

# **An agro-ecological approach to human-wildlife conflict on Namibian livestock farms**

**Chavoux Luyt, Cang Hui, Alison Leslie**



# **“Farming with Predators”**

**An agroecological approach to  
human-wildlife conflict on Namibian  
farmlands**





# Human-wildlife conflict

## A growing global problem



# Human-wildlife conflict

A growing global problem

A solved problem? Why not?



# Why conflict solutions fail?

## Literature...

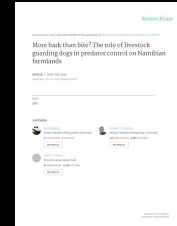
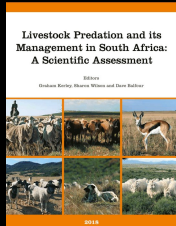




# Why conflict solutions fail?

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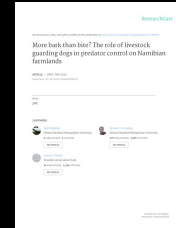
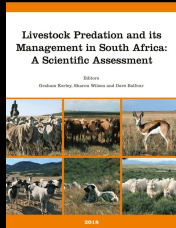
- HWC => human-human conflict! (social factors)



# Why conflict solutions fail?

## Literature:

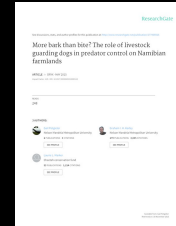
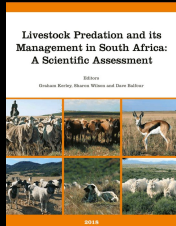
- HWC => human-human conflict
- Agricultural science vs Ecology & wildlife management



# Why conflict solutions fail?

## Literature:

- HWC => human-human conflict
- Agricultural science vs Ecology:
  - Agriculture: ignore sustainability

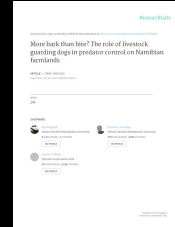
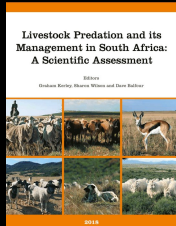




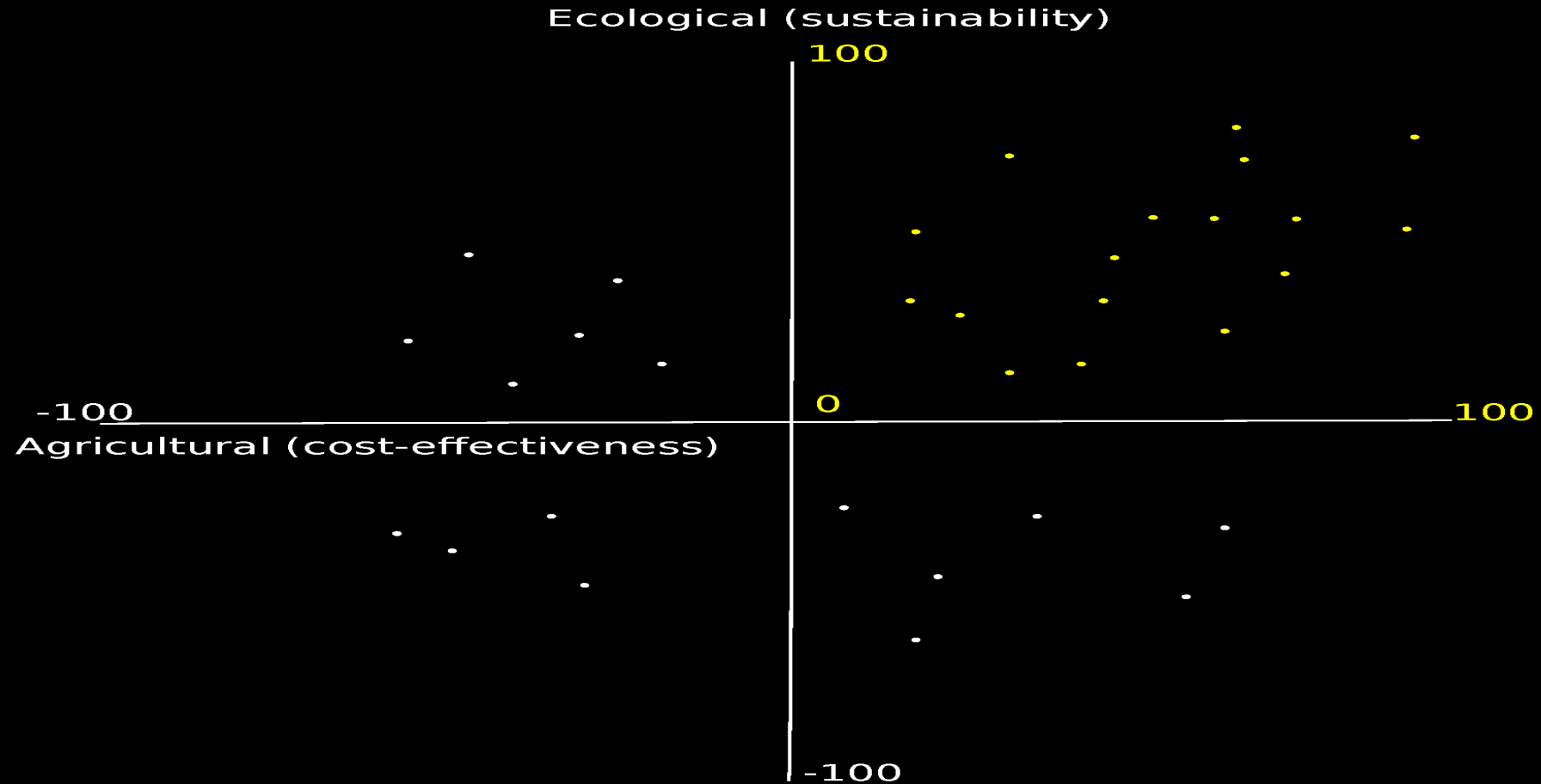
# Why conflict solutions fail?

