

## CONFLICTS BETWEEN LYNX, OTHER LARGE CARNIVORES, AND HUMANS IN MACEDONIA AND ALBANIA

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### ABSTRACT

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One of the most activities of the Balkan Lynx Recovery Programme in Albania and Macedonia was the completion of a baseline survey in both countries, to assess the ecological conditions for the Balkan lynx and the main threats to its survival. The area selected for conducting the survey covers northern, eastern and southeastern Albania, and western Macedonia. In addition to information on species distributions, the baseline survey gathered information concerning the conflicts between humans and large carnivores. The questionnaire developed for the baseline survey also included aspects of human-wildlife relationships. In total, 553 people from 154 different villages were interviewed in Macedonia, 320 people from 91 villages were interviewed in Albania. Information concerning conflicts was obtained on different levels: general information about damages in the village, direct personal losses due to large carnivore attacks, details of animal husbandry, response/prevention methods of humans towards attacks on livestock, cases of attacks on humans, and general fear level towards large carnivores. The survey uncovered a lot of conflict between livestock herders and wolves and bears, although the traditional husbandry methods appear to be relatively intact. For lynx, there were very few incidences of conflict with human interests, and most probably conservation measures will not be opposed by conflicts. Nevertheless, we encountered many cases of lynx being illegally killed and reasons for that should be properly evaluated and taken into consideration.

**Key words:** Balkan lynx, conflict between humans and large carnivores, questionnaire, depredation, conservation.

### Introduction

The aim of the Balkan Lynx Recovery Programme is to secure the survival of this subspecies through a series of actions, including the establishment of new protected areas where the Balkan lynx lives, and of a systematic species monitoring system. These should contribute to a generally better management of wildlife populations in Albania and Macedonia. The available ecological and biological information concerning Balkan Lynx has been poor, indirectly hampering the implementation of conservation measures (Breitenmoser et. al. 2006; Breit-

enmoser-Würsten & Breitenmoser, 2001). Therefore the collection of data about species distribution, prey and habitat is of crucial importance for the Recovery Programme to focus its activities. The first, and one of the most important, tasks implemented in the frame of the BLRP was to conduct an extensive baseline survey with the aim of collecting reliable and up-to-date information about lynx, prey and other carnivore's presence and distribution as well as to reveal potential conflicts between humans and large carnivores (Breitenmoser et. al. 2008 – this volume). The three large carnivores of Europe (brown bear, wolf and lynx) have always co-existed with humans

in this part of the Balkan Peninsula and the relationship between them had preserved traditional husbandry methods including different response and prevention measures. In this survey we conducted face-to-face interviews with key local informants to assess the extent of conflict and the potential for further conflict (Melovski et. al. 2007 – in prep.; Trajçe et. al. 2007 – in prep.).

### Methodology & Survey Area

Direct face to face interviews with local people were used as the main method for conducting the baseline survey and collecting information about conflicts in investigated areas. The questionnaire developed for this purpose was divided in 6 parts: 1. Distribution of species - containing questions in regard to the presence of various species in the area; 2. Conflicts – reflecting the human-wildlife conflicts in the village; 3. Animal husbandry details; 4. Socio-economic environment of the village; 5. Informant details; 6. Village details and impressions.

Survey areas were defined using the existing data on lynx occurrence and distribution. The map of Albania and Macedonia was overlaid with a

10x10 km grid (100 km<sup>2</sup>) and 136 cells were identified as survey units covering the known and potential lynx distribution in both countries. In each cell a village was selected for conducting the questionnaire survey (1 village/100 km<sup>2</sup>). Besides grid cell units the study area was also divided into regions to permit an aggregated analysis when comparing regions. The regions were defined according to natural and human barriers or boundaries, including more or less the same morphological, geographical and relief characteristics within one region. In general each region encompasses a single mountain range or massif including several grid cells as a unit. In Albania, the entire survey zone was divided into 6 regions (North-Alps, Central-North, East, Central, Central-South and South) and in Macedonia 10 regions were defined (Shar Planina, Jakupica, Suva Gora-Chelonica, Mavrovo-Bистра, Stogovo-Karaorman, Ilinska-Plakenska, Jablanica, Galichica, Pelister and Kozhuf-Nidze).

