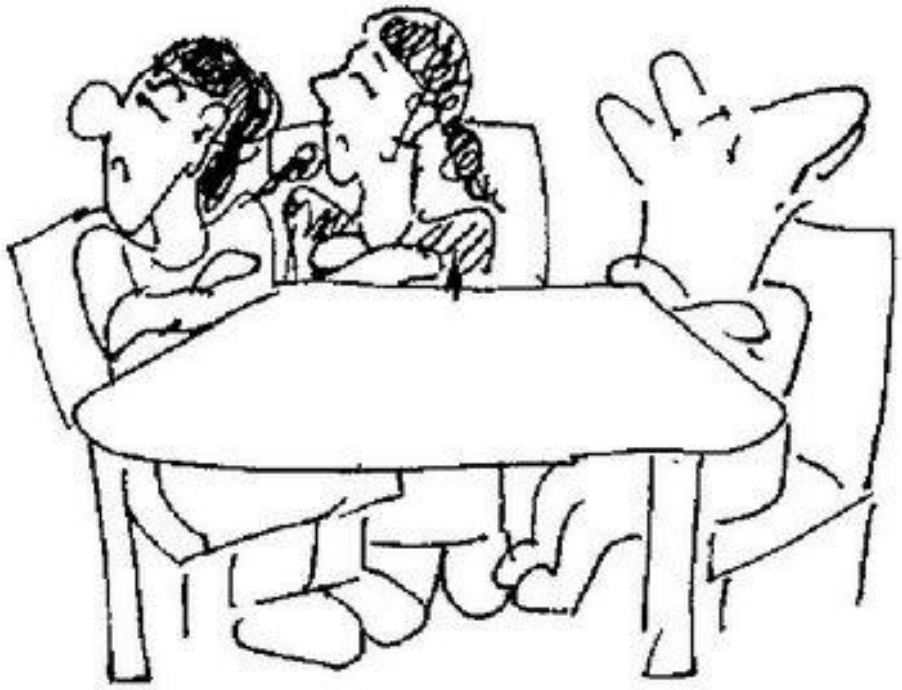
ENDANGERED WILDLIFE TRUST

CARNIVORE CONSERVATION PROGRAMME

conservation in action

Human-carnivore conflict
Impacts, drivers and solutions



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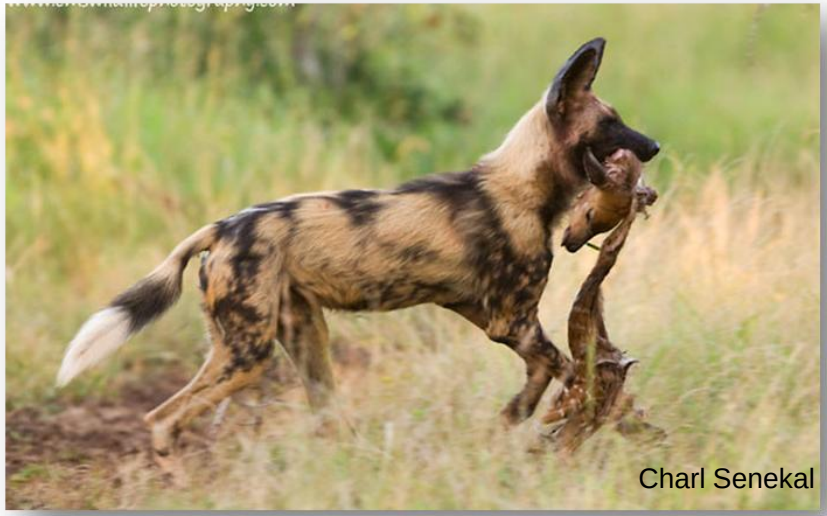
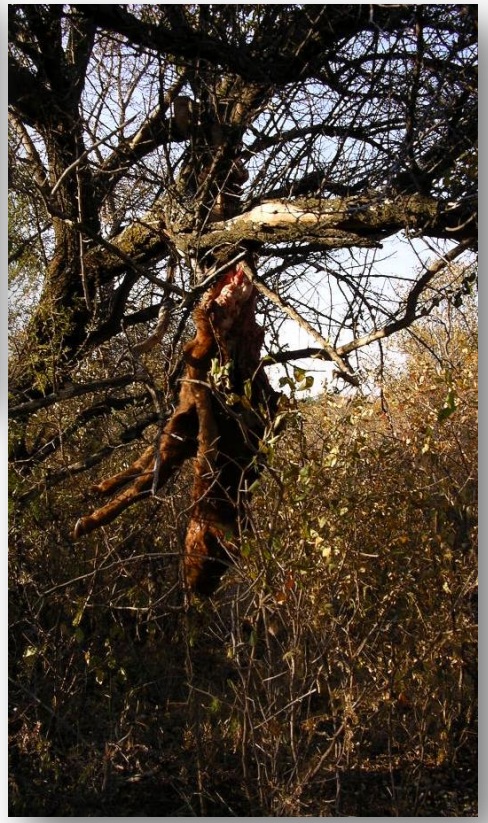
What is human-carnivore conflict?

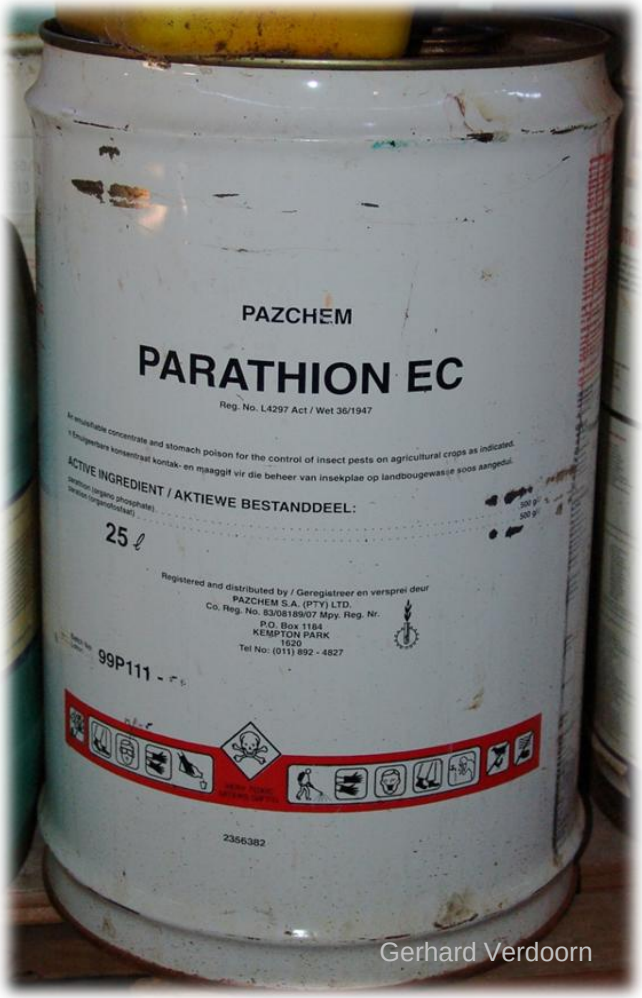
Results in…

- Loss of income or food = serious impact
  - individual farmers, agricultural production, food security, rural development
- Alleviating conflict important
  - conservation, social and economic



Complicated…..

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Conflict exacerbated…..

