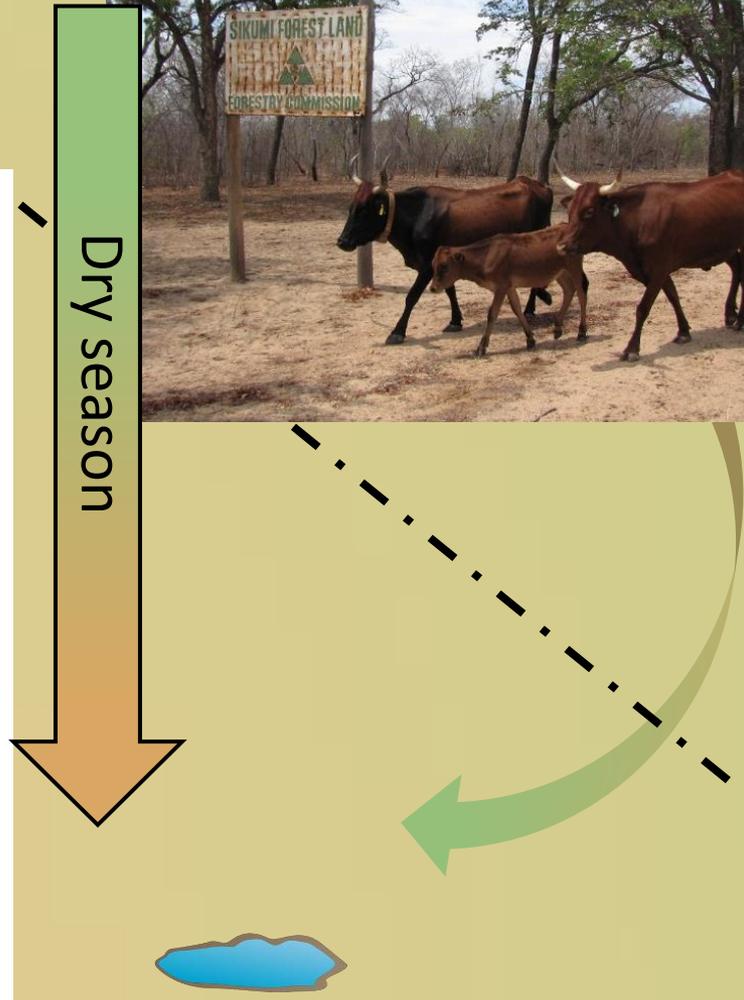
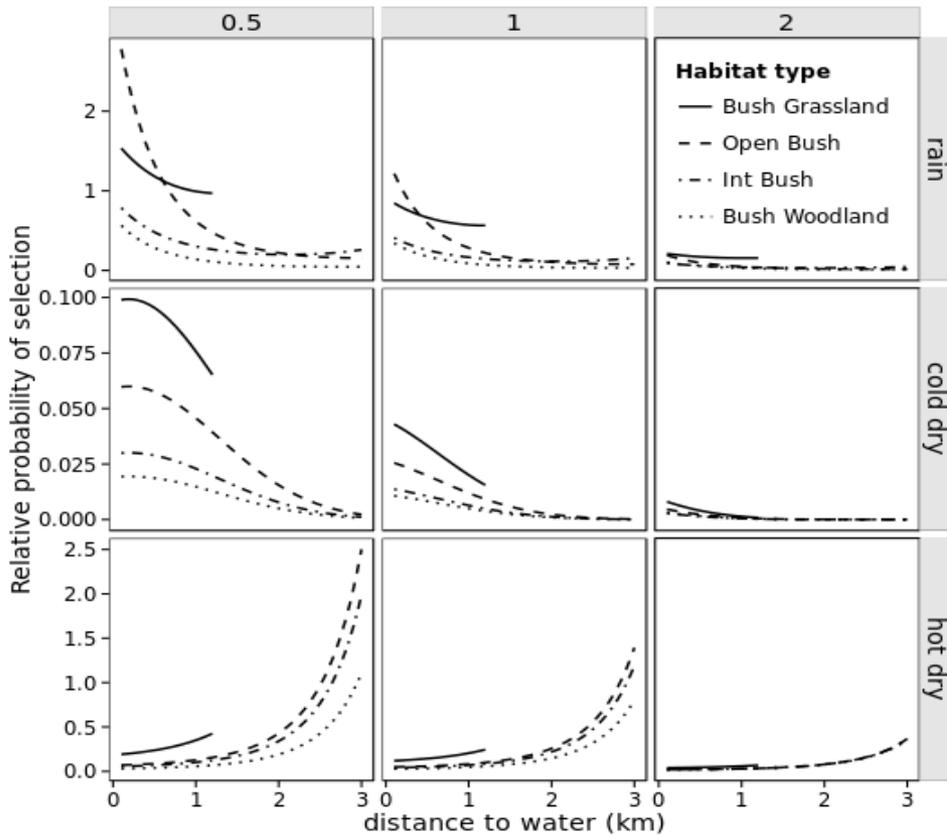