The questionnaire was addressed to specific target groups. These groups were defined as key informants or people with an extensive knowledge about nature and wildlife and they include hunters, shepherds, farmers, foresters, café-owners, game

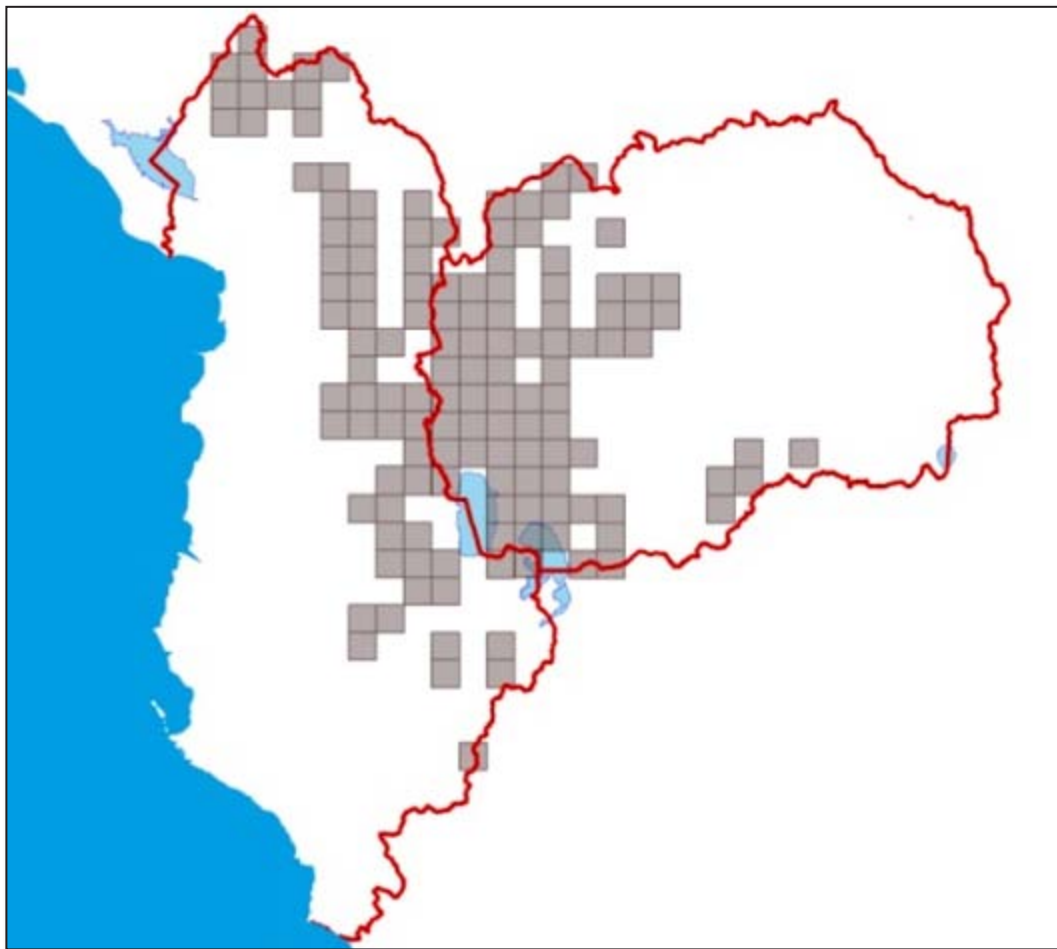


Fig. 1. Investigated area in Albania and Macedonia

wardens etc. For every village we tried to interview at least one representative of the above mentioned groups and at least 2 other random people. Species covered by the questionnaire include: roe deer, red deer, chamois, wild boar, hare, capercaillie, fox, jackal, wolf, stray dog, wild cat, lynx and brown bear. Information on carnivore depredation on livestock and husbandry details was collected for all livestock species and by specific predator. Questions about conflicts were asked on both the personal level, (i.e. if the interviewee has personally had damages on his livestock), and on the general level, (i.e. if damages on livestock had occurred in the village's surroundings during the last year) (Melovski et. al. 2007 – in prep.; Trajçe et. al. 2007 – in prep.).

## Results & Discussion

### Livestock and husbandry details

During the survey 873 systematic interviews were made with local people from 245 villages with the study area, 320 in Albania and 553 in Macedonia. Most of the interviewees were males (95% in Albania and 99% in Macedonia). From the total number of people interviewed in Albania, 54% reported owning livestock and nearly the same proportion of respondents in Macedonia had livestock (55%). Nevertheless, in both countries answers show that there has been a drastic decrease in the number of livestock during the last 5 years; this decrease being sharper in Macedonia. In Albania the characteristic flock of livestock species is small to medium sized, with sheep and goats being more or less on the same level, meanwhile in Macedonia there is a clear difference between sheep and goat flocks, with sheep being the most abundant species.