Human population growth & range expansion

Exploitation of natural resources

Breeding of colour morphs

Yellow Gemsbok

Black kudu

Painted oryx

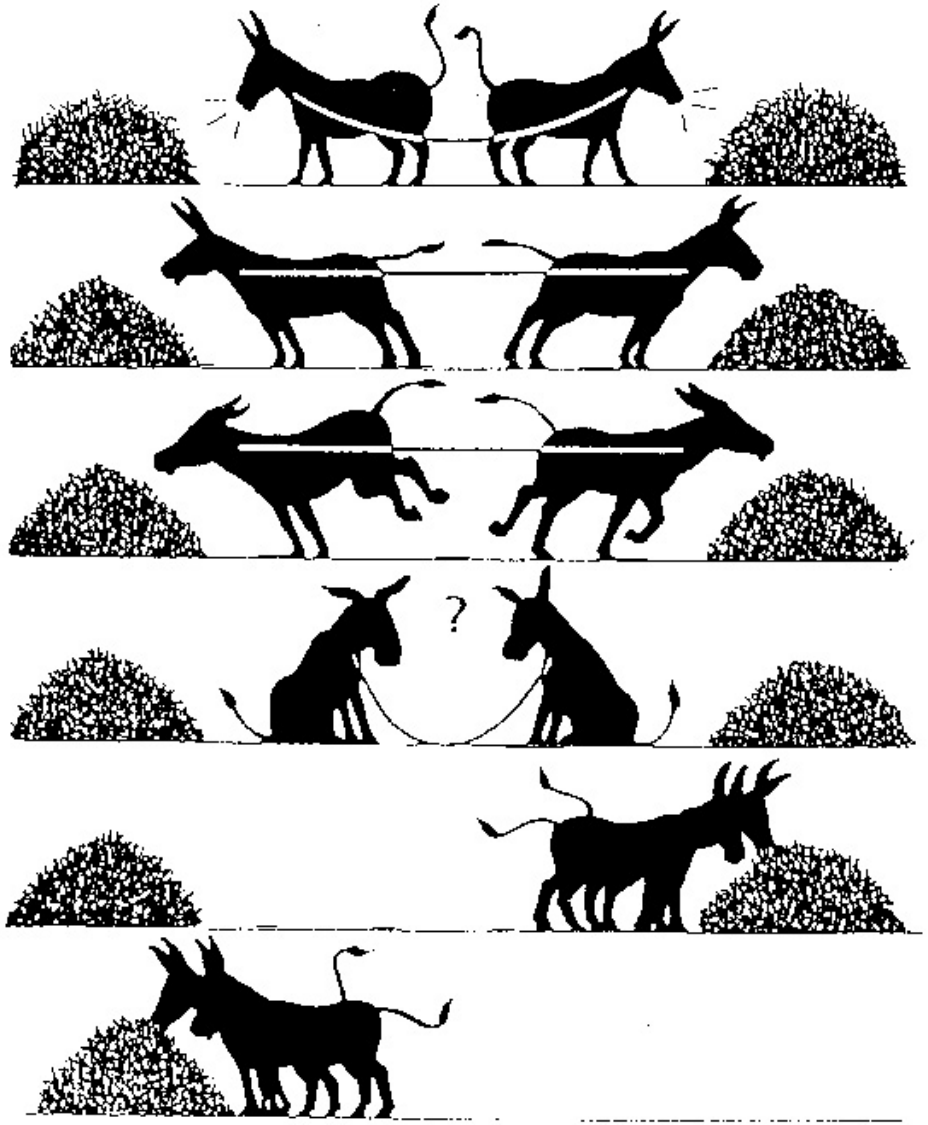
White ostrich

Krulhaar blesbok / curly haired blesbok

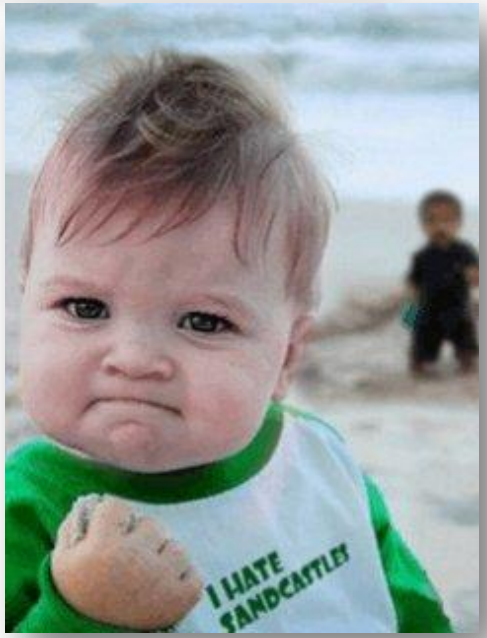
Conflict:

Principle world-wide threat to large carnivore species

Win-Win solutions

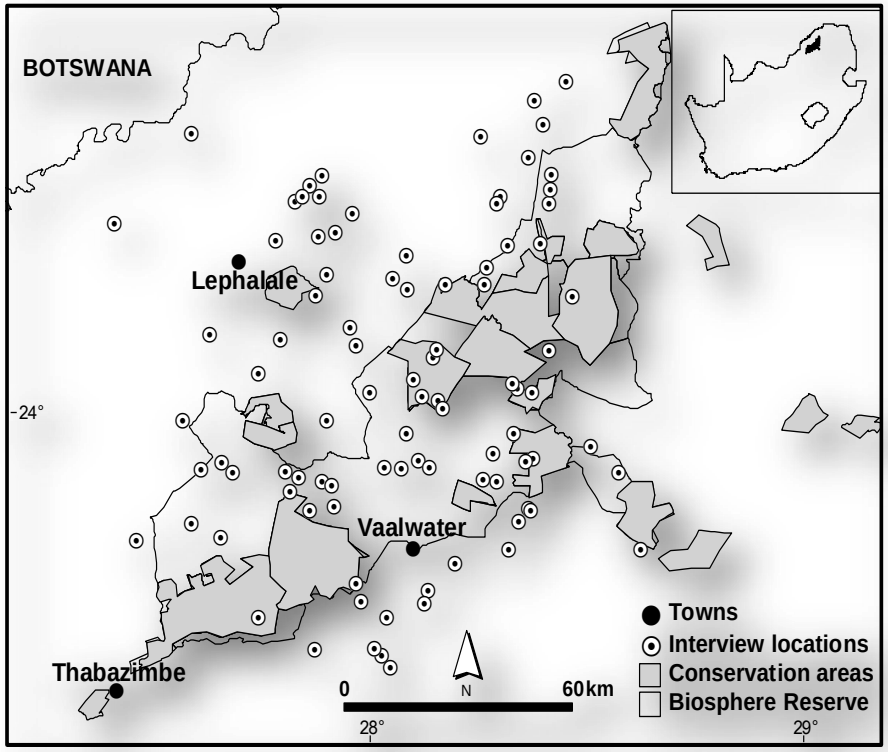


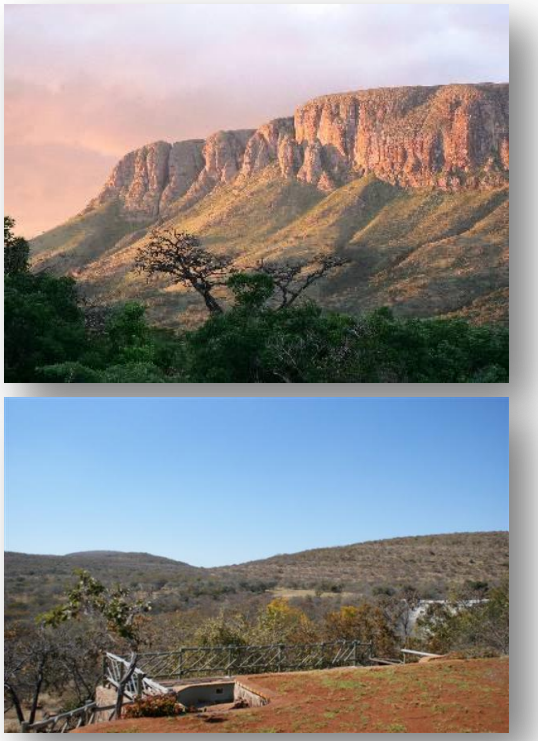
Need to understand drivers



STUDY AREA

- UNESCO Waterberg Biosphere Reserve and surrounding areas of the Waterberg District Municipality





Limpopo 49% of all South African game farms (2000)

Thorn, Green, Scott & Marnewick 2013. Characteristics and determinants of human-carnivore conflict in South African farmland. Biodiversity & Conservation 22(8): 1715-1730 .