Dry season



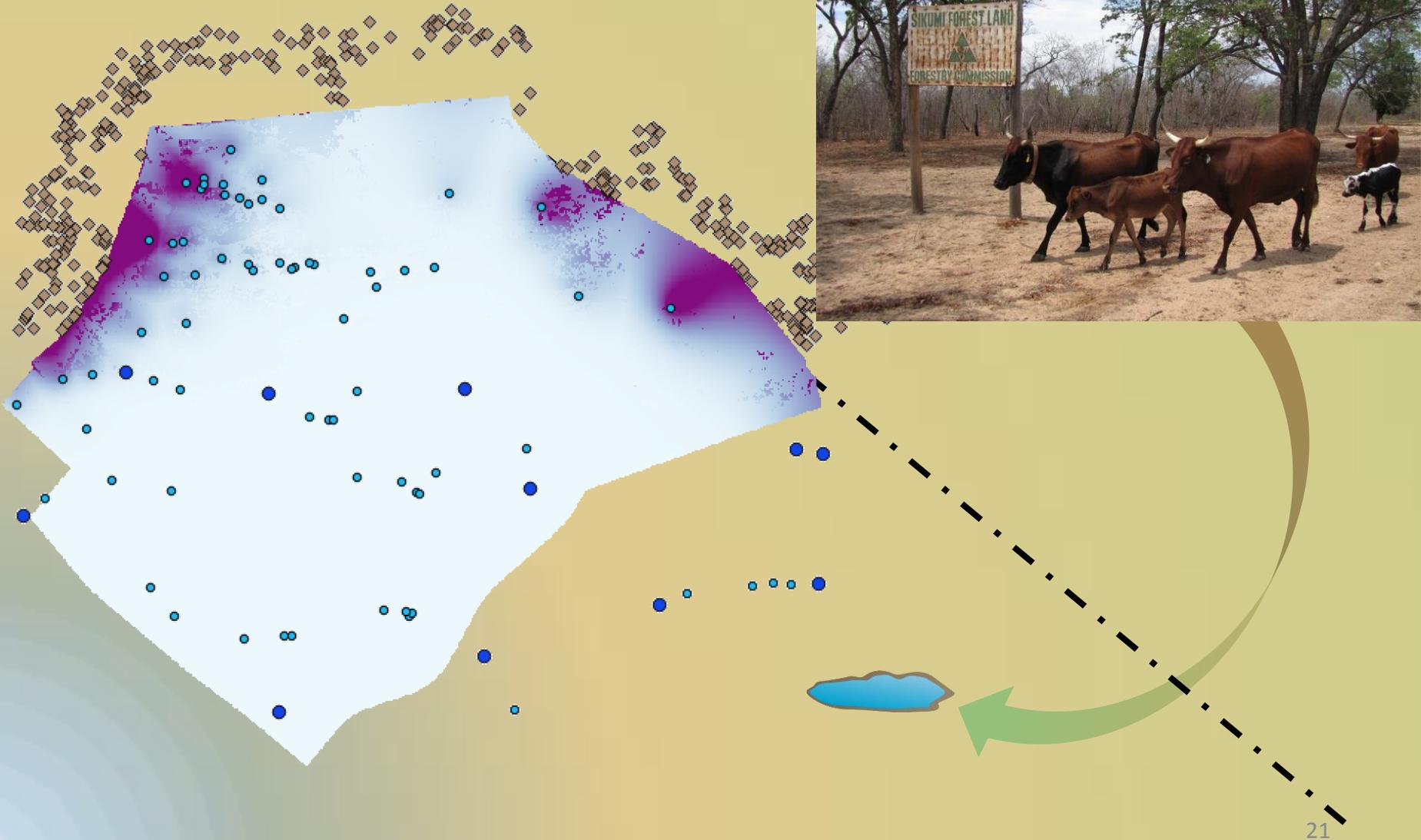
# Modeling cattle presence

## 2. Habitat selection model



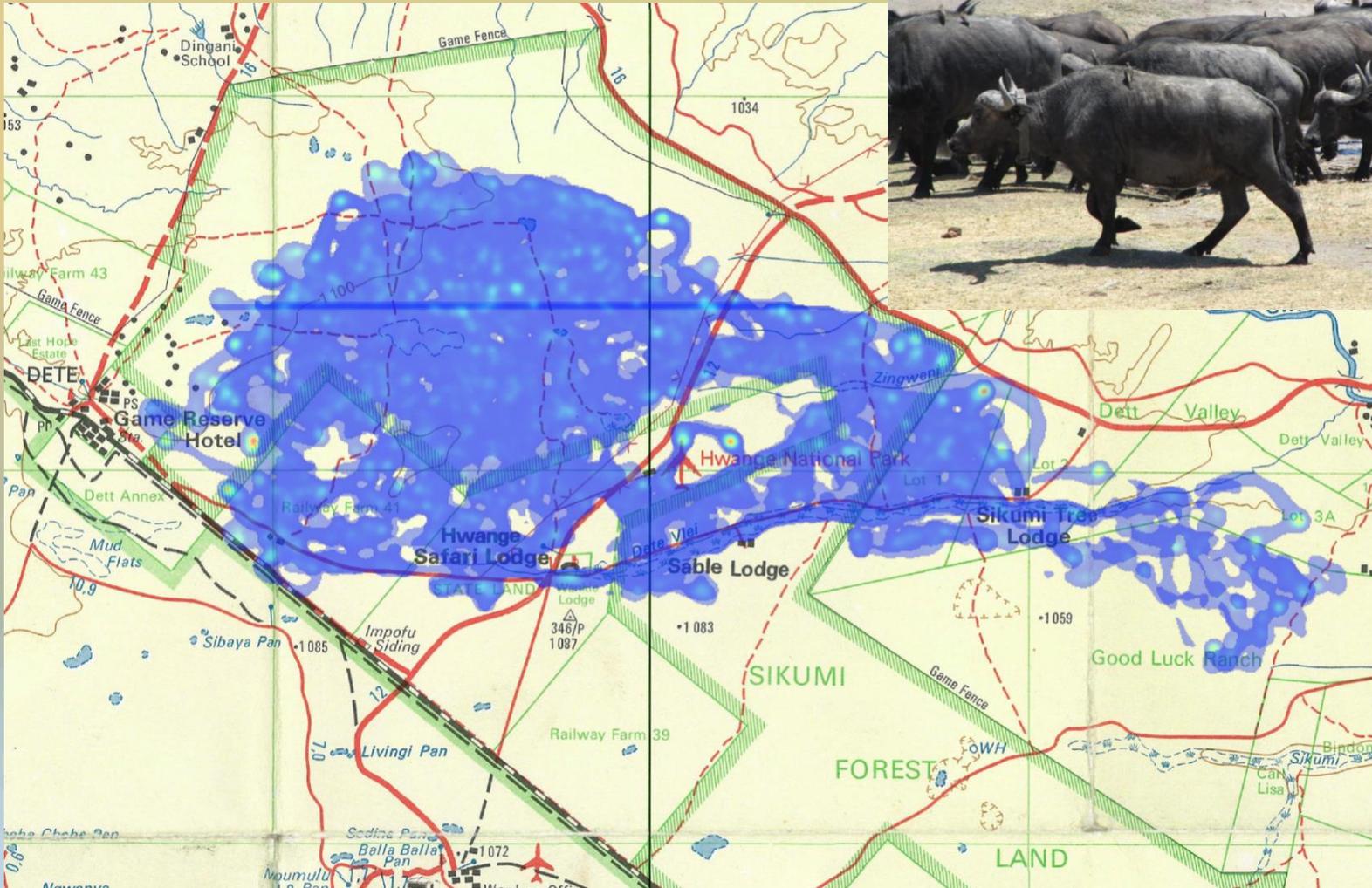
# Modeling cattle presence

## 3. Predicting cattle occurrence



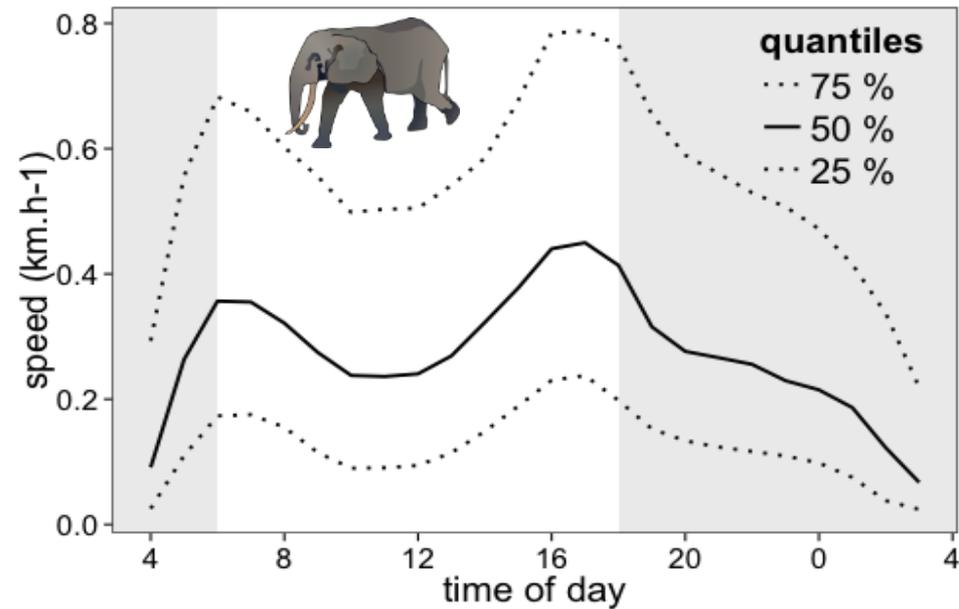
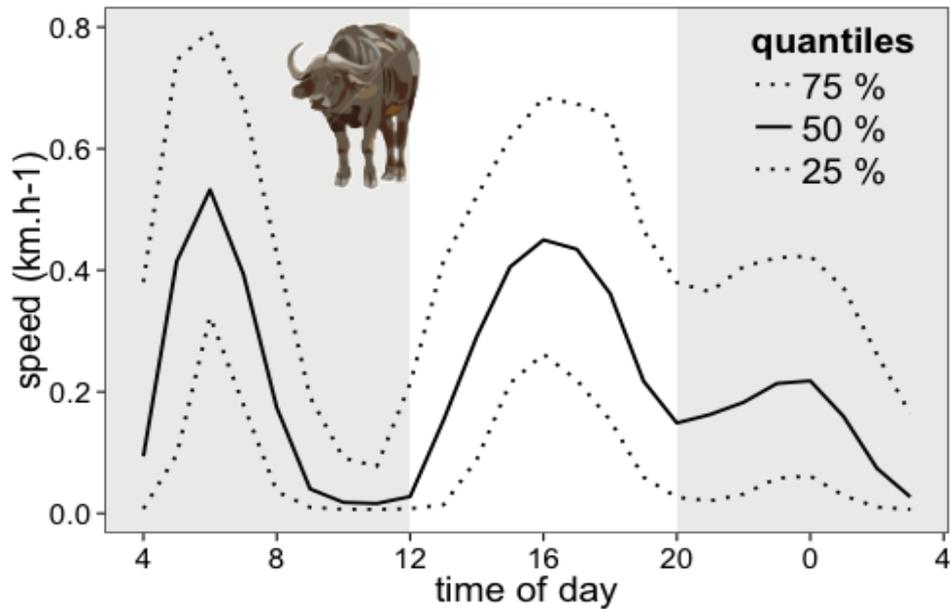
# Modeling wildlife presence at multiple scales

## 1. *Seasonal utilisation distribution (UD)*



# Modeling wildlife presence at multiple scales

## 2. Step selection functions



Buffalo:

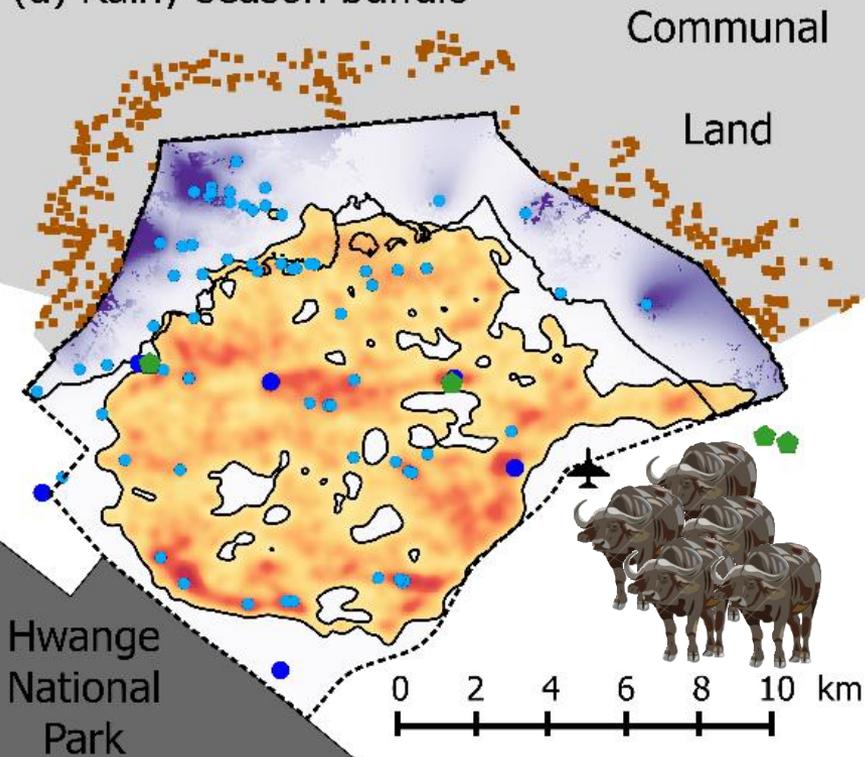
- 3 foraging bouts

Elephant:

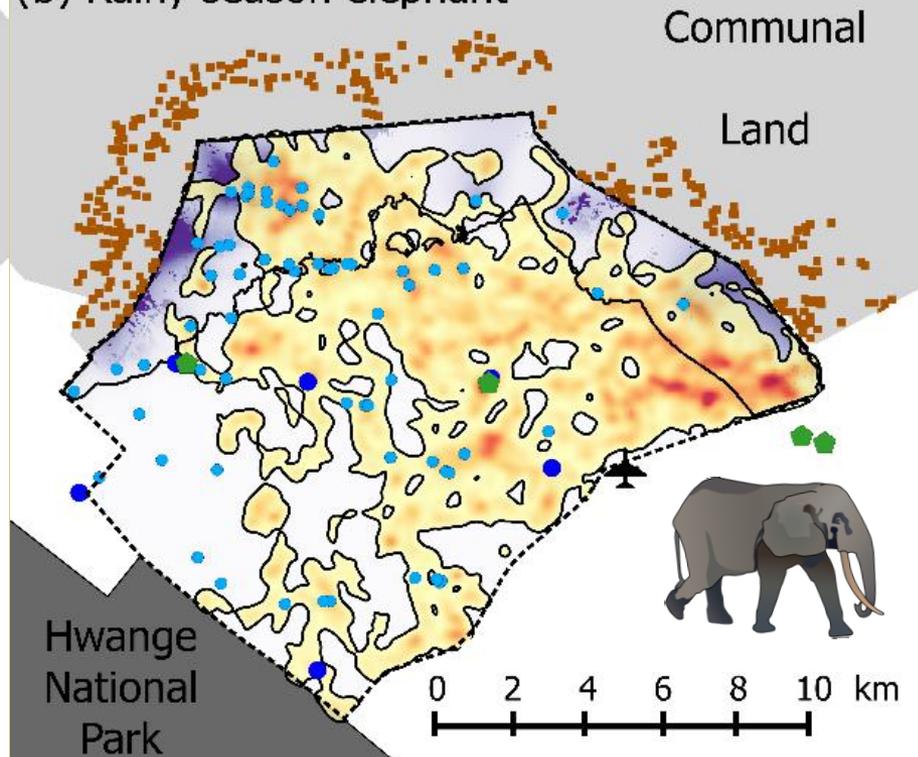
- 2 activity peaks

# Results: rainy season

(a) Rainy season buffalo

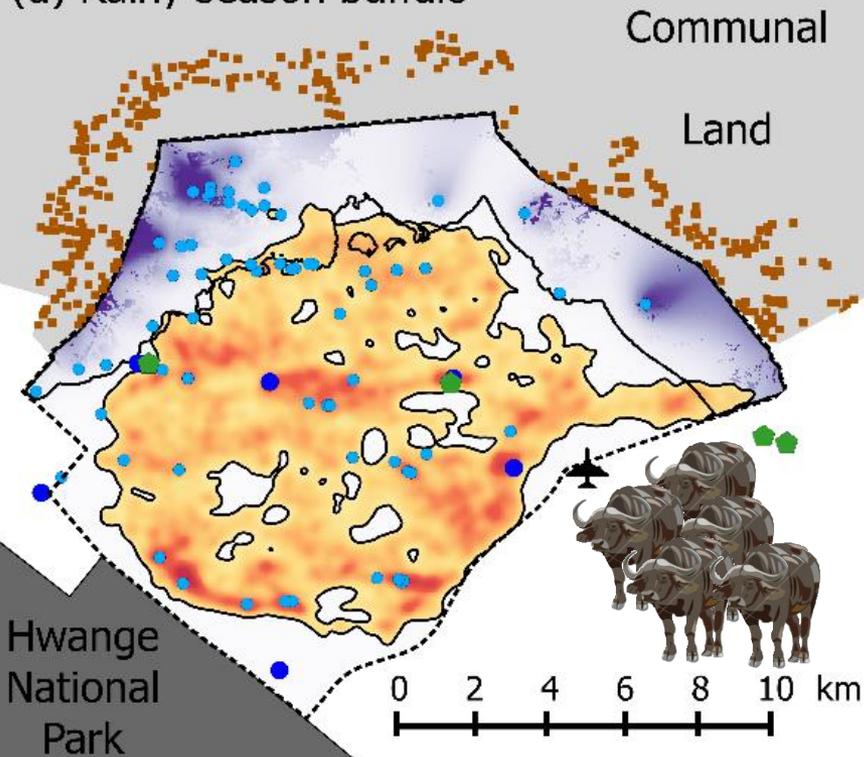


(b) Rainy season elephant

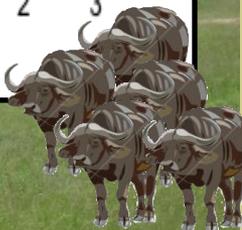
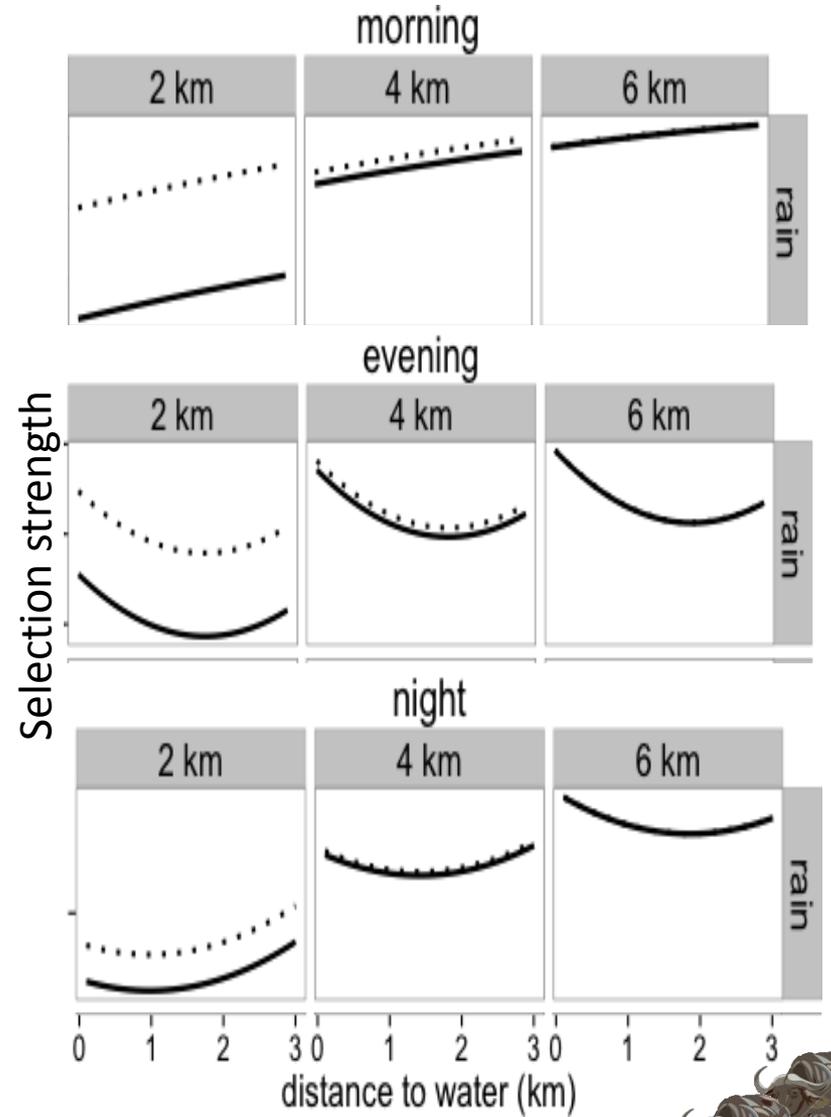


