

Georgian Carnivore Conservation Project component:

Mitigating human-carnivore conflict in East Georgia



Public opinion and knowledge of large carnivores and their management in East Georgia

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EXECUTIVE SUMMARY

The Georgian Carnivore Conservation Project (GCCP) was established to conserve the unique and globally important biodiversity of the semi-arid landscape in Georgia. This biodiversity may come under threat and conservation measures may be compromised in areas where human-carnivore conflict is prevalent. For this reason, the GCCP decided to undertake a study, in cooperation with the Tushetian pastoralist community, to identify conflict issues surrounding that community and the large carnivores with which they share the landscape.

The study focused on the Dedoplistskaro District of East Georgia, particularly around and within Vashlovani National Park (VNP). In order to gain a detailed understanding of human-carnivore conflicts in this area, a written questionnaire survey was used to investigate public perceptions, attitudes and knowledge of large carnivores and their management. Ten target groups were identified: livestock owners (both Tushetian and other ethnic groups), hired herders, cereal farmers, enforcement officers (protected area rangers and border guards), hunters, rural residents, urban residents, school pupils and school teachers. The baseline survey, conducted in 2010, collated a total of 784 completed questionnaires. A follow-up survey conducted two years later analysed a total of 1,030 additional questionnaires.

Attitudes were consistently more negative towards wolves than towards bears across all target groups and in both surveys, with livestock owners and hired herders holding the most negative views, particularly towards wolves. A large majority of most target groups was afraid of wolves. Respondents who perceived wolves as dangerous and those who were afraid of them, were involved in herding livestock, had experienced damage caused by wild carnivores, were older or had a lower level of education tended to hold more negative views. The vast majority of respondents in all groups agreed that people should be allowed to kill wolves if their livestock is attacked, although only 13% of respondents knew that wolves can be shot legally in Georgia.

Although the general pattern of opinions and knowledge was broadly similar between the two surveys, several significant differences were found in relation to particular items and target groups. The responses of rural residents and school pupils to some of the items asking about their general feelings toward wolves and bears and their presence in Georgia showed significant shifts from negative to neutral or positive. For example, whereas 69% of rural residents in the baseline survey considered it bad or very bad that there were wolves in Georgia, in 2012 the proportion holding such views was 53%. Thirty percent of school pupils surveyed in 2010 thought it was good or very good that there were wolves in Georgia; two years later the respective figure was 40%. The views of livestock owners on whether wolves belong in Georgia also appeared to mellow: whereas in 2010, 16 of them (22%) answered that they “*strongly disagree*” and two (3%) answered “*disagree*” with this assertion, in 2012 only four of them (7%) answered “*strongly disagree*” while 13 (23%) indicated the milder level of disagreement. No significant changes were found among teachers’ or hunters’ perceptions of wolves or among the attitudes of cereal farmers, hunters, livestock owners, hired herders or teachers toward bears.

In relation to management, increased support was found among livestock owners in 2012 for a ban on hunting in protected areas. However, there was no concomitant reduction in support for allowing hunting of wolves in national parks. The views of hired herders on

both these items remained unchanged. No change was found in owners' support for paying compensation for livestock killed by wolves where owners had taken measures to protect it.

Repeating the questionnaire survey provided an opportunity to investigate the opinions and knowledge of urban residents, who were insufficiently represented in the baseline survey. They were found to be relatively moderate in comparison to other target groups. Most urban residents were positive toward bears and urban residents were more likely to be positive toward wolves than were rural residents, even though they were slightly less convinced that these species belong in the wild in Georgia.

Urban residents had relatively little experience of large carnivores: 91.7% of them indicated that they seldom or never went to areas with wild animals such as wolves (although, somewhat incongruously, 39.1% claimed to have seen a wild wolf). Only 9.2% of urban residents confirmed that they or their families had experienced damage by wolves and 1.4% by bears, compared to 52.8% and 13.1% respectively of rural residents. Urban residents were also found to be the least knowledgeable of the target groups in relation to carnivores and their management.

Generally, survey respondents were keen to receive more information about wolves and bears and were supportive of more research taking place on these animals in their area. Evidence was found of an increase in knowledge of large carnivores and their management during the period between the surveys: the mean knowledge score across all respondents was 4.37 (median 4) in 2010, whereas in 2012 it was 4.58 (median 5). The difference was highly significant in the case of rural residents, significant for livestock owners and marginally significant for hired herders as well as teachers. There was no change in the level of knowledge of pupils, enforcement officers or hunters.

Whether or not the observed changes can be attributed primarily to the awareness campaign of the GCCP is a moot point. The GCCP did not engage any of the target groups on bears in the intervening period and yet some modest but significant shifts in a positive direction were found in rural residents' and school pupils' perceptions of bears. However, the changes observed in attitudes toward wolves were more substantial and were partly evident even among livestock owners. All the changes in regard to both species were in a positive direction. The baseline survey showed that more knowledge tends to equate with less fear, which in turn correlates with more positive attitudes to wolves and bears. Further awareness work is justified in continuing to address human-carnivore conflict in East Georgia.

CONTENTS

Executive summary	1
List of tables	4
List of figures	4
1. Introduction	5
2. Summary of baseline survey findings	6
3. Aims & objectives	7
3.1. Objectives	7
3.2. Key questions	7
4. Materials & methods	8
4.1. Questionnaire design	8
4.2. Sample frame and sample sizes	9
4.3. Sampling procedures	9
4.4. Study area	11
4.5. Data analysis	11
5. Results	13
5.1. Results of the 2012 follow-up survey	13
5.1.1. Socio-demographic characteristics of respondents	13
5.1.2. Findings by item and target group	13
5.1.3. Urban residents	23
5.2. Comparison with the 2010 baseline survey	25
5.2.1. Socio-demographic characteristics of respondents	25
5.2.2. Findings by item and target group	25
6. Discussion & conclusions	27
Acknowledgements	28
Glossary	29
Abbreviations used	29
Literature	30
Appendix: Written questionnaire to quantify public opinion and knowledge	31

LIST OF TABLES

Table 1. Sample sizes of target groups and their proportion of total sample size	9
Table 2. Response rates to the written questionnaire survey by target group	11
Table 3. Items used to calculate a knowledge score for questionnaire respondents	12
Table 4. Socio-demographic characteristics of respondents by target group	13
Table 5. Responses to the question, “ <i>What has formed your impression of carnivores?</i> ”	19
Table 6. Forms in which respondents would like to receive more information	19
Table 7. Percentages of each target group undertaking various activities	21
Table 8. Comparison of rural residents’ views with those of other target groups	24

LIST OF FIGURES

Fig. 1. Location of Kakheti Region in East Georgia showing Tusheti and Vashlovani NPs	12
Fig. 2. Respondents feelings towards bears and wolves by target group	14
Fig. 3. Responses of livestock owners to questions on attitudes to bears and wolves	14
Fig. 4. Attitudes of respondents to the presence of bears and wolves in Georgia	15
Fig. 5. The danger rating of various animal species by select target groups	16
Fig. 6. Knowledge of bears, wolves and their management by target group	17
Fig. 7. How respondents’ impressions formed and how they want to learn more	20
Fig. 8. Activities undertaken by respondents in areas with wildlife	22
Fig. 9. Responses of livestock owners to questions on experience of bears and wolves ..	23
Fig. 10. Responses of urban residents to questions on attitudes to bears and wolves	24



1. INTRODUCTION

Study of public opinion and knowledge or 'human dimensions research' has become an important element of carnivore conservation management (e.g. Bath 2009, Musiani *et al.* 2009). It is now widely acknowledged that wildlife conservation and management is not so much about managing animal populations as about managing the people that interact with them. Wolves and bears are only able to coexist with humans if people are willing to share landscapes, tolerate livestock losses or crop damage and accept potential and actual risks to human safety and property. Thus, for successful large carnivore conservation, be it in a protected area or in a wider landscape, there must be a wildlife acceptance capacity (Sillero-Zubiri *et al.* 2006).

Public acceptance of carnivores is likely to be influenced not only by the actual level of danger and damage but also by a host of other factors including fear, perception and tolerance of risk, demographic characteristics such as rural versus urban residence as well as membership of an interest group (e.g. farmers, foresters, hunters, environmentalists). Large carnivore conservation therefore tends to be more socio-political in nature than biological, requiring a good understanding of public attitudes toward predators and existing or planned conservation/management options (Bath 2009).

The Georgian Carnivore Conservation Project (GCCP) was established to conserve the unique and globally important biodiversity of the semi-arid landscape in East Georgia, where human-carnivore conflict (HCC) has been recognised as an important issue. The Tushetian people are transhumant pastoralists who use natural pastures in Vashlovani Protected Areas (VPA) and neighbouring territories as traditional winter grazing lands. In spring, they move their sheep and cattle north to summer pastures in the Caucasus Mountains. In both these areas there are interactions with large carnivores, especially grey wolves (*Canis lupus*) and brown bears (*Ursus arctos*), and HCC often develops as a result.

With a view to enhancing conservation management efforts in East Georgia, the GCCP undertook to identify and implement measures to mitigate HCC in and around Vashlovani National Park (VNP). The GCCP worked in partnership with the Tushetian community to conduct a comprehensive baseline survey. This comprised two elements: a series of semi-structured interviews with livestock owners and herders to gain a detailed understanding of husbandry and the level of HCC; and a written questionnaire survey to quantify public opinion and knowledge of large carnivores (Rigg and Sillero 2010a). A strategy or 'toolbox' of direct and indirect measures to reduce HCC was then developed based on approaches that have proven successful in comparable situations worldwide, adapted to local conditions (Rigg and Sillero 2010b).

Drawing on the recommendations of the mitigation toolbox, the GCCP implemented several measures to combat HCC, including the establishment of an HCC Response Team, an awareness raising campaign and initiatives intended to improve the effectiveness of damage prevention measures such as livestock guarding dogs (Rigg 2012). Two years after the baseline survey, the written questionnaire survey was repeated to assess the impact of these interventions.