Carnivores present

LC

NT

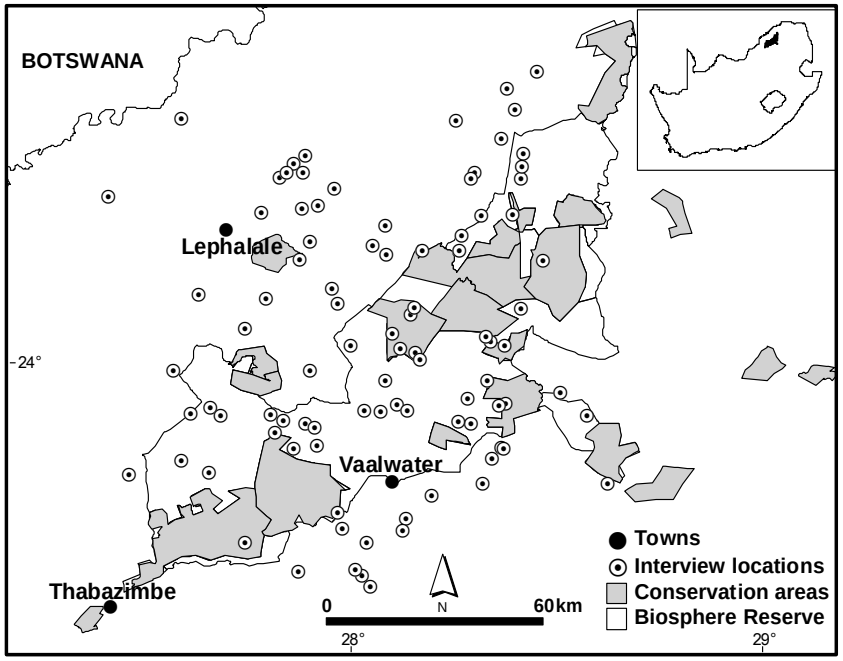
V

En

METHODOLOGY

Questionnaire survey

- 40 minutes - semi-structured questionnaire
- Opportunistically selected farmers throughout the Waterberg
- March 2011 and August 2011
- All respondents were assured of anonymity and confidentiality
- Cultural group was inferred from the respondent's first language.

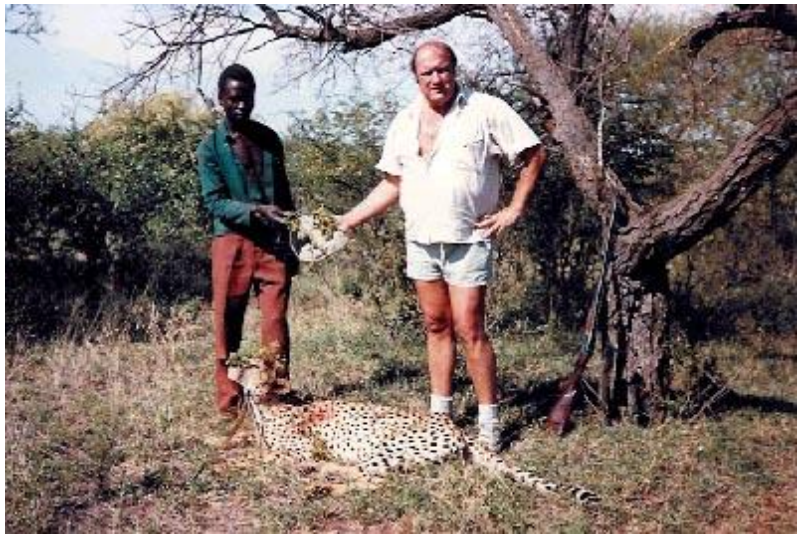


METHODOLOGY

Baseline measures of

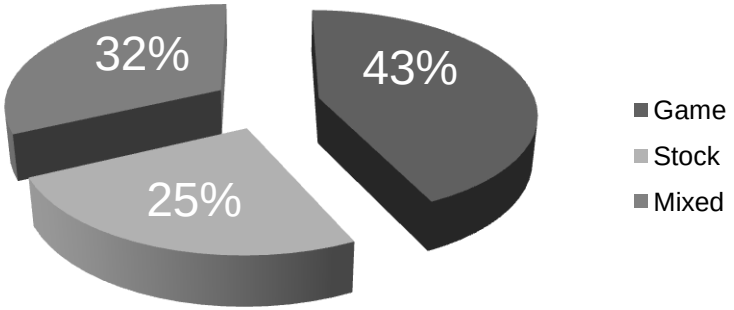
1) human-carnivore conflict characteristics
2) determinants of perceived carnivore predation levels
3) determinants of retaliatory persecution of carnivores

Lack of game species population growth as indirect evidence of predation not recorded

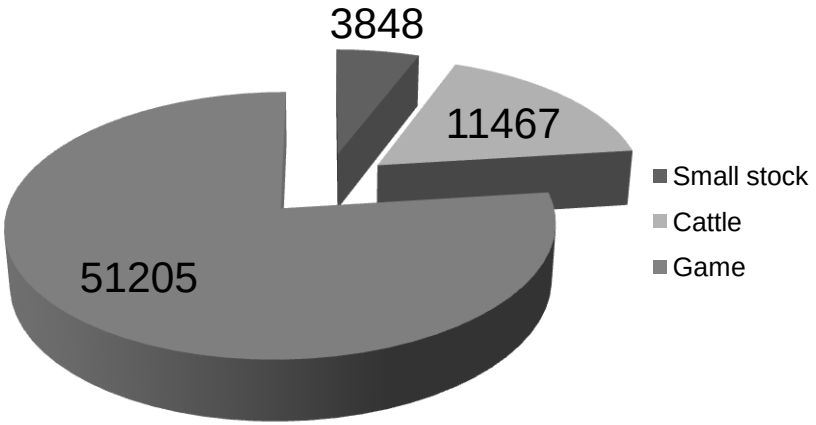


RESULTS

- 92 respondents - 95 farms
- 73% Afrikaans or Afrikaans and German-speaking



Land use as % of respondents



Number of head of stock

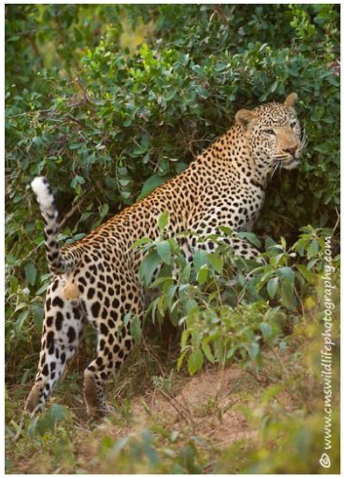
Size of property:
Median= 1300 ha
Range = 6.2 - 16 000 ha