All of the respondents in both countries confirmed that they keep the animals enclosed during the night. During daytime, when the animals graze, shepherd presence with the flock was confirmed by 99.2% of the respondents in Albania and 81% in Macedonia. Most of the respondents felt it would be

unacceptable to leave the animals alone while grazing, especially in Albania. Most stock owners use guarding dogs with their flocks, 62% of stock owners in Albania and 52% of Macedonian stock owners. The average number of dogs kept per flocks is 2 in Albania and 3 in Macedonia.

With the data on livestock, collected during the baseline survey, we can conclude that in both countries livestock populations are decreasing significantly. Sheep seems to be the most abundant species, although there are significant differences in average flock sizes between Albania and Macedonia. Methods of keeping and guarding the animals show that old traditional husbandry techniques still remain relatively intact (Melovski et. al. 2007 – in prep.; Trajçe et. al. 2007 – in prep.).

### Conflicts – Damages – Responses

Most of the interviewees confirmed at least one type of conflict with wildlife in their areas; whether attacks on livestock, damage on agriculture, direct attack on humans by large carnivores or fear for personal safety. The following tables represent the number of respondents indicating depredation on livestock species by different predators in their areas.

According to people's replies, wolves are the species causing most damage in both countries, causing significant losses to domestic ungulates and dogs. Brown bears were reported as being less problematic; nevertheless in Macedonia they are responsible for most of attacks on cattle. Reported damages for lynx seem to be quite minimal when compared with those of the other large carnivores.

The information on personal losses of the stockbreeders interviewed gives a similar picture to that of the general losses confirmed in the area. Most of the livestock breeders report losses of sheep to wolf depredation, and this varied from 20% of the flock in Albania to 38% of the flock in Macedonia. Even if the results show that the number of sheep killed during the last year is higher than for the oth-

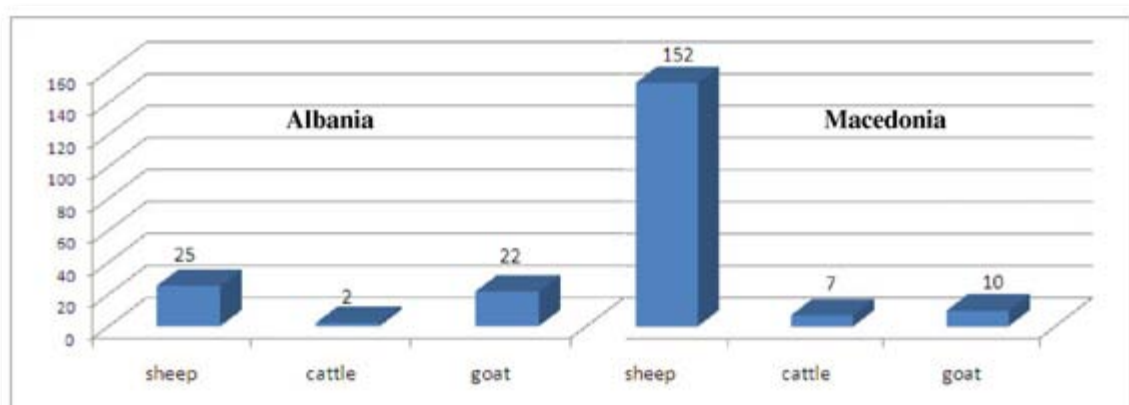


Fig. 2. Mean flock size for livestock species

**Tab. 1.** Respondents confirming livestock damages in Albania

	Lynx	Bear	Wolf	Jackal	Fox	Unknown	Total
Sheep	3	26	258	1	-	-	288
Goats	3	12	173	-	-	-	188
Pigs	-	3	7	-	-	-	10
Cattle	-	33	79	-	-	-	112
Dogs	-	1	104	-	-	-	105
Poultry	-	-	-	-	99	2	101
Donkeys	-	2	89	-	-	-	91
Horses	-	3	40	-	-	-	43
Beehives	-	14	-	-	-	-	14