# Results: rainy season

(a) Rainy season buffalo



(b)

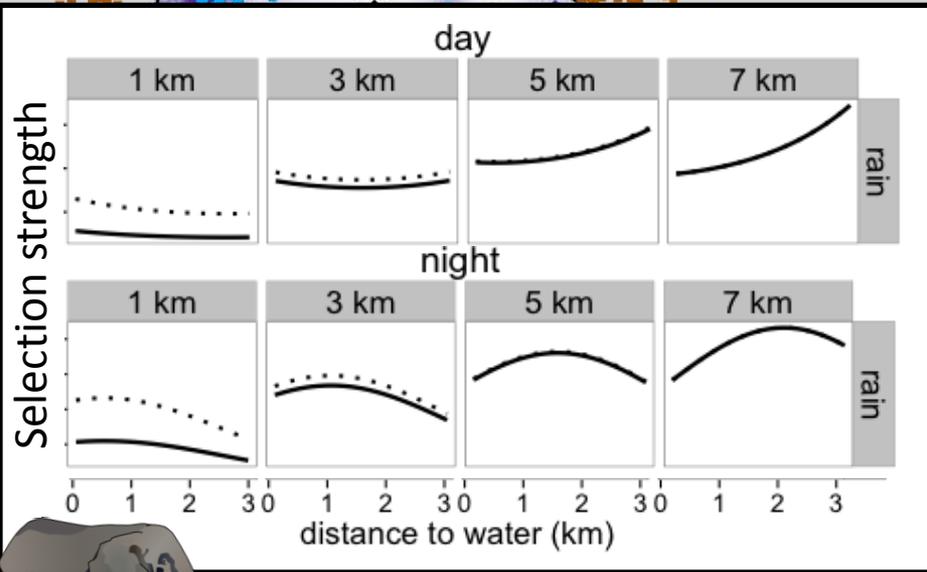


# Results: rainy season

(a) Rainy season buffalo

Communal

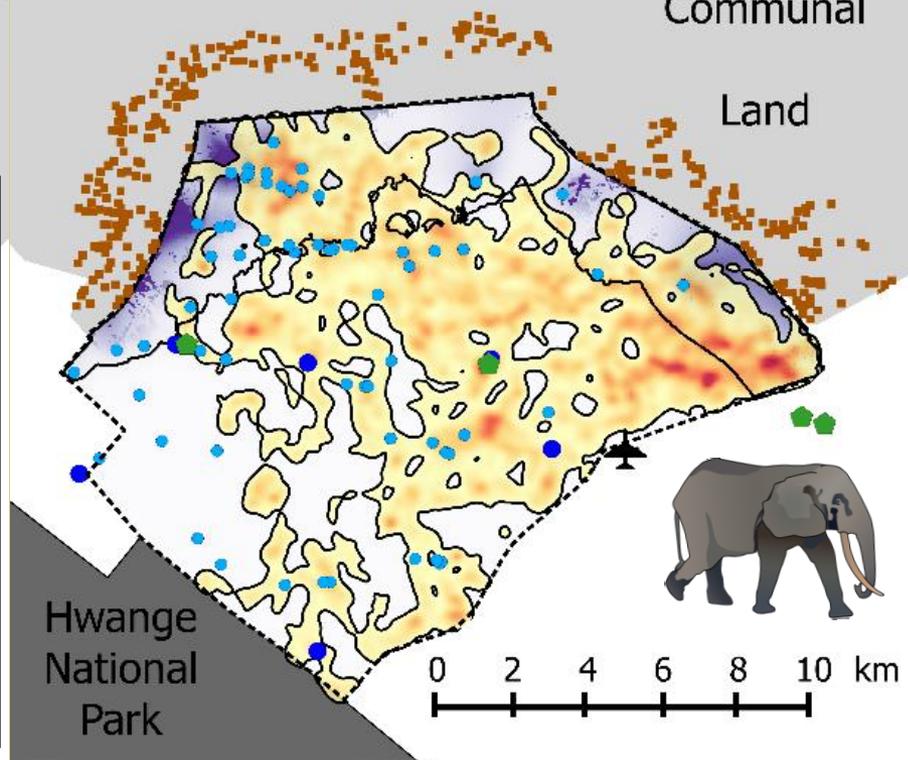
Land



(b) Rainy season elephant

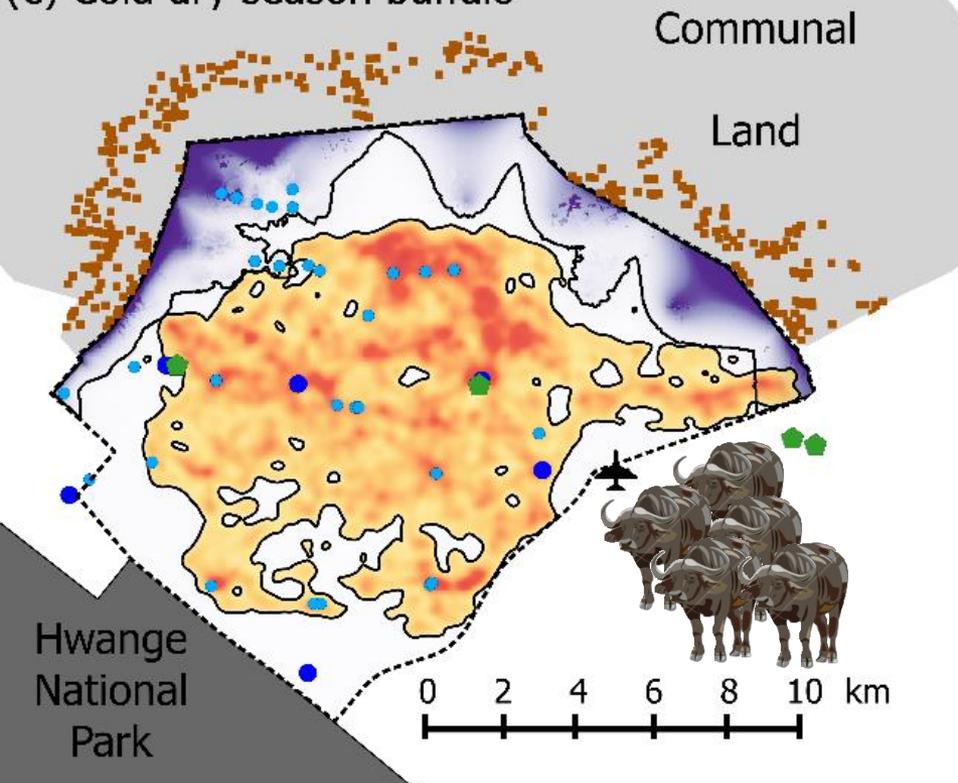
Communal

Land