2. SUMMARY OF BASELINE SURVEY FINDINGS

A self-administered written questionnaire was used to gauge the perceptions of and attitudes towards large carnivores of 10 target groups: Tusheti and other livestock owners; herders; cereal farmers; enforcement officers; hunters; rural residents; urban residents; school pupils; and school teachers. The vast majority of the 784 respondents who took part in the written questionnaire lived in the Kakheti Region of East Georgia. Key results included the following:

- Feelings were consistently more negative towards wolves than towards bears across all target groups, with livestock owners and hired herders holding the most negative views, particularly towards wolves. Unexpectedly, cereal farmers (many of whom also owned livestock) had a fairly positive attitude when it came to bears but held more negative views of wolves. Seventy-four percent of respondents, especially livestock owners, thought that the wolf population was increasing in Georgia, while 79% of all respondents thought that there were too many of them. In every group, bar the enforcement officers (national park rangers and border guards), the majority of respondents were afraid of wolves, more so than of bears.
- More than three quarters of urban residents, teachers and pupils seldom or never went to places with wild animals. Livestock owners tended to spend the most time in places with wild animals such as wolves, followed by enforcement officers and hired herders. For all the other target groups the respective figure was less than 20%. Unsurprisingly, livestock owners were the group most directly affected by the presence of wolves. Bears had been seen less, shot less and caused less damage within every target group.
- All target groups tended to acknowledge that wolves belong in the wild in Georgia, but only in restricted parts of the country. The majority agreed that it is important to have protected areas such as VNP in Georgia (from 61% of livestock owners to 96% of teachers). Whereas most target groups agreed with a year-round ban on hunting any wild animals within protected areas, 77% of livestock owners and 67% of cereal farmers thought otherwise. Owners and herders also thought that grazing should be allowed in protected areas. The vast majority (89–99%) of respondents in all groups agreed that people should be allowed to kill wolves if their livestock is attacked. Over 90% agreed that compensation should be paid to owners who have lost livestock to predators, while 61% of owners and 86% of herders supported the idea of money being paid only to those that had employed some sort of protection method.
- Generally, the respondents were keen for more information on wolves and bears and wanted to see more research taking place. They differed in their choice of media in which to receive new information. For example, television, newspapers and magazines seemed to be the best media to reach livestock owners, while excursions would be appreciated more by urban residents, pupils, cereal farmers, hunters and teachers.

3. AIMS & OBJECTIVES

3.1. Objectives

The main objective of the baseline study in 2010 was to gain a detailed understanding of the attitudes of the local population toward large carnivores and of human-carnivore conflict (HCC) in the Dedoplistskaro District of East Georgia, with a particular focus on Vashlovani National Park (VNP) and surroundings in order to provide a better foundation from which to deliver future conservation policy.

The main target group for much of the GCCP were the Tushetian livestock owners and hired herders using VNP seasonally. However, in line with GCCP activity 4.1. 'Survey of local attitudes and perceptions', human dimensions work on public opinion and knowledge was extended to include other interest groups. By doing this we sought to get a broader understanding of the perceptions of, and attitudes toward, large carnivores in East Georgia. Pertinent interest groups were identified as being other farmers, hunters, local residents, school pupils and teachers as well as VNP staff and border guards.

The survey was repeated in 2012 in order to determine whether there had been any changes in knowledge or attitudes over the course of the GCCP, thereby providing a measure of the impact of the project in Dedoplistskaro District.

3.2. Key questions

The Terms of Reference for the design and implementation of the base-line survey posed the following questions:-

- What is the extent and intensity of the conflict?
- What is the actual impact of the conflict and is it bearable?
- What do the herders and livestock owners feel about living alongside large carnivores?
- What is the level of public acceptance of large carnivores in East Georgia?
- What is the current level of knowledge of large carnivores?
- How do the attitudes of livestock owners and herders towards large carnivores, their management and protected areas compare to those of other interest groups and the local population at large?
- Which factors most influence attitudes and perceptions?

The follow up survey sought to answer the following additional questions:-

- What change, if any, has there been in the attitudes held by the various target groups toward wolves and bears?
- What change, if any, has there been in the knowledge of the target groups about large carnivores and their management in Georgia?

4. MATERIALS & METHODS

4.1. Questionnaire design

A quantitative social sciences method, usually referred to as ‘survey research’, was used as the main method to collect data for this part of the study. The implemented questionnaire was based on a research instrument developed by A. Bath, Memorial University, Newfoundland, Canada, and used in Alberta (Wechselberger 2002), Austria (Wechselberger and Leizinger 2005) and Slovakia (Wechselberger *et al.* 2005, Rigg *et al.* 2011), substantially revised and adapted to Georgian conditions and the specific objectives of the GCCP (Rigg and Sillero 2010a).

The baseline survey was conducted in spring 2010, with the follow-up survey being undertaken in spring 2012. To identify and eliminate potential problems at the design phase, the draft questionnaire was first pre-tested with 13 respondents from three different target groups. This resulted in a few changes to clarify the wording of some questions and answers. The finalised design was translated into Georgian and the accuracy of translation checked by translating from the Georgian version back into English and comparing this with the original questions.

The finalised questionnaire (see Appendix) was printed as a booklet consisting of six sheets of paper (Din A4). At the top of the first page was a brief text explaining who was conducting the survey and why, plus stressing its anonymity. The research instrument itself consisted of 70 items: individual survey questions or statements for which we wanted to document the respondents’ opinions. These items were organised into six sections, with a brief guide to answering at the beginning of each section. The six sections focused on the following aspects:-

1. attitude, value and belief of people about bears and wolves (19 items)
2. knowledge about bears and wolves and their management (11 items)
3. attitude toward bear and wolf management (17 items)
4. sources of information and how important this issue is to people (3 items)
5. previous personal experience with large carnivores in Georgia (13 items)
6. socio-demographic aspects (7 items)

All attitudinal questions were measured on a 5-point Likert scale ranging from “*very negative*” to “*very positive*”, “*very bad*” to “*very good*”, “*strongly disagree*” to “*strongly agree*” or “*very dangerous*” to “*always harmless*”. The option of answering “*I do not know*” was not included except for questions #12–18. In addition to these multiple choice questions, the attitudinal sections also contained one open question (#19) requesting a short essay-type response. All knowledge items were of closed structure, offering multiple choice responses, but all of these items also offered an “*I do not know*” option.

The majority of questions about sources of information, previous experience and socio-demographic aspects were also multiple choice questions, although there were two open-ended items (#46–47) in the section on management and three (#59–61) in the experience section.

4.2. Sample frame and sample sizes

Ten target groups were identified for inclusion in the surveys (see Glossary for definitions). A total of 1,030 completed questionnaires were analysed for the 2012 survey (six others were discarded because the respondents were less than 12 years old). Some respondents did not answer all the questions. Most respondents (99.7%) lived in the Kakheti Region of East Georgia (see 4.4.). Sample sizes for the target groups ranged from 14 to 336 (Table 1). Compared to the baseline survey, substantially more urban and rural residents were included.

Table 1: Sample sizes of the 10 target groups and their proportion of total sample size

Target groups	2010 baseline survey		2012 follow-up survey	
	<i>n</i>	%	<i>n</i>	%
1. Tusheti livestock owners &	76	9.7	56	5.4
2. other (local) livestock owners				
3. Hired herders	47	6.0	45	4.4
4. Cereal farmers	12	1.5	14	1.4
5. Enforcement officers	37	4.7	29	2.8
6. Hunters	46	5.9	33	3.2
7. Rural residents	122	15.6	216	21.0
8. Urban residents	19	2.4	207	20.1
9. School pupils	336	42.9	336	32.6
10. School teachers	89	11.4	94	9.1
Total	784	100.0	1,030	100.0

4.3. Sampling procedures

The follow-up survey was conducted in March–May 2012. Different procedures were used for each target group, described below. Response rates are summarised in Table 2.

Livestock owners and herders

Livestock owners and hired herders were asked to fill in the questionnaire during farm visits to assess damage, prevention measures and reported losses to large carnivores. Some of them, such as Azeri cattle farmers in the western part of the study area, required assistance to understand questions and fill in their answers. The response rate (useable questionnaires only) was 80% for livestock owners and 90% for hired herders. Of the total sample of 56, 84% were from Tusheti and 16% were local people.

Cereal farmers

Three questionnaires were left in each village and some of them were met with personally in Dedoplistskaro. The response rate for this target group was 70%.

Enforcement officers

Initially, questionnaires for rangers were left at the VPA administration building, but only five of them were filled in. The remaining forms were therefore redistributed directly to rangers when visiting them or passing ranger stations. Questionnaires for the border police were left with a contact at the local office who agreed to distribute them to his colleagues. Of the total sample of 29, 18 were rangers and 11 were border guards. The response rate was 95% for rangers and 100% for border guards.

Hunters

Three questionnaires were left in each village and some of them were met with personally in Dedoplistskaro. The response rate for this target group was 66%.

Rural and urban residents

Local residents were sampled by personally distributing and collecting questionnaires. For urban areas (Dedoplistskaro), distributors used the third house/flat rule to select which residences to visit and asked the member of the household whose birthday was soonest to complete the questionnaire. If no one was at home or they refused to fill in the questionnaire, the next neighbouring house/flat was approached in the same way. In rural areas (villages near VNP), every residence was visited to ensure sufficient sample size. The questionnaire was left for people to fill in and was collected later. Respondents were asked to leave the questionnaire in front of the door if they had to leave before the distributor returned. In some cases, mainly involving elderly residents, distributors had to help respondents to fill in their answers. Members of the HCCRT distributed 100 questionnaires to urban residents and a further 200 were given to students to distribute. Local government officials helped with distribution to rural residents. The response rate was 69% for urban residents and 62% for rural residents.

School pupils and teachers

School directors assisted with the distribution of questionnaires at schools in Dedoplistskaro as well as the villages of Kasristskali, Zemo Kedi, Kvemo Kedi, Arkhiloskalo, Firosmani, Sabatlo and Khornabuji. At each school, the questionnaire was administered during class time to pupils aged 12–18 as well as teachers, and collected at the end of the class. Non-Georgian speaking Armenian children at Sabatlo school were excluded from the survey. The return rate of useable questionnaires was 87% for pupils and 100% for teachers. Of 336 school pupils surveyed, 197 (59%) indicated that they lived in a village and 139 (41%) lived in Dedoplistskaro. The respective figures for teachers were 66 (70%) and 28 (30%).