## Literature:

- HWC => human-human conflict
- Agricultural science vs Ecology:
  - Agriculture: ignore sustainability
  - Ecology: ignore economics & practicality



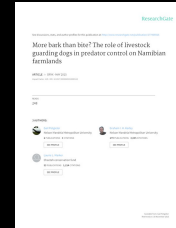
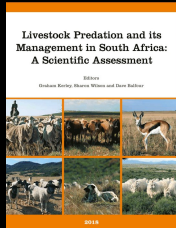
# Conflict mitigation methods



# Conflict mitigation methods

## Literature:

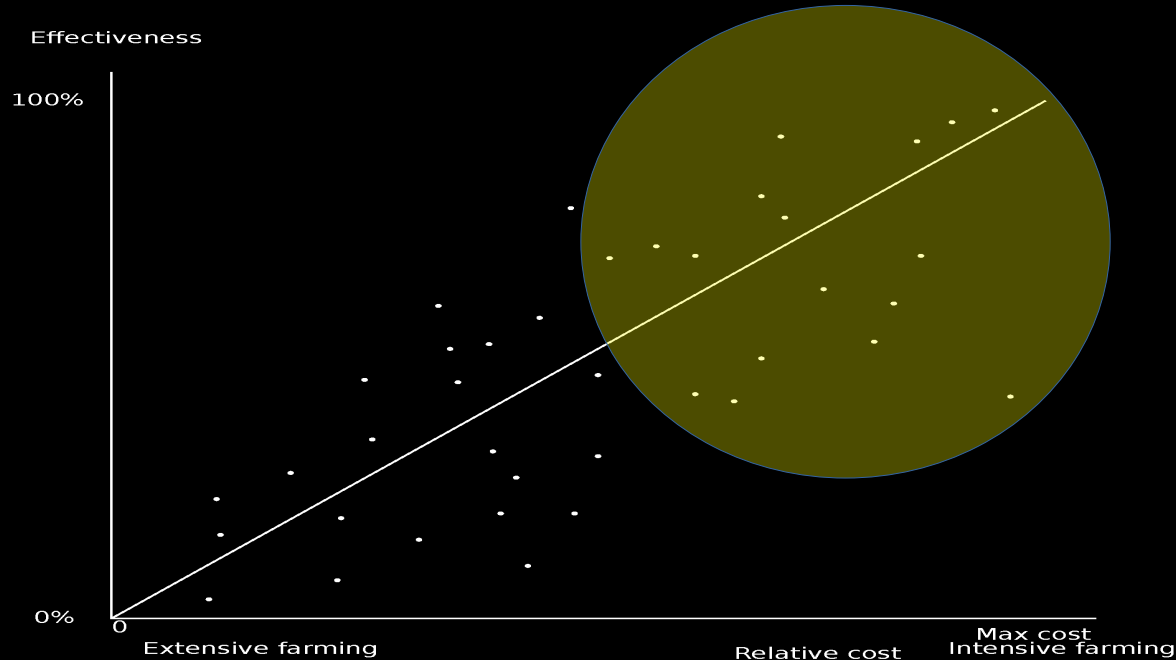
- 40 Methods used world-wide  
(in 211 book chapters/articles)