Losses to stock

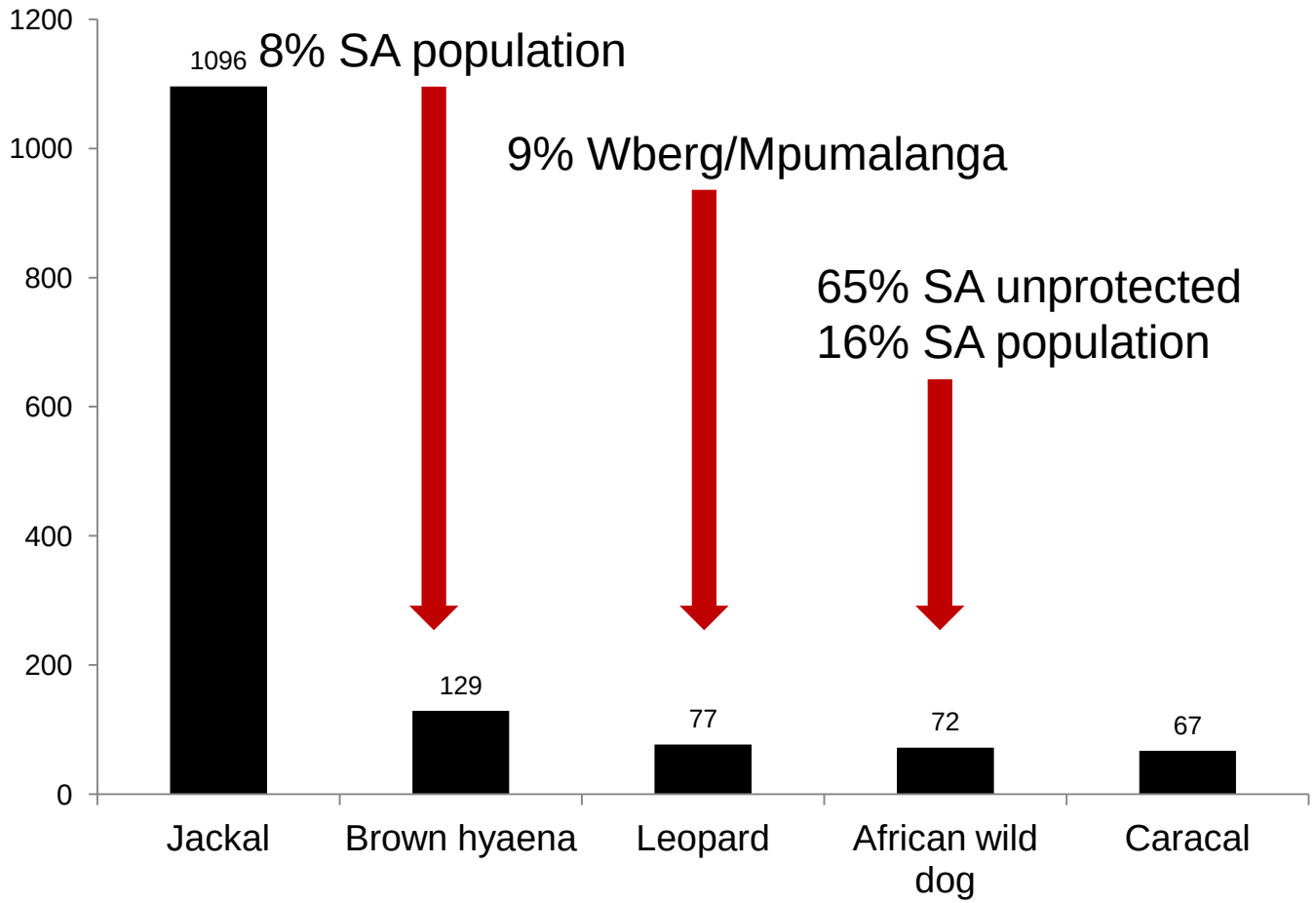
- Financial losses
  - R 2 792 873
  - Median = R 12 000 (Q1 = R 1 000, Q3 = R 30 000)
  - Extremely high losses - seven respondents, R 105 800 - R 392 500.
    - Three - current predation levels not a serious problem.
    - Four - stud or high-value game breeders

- Median annual rate of loss R 1.23 ha-1 (Q1 = R 0.03/ha-1, Q3 = R 3.98/ha)

- Annual predation loss R 1 368 830 whole study area
  = 0.028% of Limpopo agricultural GDP in 2010