Table 2: Response rates to the written questionnaire survey by target group (and village)

Target Group	N questionnaires (% = return rate)	
	Distributed	Completed
Tushetian and other (local) livestock owners	70	56 (80%)
Hired shepherds	50	45 (90%)
Cereal farmers	20	14 (70%)
Enforcement officers:	30	29 (97%)
Rangers	19	18 (95%)
Border guards	11	11 (100%)
Hunters	50	33 (66%)
Rural residents:	350	216 (62%)
Urban residents	300	207 (69%)
School pupils:	386	336 (87%)
School teachers:	94	94 (100%)
Total	1,350	1,030 (76%)

4.4. Study area

The survey was conducted in Dedoplistskaro District (area 2,530 km², human population in 2007 estimated at 30,600), which is an administrative division of the Kakheti Region of East Georgia (area 11,379 km², population 403,600) (Fig. 1). The District lies on an elevated plateau between the Alazani and Iori Rivers at the southeastern limit of Georgia. Elevation ranges from 90 to 1,001m a.s.l. Agriculture is the main economic activity. The central and northern parts of Dedoplistskaro District are mostly cultivated agricultural lands with vineyards, corn fields and gardens as well as areas used for livestock grazing. There is one town (also called Dedoplistskaro, population c.7,700 in 2002) and 15 villages. At the eastern edge bordering Azerbaijan lie Vashlovani Protected Areas, including Vashlovani National Park.

4.5. Data analysis

Statistical analyses were carried out using PASW Statistics 18 (SPSS 2009). Null hypotheses (H₀) were rejected at $\alpha=0.05$. A chi-square test of association was used to test the null hypothesis that row and column variables were independent, for example to assess whether responses to an item differed between years. To compare knowledge levels, a knowledge score was first calculated for each respondent by summing the number of correct answers given to 10 items (Table 3). An independent samples *t*-test (Mann-Whitney *U* test) was then used to test if two or more unrelated samples (i.e. knowledge scores from 2010 and from 2012) came from populations with the same median.



Figure 1: The location of Kakheti Region within Georgia, showing Dedoplistskaro District (darker shading) and the town of Dedoplistskaro as well as Vashlovani (VNP) and Tusheti National Parks

Table 3: Items used to calculate a knowledge score for respondents of the questionnaire survey

#	Item	Correct response	Score
20	<i>“Presently in Vashlovani NP there are bears.”</i>	1 to 50	1
22	<i>“What do you think is the main food of bears in Vashlovani NP?”</i>	Fruits, berries, grass	1
22	<i>“What do you think is the main food of wolves in Vashlovani NP?”</i>	Wild boar Livestock	1 1
23	<i>“What is the typical number of wolves in a pack in Vashlovani NP?”</i>	up to 10	1
24	<i>“What is the typical weight of an adult male bear?”</i>	101 to 250 kg	1
27	<i>“In Georgia, nowadays are owners paid money for livestock killed by bears?”</i>	No	1
28	<i>“In Georgia, nowadays are owners paid money for livestock killed by wolves?”</i>	No	1
29	<i>“In Georgia, is it normally legal to hunt bears?”</i>	No	1
30	<i>“In Georgia, is it normally legal to hunt wolves?”</i>	Yes	1
Total	–	–	10

5. RESULTS

5.1. Results of the 2012 follow-up survey

5.1.1. Socio-demographic characteristics of respondents

All but 3 of the 1,030 respondents who answered question #70 indicated that they lived in the Kakheti Region of East Georgia (see Fig. 1): 85.1% of them in Dedoplistskaro District, 12.7% in Akhmeta (which includes Tusheti), 0.9% in Telavi, 0.5% in Sagarejo, 0.3% in Sighnaghi, 0.1% in Gurjaani and 0.1% in Kvareli. Basic socio-demographic characteristics of respondents by target group are shown in Table 4.

Compared to the baseline survey conducted two years prior, the mean ages of livestock owners and hired herders show an increase of 2.0–2.2 years. This could be coincidental but might also suggest, particularly in the case of owners, that many of the same people completed questionnaires for both surveys.

Table 4: Mean age in years, sex ratio, highest level of completed education (primary, secondary or higher) and place of residence (rural or urban) of respondents ($n=1,030$) by target group

Target groups	Mean age (y)	Sex ratio (M:F)	Education			Residence	
			% P	% S	% H	% R	% U
Livestock owners ($n=56$)	42.9	1 : 0.00	1.8	83.9	14.3	98.2	1.8
Hired herders ($n=45$)	37.9	1 : 0.00	11.1	84.4	4.4	66.7	33.4
Cereal farmers ($n=14$)	42.3	1 : 0.08	0	14.3	85.7	21.4	78.6
Enforcement officers ($n=29$)	38.7	1 : 0.00	0	57.1	42.9	31.0	69.0
Hunters ($n=33$)	40.4	1 : 0.00	0	69.7	30.3	63.6	36.4
Rural residents ($n=216$)	40.5	1 : 0.67	4.5	61.1	34.3	100	0
Urban residents ($n=207$)	40.2	1 : 1.77	1.4	51.2	47.3	0	100
School pupils ($n=336$)	14.9	1 : 0.94	100	0	0	58.6	41.4
School teachers ($n=94$)	45.4	1 : 7.09	0	2.1	97.9	70.2	29.8

5.1.2. Findings by item and target group

Attitude to large carnivores

Public attitudes were consistently more negative towards wolves than towards bears across all target groups (Fig. 2). Livestock owners and hired herders held the most negative views, particularly towards wolves. Nevertheless all target groups, including livestock owners (Fig. 3), tended to acknowledge that wolves belong in the wild in Georgia.

The target groups varied on how they felt about the fact that bears and wolves live in Georgia. Enforcement officers (90% positive responses), hunters (88%), teachers (79%), pupils (68% positive, 24% neutral) and urban residents (67% positive, 26% neutral) all tended to think it was good that Georgia has brown bears. Surprisingly, 86% of cereal farmers also held positive views on this. Livestock owners (48% positive, 18% negative and 34% neutral responses), herders (51%, 20% and 29% respectively) and rural residents (49%, 9% and 42%) were more divided and/or undecided on this item. Concerning the wolf, the pattern was

similar but shifted toward the negative. Enforcement officers (62% positive responses, 21% neutral) and cereal farmers (50% positive, 36% neutral) were the only two groups in which at least half the respondents held positive views on this question. Hunters (49% positive vs. 39% negative), pupils (40% vs. 32%), teachers (40% vs. 37%) and to some extent urban residents (30% vs. 39%) were divided on whether it is good or bad that Georgia has wolves. Livestock owners (73% negative responses), herders (71%) and rural residents (54%) showed clear tendencies to consider it to be a bad thing, even though 63%, 71% and 85% of them respectively agreed that the wolf is a native species. Wolves elicited more strongly negative reactions than bears, particularly among the target groups most likely to be affected by them (Fig. 4).

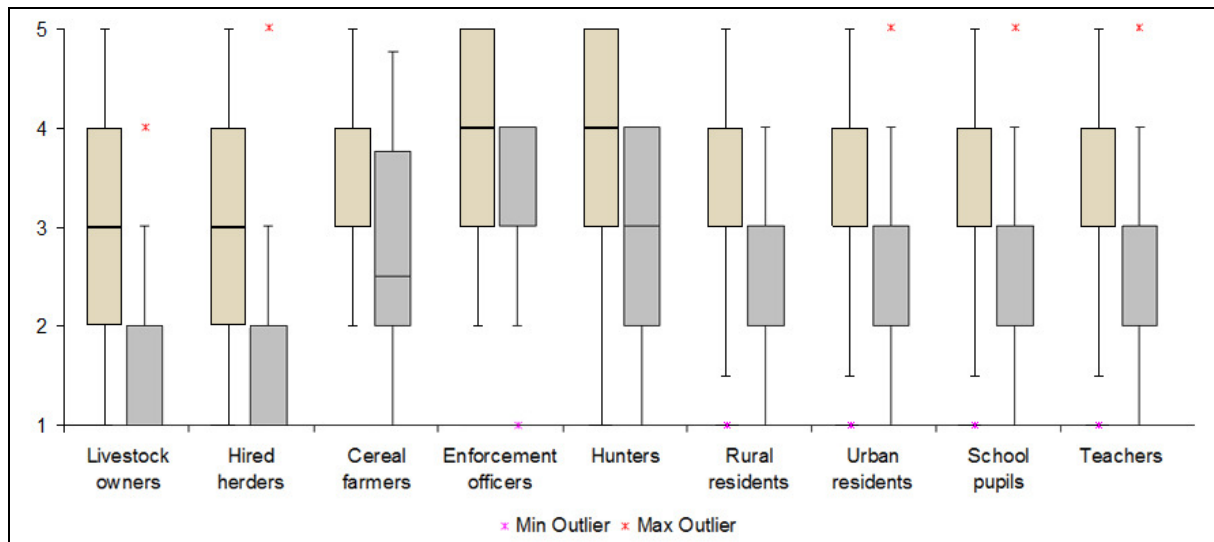


Figure 2: Responses by target group to the question “Which answer best describes your feelings towards these animals?” measured on a 5-point scale from very negative (1) to very positive (5). Answers related to bears are shown in brown, wolves in grey