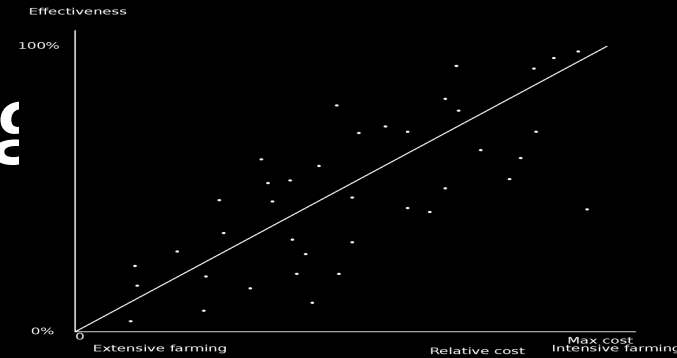
# Mitigation Methods classified

- Pro-active (Preventative)  
*e.g. Hunt to exterminate, Herding*

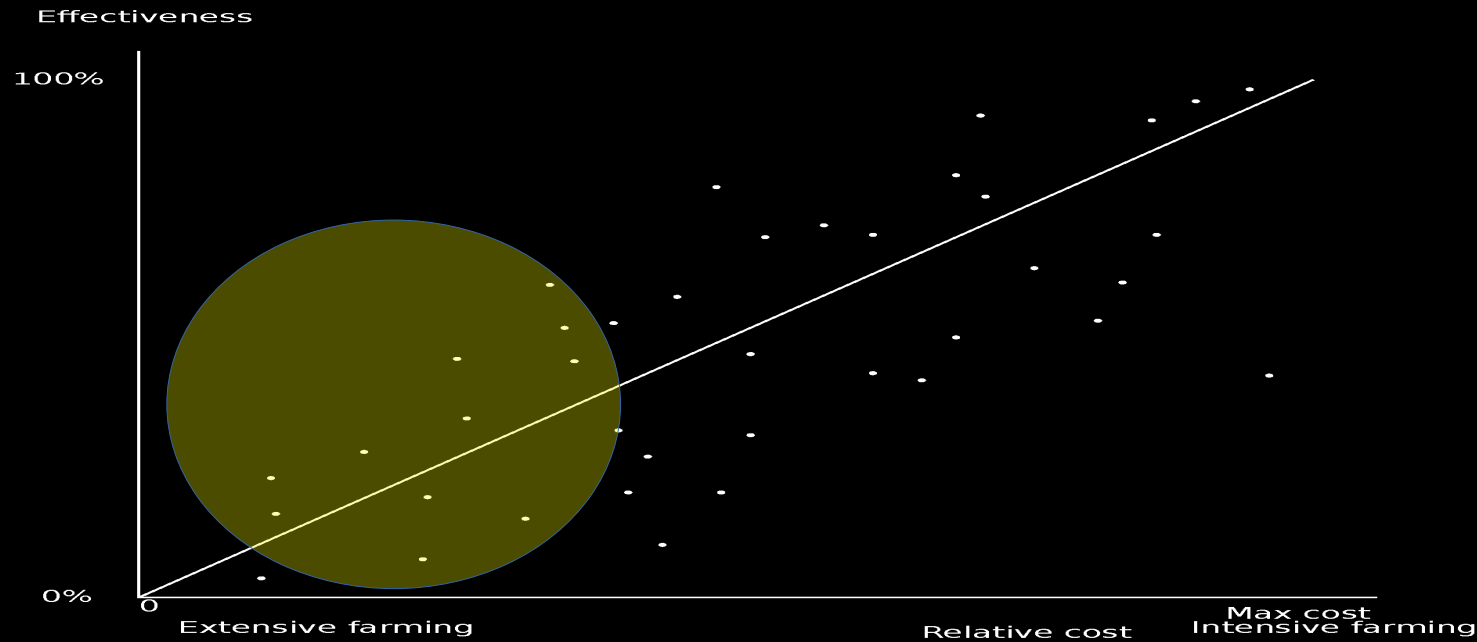


# Mitigation Methods classified

- Pro-active (Preventative)  
*e.g. Hunt to exterminate, Herding*
- Compensatory (Live with losses)  
*e.g. Price premium, Tourism, Trophy hunt*



# Mitigation Methods classified



- **Reactive (React to losses)**  
*e.g. Trap on carcass, Translocate*



# Two typical approaches in the literature



One “silver bullet”

# Two typical approaches



One “silver bullet” – But every farm is different!

# Two typical approaches



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Scatter-gun

# Two typical approaches



One “silver bullet” – But every farm is different!



Scatter-gun – But no farmer can implement them all!

# Two typical approaches

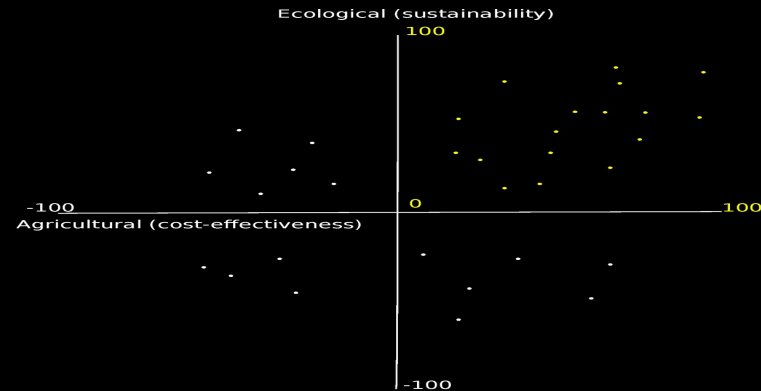


One “silver bullet” – But every farm is different!



Scatter-gun – But no farmer can implement them all!

Adaptive management instead?

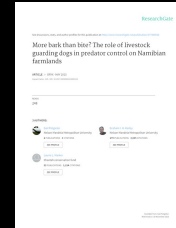
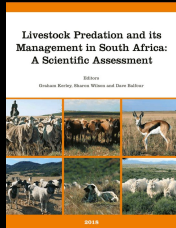




# Conflict mitigation methods

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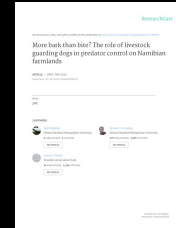
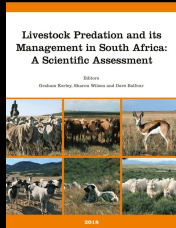
- 40 Methods used world-wide
- Only effectiveness



# Conflict mitigation methods

## Literature:

- 40 Methods used world-wide
  - Only effectiveness
  - ... and sustainability (no cost)



# Conflict mitigation methods

- 40 Methods described
- Advantages



THE GOOD

# Conflict mitigation methods

- 40 Methods described
- Advantages
- Disadvantages



THE GOOD

THE BAD

# Conflict mitigation methods

- 40 Methods described
- Advantages
- Disadvantages
- Limitations



THE GOOD

THE BAD

AND THE UGLY



# Mitigation Worldwide

“Best” methods worldwide:

1) Herding [ $p(\text{success}) = 0.87$ ]



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# Mitigation Worldwide

“Best” methods worldwide:

- 1) Herding [ $p(\text{success}) = 0.87$ ]
- 2) Fencing (unspecified!) [ $p(\text{success}) = 0.87$ ]
- 3) Livestock Guarding Dogs [ $p(\text{success}) = 0.91$ ]





# Mitigation Worldwide

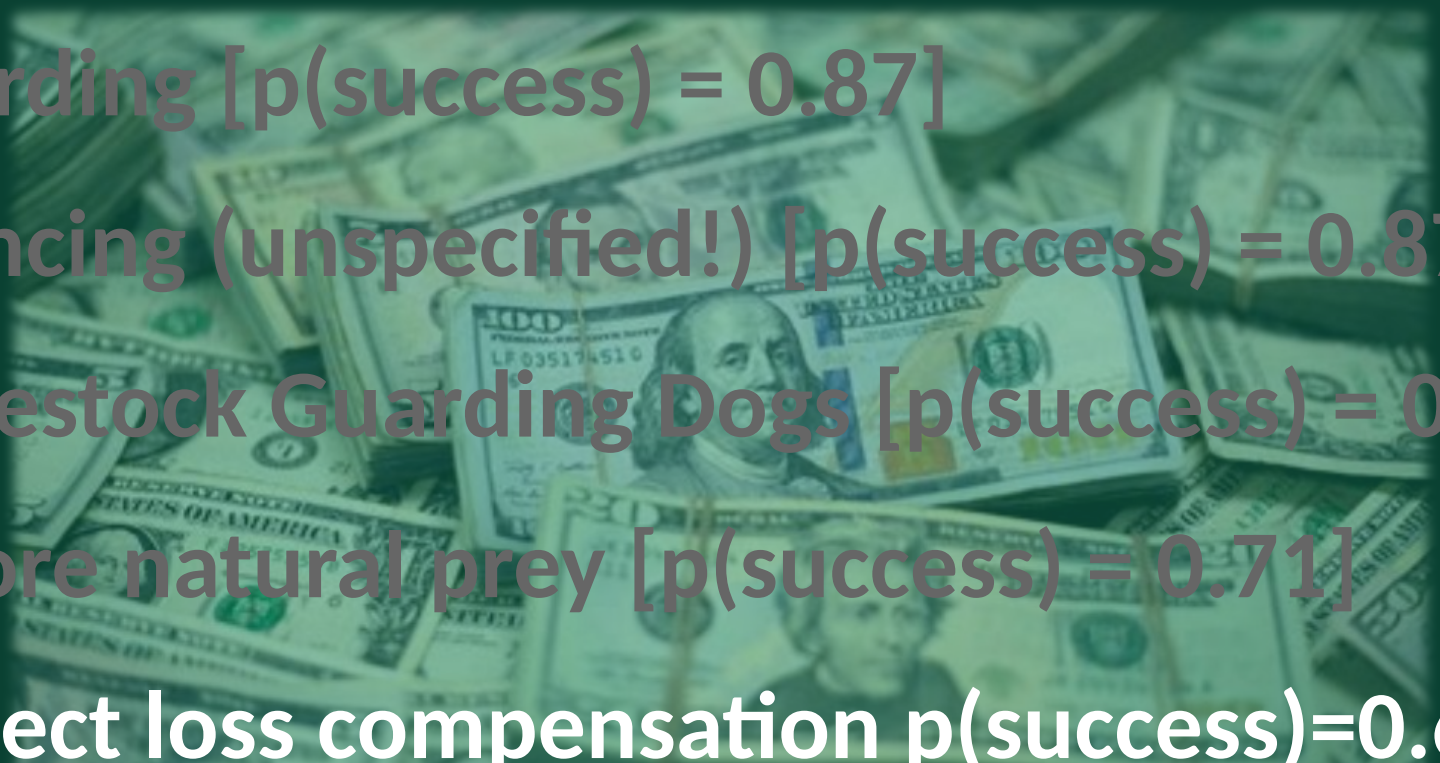
“Best” methods worldwide:

- 1) Herding [ $p(\text{success}) = 0.87$ ]
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- 4) More natural prey [ $p(\text{success}) = 0.71$ ]



# Mitigation Worldwide

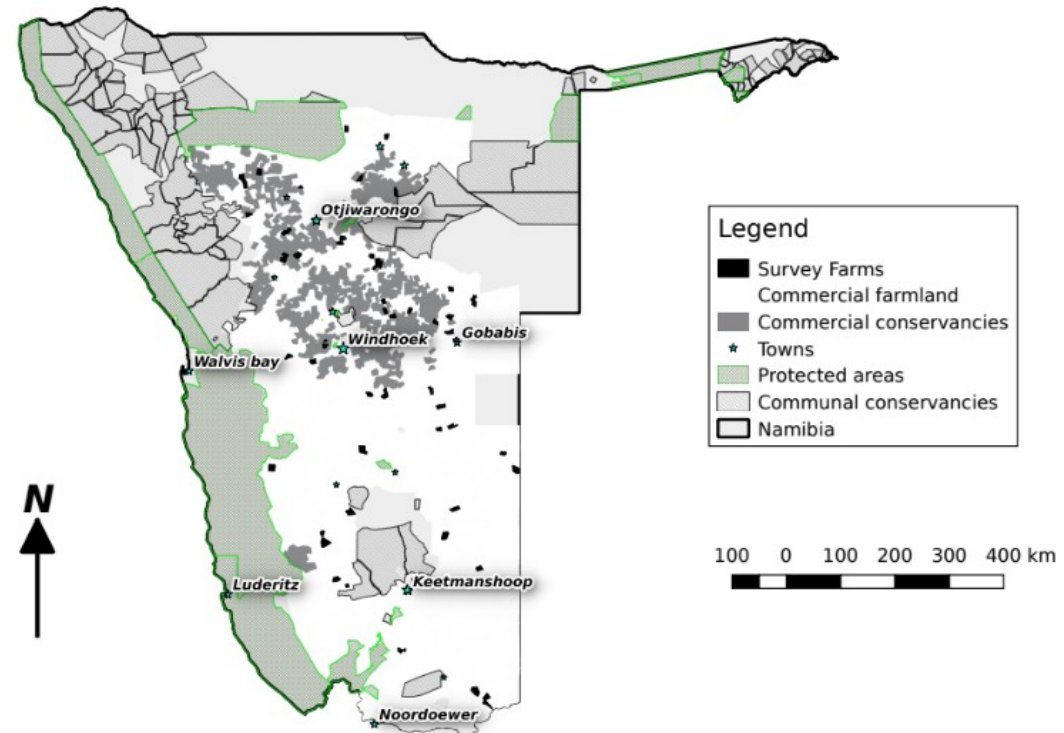
“Best” methods worldwide:

- 
- A background image showing a pile of US dollar bills, including \$100 and \$20 bills, with the portrait of Benjamin Franklin visible on a \$100 bill.
- 1) Herding [ $p(\text{success}) = 0.87$ ]
  - 2) Fencing (unspecified!) [ $p(\text{success}) = 0.87$ ]
  - 3) Livestock Guarding Dogs [ $p(\text{success}) = 0.91$ ]
  - 4) More natural prey [ $p(\text{success}) = 0.71$ ]
  - 5) Direct loss compensation  $p(\text{success})=0.64$