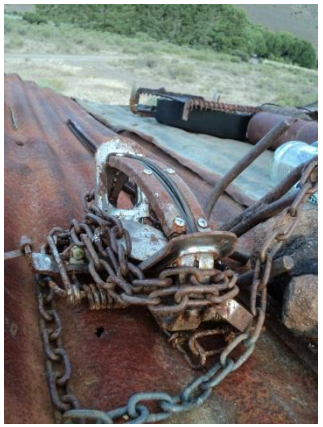


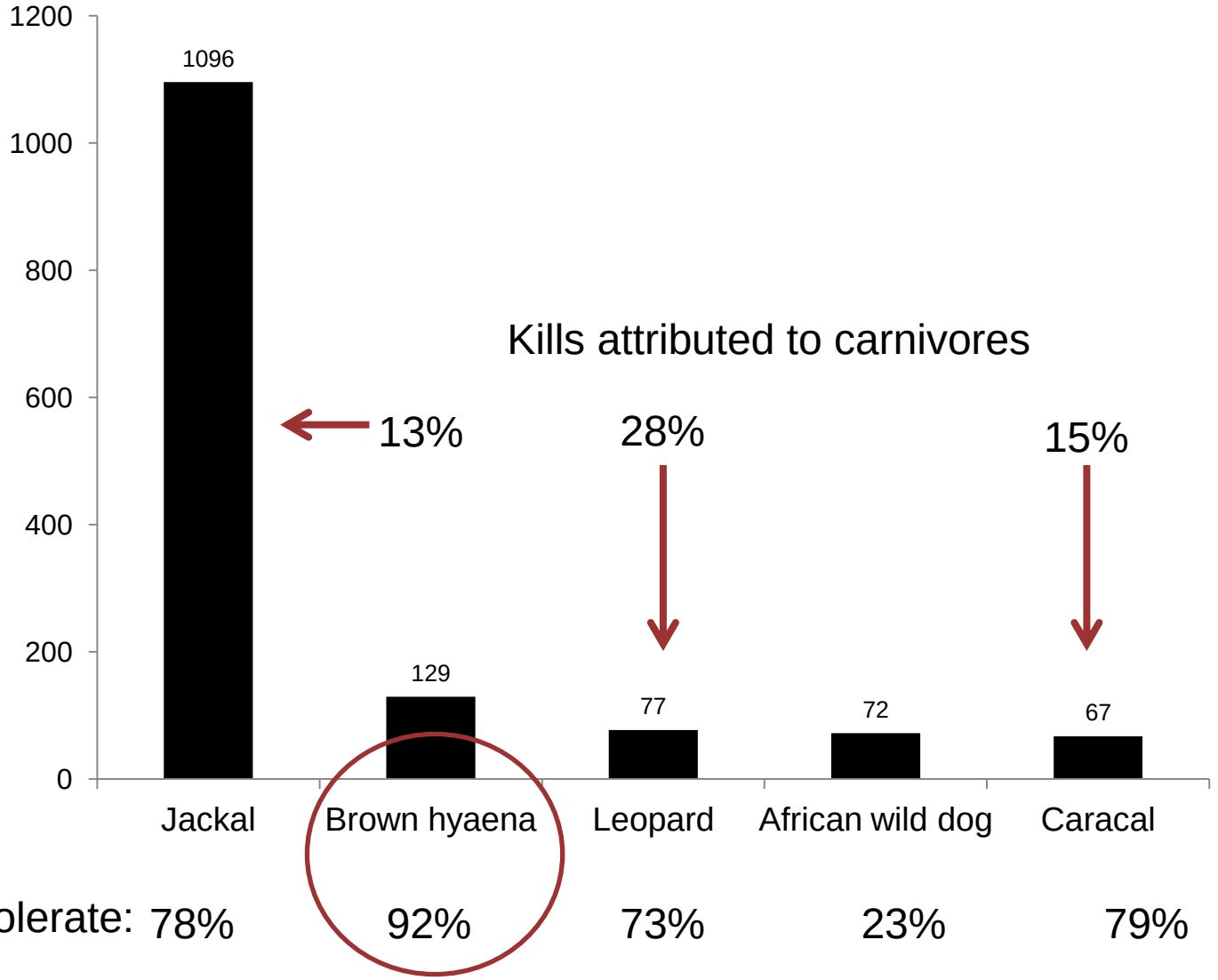
Persecution of carnivores



Excluding road kills, legal and illegal removal, natural mortality, etc

Persecution of carnivores





Species most killed are NOT the ones most often blamed for predation

Persecution of carnivores

Species persecuted & stock losses attributed

≠ correlation

(r_s = 0.467, P = 0.243, n = 8)

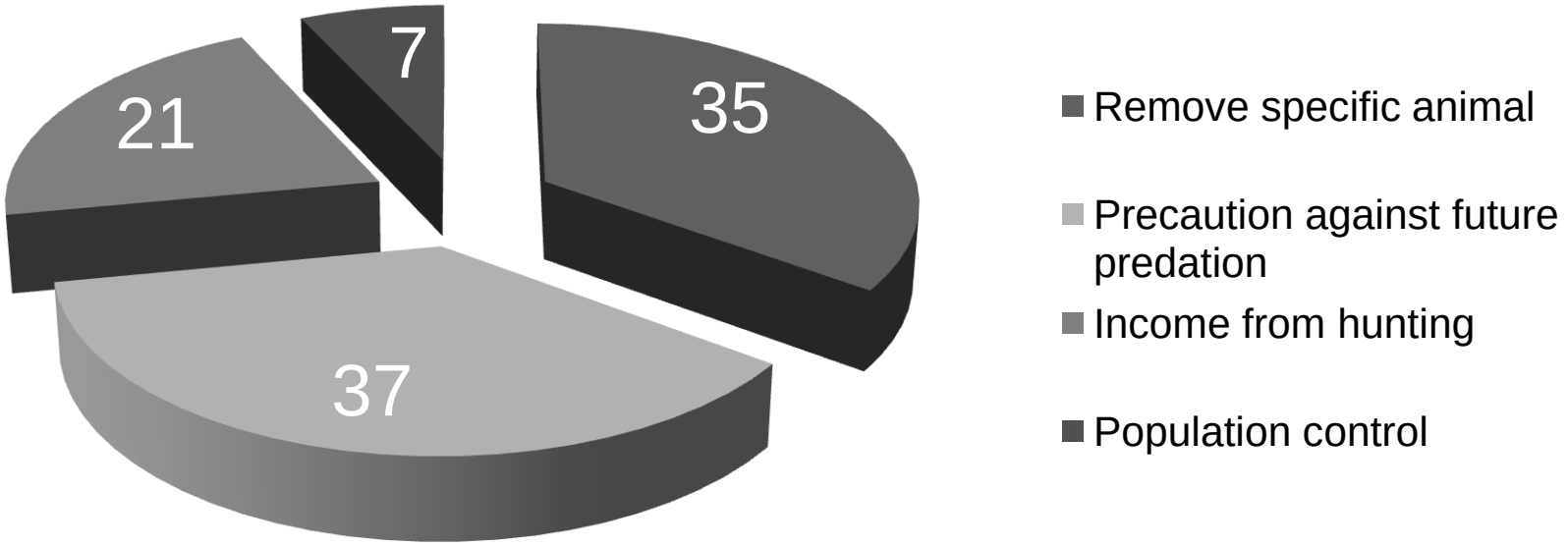
Carnivore occupancy & species-specific persecution

= correlation

(rs = 0.802, P = 0.017, n = 8)

Carnivores persecuted according to availability not to perceived culpability for predation