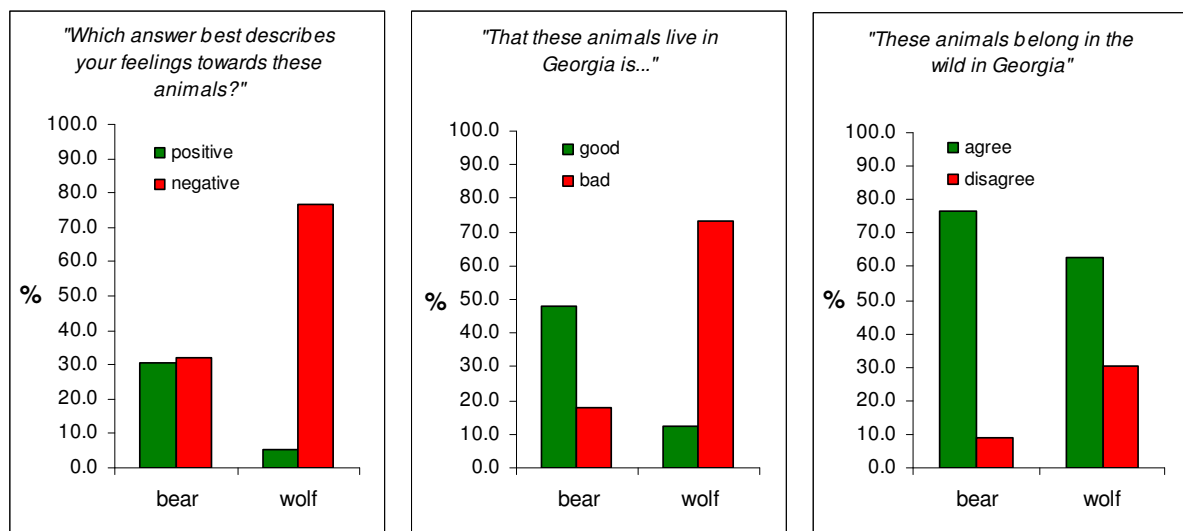


Figure 3: Responses of livestock owners ($n=56$) in and around VNP to three items investigating attitudes towards bears and wolves

Respondents in every target group tended to think that wolves kill a lot of sheep: 44–57% of livestock owners, rural residents, herders and hunters strongly agreed and a further 30–44% agreed with this assertion. Rural residents showed a slight tendency to think that

bears kill a lot of sheep, although only 9% of them strongly agreed, while livestock owners and herders were divided or neutral on this item and all other groups disagreed.

In all groups, there were more respondents who agreed that wolves greatly reduce numbers of deer, the greatest advocates of this view again being livestock owners (80% agreed), hunters (70%), herders (69%) and rural residents (68%), together with urban residents (63%), teachers (65%) and pupils (61%). Most cereal farmers and enforcement officers held moderate views, with only 7–10% of them strongly agreeing and 38–43% indicating a neutral response.

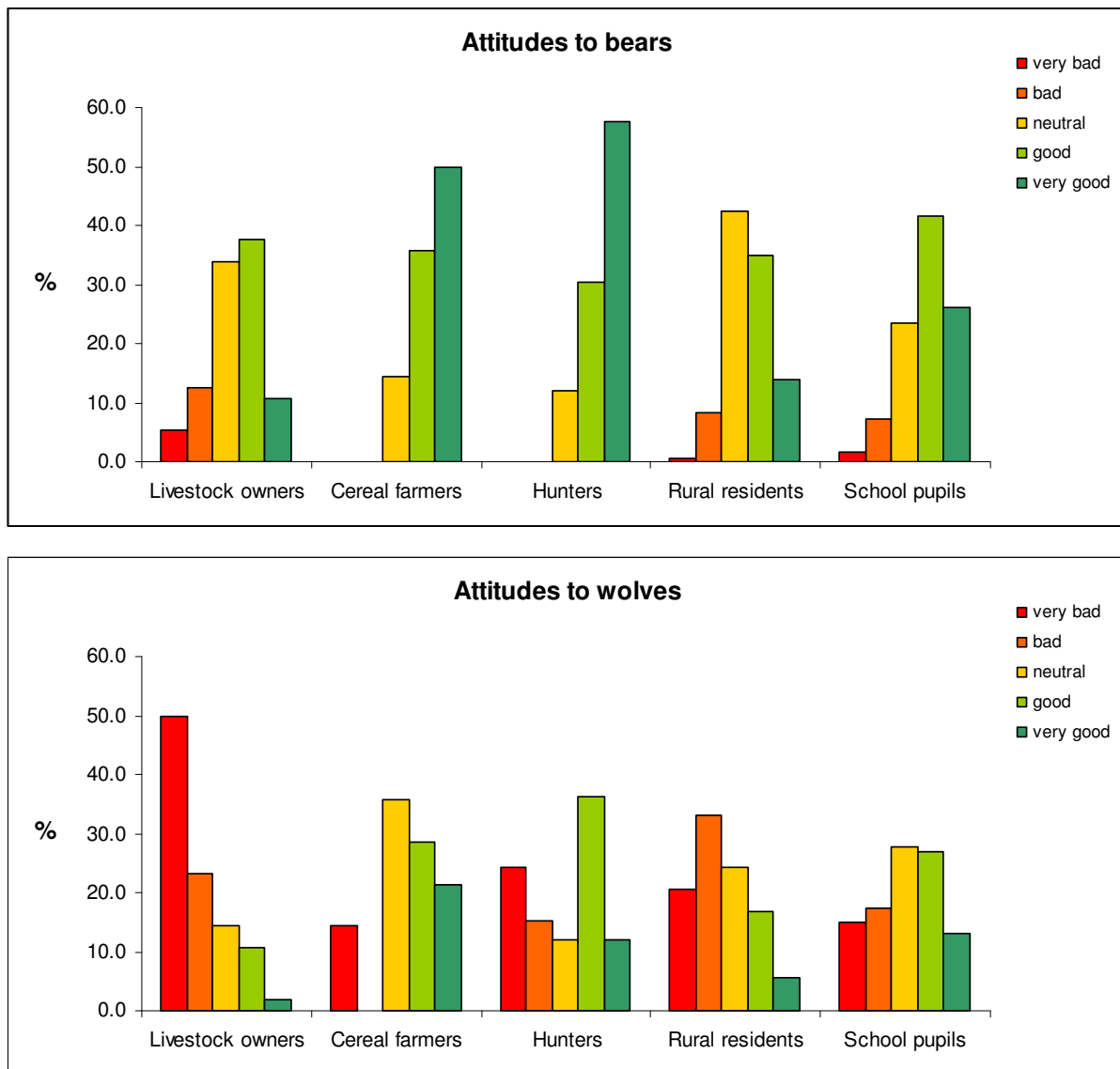


Figure 4: Attitudes of respondents to the presence of bears and wolves: responses by target group to the item, “That [bears/wolves] live in Georgia is [bad/good]”

Every target group showed a tendency to be more afraid of wolves than of bears and in every group except cereal farmers, enforcement officers and hunters the majority of respondents were afraid of wolves. Only 3% of teachers and less than 13% of rural and urban residents would not be afraid to go to places with wolves. The most fearful groups were school pupils and teachers (36% of whom strongly agreed that they would be afraid to go to places with wolves and 16% where there are bears) and the least fearful were cereal farmers

(7% and 0% respectively) and enforcement officers (7% and 3%). Hunters (61%), livestock owners (57%) and enforcement officers (55%) were the only groups in which most respondents would not be afraid to go to places with bears, although 36% of cereal farmers and 34% of rural residents gave a neutral response to this item.

Between 69% (enforcement officers) and 95% (teachers) of every target group rated wolves as very dangerous or dangerous (Fig. 5). The respective range for bears was 36% (cereal farmers) to 61% (hunters). After the wolf, the species most frequently considered dangerous was, surprisingly, the lynx, which was regarded as very dangerous or dangerous by 76–84% of teachers, pupils and urban residents. The domestic dog elicited more “mostly harmless” responses than any other species listed (50–86%) and was least often considered dangerous (0–26%) by all target groups except livestock owners, herders and hunters, fewer of whom rated the jackal as dangerous. Respondents were most often uncertain about the potential danger of leopards.

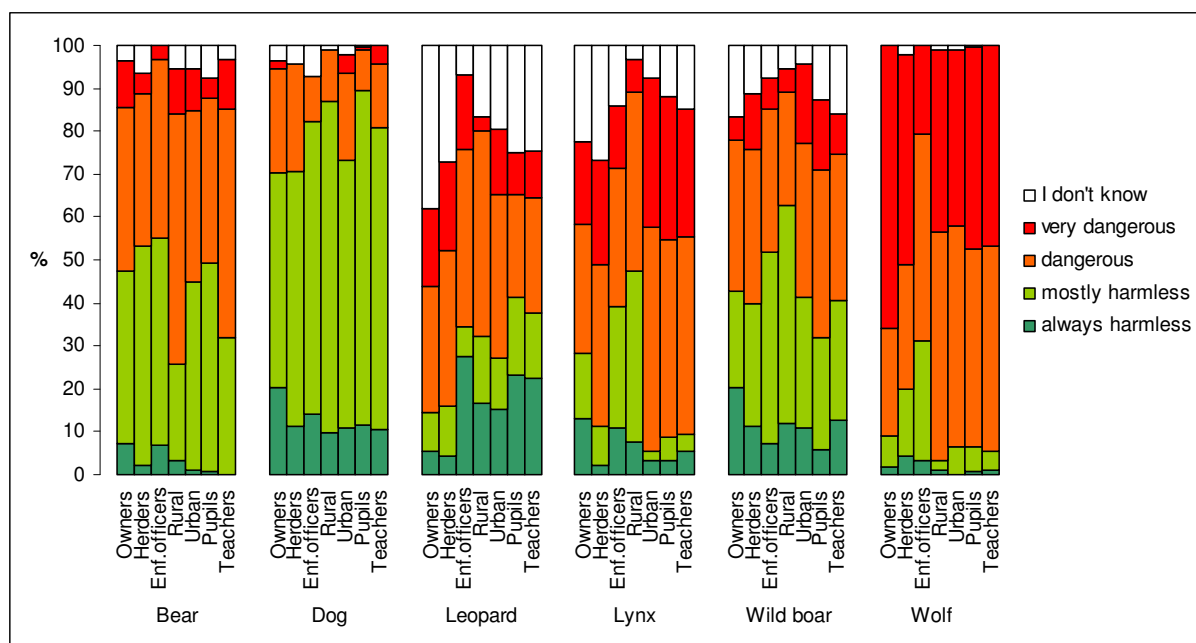


Figure 5: The danger rating of various animal species by respondents in the Kakheti Region of East Georgia divided into seven target groups: livestock owners, hired herders, enforcement officers (protected area rangers and border guards), rural and urban residents, school pupils and teachers

Knowledge

Overall, 53% of respondents ($n=1,030$) answered five or more knowledge questions correctly. Although no one knew all the right answers, there were seven scores of 9/10: two from urban residents and one each of the livestock owners, enforcement officers (a ranger), hunters, rural residents and school pupils. The questions most often answered correctly were: #29 – it is illegal to hunt bears in Georgia (72.5%); #22 – livestock is a major food item of wolves in Vashlovani (71.9%); and #22 – bears eat fruit, berries and grass (62.9%). Least known were: #30 – it is legal to hunt wolves in Georgia (12.8%); #24 – a typical male bear weighs 101–250 kg (23.0%); and #20 – there are around 1–50 bears in Vashlovani (24.6%). Livestock owners, with a mean score of 6.0/10 (median 6), and hunters (5.5, 6) were the most knowledgeable about carnivores and their management, followed by hired herders

(5.0, 5), enforcement officers (5.0, 5), rural residents (4.9, 5) and school pupils (4.8, 5). Urban residents (3.8, 4) and farmers (3.9, 3.5) answered the fewest questions correctly (Fig. 6).