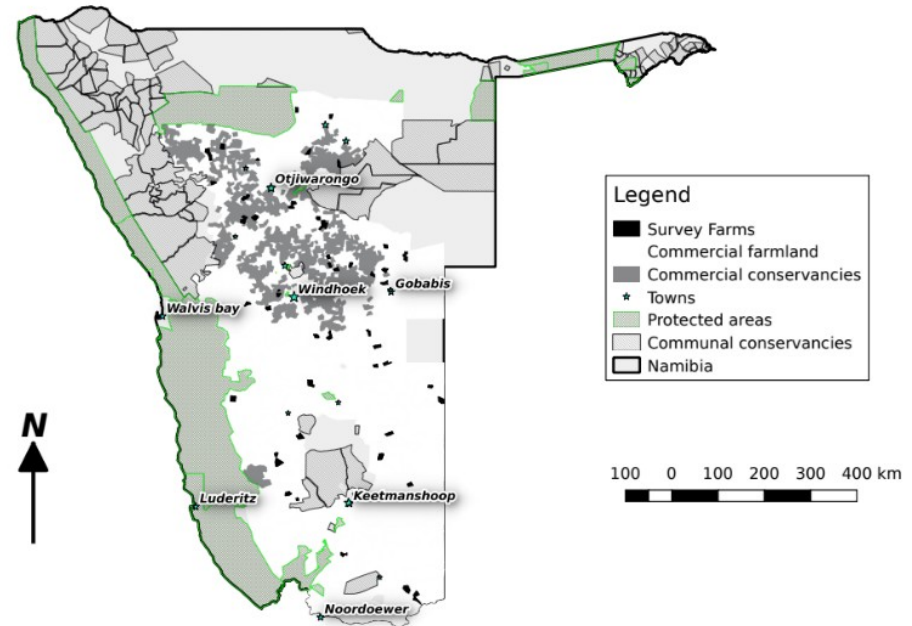
# Farming with Predators

- 2500 questionnaires distributed
- 52 responses



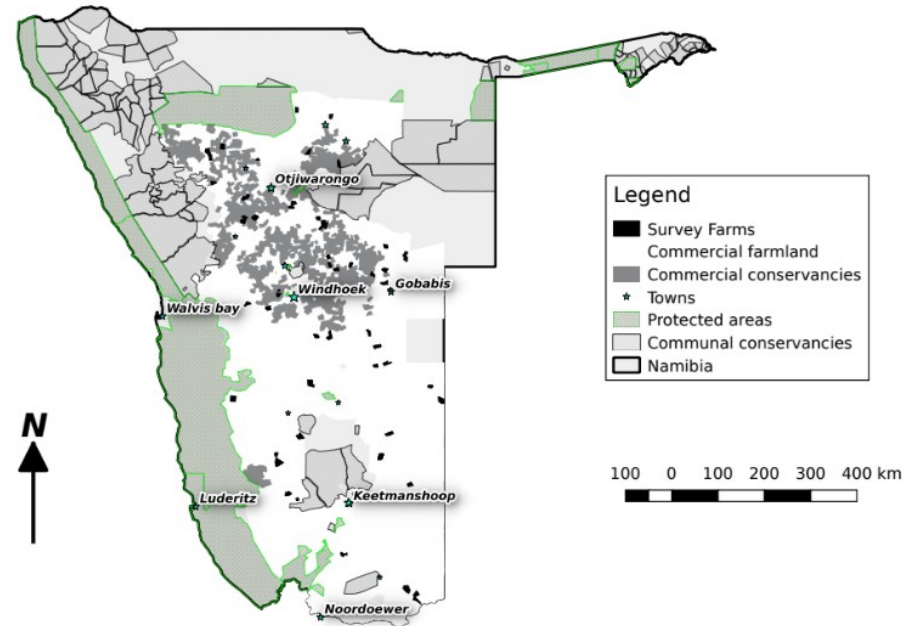
# Farming with Predators

- 2500 questionnaires distributed
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# Farming with Predators

- 2500 questionnaires distributed
- 52 responses, 9.2 LSU/farm/year to predation
- Leading predators:
  - Jackal (*Canis mesomelas*)
  - Caracal (*Caracal caracal*)
  - Leopard (*Panthera pardus*)
  - Cheetah (*Acinonyx jubatus*)



# Farming with Predators

- 20 Methods used by farmers





# Farming with Predators

- 20 Methods used by farmers
- Relative effectiveness (% farmers with less losses than the median)





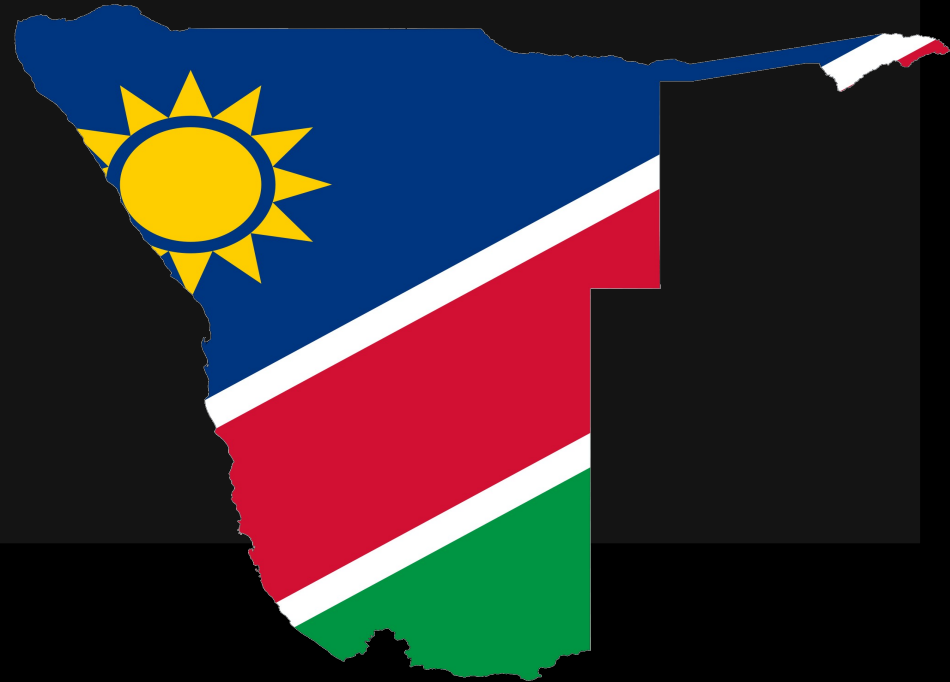
# Farming with Predators

- 20 Methods used by farmers
- Relative effectiveness (% farmers with less losses than the median)
- Relative sustainability