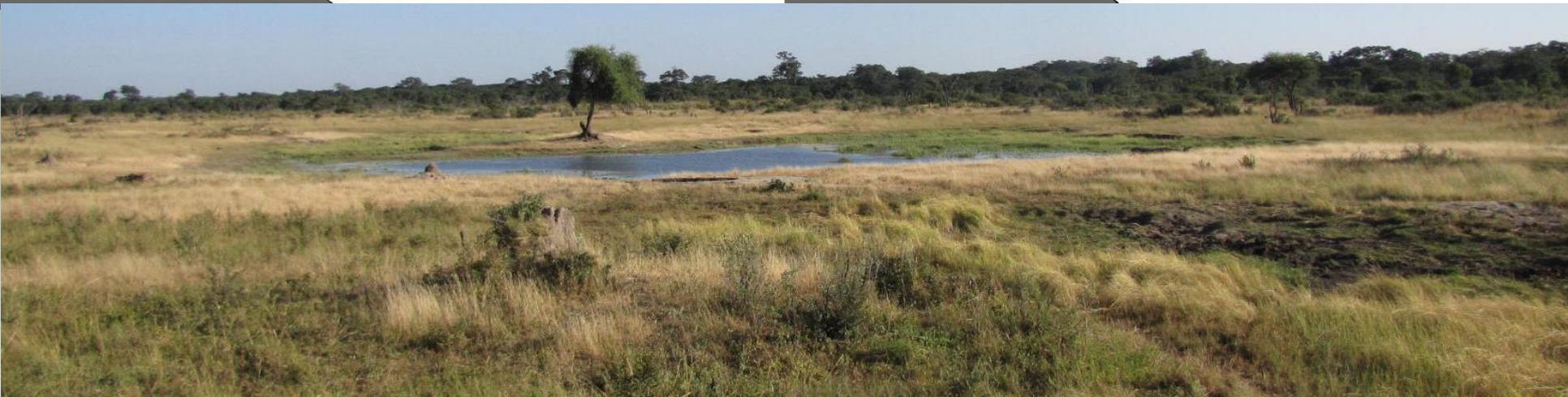
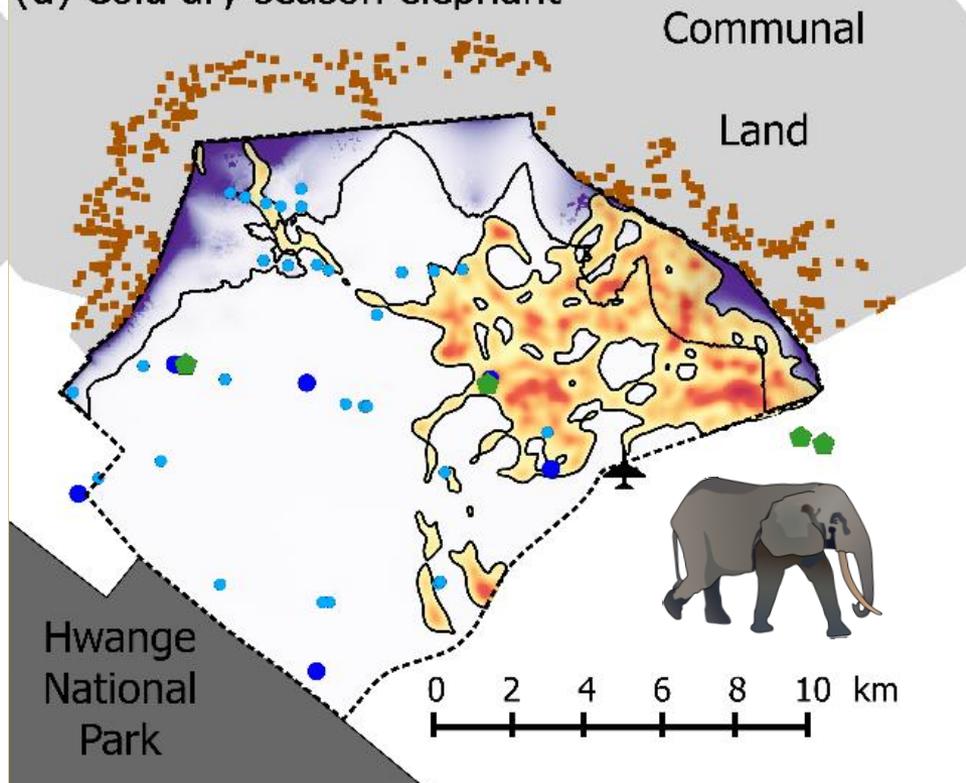


# Results: cold dry season

(c) Cold dry season buffalo

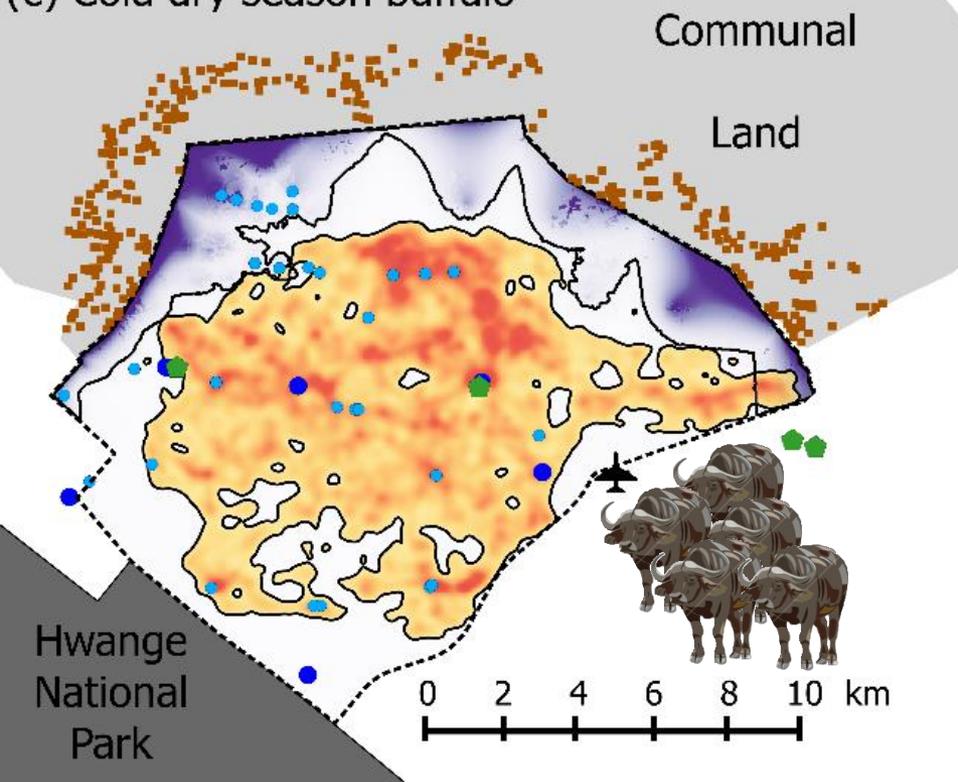


(d) Cold dry season elephant

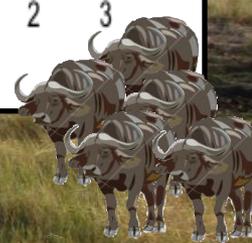
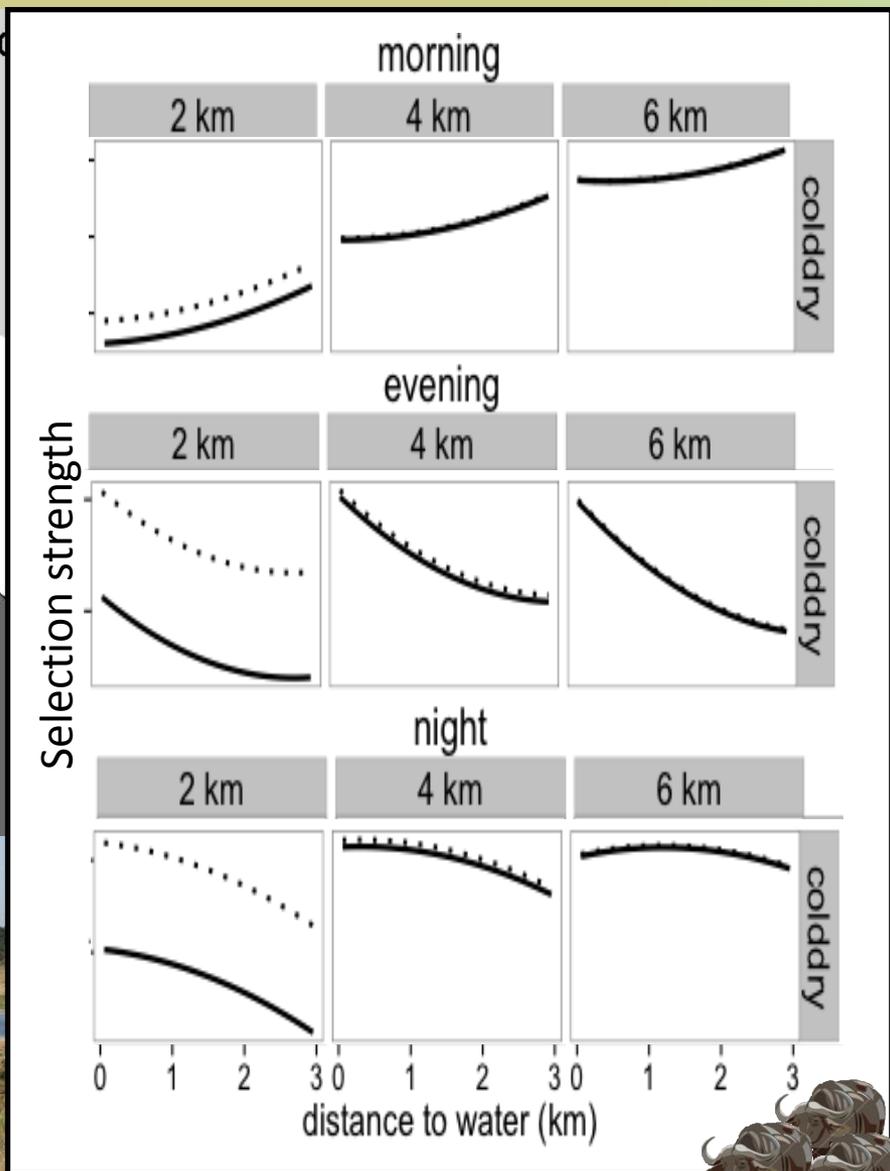