Up to 96% of livestock owners and herders as well as 45–71% of all other target groups knew that compensation is not paid for damage by bears and wolves. However, many respondents, ranging from 25% of rural residents to 52% of enforcement officers, indicated that they did not know if compensation is paid or not. The question most often answered correctly was if it is normally legal to shoot bears, whereas the least often correctly answered question was if it is legal to shoot wolves in Georgia. Only 12.8% of all respondents, including 7% of owners, 11% of herders and 6% of hunters, knew that it is legal to hunt wolves, with the percentage of correct responses by target group ranging from 3% for enforcement officers to 18% for urban residents. Although 72.5% of all respondents knew that it is illegal to hunt bears, 21% of cereal farmers, more than any other group, thought it legal to do so.

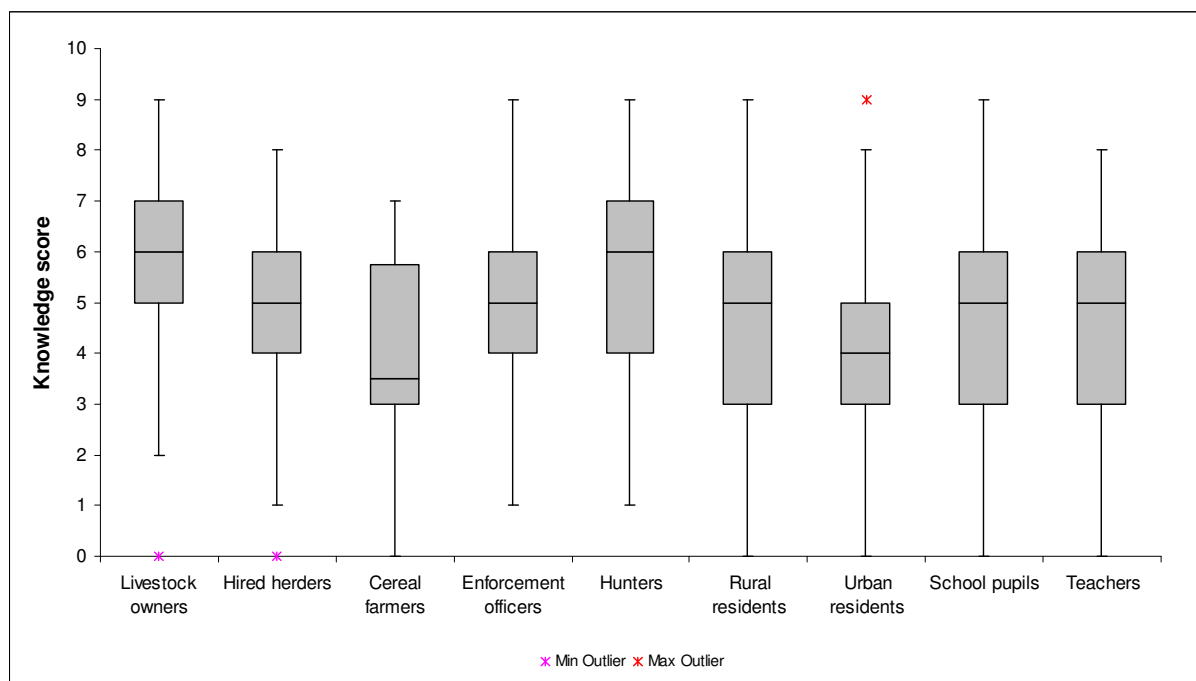


Figure 6: Knowledge of bears, wolves and their management by target group

Attitude to management

Most respondents (60.3%, $n=1,030$) thought that the number of wolves is increasing and that there are too many of them in Georgia (74.5%). Livestock owners held the strongest views, with 89% ($n=56$) of them thinking that wolf numbers are increasing and 95% agreeing (50% of them strongly) that there are too many wolves in Georgia. Livestock owners also tended to think that bears are becoming more numerous (63%), whereas other target groups were divided on whether numbers are increasing or decreasing and also tended to have large proportions of respondents indicating that they did not know the trend of the bear population. Livestock owners and herders were the only target groups in which more than 22% of respondents thought that there are too many bears. All other target groups tended to be neutral or disagree.

All but one of the target groups showed a tendency to think that wolves should only live in restricted parts of Georgia: overall 65.1% of 1,017 respondents agreed with this statement.

The exception was cereal farmers, of whom 43% responded neutrally and 36% disagreed. Similarly, all target groups supported the payment of compensation to owners whose livestock has been killed: only 11% of respondents disagreed with this idea, the highest support being among livestock herders (96%), hunters (94%), livestock owners (91%) and teachers (90%). Overall, 51% of respondents agreed that money should only be paid to owners who tried to protect their livestock, with 34% against. However, the highest levels of support for this condition were found among hired herders (91% in favour, including 40% strongly agreeing) and livestock owners (79% agreeing, 30% strongly).

There was overwhelming support (71–96%) among all target groups for allowing people to kill wolves if their livestock is attacked. However, most livestock herders (69%) and owners (62%) agreed that hunting of wolves should be strictly regulated, as did all other target groups. Whereas most target groups tended to disagree with hunting wolves in national parks, most livestock owners (71%) and herders (67%) thought it should be allowed while rural residents (44% for vs. 42% against) and hunters (41% for vs. 47% against) were divided. Paradoxically, a majority of livestock owners and herders, as well as of all other target groups, supported a year-round ban on hunting any wild animals inside protected areas. Conversely, livestock owners (86%), herders (76%) and rural residents (48% for and 27% neutral) were the only target groups who thought that livestock grazing should be allowed in protected areas. All the other target groups had a majority against this, with 31% of pupils and 28% of enforcement officers being strongly opposed.

Most respondents in each target group agreed that it is important to have protected areas such as VNP in Georgia, ranging from 77% for livestock owners to 98% for teachers. More than two thirds of respondents in each target group agreed that people need more information about wolves and that more research should be done on them, the only slight exception being cereal farmers, of whom 36% were neutral on the need for more research.

Sources of information

Substantial differences were found among the target groups (Fig. 7) which should be taken into account when designing outreach and education programmes. Livestock owners and herders were the most conservative both in terms of what had formed their impressions of bears and wolves (Table 5) and in the range of media from which they wanted to receive more information (Table 6). Cereal farmers, school pupils and teachers mentioned the broadest range of sources.

In terms of what respondents said had formed their impressions of carnivores, television was the most influential medium, reaching 69% of teachers, 67% of school pupils, 57% of rural residents, 52% of urban residents and 50% of cereal farmers. Livestock owners tended to rely more on their own experience (66%) or information from their peers (46%), as did herders (51% for both sources). Hunters most often received information on bears and wolves from their peers (52%) and were also mentioned by 43% of enforcement officers, 36% of cereal farmers, 28% of school pupils and 23% of teachers as having helped form their impressions. Protected area staff were mentioned by 59% of enforcement officers but had influenced only 6–18% of other target group except cereal farmers (29%).

Table 5: Answers of 1,030 respondents' to item #48, "What has formed your impressions of bears and wolves?", expressed as the percentage of each target group that marked each option

Target group	Newspapers / magazines	Books / leaflets	Fairy tales	Hunters	TV	Radio	School	Family	Farmers / Herders	PA staff	Own experience	Other	Total ^a
Livest. owners	10.7	5.4	1.8	8.9	10.7	7.1	1.8	1.8	46.4	14.3	66.1	0	175.0
Herders	26.7	11.1	0	15.6	28.9	6.7	11.1	8.9	51.1	15.6	51.1	0	226.8
Farmers	50.0	42.9	21.4	35.7	50.0	7.1	21.4	14.3	28.6	28.6	7.1	0	307.1
Enforc. officers	20.7	27.6	3.4	20.7	34.5	0	10.3	0	31.0	58.6	31.0	0	237.8
Hunters	33.3	18.2	6.1	51.5	33.3	15.2	12.1	15.2	9.1	18.2	24.2	0	263.7
Rur. residents	34.3	31.5	20.4	19.0	56.9	5.6	30.6	23.1	22.2	6.9	12.0	0	262.5
Urb. residents	39.1	29.5	26.6	15.0	52.2	4.3	16.9	13.5	10.6	8.7	6.3	0	222.7
School pupils	21.4	36.6	21.4	28.3	67.3	4.8	42.3	35.1	17.3	11.3	7.7	1.5	295.0
Teachers	43.6	45.7	21.3	23.4	69.1	8.5	29.8	22.3	17.0	6.4	8.5	0	295.6
Mean ^b	31.1	27.6	13.6	24.2	44.8	6.6	19.6	14.9	25.9	18.7	23.8	3.2	

^a The sum of percentages for each option, used as a relative measure of how conservative each target group is in terms of the range of sources that have formed their impressions of carnivores.

^b The mean percentage of positive responses for each option, weighting all target groups equally, to indicate the relative impact of the various sources of information across target groups as reported by respondents.