Motivation for persecution



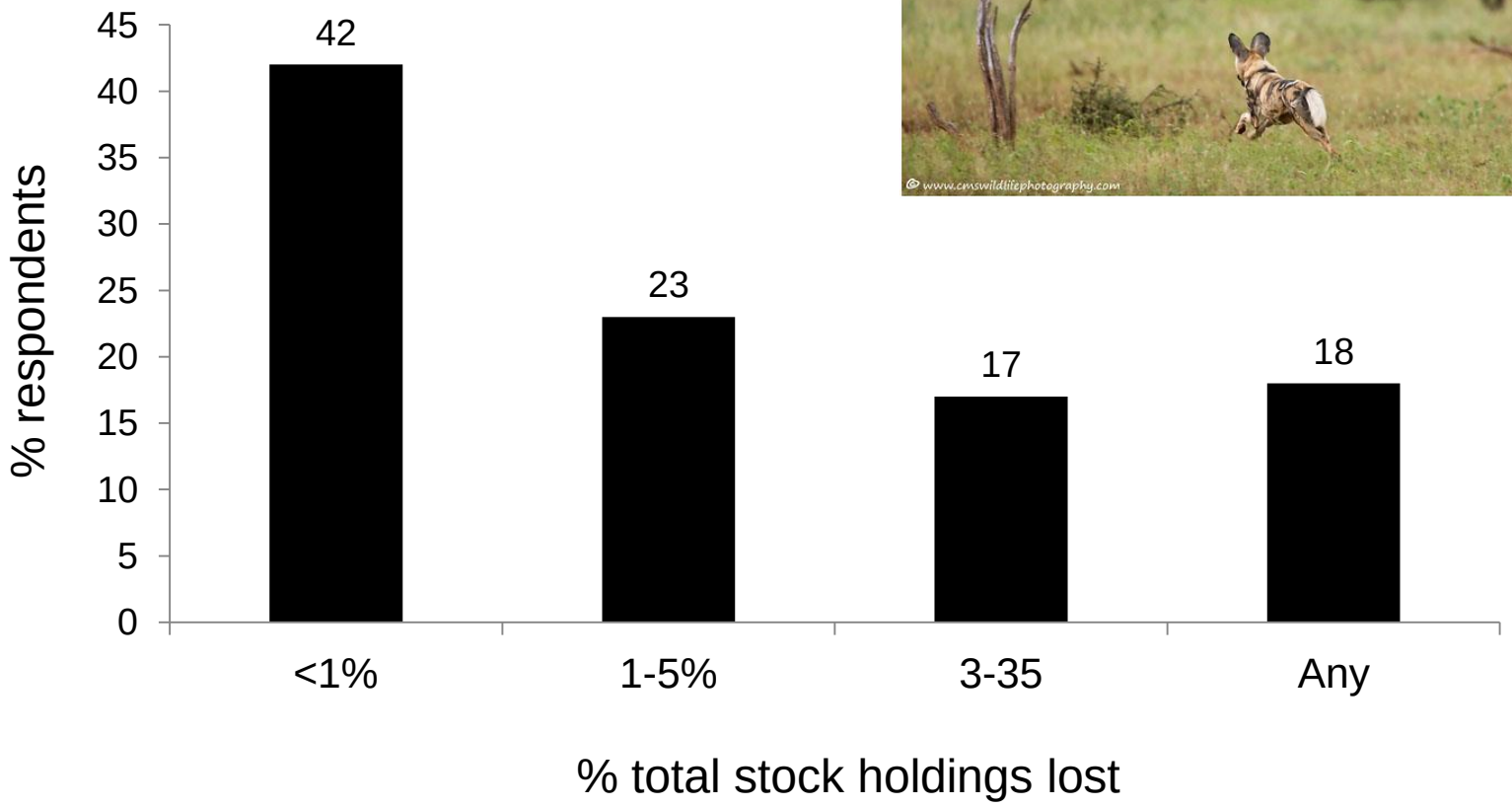
Determinants of predation

Expected predation frequency:

- High elevation (1600 m) 5 X higher than low elevation (822 m)
- Mixed farms 3 X higher than in game farms
- Dense or heterogeneous cover 2X higher than open cover
- No anti-predation measures = highest predation losses
- Losses 2X higher on farms using lethal measures

- **Increased probability of persecution may be a reaction to high predations levels?**
- **Alternatively, lethal control may increase predation levels?**

Threshold of tolerance



Rate of predation loss

1.4% 4.5%

Range reported in other recent African studies

Annual loss on average size farm: R1 605

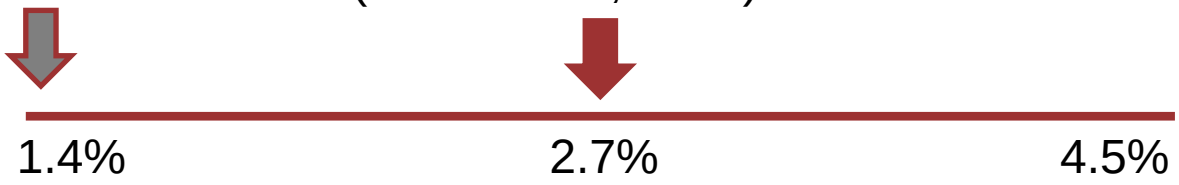
Probably no threat to livelihoods

~0.028% of Limpopo agricultural GDP

Economic effect of predation probably negligible

Comparison to North West Province

(Thorn et al., 2012)



Range reported in other recent African studies

Median annual rate of loss R 0.22 ha^{-1} (R1.23 Waterberg).

Waterberg –

- Lost a smaller proportion of their stock holdings
- But prey animals were considerably more valuable
- Stud and high-value antelope breeding
- Financial losses a key determinant of conflict in Waterberg, **not** in the North West Province

Comparison to North West Province

(Thorn et al., 2012)

Jackals and caracals reported predation losses:

- Waterberg - 28%
- North West - 61%

- Land use, farm management & animal husbandry similar
  - Meso-carnivores release?
  - Functional benefits of apex carnivores?
  - Possible negative financial consequences of removal?

Priority areas for conflict-mitigation

- High elevation
- Mixed farms
- Dense or heterogeneous cover
- High perceived financial losses due to predation.

But how to mitigate conflict?

Methods need to be:

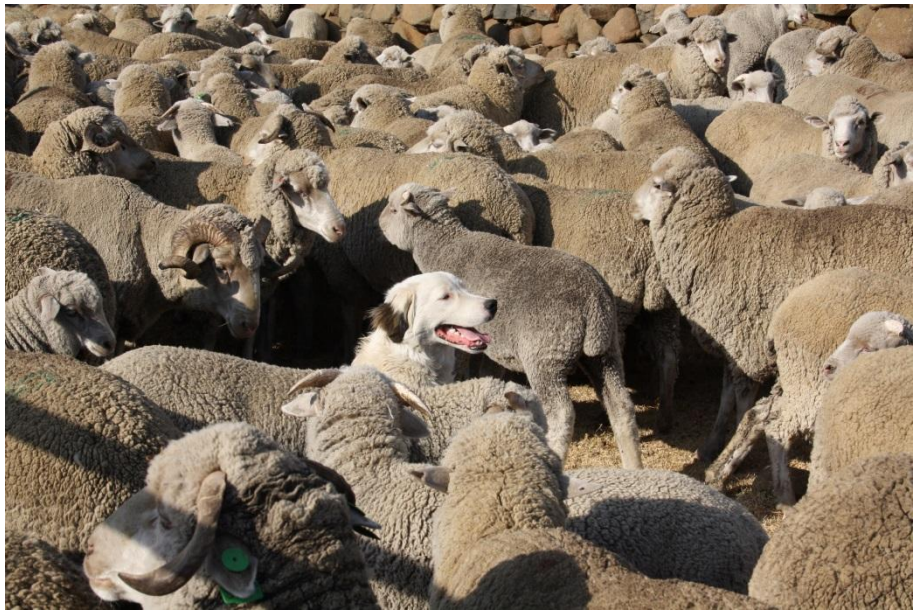
- Practical
- Economically viable
- Culturally acceptable

Managing expectations

- Farmers should anticipate losses of 1.4%-4.5%
  - budget accordingly
- But Waterberg > 1% intolerable
  - Expectations on predation levels unrealistically low
- 65% killed carnivores not implicated in predation

