

# Local attitudes toward wolves: a case study in Abruzzo, Lazio and Molise National Park (Italy)

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## Overview of the Project



Collaboration between La Sapienza, PNALM & Memorial University

### Conservation of Bears and Wolves

- Biological aspects
- Human Dimension aspects

## PNALM



Modified from www.lcie.org

1976 National Protect

2007 Population size  
5 packs  
40 individuals

## N=42 QUALITATIVE INTERVIEWS

What are the key issues in your community?

HUNTER

SHEPHERD

PARK RANGER

TRUFFLER

## Study Area

The study area was divided into four parts using:

- Geo-political boundaries
- biophysical factors
- human factors



To understand how attitudes toward wolves differ among four zones



## Scope of the study

Understand opinions of park residents toward wolves at a local scale

Identify which attitudinal items and beliefs about wolves most differentiate the 4 study zones

## Data collection

- Questionnaire:
  - wolf attitudes, management opinions and knowledge of wolf biology
- Sample size n= 1611
  - Abruzzo Marsica 402
  - Molise 400
  - Lazio 410
  - Abruzzo Fucino 399



## Data analysis

- Principal Component Analysis
- Multinomial logistic regressions
  - “study zone” as a dependent variable and AM as reference category

## PCA Results

- PC 1: Attitudes toward wolves 45%
- PC 2: Perceived impact on wild game 14%
- PC 3: Support for lethal control of wolves 10%

	Principal components		
	1	2	3
attitudes toward wolves	.80		
'perceived impact on wild game		.88	
support for lethal control of wolves			.74
Which of the following best describe your feelings toward wolves? (strongly dislike – strongly like)	.80		
To have wolves in your region is (strongly negative – strongly positive)		.88	
It is important to maintain wolf populations in your region so that future generations can enjoy them		.74	
Having wolves in your region increase tourism	.69		
Wolves have a significant impact on big game (example roe deer..)		.89	
Wolves have a significant impact on small game (hare).		.92	
Wolves should remain completely protected (i.e. it should be illegal to kill them)			-.50
In areas where there are continuous attacks to livestock, it should be possible to selectively kill wolves			.60
Wolf hunting should be authorized			.80
The use of poison baits should be authorized			.91

## Data analysis

- Principal Component Analysis
- Multinomial logistic regressions
  - “study zone” as a dependent variable and AM as reference category

## List of variables included in the model

Dependent variable	Study zone: (Abruzzo Marsica/ Abruzzo Fucino/ Molise/ Lazio)
Independent variables	<ul style="list-style-type: none"> <li>• PC score 1 - attitudes toward wolves</li> <li>• PC score 2 – perceived wolf impact on wild game</li> <li>• PC score 3 - support for lethal control of wolves</li> <li>• Wolves cause abundant damages to livestock (1-5 Likert-type scale: strongly disagree – strongly agree)</li> <li>• Wolf damages in your region are: (don't know/ increasing/ stable/ decreasing)</li> <li>• Wolf numbers in your region are: (don't know/ increasing/ stable/ decreasing)</li> <li>• Which is the main mortality cause for wolves in your region? (poison baits/ weapon kills/ natural causes and other)</li> <li>• Have you ever seen a live wolf in the wild? (no/ yes)</li> </ul>

AM as reference category against which all other study zones were compared

## Model fit

- As a group, the variables in the chosen model significantly contribute to predict its outcome ( $\chi^2= 436.859$ ,  $df=36$   $p< 0.001$ )
- pseudo  $R^2=0.24$
- binomial models
  - A M - MO and A M – A F both exhibited a good fit and a satisfactory ability to discriminate between outcomes
    - (Hosmer Lemeshow p-value =0.806, AUCR= 0.787; Hosmer Lemeshow p-value =0.170, AUCR=0.704; respectively)
  - A M - LA showed a satisfactory ability to discriminate between outcomes.
    - exhibited a poor fit, which should be kept in mind while interpreting the results. No indication that this may have been caused by outliers and the model
    - (Hosmer Lemeshow p-value =0.001, AUCR= 0.749)