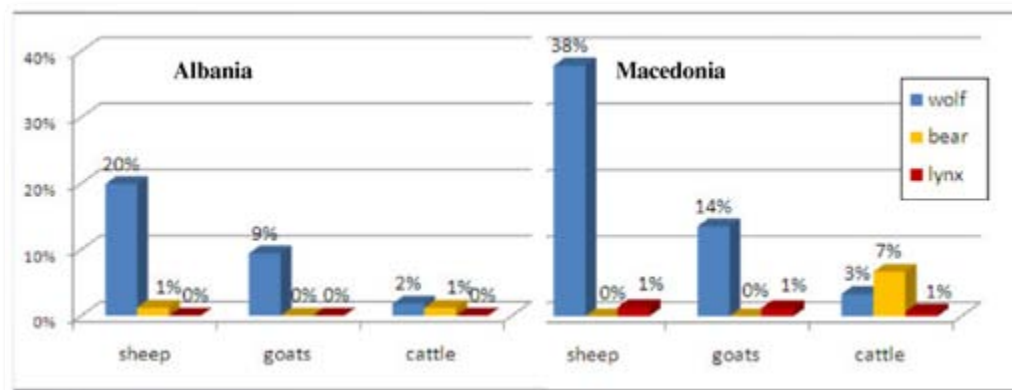
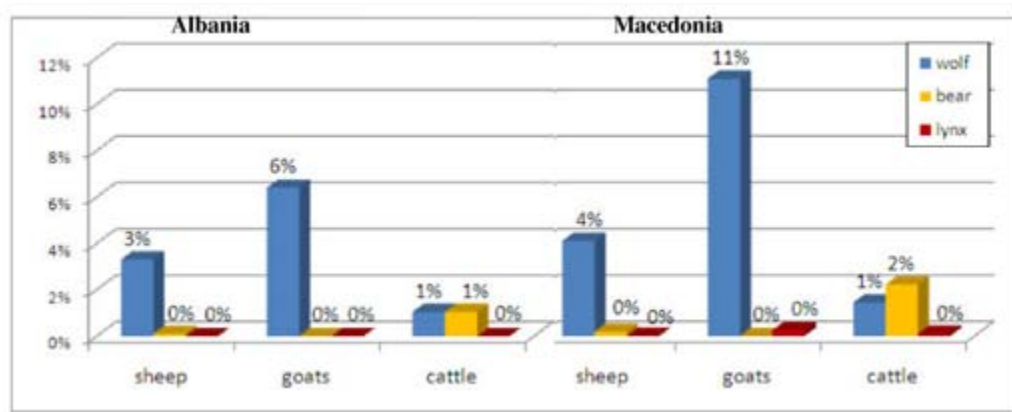
**Tab. 2.** Respondents confirming livestock damages in Macedonia

	Lynx	Bear	Wolf	Jackal	Fox	Wild cat	Stray dog	Total
Sheep	7	49	245	1	4	-	18	324
Goats	4	6	71	-	-	1	16	98
Pigs	-	9	6	-	-	-	3	18
Cattle	4	101	95	2	2	-	9	213
Dogs	-	8	76	3	3	-	7	97
Poultry	-	-	1	1	243	20	38	303
Donkeys	-	19	77	-	1	-	2	99
Horses	3	26	77	-	-	-	2	108
Beehives	-	151	1	-	-	-	-	152

er domestic ungulates, the proportion of flock lost is higher for goats in both countries. There has not been any case of personal livestock damages caused by lynx in Albania, whereas in Macedonia lynx damages can be considered as insignificant. In general we can conclude that depredation levels from

large carnivores in both countries are low to moderate (Melovski et al. 2007 – in prep.; Trajçe et al. 2007 – in prep.).

Human responses to large carnivore's attacks on livestock are varied. The following figures show how people react or prevent attacks in each country.