Table 6: The forms in which respondents ($n=1,030$) would like to receive more information about bears or wolves, expressed as the percentage of each target group that marked each option

Target group	Newspapers / magazines	Books	Leaflets	TV / radio	PA staff	Internet	Excursions	Special activities	Presentations	Other	Total ^a
Livestock owners	10.7	10.7	8.9	25.0	19.6	3.6	8.9	8.9	3.6	3.6	73.2
Hired herders	17.8	20.0	8.9	35.6	20.0	11.1	17.8	2.2	4.4	2.2	93.3
Cereal farmers	28.6	14.3	28.6	28.6	21.4	21.4	50.0	28.6	7.1	0	157.1
Enforcement officers	20.7	17.2	13.8	10.3	31.0	10.3	10.3	20.7	20.7	0	103.3
Hunters	18.2	12.1	6.1	45.5	21.2	15.2	27.3	27.3	6.1	0	142.6
Rural residents	11.1	13.9	14.8	31.9	13.0	20.4	31.9	13.9	7.4	0.9	119.4
Urban residents	14.0	11.1	19.3	46.9	11.1	12.1	30.9	17.4	2.9	0	121.3
School pupils	5.7	26.2	11.0	21.4	25.0	25.3	62.2	25.9	16.4	1.2	177.4
School teachers	17.0	22.3	23.4	23.4	25.5	16.0	30.9	16.0	8.5	1.1	121.4
Mean ^b	16.0	16.4	15.0	29.8	20.9	15.0	30.0	17.9	8.6	1.0	

^a The sum of percentages for each option, used as a relative measure of how conservative each target group is in terms of the range of media from which they would like to receive more information on carnivores.

^b The mean percentage of positive responses for each option, weighting all target groups equally, to indicate the potential effectiveness of each medium in reaching a range of target groups.



Fig. 7. What respondents said had formed their impressions of bears and wolves (blue) and how they would like to receive more information about them (red)

With the exception of cereal farmers, 50% of whom gave a neutral answer, the largest portion of each target group was interested in learning more about bears or wolves, ranging from 49% of urban residents to 82% of enforcement officers. The respective figures for livestock owners and rural residents were 64% and 69%. Different target groups favoured different sources for receiving new information (Table 6). For example, television or radio and protected area staff are likely to be the best media for reaching livestock owners. Excursions would be appreciated by pupils and teachers, rural and urban residents, cereal farmers and hunters. The internet seems most appropriate for pupils, cereal farmers and rural residents while presentations are only suitable for enforcement officers and pupils. Leaflets were not favoured by most target groups so should not be relied upon to convey information.

Experience with large carnivores

Livestock owners tended to spend the most time in places with wild animals such as wolves, with 93% of them indicating that they frequented such places almost daily, followed by hired herders (87%) and enforcement officers (59%). For all the other target groups the respective figure ranged from 0.5% (urban residents) to 22% (cereal farmers). More than 90% of urban residents and teachers as well as 74–76% of rural residents and school pupils indicated that they seldom or never go to places with wild animals. Surprisingly, 20% of rural residents, 13% of hunters and 7% of cereal farmers said they never went to places with wild animals.

Table 7. The percentage of respondents in each target group undertaking various activities in areas with wild animals such as wolves

Target group	Sheep/cattle herding	Hunting	Watching wildlife	Hiking	Skiing	Berry/mushroom picking	Mountain biking	Fishing	Other
Livestock owners	98.2	0	3.6	1.8	0	1.8	0	5.4	0
Hired herders	93.3	4.4	0	0	0	2.2	0	4.4	0
Cereal farmers	21.4	21.4	7.1	28.6	0	21.4	0	50.0	0
Enforcement officers	0	6.9	55.2	10.3	0	3.4	0	17.2	10.3
Hunters	12.1	69.7	9.1	9.1	0	9.1	0	42.4	0
Rural residents	27.8	12.5	15.3	33.3	0.5	28.2	1.4	10.6	2.3
Urban residents	2.9	7.2	12.1	58.0	1.0	16.9	2.4	12.1	1.4
School pupils	7.1	19.9	24.7	63.1	2.4	16.1	14.0	24.7	0.9
School teachers	9.6	1.1	29.8	57.4	1.1	26.6	0	7.4	2.1

Regarding activities undertaken in wildlife areas, livestock owners and herders tended to do little other than tending their animals, with 5% or less of each group mentioning fishing, berry or mushroom picking, hunting, wildlife watching and hiking (Table 7). The other target groups all participated in a broader range of activities (Fig. 8), with watching wildlife apparently common among several of them, particularly enforcement officers, school pupils and teachers. Many hunters also fished, as did half the cereal farmers and a quarter of school pupils. A majority of school pupils, teachers and urban residents hiked in areas with wild animals. Active sports (mountain biking, skiing) were the least popular of the activities listed in the questionnaire. Around 20% of school pupils and cereal farmers, 13% of rural

residents, 7% of urban residents and enforcement officers and smaller percentages of herders and teachers indicated that they hunted.

Unsurprisingly, livestock owners and herders were the groups most directly affected by the presence of wolves: all of them indicated that they had seen a wolf, 84–86% had experienced damage caused by wolves and 38% of each group had shot one (Fig. 9). All but one of the hunters (95%) said they had shot a wolf and all of them had seen one in the wild, compared to 93% of enforcement officers, 86% of cereal farmers and 61% of rural residents who said they had seen a wild wolf. Almost half the rural residents and 60% of teachers claimed that they or their families had suffered damage by wolves.

Bears had been seen less, shot less and caused less damage within every target group. Nevertheless, 56% of hunters, 23% of livestock owners and 20% of herders claimed to have shot a bear and 84–88% of livestock owners, herders and hunters said they had seen one. Only 7% of cereal farmers and 13% of rural residents indicated that their family had suffered damage by bears, although 49–52% of livestock owners and herders as well as 71% of hunters had experienced damage. Pooling all respondents for the purpose of comparing experience of the two species, 29.8% of respondents had seen a bear compared to 58.2% who had seen a wolf; 4.9% had shot a bear compared to 13.0% for the wolf and 10.8% of respondents had suffered damage by bears within their family compared to 35.2% who had experienced damage by wolves.

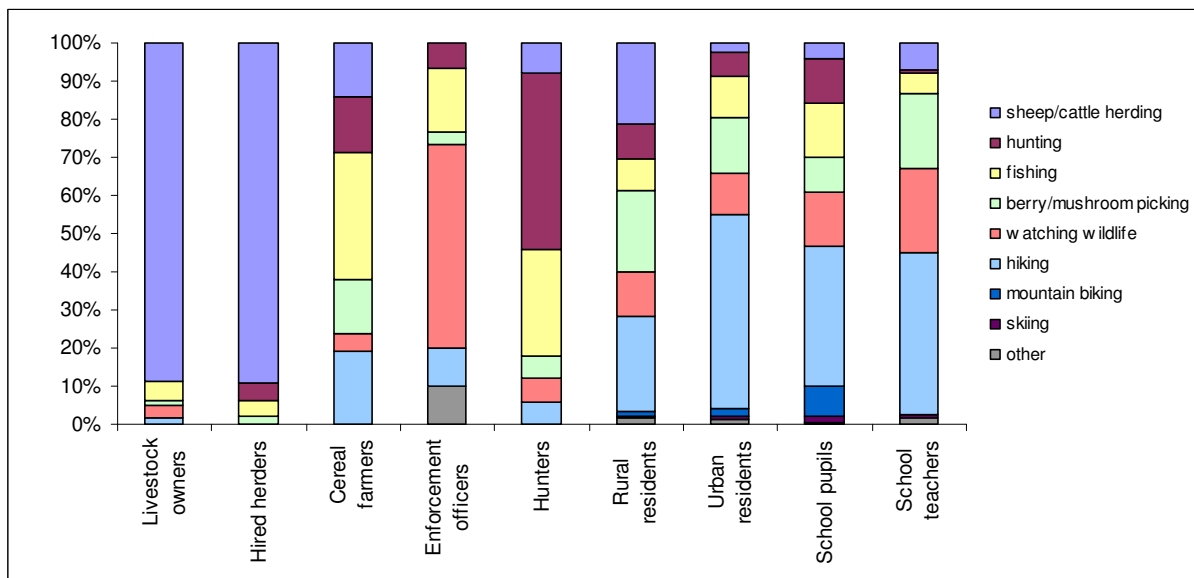


Figure 8: Activities undertaken by respondents in wildlife areas, expressed as the frequency of occurrence of each activity among all responses from the target group

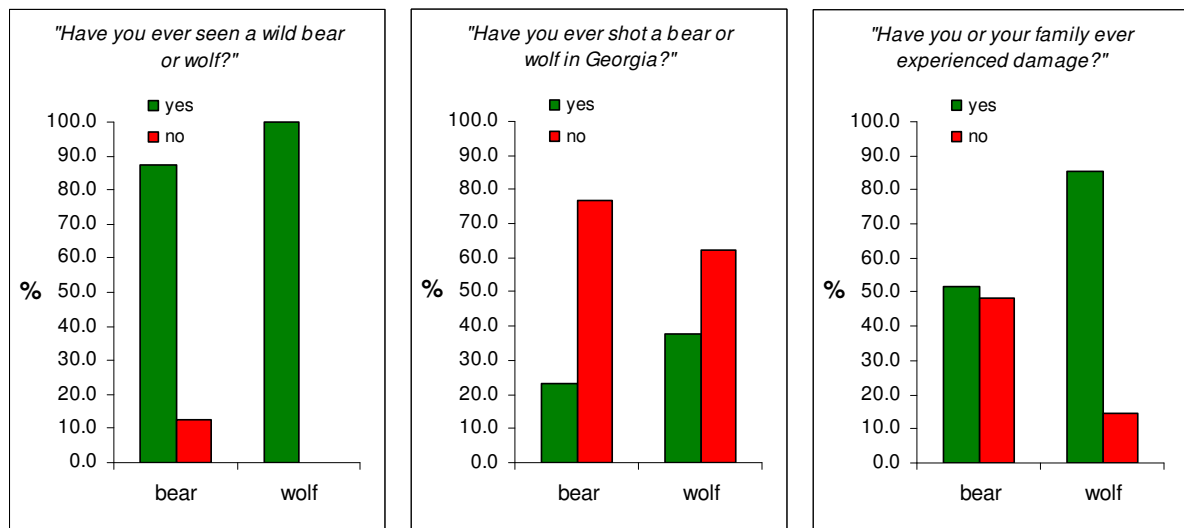


Figure 9: Responses of livestock owners ($n=56$) in and around VNP to three items investigating their experience of bears and wolves

5.1.3. Urban residents

Repeating the questionnaire survey provided an opportunity to investigate the opinions and knowledge of urban residents, who were under-represented in the baseline survey by a small sample of only 19 respondents (Table 1). In 2012, urban residents ($n = 207$) had the same mean age as rural residents ($n = 216$), but there were more than twice as many women among them (M:F ratios of 1 : 1.77 and 1 : 0.67 respectively). A tendency was seen for urban residents to have completed a higher level of education (Table 4). In an analysis of social and demographic factors affecting attitudes toward carnivores and their management (Rigg and Sillero 2010a), there was evidence of a weak but significant negative correlation between education level and feelings towards wolves, although respondents' gender had little if any influence on their feelings toward this animal.