## Descriptive statistics

	REGION			
	AM (%)	AF (%)	LA (%)	MO (%)
PC1 - attitudes towards wolves *	3.75	3.77	3.42	3.50
PC2 - impact on wild game *	2.62	2.62	2.96	2.79
PC3 - support for lethal control *	1.66	1.72	1.87	2.02
Wolf impact on livestock **	3.02	2.94	3.44	3.25
wolf pop. trend				
decreasing	26	39	26	21
increasing	34	26	36	36
stable	26	16	22	23
wolf damages trend				
decreasing	50	54	26	26
increasing	6	11	21	26
stable	30	17	39	37
have seen wolf in wild				
no	31	45	52	46
yes	69	55	48	55
main mortality cause of wolves				
natural & other	58	36	39	39
poison baits	29	47	41	30
weapons	13	16	20	31

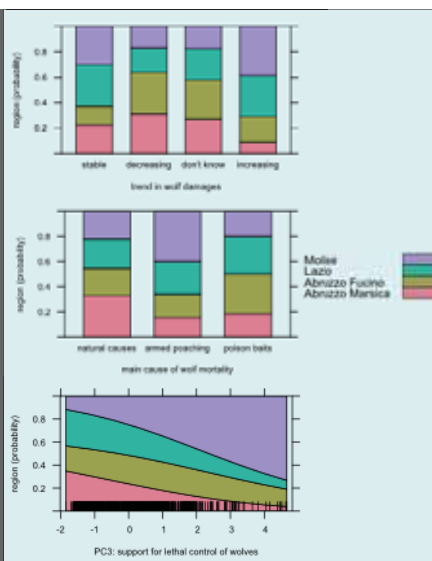
\*mean score of the variables that loaded highly on that component (on a scale of 1-5)  
 \*\* mean score (on a scale of 1-5)

## Model results

A F, MO & LA more likely believe wolf damages  $\uparrow$  (or=3.5, 3.30 and 2.57).

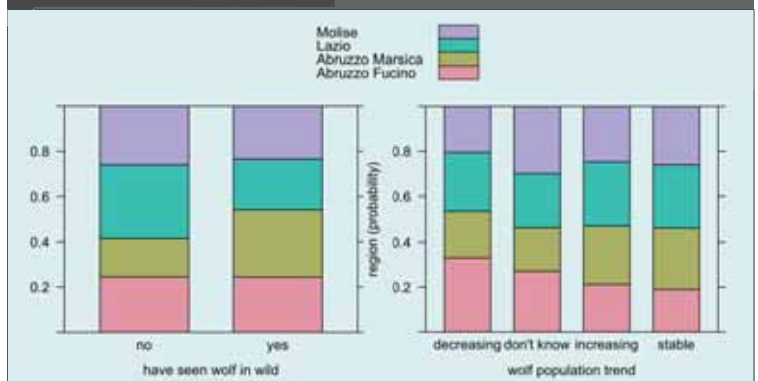
A F, LA & MO more likely poison baits (or=2.62, 2.27 and 1.60) and shooting (or=1.80, 2.37 and 3.82)

A F & MO more likely support lethal control (or= 1.32 and 1.85).



A F, LA and MO were less likely to have seen a wolf in the wild: (or=0.57, 0.40 and 0.52)

A F more likely to be perceived wolf population trend as decreasing rather than stable: (or=2.23)



## Discussion

- MO LA & AF - perceived increase in damages and greater support for lethal control:
  - a reflection of attitudes toward PNA LM (fewer perceived benefits and more perceived limitations)
- LA MO & AF - higher perception of poison bait use
  - In AF 7 wolves and bears that were found poisoned that year
  - throughout the interviews many respondents in LA and MO mentioned that poison was used in conflict between truffles-collectors

## Discussion

- AF - wolf pop. trend perceived as decreasing: dead wolves found in that area
- AM - seen more wolves: greater human presence in the territory



## Implications

- Local scale studies help determine distribution of support for conservation
- Identify areas
  - where public participation and education efforts are needed
  - outreach program on illegal killing and law enforcement should be focused

**THANK YOU  
FOR YOUR ATTENTION**

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