# Results: cold dry season

(c) Cold dry season buffalo



(d)

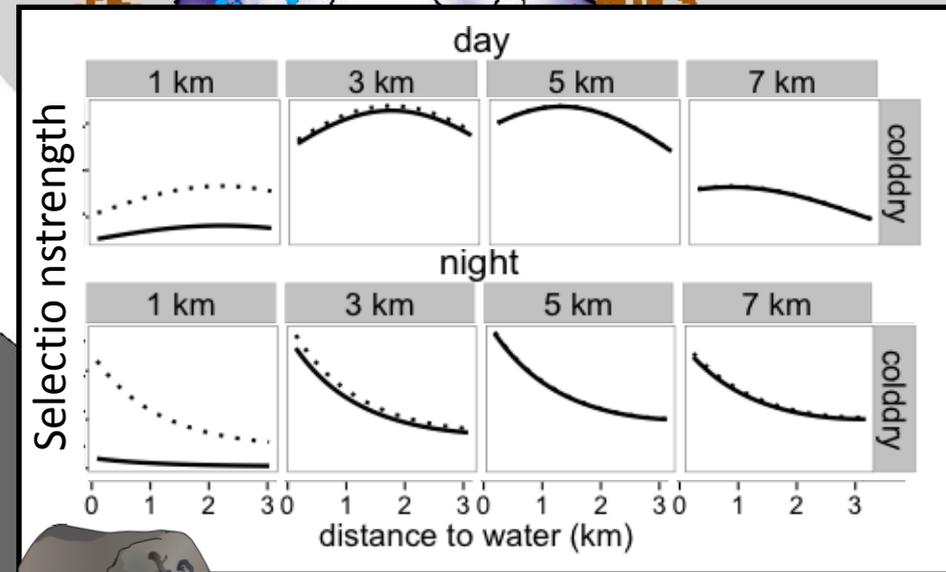


# Results: cold dry season

(c) Cold dry season buffalo

Communal

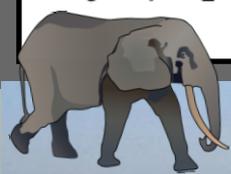
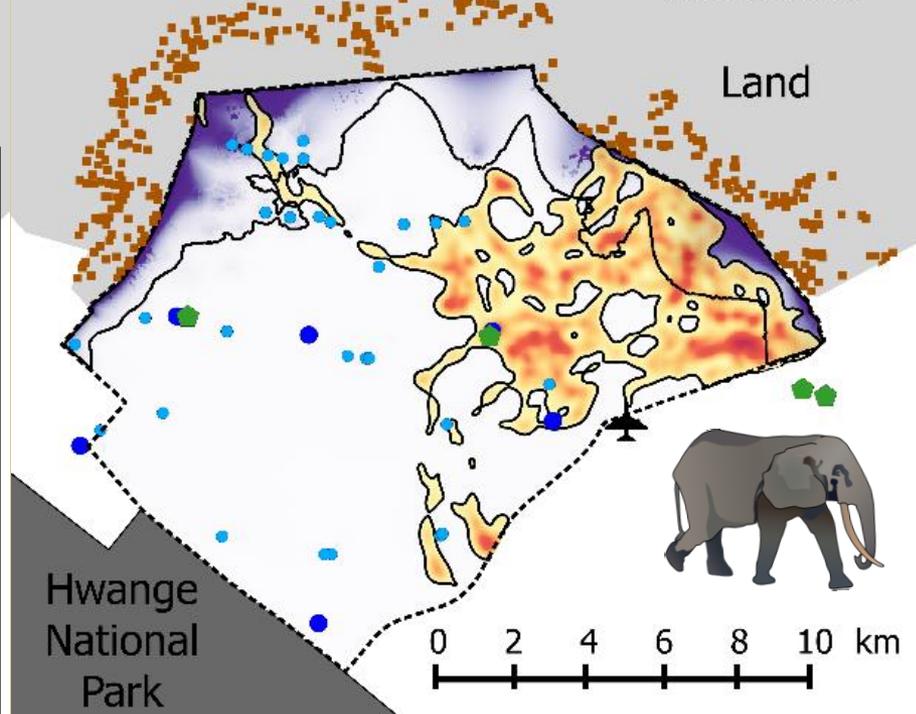
Land