**Fig. 3.** Proportion of livestock owners reporting depredation during the last year**Fig. 4.** Proportion of flock lost during the last year

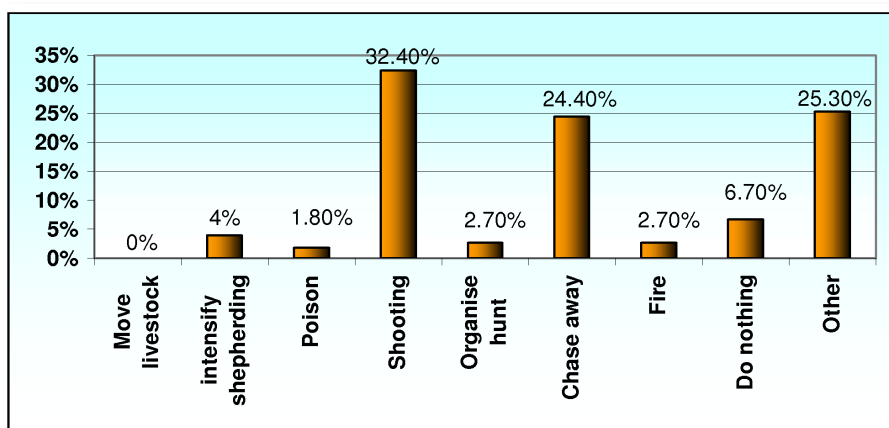


Fig. 5. Response methods in Albania

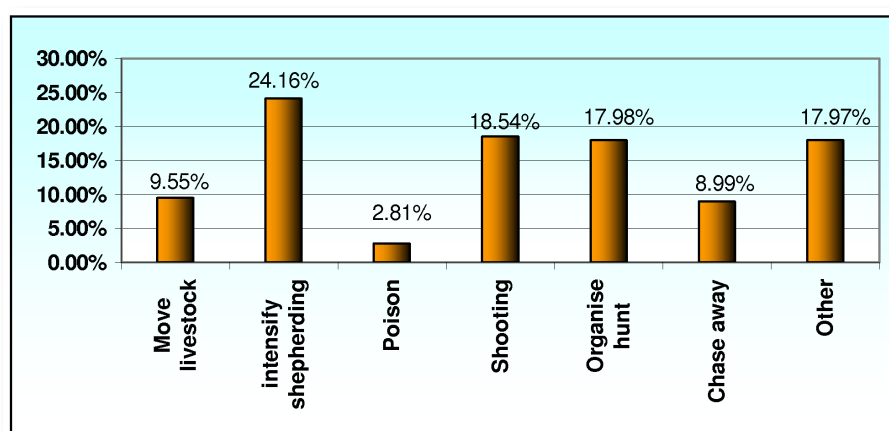


Fig. 6. Response methods in Macedonia

In Albania it seems that the most common option for “solving” the conflicts is to shoot the depredating animals. The proportion of persecution responses is high even in Macedonia, where shooting and organizing hunts was taken by more than 36% of the respondents. Nevertheless, non-lethal methods like moving livestock and intensifying shepherding are also commonly used in Macedonia, whereas in Albania chasing away the animals is the most used among the non-lethal methods.

Agricultural damages seem to be another source of conflict between humans and wildlife. The most damaging animal in Albania is the brown bear, constituting over 79% of the damages reported by people. Wild boar and badger are reported as the second and third most conflictful animals with 11% and 10% of the reports respectively. Most of the damages are caused on crops, but it should be mentioned that brown bears cause significant damages on fruit trees, while wild boar damage vegetable gardens. The situation is quite different in Macedonia where the most damaging animal on agriculture is wild boar (56.8%) followed by brown bear (37.7%). Brown bear in Macedonia are mainly reported to damage fruit trees while wild boar mainly damages crops. Other animals are rarely reported to

cause damages to agricultural interests (Melovski et al. 2007 – in prep.; Trajçe et al. 2007 – in prep.).

Direct attacks of large carnivores on humans are a controversial issue and there are often cases with exaggerated interpretations. Reports of wolf and bear attacks are more or less the same in Albania, with 26 and 27 cases respectively. There has been only one reported case of a person killed by wolves in central Albania, but information from different sources makes it very confusing and it needs further verification. Not a single case of lynx attack on people was ever reported during the survey in Albania. Brown bears in Macedonia are responsible for most of the attacks on people with 54 cases recorded. Compared with Albania the number of reported wolf attacks in Macedonia is quite low with only 10 reported cases, but surprisingly enough there are 7 reported attacks from lynx. Fear levels of people towards large carnivores appear to be related to the number of attacks, with bears being the most feared animal in both countries immediately followed by the wolf. Both, bear and wolf are believed to attack people, although the level of fear can be considered as low. Answers in both countries show that almost nobody is afraid of the lynx (Melovski et al. 2007 – in prep.; Trajçe et al. 2007 – in prep.).