In terms of their views toward bears and wolves, urban residents were found to be relatively moderate in comparison to other target groups (compare Figs. 10 and 3). Their answers to the first six items of the questionnaire, dealing with general feelings and attitudes, were close to the mean of all respondents or, for some items, were slightly more positive. Most urban residents were positive toward bears and urban residents were more likely to be positive toward wolves than were rural residents, even though they were slightly less convinced that these species belong in the wild in Georgia (see Table 8).

Not unexpectedly, urban residents had relatively little experience of large carnivores: 91.7% of them indicated that they seldom or never went to areas with wild animals such as wolves (although, somewhat incongruously, 39.1% claimed to have seen a wild wolf). Only 9.2% of urban residents confirmed that they or their families had experienced damage by wolves and 1.4% by bears, compared to 52.8% and 13.1% respectively of rural residents. Urban residents were also the least knowledgeable about large carnivores of the target groups surveyed (see 5.1.2.). Moreover, with the exception of cereal farmers, they were the group least interested in learning more. Nevertheless, half the urban residents who completed the questionnaire in 2012 expressed a wish to receive more information about bears or wolves, television/radio and excursions being their preferred media.

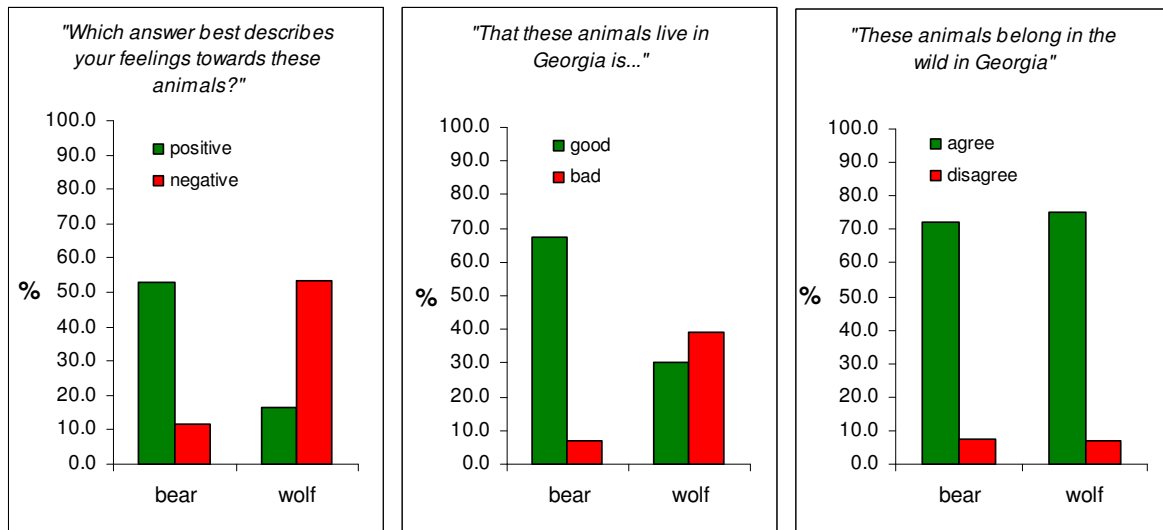


Figure 10: Responses of urban residents of Dedoplistskaro ($n=207$) to three items investigating attitudes towards bears and wolves

Table 8: Comparison of rural residents, urban residents and other respondents in their responses to questionnaire items measuring general attitudes to bears and wolves

Species	Respondents	Items #1-2 ^a		Items #3-4 ^b		Items #5-6 ^c	
		+ve	-ve	+ve	-ve	+ve	-ve
Bear	Rural (n = 216)	29.8	13.5	48.8	8.8	75.2	9.3
	Urban (n = 207)	53.1	11.6	67.1	6.8	72.0	7.2
	Other (n = 607)	46.3	12.9	69.0	8.4	78.9	6.8
Wolf	Rural (n = 216)	10.2	59.5	22.3	53.5	84.5	7.5
	Urban (n = 207)	16.5	53.4	30.0	39.1	75.4	6.8
	Other (n = 607)	20.3	49.1	37.0	38.9	83.8	7.6

^a #1: "Which answer best describes your feelings towards bears?" [A: very -ve / -ve / neutral / +ve / very +ve]

#2: "Which answer best describes your feelings towards wolves?" [A: very -ve / -ve / neutral / +ve / very +ve]

^b #3: "That in Georgia there are bears is ..." [A: very bad / bad / neither good not bad / good / very good]

#4: "That in Georgia there are wolves is ..." [A: very bad / bad / neither good not bad / good / very good]

^c #5: "Bears belong in the wild in Georgia." [A: strongly disagree / disagree / neutral / agree / strongly agree]

#6: "Wolves belong in the wild in Georgia." [A: strongly disagree / disagree / neutral / agree / strongly agree]

5.2. Comparison with the 2010 baseline survey

5.2.1. Socio-demographic characteristics of respondents

As in 2010, respondents were almost exclusively residents of the Kakheti Region of East Georgia (see 4.2.). However, the proportion of urban residents and, to a lesser extent, rural residents was higher in 2012 than in the baseline survey, when difficulties with questionnaire distribution restricted sample size (Table 1). While the sample sizes of the other target groups were broadly similar, some of their socio-demographic characteristics differed. For example, cereal farmers included in 2012 were much more likely to live in a town and to have completed a higher level of education.

5.2.2. Findings by item and target group

As found in the original survey, public attitudes were consistently more negative towards wolves than towards bears across all target groups, with livestock owners and hired herders holding the most negative views, particularly towards wolves. No significant change between the two surveys was found in livestock owners' responses to the first two items dealing with wolves, but their views on whether wolves belonged in Georgia appeared to have mellowed: whereas in 2010, 16 (22%) of them answered that they *“strongly disagree”* and two (3%) answered *“disagree”* with this assertion, in 2012 only four of them (7%) answered *“strongly disagree”* while 13 (23%) indicated the milder level of disagreement ($\chi^2 = 18.302$, $df = 4$, $p = 0.0011$).

The responses of rural residents to item #2 showed a substantial shift from negative to neutral ($\chi^2 = 26.701$, $df = 4$, $p < 0.0001$). In addition, a marked decrease was found among those considering it bad or very bad that there were wolves in Georgia (53% in 2012 versus 69% in 2010) concurrent with a substantial increase in those considering it to be good ($\chi^2 = 18.967$, $df = 4$, $p = 0.0008$). Among school pupils, a significant change was found in responses to item #4 (but not #2 or #6): in 2012, 40% of them thought it was good or very good that there were wolves in Georgia compared to 30% in 2010 ($\chi^2 = 11.428$, $df = 4$, $p = 0.0222$). No significant changes were found among teachers' or hunters' responses to these items. Due to the small sample size of urban residents in the baseline survey, the responses obtained from this target group in 2012 were not compared with those from 2010.

Changes were found among rural residents in their feelings toward bears and how they viewed the presence of bears in Georgia. In both cases, there was a reduction in negative responses in 2012, with more neutral responses than expected for item #1 ($\chi^2 = 20.903$, $df = 4$, $p = 0.0003$) and more positive responses than expected for #3 ($\chi^2 = 23.251$, $df = 4$, $p = 0.0001$). Although there appeared to be increases in the proportions of cereal farmers and hunters with positive attitudes toward bears (Fig. 16), no significant difference between the surveys was found for any of the first three items. Likewise no change was observed among livestock owners, hired herders or teachers. School pupils, however, showed a slight but significant shift in relation to item #1, with fewer negative and more neutral responses than expected in comparison with the 2010 survey ($\chi^2 = 12.308$, $df = 4$, $p = 0.0152$).

The general pattern of fear and wariness of various species (Fig. 5) was broadly similar between the two surveys, with some subtle differences of detail. Apparent increases in the proportions of hunters and livestock owners agreeing that wolves greatly reduce numbers of

deer were not statistically significant. Neither was any significant change detected in livestock owners' views on whether bears or wolves kill a lot of sheep.

Overall a marginal but significant increase in knowledge was observed between the surveys (Mann-Whitney U test, $U = 429561.0$, $p = 0.0193$ two-tailed). Whereas in 2010 the mean knowledge score across all respondents was 4.37 (median 4), in 2012 it was 4.58 (median 5). This change cannot be attributed to the inclusion of more urban residents because this group was found to be the least knowledgeable of carnivores and their management (Fig. 6). Moreover, the knowledge scores of several target groups showed improvements from 2010 to 2012. The change was highly significant in the case of rural residents ($U = 16616.0$, $p < 0.0001$ two-tailed), significant for livestock owners ($U = 2690.0$, $p = 0.0085$ two-tailed) and marginally significant for hired herders ($U = 1348.0$, $p = 0.0217$ two-tailed) as well as teachers ($U = 5004.5$, $p = 0.0204$ two-tailed). There was no change in the level of knowledge of pupils, enforcement officers or hunters.