(d) Cold dry season elephant

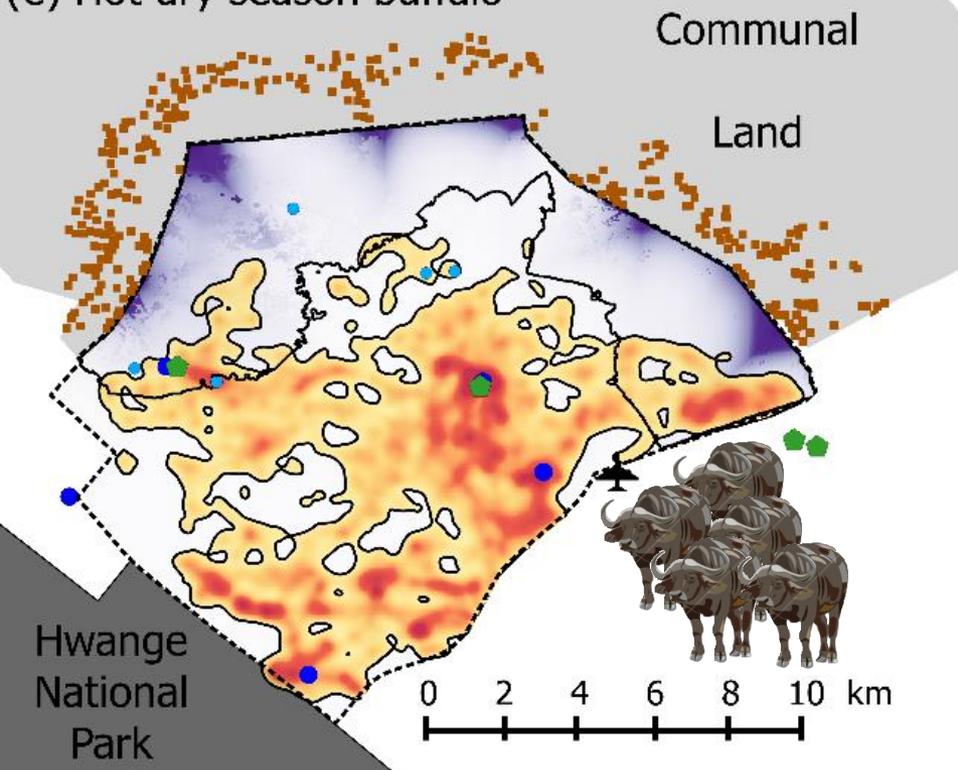
Communal

Land

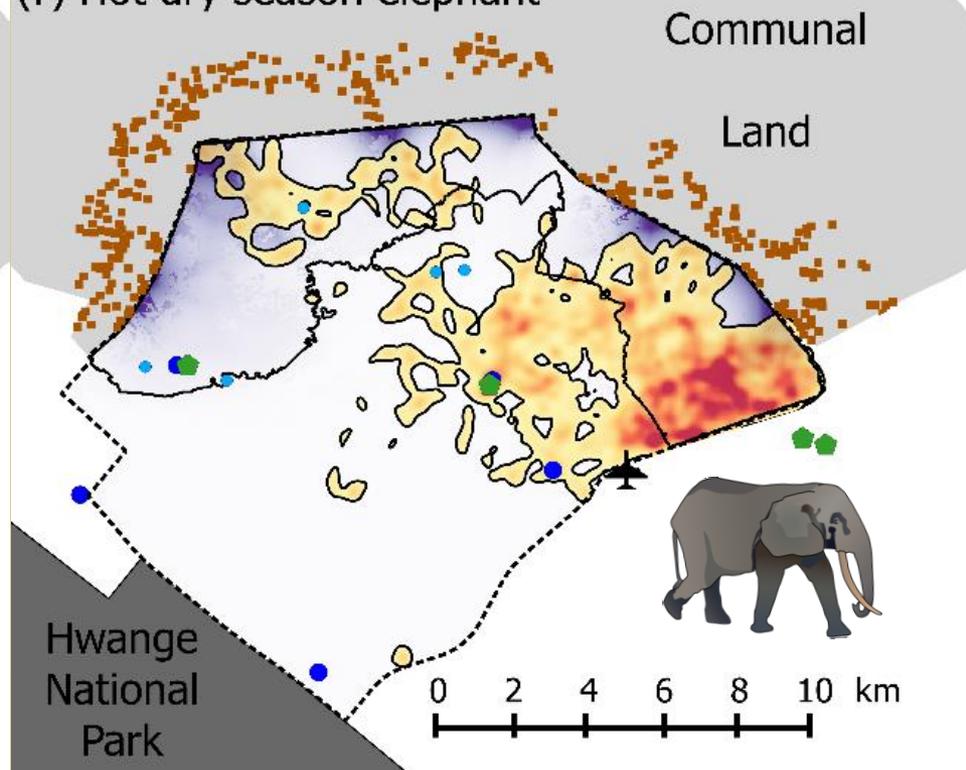


# Results: hot dry season

(e) Hot dry season buffalo

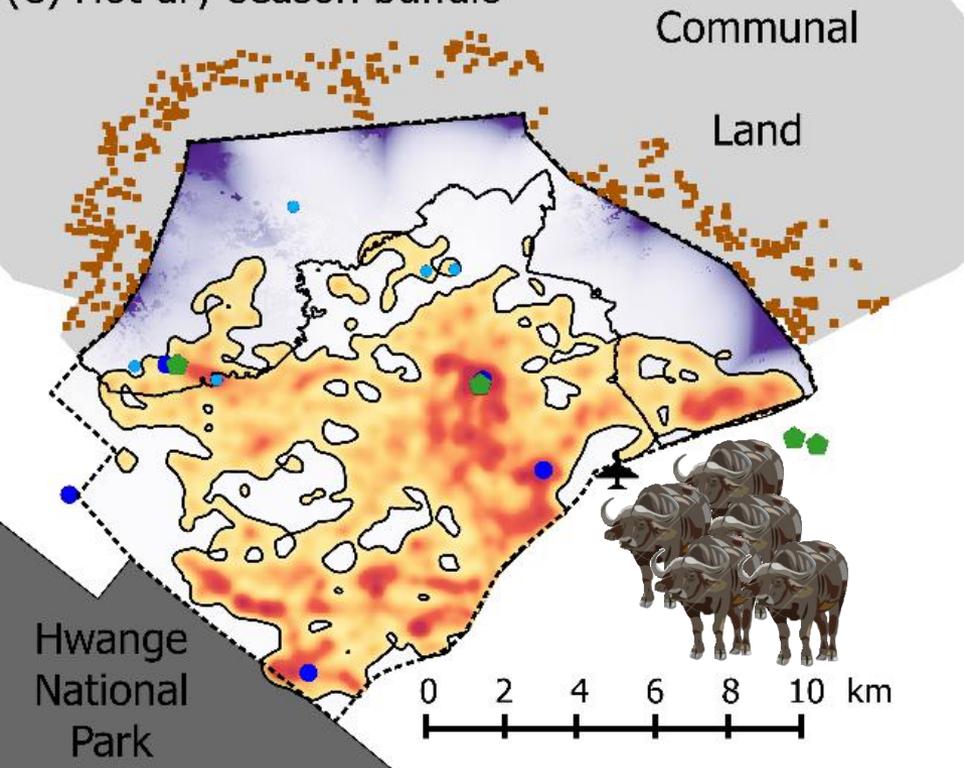


(f) Hot dry season elephant

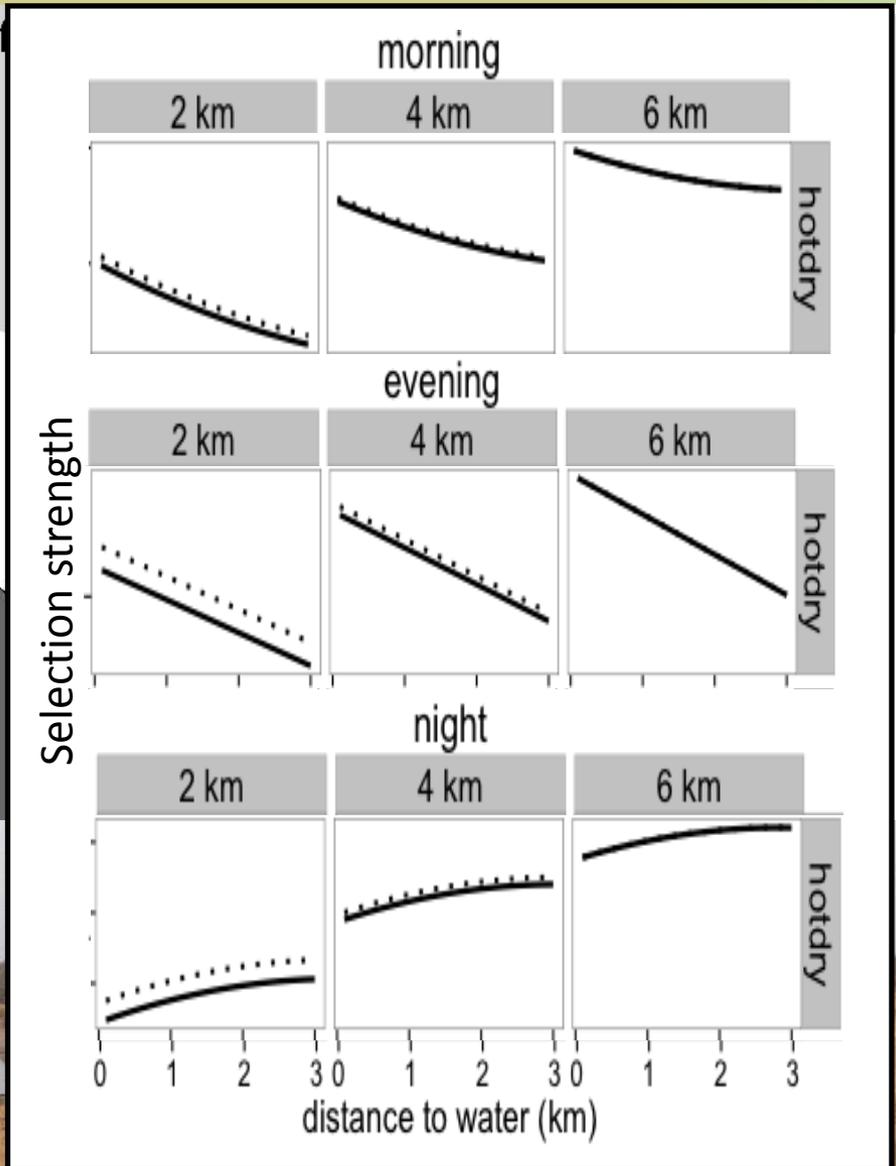


# Results: hot dry season

(e) Hot dry season buffalo



(f)