# Farming with Predators

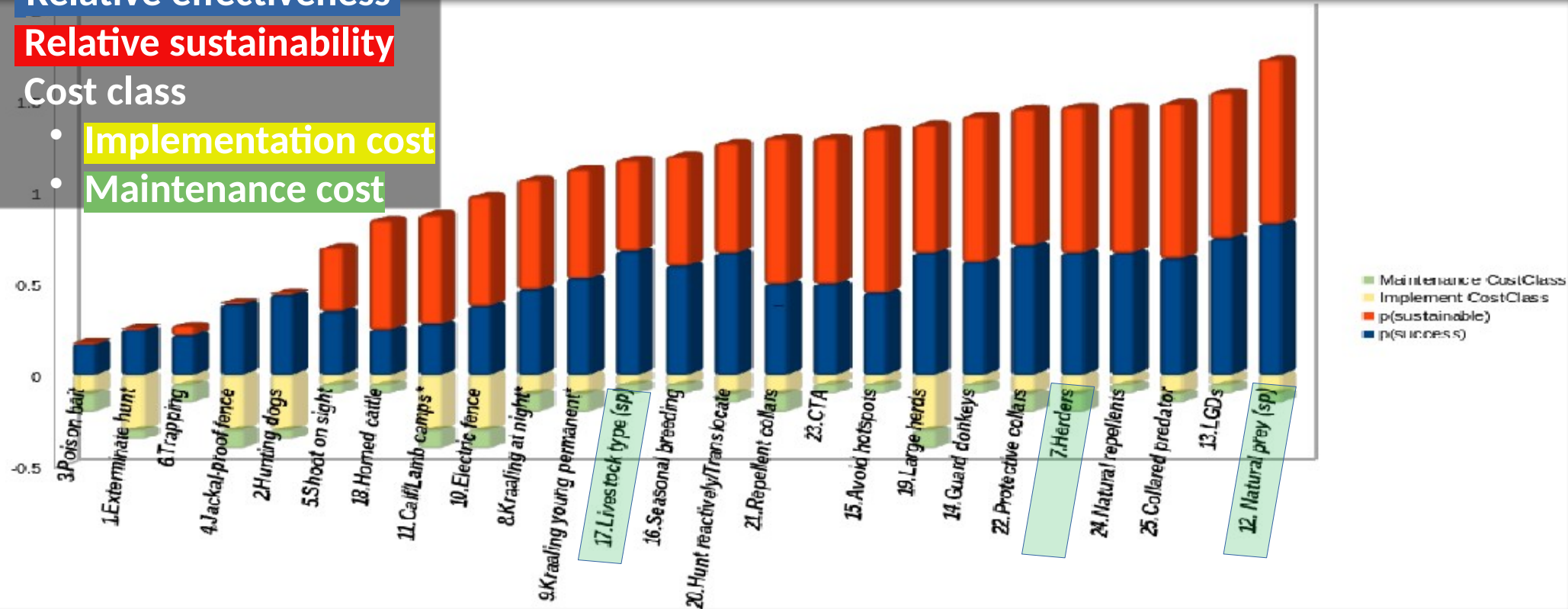
- 20 Methods used by farmers
- Relative effectiveness (% farmers with less losses than the median)
- Relative sustainability
- Cost class
  - Implementation cost
  - Maintenance cost