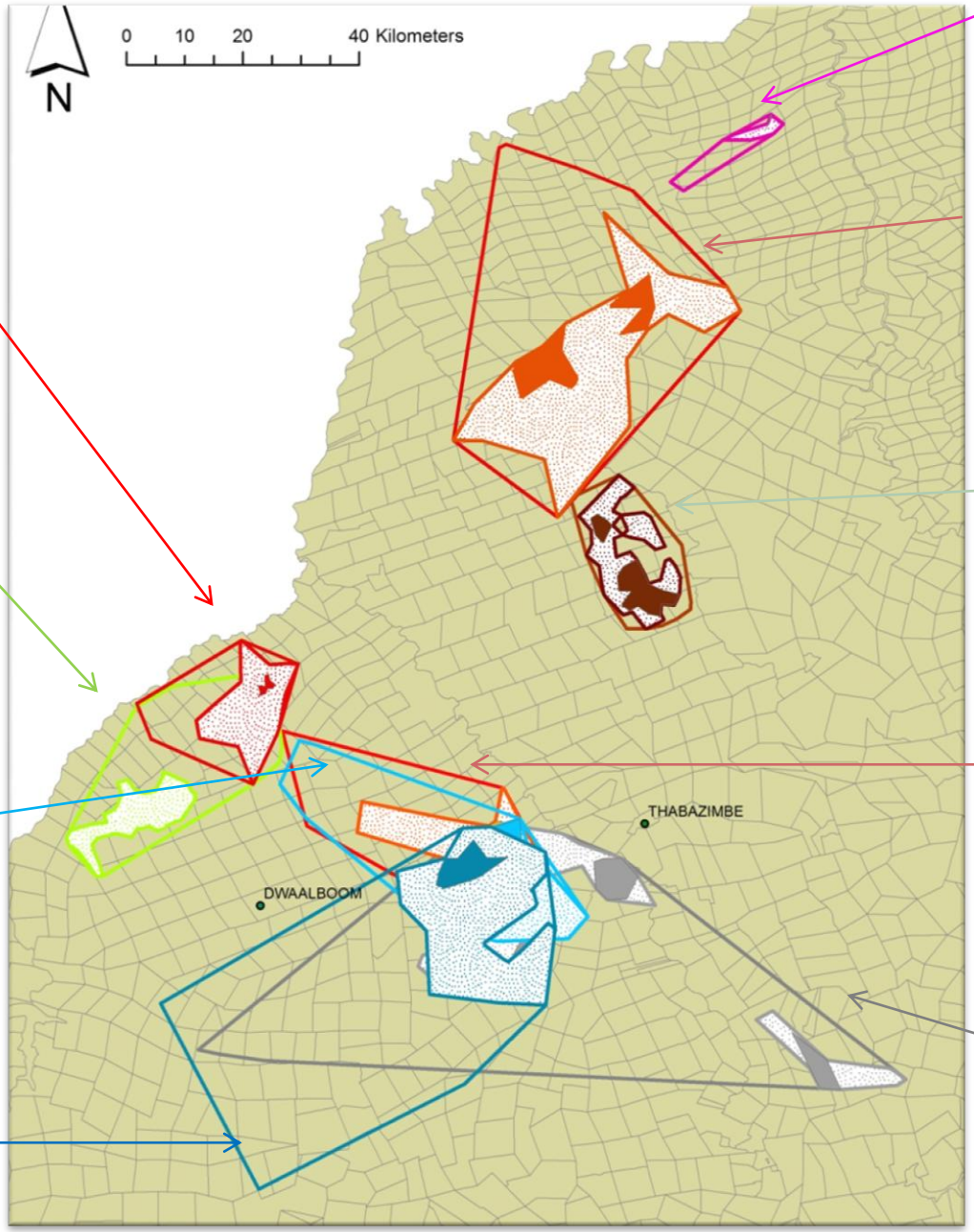
Prevent predation

- Livestock guarding dogs
- Kraaling
- Bells / other deterrents
- General husbandry



Information

- On carnivore behaviour & biology
  - Needs to be relevant to the area
  - Research



MALE (3)
MCP = 367 km2
95 UD = 171 km2
50 UD = 4 km2

MALE (2)
MCP = 662.0 km^2
95 UD = 121.5 km^2
50 UD = 0.001 km^2

MALE (1)
MCP = 824 km^2
95 UD = 314 km^2
50 UD = 44 km^2

MALE (1)
MCP = 2172 km2
95 UD = 506 km2
50 UD = 42 km2

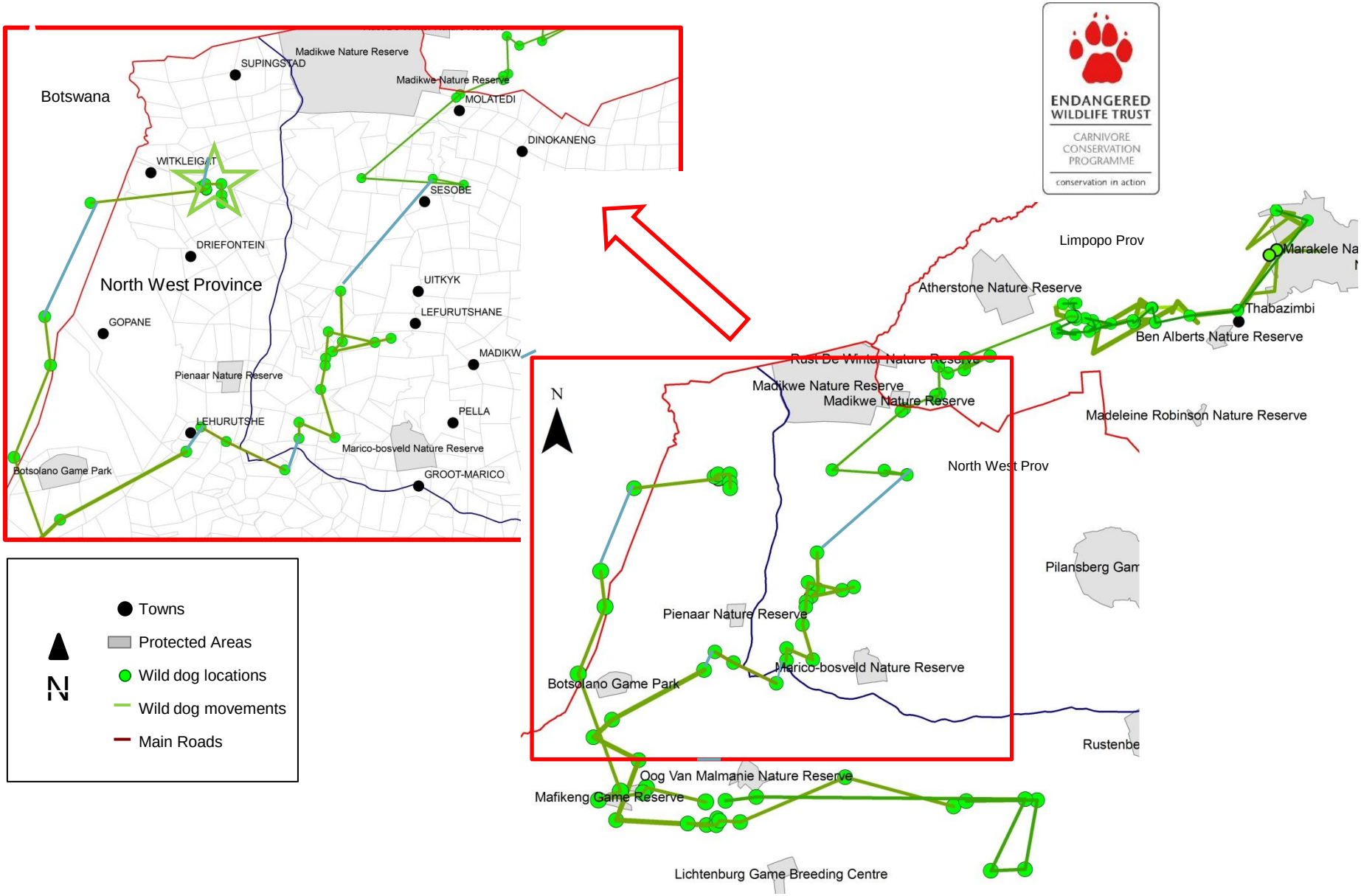
FEMALE
MCP = 61 km2
95 UD = 14 km2
50 UD = 0.2 km2