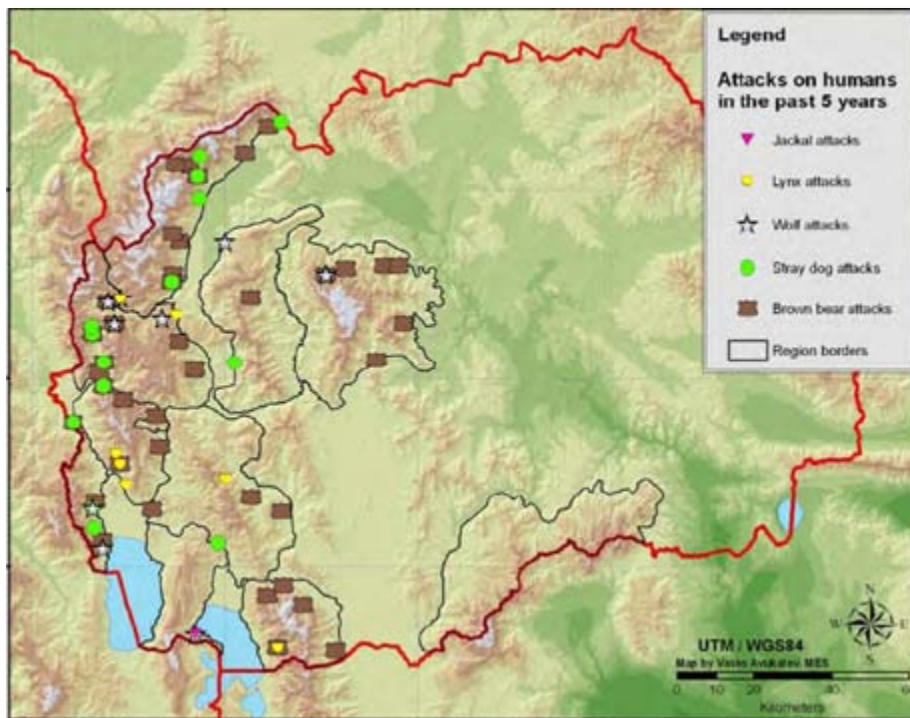


Fig. 7. Villages reporting attacks to humans in Macedonia

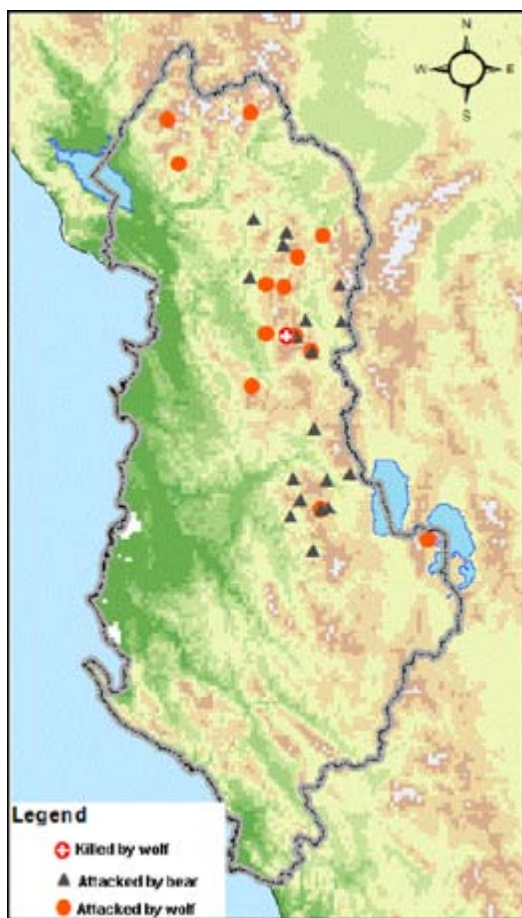


Fig. 8. Villages reporting attacks to humans in Albania

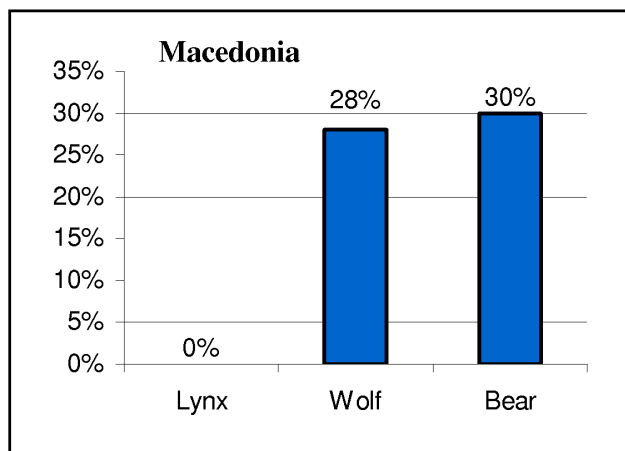
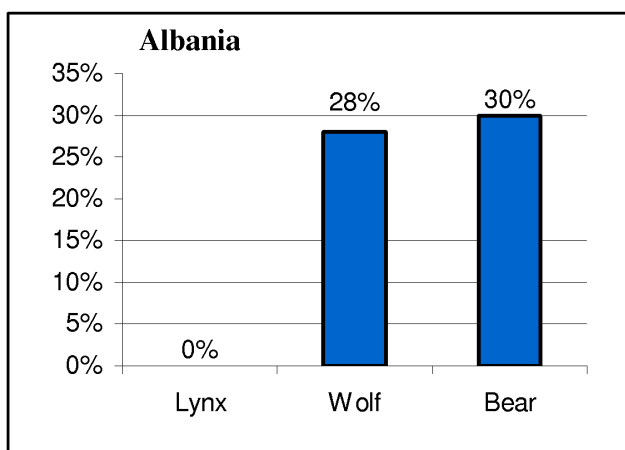


Fig. 9. Proportion of people expressing fear for personal safety

## Conclusions

The information gathered during the baseline survey is of crucial importance for the continuation of the Balkan Lynx Recovery Programme. Conservation measures cannot be effectively implemented without having good data for the species concerned (Breitenmoser et al. 2005). This is particularly true when it comes to large carnivore conservation, because of the controversial and emotional relationships these species have with humans. In regard to this, one of the main targets of the baseline survey carried out in Albania and Macedonia was to uncover potential and existing conflicts between humans and large carnivores, as a potential obstacle to lynx recovery in the region. In the past 15 years the countryside of Albania and Macedonia has faced several alterations, specific for each country, characterized by massive migration of the mountain rural human population towards lowland urbanized areas and the associated abandonment of houses and villages. This is especially true for Albania, where the sharp political and economical changes during these years, have caused massive changes to the socio-economic environments of the villages. Following these changes there has been a drastic decrease in agricultural activity in both countries, this decrease is also reflected in the number of livestock owned by people. In both countries people confirm that generally livestock numbers are decreasing significantly and this trend doesn't seem to be about to change in the near future. Small to medium sized flocks have now



**Fig. 10.** Hunter holding a killed lynx in 2005, Central Albania

taken over big flocks and traditional transhumance shepherds are disappearing in both countries. Nevertheless, traditional husbandry practices, often induced by the presence of large carnivores in the area, are still in place and are relatively intact. Looking at the above situation we can say that the potential for conflict between humans and carnivores is at low to moderate levels.