# Farming with Predators

## 20 Methods used by farmers

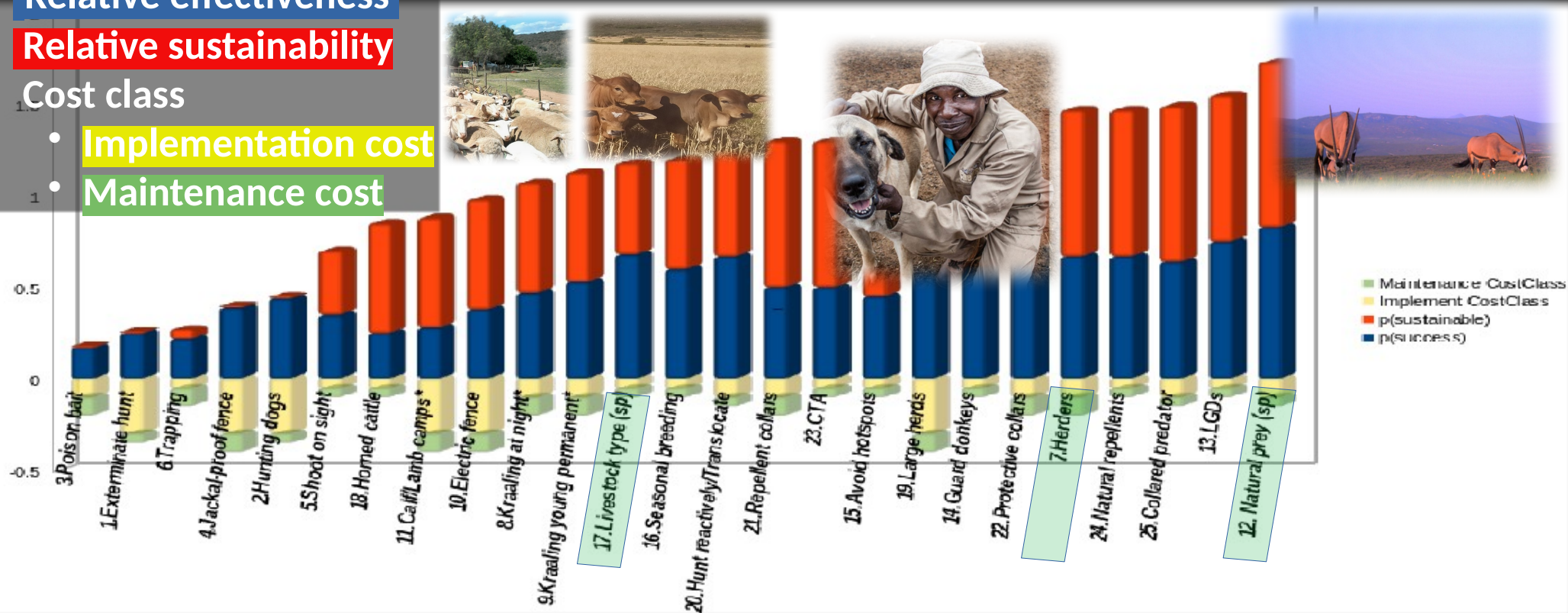
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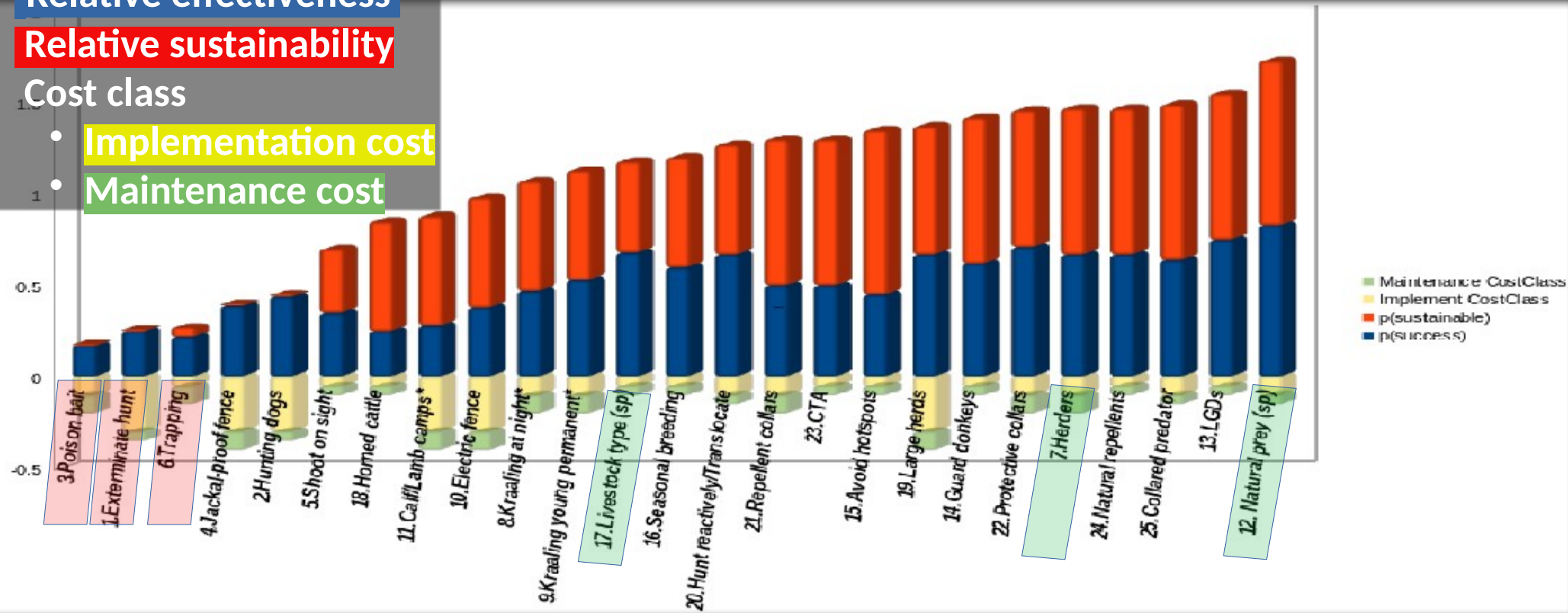
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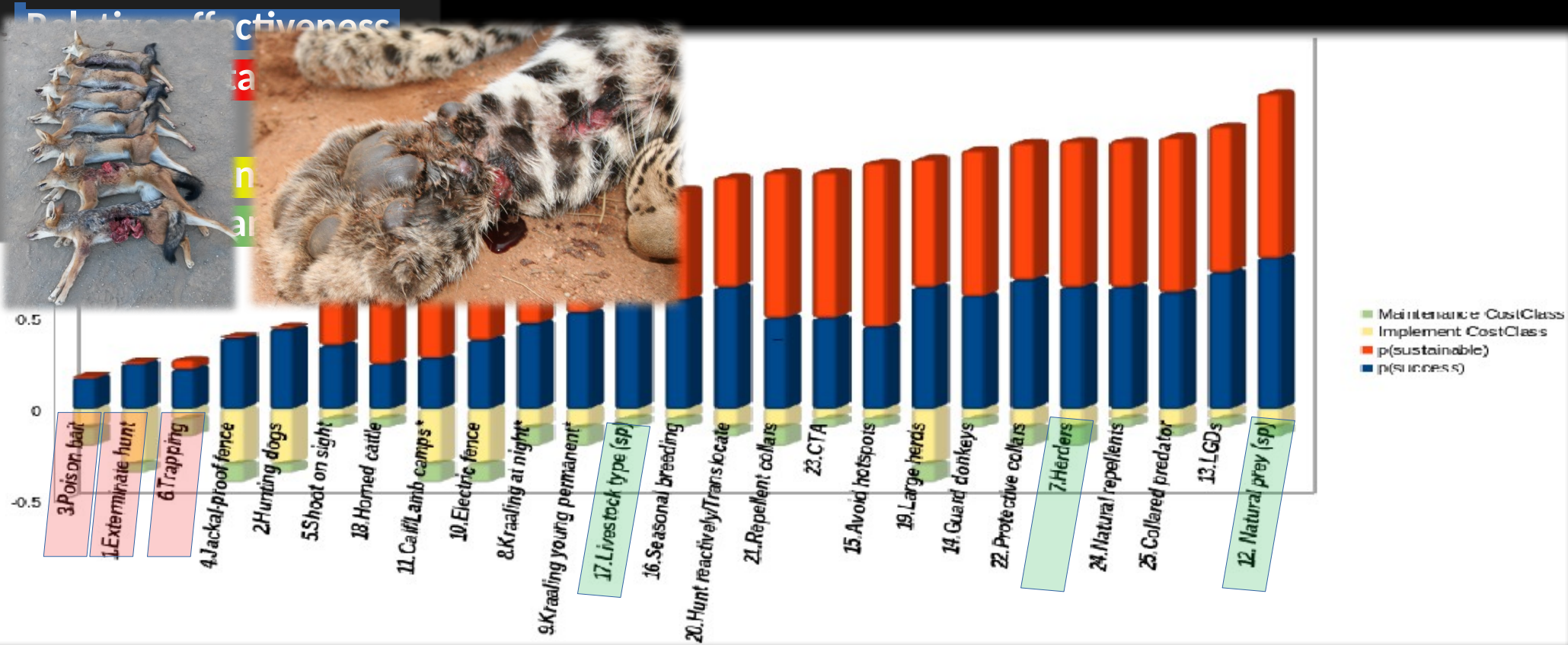
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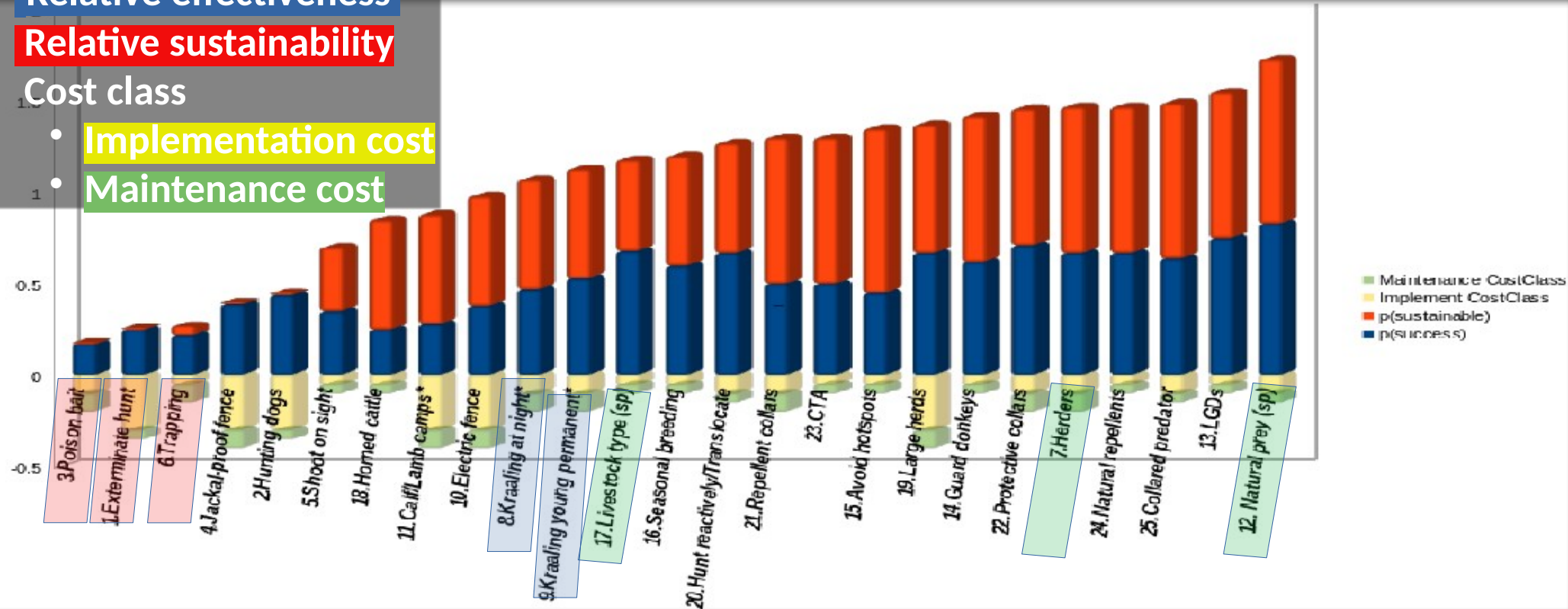
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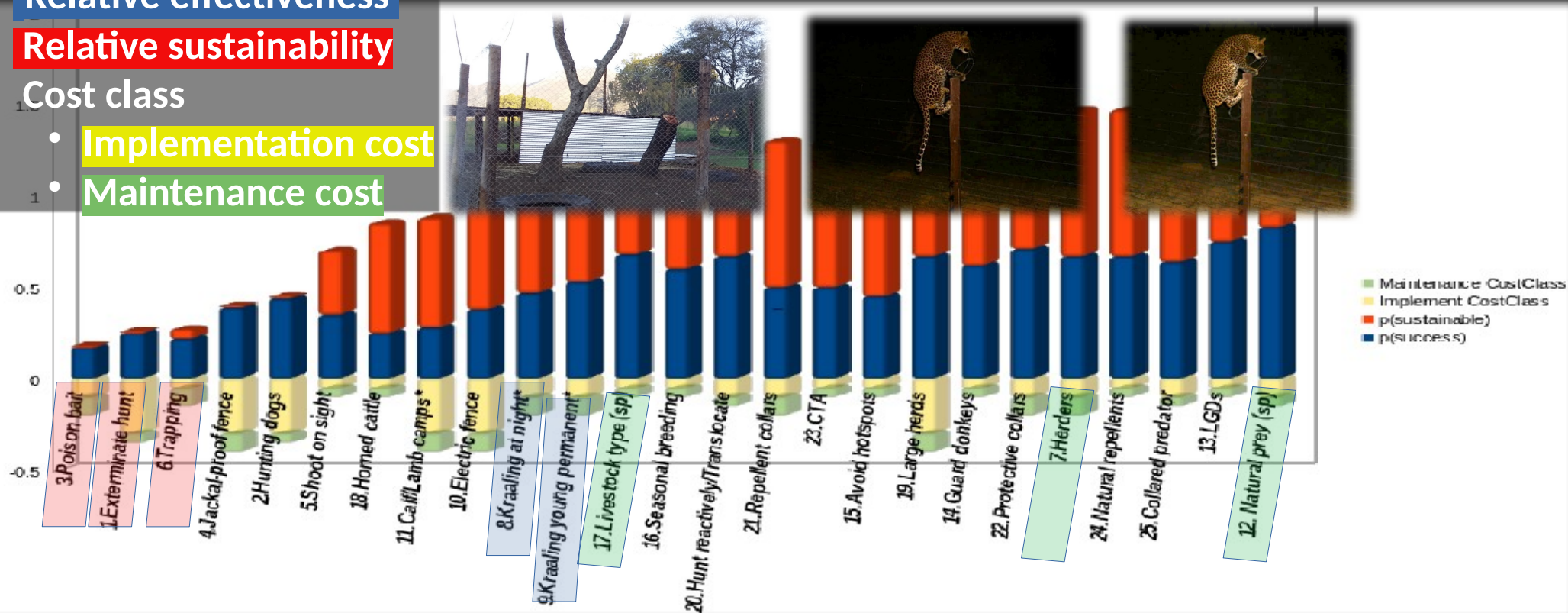




# Farming with Predators

## 20 Methods used by farmers

- Relative effectiveness
- Relative sustainability
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  - Implementation cost
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# Adaptive mangement requires quantification of mitigation success and costs

## *Questions?*

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