FEMALE
MCP = 1717 km2
95 UD = 703 km2
50 UD = 102 km2

FEMALE
MCP = 315 km2
95 UD = 183 km2
50 UD = 56 km2

MALE (1)
MCP = 631 km2
95 UD = 192 km2
50 UD = 11 km2

MALE (1)
MCP = 2 761 km2
95 UD = 607 km 2
50 UD = 86 km2

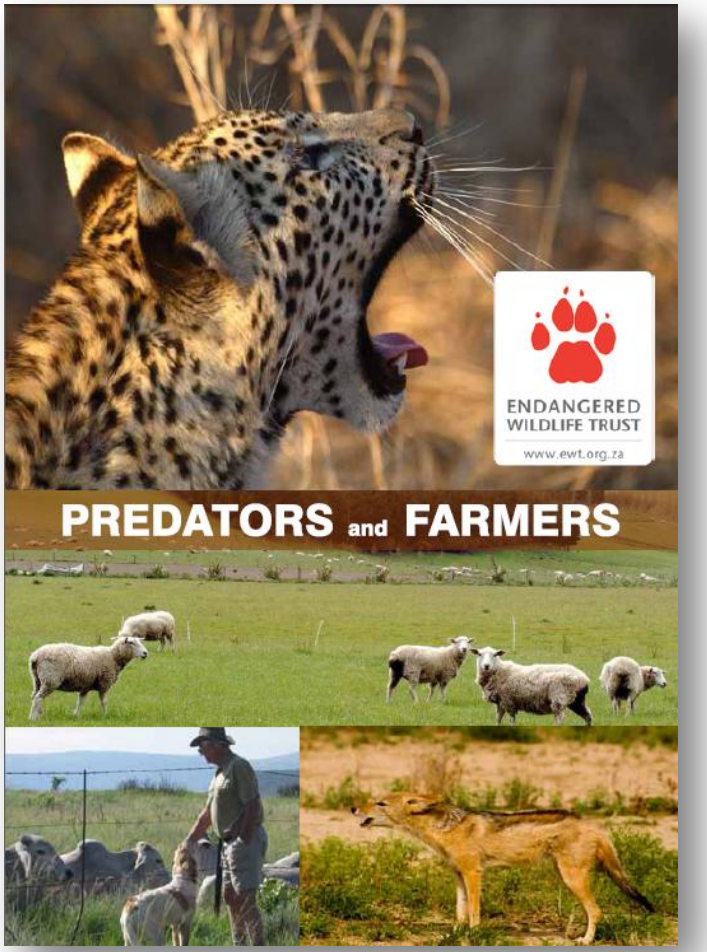


Movement of a group of three male African wild dogs from 5 July -2September 2013. Duplicate and inaccurate GPS points removed, no data for 12 August 2013 due to satellite transmission error.
Straight line distance moved: 172km, total distance moved approx.: 951km.

Map compiled by Kelly Marnewick, Endangered Wildlife Trust: kellym@ewt.org.za

Information

- On effective mitigation
  - eg removal not a solution

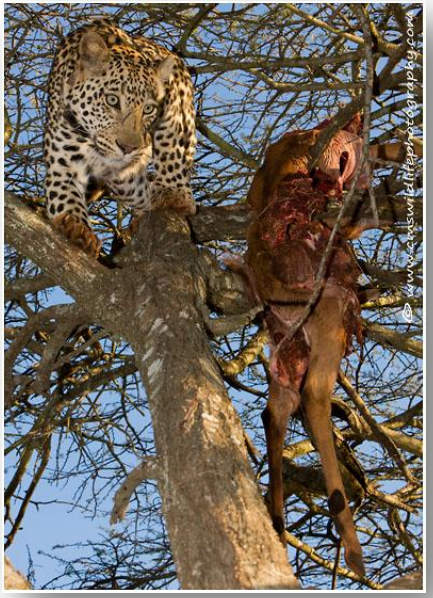


Incentives

- Badger Friendly honey
- Jackal Friendly wool
- Predator Friendly meat
- Pressure from markets

CONCLUSION

- Current levels of persecution are problematic
- Persecution is not always related to damage
- Farming can occur in harmony with carnivores
- Requires conflict mitigation at several levels
- Incentives from consumers can drive change



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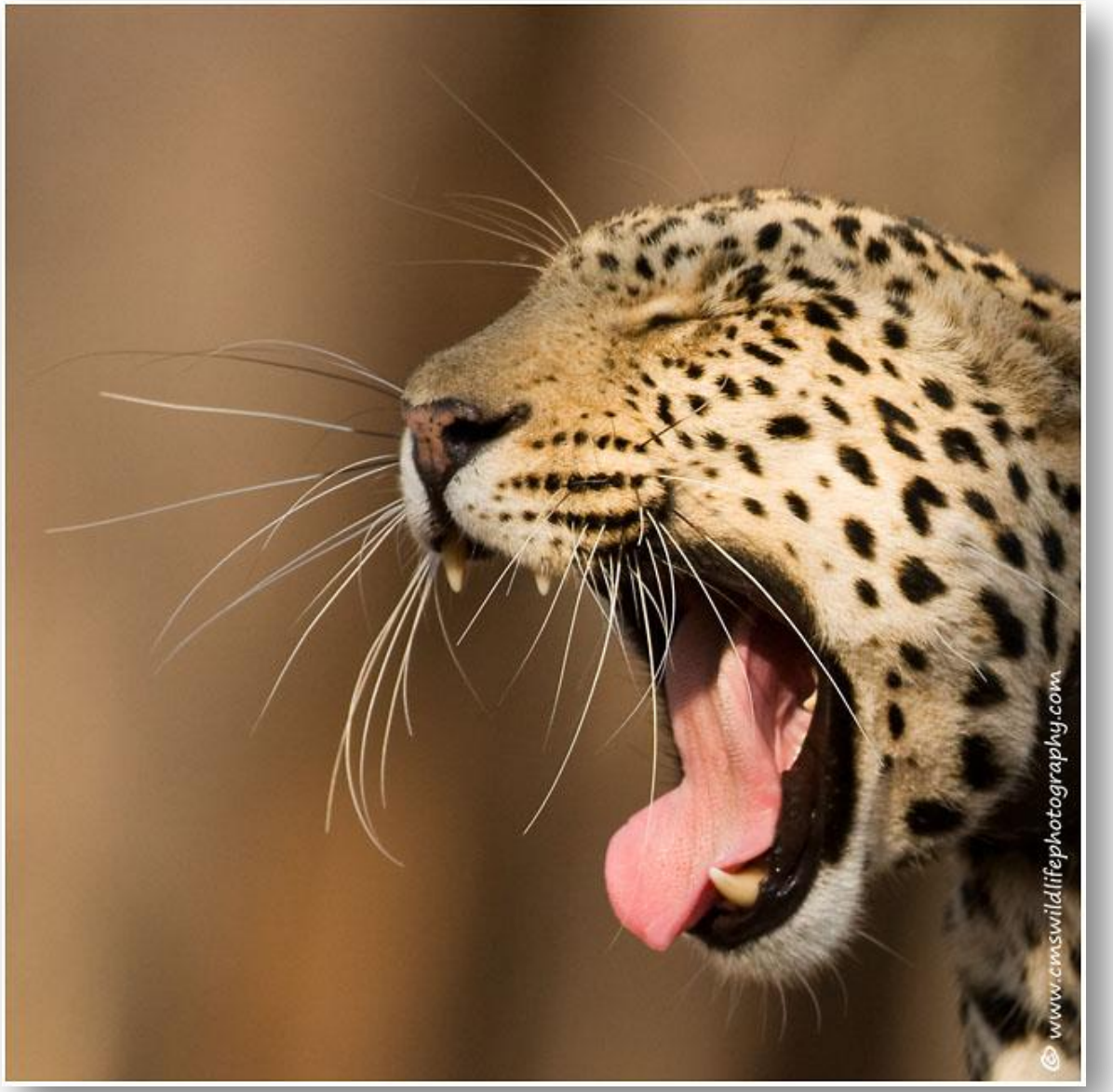
conservation in action



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