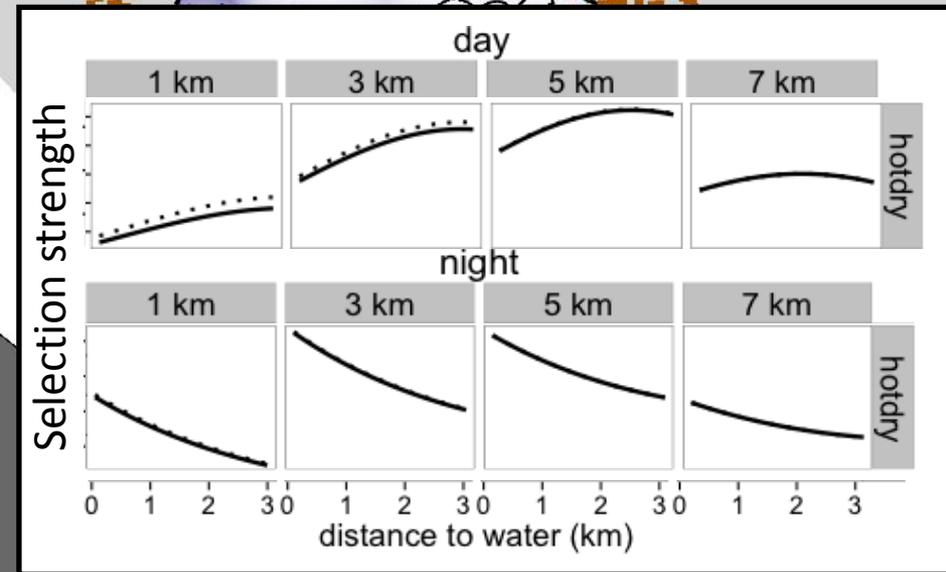


# Results: hot dry season

(e) Hot dry season buffalo

Communal

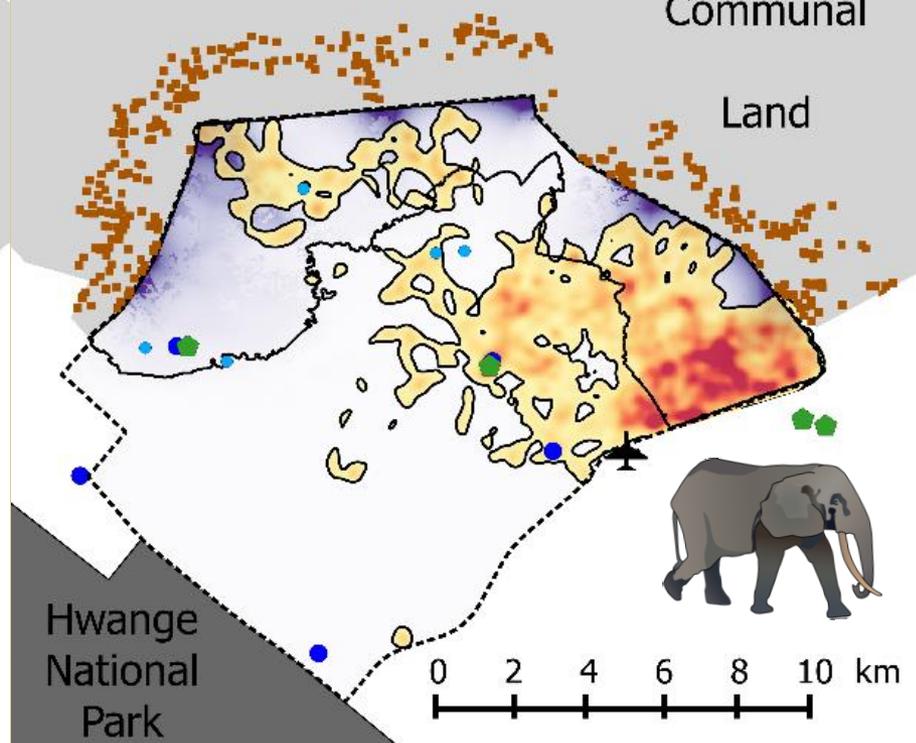
Land



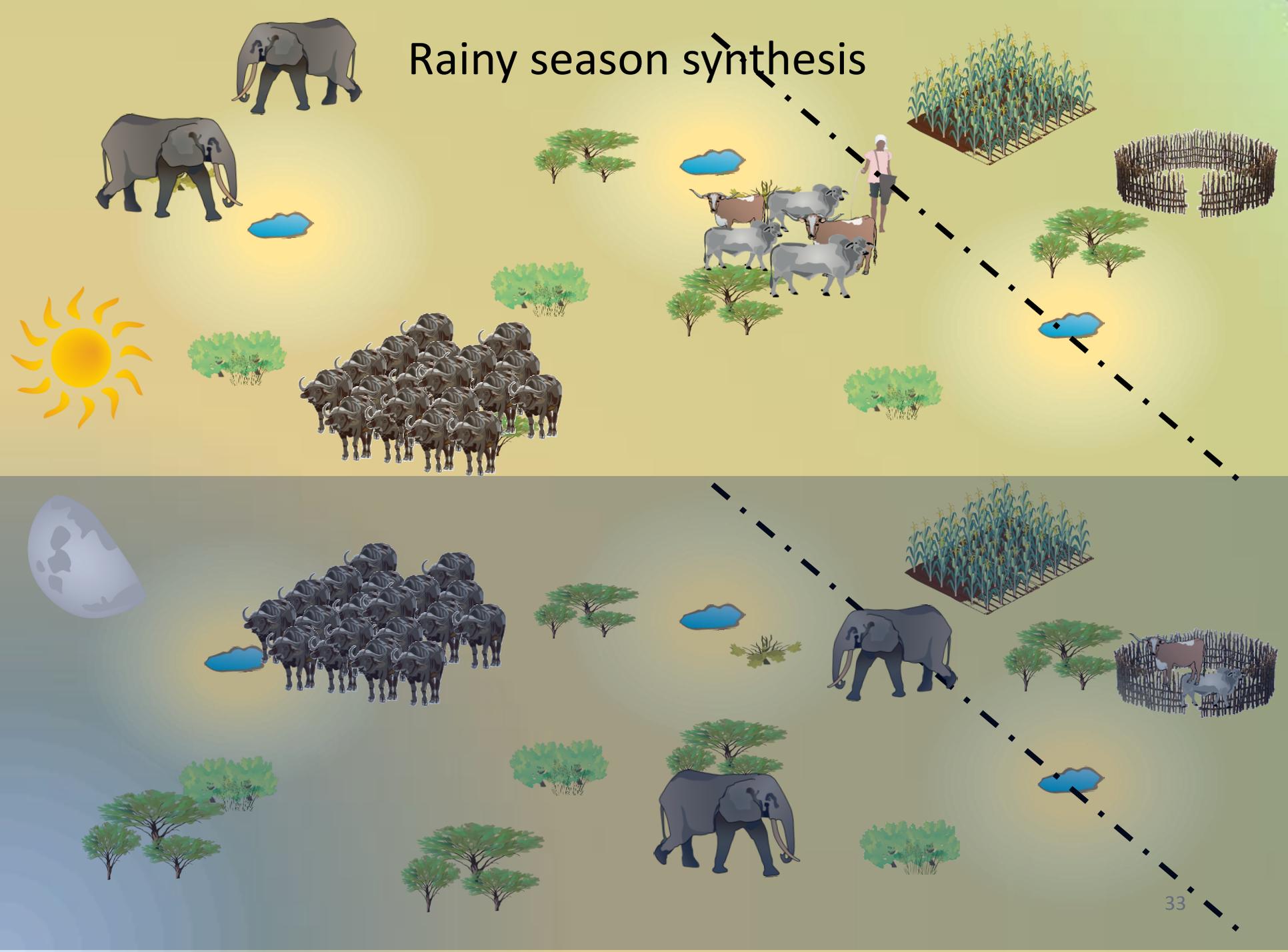
(f) Hot dry season elephant

Communal

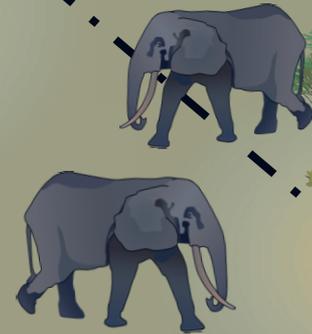
Land



# Rainy season synthesis



# Dry season synthesis



# Implications for water management

- During the **rainy season** **cattle husbandry** pushes wildlife further away from the border.



# Implications for water management

- During the **rainy season** **cattle husbandry** pushes wildlife further away from the border.



- During the **dry season** artificial **waterpoints close to the boundary** attract wildlife increasing the likelihood of conflict (disease transmission, depredation, raiding of gardens)

# Thank you for your attention



[www.rp-pcp.org](http://www.rp-pcp.org)