This being said, depredation on livestock and agricultural damages is widespread in both countries. Wolves are the most problematic carnivore, mainly causing damage to small domestic ungulates. Lynx depredation in Albania and Macedonia is pretty insignificant, especially when compared to wolf and bear predation. We can conclude that losses on livestock are at low to moderate levels. Brown bears are more problematic when it comes to direct attacks on people. During the entire survey, there has been only one reported case of a man being killed by large carnivores, by wolves in central Albania, although this information is highly controversial and different versions are given. Reports of lynx attacks on people are very few in Macedonia and non-existent in Albania. The situation is the same with fear that people have towards large carnivores. Brown bears are the most feared animal in both countries; meanwhile almost nobody seems to be afraid of the lynx (Melovski et al. 2007 – in prep.; Trajçe et al. 2007 – in prep.).

The results obtained from the baseline survey can help us to determine to what extent conflicts between lynx and humans can hamper the implementation of recovery measures for this species in the region. It seems that lynx are not the major source of human-wildlife conflicts; on the contrary their damages are minor and most probably will not limit its conservation and recovery strategy. On the other hand, during the baseline survey, we discovered a lot of cases of lynx being illegally killed (Ivanov et al. 2008 – this volume). This is quite serious considering the critical situation of the lynx population in both countries. The reasons for killing lynx should be sought beyond livestock conflicts. These reasons must be properly evaluated and taken into consideration during the continuation of the Recovery Programme.

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