In relation to management, increased support was found among livestock owners in 2012 for a ban on hunting in protected areas ($\chi^2 = 11.986$, $df = 4$, $p = 0.0175$). However, there was no concomitant reduction in support for allowing hunting of wolves in national parks. The views of hired herders on both these items remained unchanged. No change was found in owners' support for paying compensation for livestock killed by wolves where the owners had taken measures to protect it.



6. DISCUSSION & CONCLUSIONS

At first glance, the general pattern of opinions and knowledge as revealed by the 2012 survey appears broadly similar to that found by the 2010 baseline survey. Attitudes are persistently more negative toward wolves than toward bears. However, closer examination reveals several significant differences in relation to particular questionnaire items and target groups. All the changes represent a shift from negative to neutral or positive or, in the case of livestock owners' views on wolves in Georgia, from very negative to less negative.

Whether or not the observed changes in attitudes and knowledge can be attributed primarily to the awareness campaign of the GCCP is a moot point. The GCCP did not engage any of the target groups on bears in the intervening period (Goldthorpe pers. comm.) and yet some modest but significant shifts in a positive direction were found in rural residents' and school pupils' perceptions of bears. However, the work of the GCCP may have had an impact which extends beyond the topics it specifically intended to address. Moreover, the changes observed in attitudes toward wolves were more substantial and were partly evident even among livestock owners.

The 31.4% increase in sample size for the 2012 survey compared to the baseline survey was not spread evenly across target groups, being due in large part to the inclusion of 10 times more urban residents. Whilst this has provided an opportunity to examine the opinions and knowledge of a target group which was previously insufficiently represented, it necessitates careful scrutiny of the findings to verify that any apparent change is due to a change in opinions rather than attributable to a different structure of the sampled population. Human dimensions studies have often found that elderly, less educated people, women and sheep farmers tend to have more negative attitudes toward wolves (reviewed in Majić and Bath 2010). Different birth cohorts may react differently to conservation activities (Majić and Bath 2010). The GCCP surveys have found significant differences among target groups as well as correlations between people's feelings towards wolves and their level of education, knowledge, fear and other factors including age (Rigg and Sillero 2010a). Therefore, comparison of means or medians across all interest groups should be done only sparingly and with caution.

In some cases, socio-demographic characteristics were also found to differ between surveys within the same target group. For example, cereal farmers included in the follow-up survey were more likely to live in a town and to have completed a higher level of education than those sampled in the baseline survey. This, too, should be borne in mind when interpreting results.

Evidence was found of an increase in knowledge of large carnivores and their management among several target groups over the two years separating the GCCP surveys. This result is encouraging, as more knowledge can be expected to equate to less fear which in turn tends to correlate with more positive attitudes to wolves and bears (Rigg and Sillero 2010a). The degree of change varied among target groups so further work is clearly justified. However, the goal need not necessarily be to maximise positive views: people holding extremely positive views of wolves can be just as great an obstacle to finding consensus and implementing effective management as those with strongly negative views (Majić and Bath 2010). An initiative such as the GCCP, aiming to reduce human-carnivore conflict, should be encouraged by neutral views and not necessarily strive for further 'improvement'.

ACKNOWLEDGEMENTS

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Robin Rigg
May 2012



GLOSSARY

To ensure their clear, consistent use and to avoid potential confusion and misinterpretation, the following glossary of terms was established in English and nearest Georgian equivalent.

- Cereal farmer (ფერმერები, რომელთაც მარცვლეული მოჰყავთ):** A person growing crops – but not substantial numbers of livestock (as defined under livestock owner) – around VNP.
- Enforcement officers (კანონის აღმსრულებლები):** National Park rangers, border police, etc, working in and around VNP.
- Farm (მეურნეობა/ფერმა)** Buildings (pens, barn, farmhouse) used by herders/owners to contain their flocks/herds while in or around VNP.
- Flock (ფარა):** A number of sheep/goats kept and grazed together.
- Herd (ჯოგი, ნახირი):** A number of cattle/horses kept and grazed together.
- Herder (მწყემსი, მენახირე):** A worker who tends livestock on a daily basis but is not the owner of a significant proportion (>10%) of the herd/flock.
- Hunter (მონადირე):** A person that legally hunts wild animals in East Georgia, whether commercially or as a hobby.
- Livestock (პირუტყვი):** For the purposes of this survey, livestock is considered to include sheep, goats, cattle, horses, donkeys and pigs.
- Livestock owner (პირუტყვის მეპატრონე):** The owner of at least 100 sheep/goats or at least 15 cattle/horses, who may or may not tend them daily. This group could be subdivided into Tushetian (present in East Georgia during the winter but going to the Caucasus for the summer grazing season), local (present throughout the year) and other.
- Rural residents (სოფლის მაცხოვრებლები):** People living in villages near VNP and not belonging to one of the other target groups.
- Sheep dog (ნაგაზი, მეცხვარე ძაღლი):** A large breed of dog used to guard livestock, living close to the flock. Livestock guarding dogs kept in VNP may be listed as Georgian, Caucasian, mixed breed or other.
- Urban residents (ქალაქის მოსახლეობა):** People living in Dedoplistskaro and not belonging to one of the other target groups.

ABBREVIATIONS USED

GCCP	Georgian Carnivore Conservation Project	NP	National Park
HCC	Human-carnivore conflict	PA	Protected area
HCCRT	Human-Carnivore Conflict Response Team	VNP	Vashlovani National Park
LGD	Livestock guarding dog	VPA	Vashlovani Protected Areas

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Appendix

Written questionnaire to quantify public opinion and knowledge

[#: _____]

Dear respondent,

Thank you for filling in this questionnaire about your feelings towards large carnivores living in Georgia, such as bears, jackals, lynx and wolves.

Your opinions towards these animals are important and we greatly appreciate your time answering these questions thoughtfully. Whether positive, neutral or negative your views are very valuable to us, since we are trying to document the range of people’s attitudes toward wild animals.

Your answers should represent your real opinions, not those of others. We encourage you to voice your opinion. Your individual answers will be treated confidentially.

Please answer all the questions yourself. Do not take too long over this: it is not an exam!

With regards,

Georgian Carnivore Conservation Project Team

I. We would like to ask about your attitude towards large carnivores in Georgia such as bears and wolves.

Please circle the number that best describes your opinion.

Which answer best describes your feelings towards these animals?	very negative	negative	neutral	positive	very positive
1. Bears	1	2	3	4	5
2. Wolves	1	2	3	4	5
	very bad	bad	neither bad nor good	good	very good
3. That in Georgia there are bears is:	1	2	3	4	5
4. That in Georgia there are wolves is:	1	2	3	4	5
	strongly disagree	disagree	neutral	agree	strongly agree
5. Bears belong in the wild in Georgia	1	2	3	4	5
6. Wolves belong in the wild in Georgia	1	2	3	4	5
7. Wolves greatly reduce numbers of deer	1	2	3	4	5
8. A lot of sheep are killed by bears	1	2	3	4	5
9. A lot of sheep are killed by wolves	1	2	3	4	5
10. I'd be afraid to go to places with bears	1	2	3	4	5
11. I'd be afraid to go to places with wolves	1	2	3	4	5

Which of the following animals do you think are dangerous to humans?

	very dangerous	dangerous	mostly harmless	always harmless	I don't know
12. Bear	1	2	3	4	5
13. Dog	1	2	3	4	5
14. Jackal	1	2	3	4	5
15. Leopard	1	2	3	4	5
16. Lynx	1	2	3	4	5
17. Wild boar	1	2	3	4	5
18. Wolf	1	2	3	4	5

19. If you answered very dangerous or dangerous, in which situations are they dangerous?

II. The next questions ask about your knowledge about bears and wolves.

Please circle the response that best describes your opinion or fill in the blanks.

If you don't know the answer circle "I don't know" rather than asking someone else.

Presently in Vashlovani National Park there are:

20. bears	0	1 to 50	51 to 100	more than 100	I don't know
21. wolves	0	1 to 50	51 to 100	more than 100	I don't know

22. What do you think is the main food of **bears** and **wolves** in Vashlovani NP?

	Bears	Wolves
Fruits, berries, grass		
Mice and hares		
Honey		
Agricultural crops		
Wild boar		
Sheep or cattle		
Other (please specify)		
I don't know		

23. What is the typical number of **wolves** in a pack in Vashlovani NP?

up to 10 11 to 20 more than 20 I don't know

24. What is the typical weight of an adult male **bear**?

up to 100kg 101 to 250kg 251 to 500kg More than 500kg I don't know

About how many people were killed in Georgia in the last 10 years by:

25. bears	0	1 to 10	11 to 100	more than 100	I don't know
26. wolves	0	1 to 10	11 to 100	more than 100	I don't know

In Georgia, nowadays are owners paid money for livestock killed by **bears** and **wolves**?

- | | | | |
|-------------------|-----|----|--------------|
| 27. Bears | yes | no | I don't know |
| 28. Wolves | yes | no | I don't know |

In Georgia, is it normally legal to hunt **bears** and **wolves**?

- | | | | |
|-------------------|-----|----|--------------|
| 29. Bears | yes | no | I don't know |
| 30. Wolves | yes | no | I don't know |

III. What is your opinion about bear and wolf management in Georgia?

Please circle the response that best describes your opinion.

Do you think the numbers of these animals is changing or staying the same?

- | | | | | |
|-------------------|------------|------------|------------------|--------------|
| 31. Bears | Increasing | decreasing | staying the same | I don't know |
| 32. Wolves | Increasing | decreasing | staying the same | I don't know |

	strongly disagree	disagree	neutral	agree	strongly agree
33. In Georgia there are too many bears	1	2	3	4	5
34. In Georgia there are too many wolves	1	2	3	4	5
35. Wolves should only live in restricted parts of Georgia	1	2	3	4	5
36. Money should be paid to owners whose livestock is killed by wolves	1	2	3	4	5
37. Money should only be paid to owners who tried to protect their livestock	1	2	3	4	5
38. Hunting of wolves should be strictly regulated	1	2	3	4	5
39. Hunting wolves in National Parks should be allowed	1	2	3	4	5
40. People should be allowed to kill wolves if they attack their livestock	1	2	3	4	5
41. People need more information about wolves	1	2	3	4	5
42. More research should be done on wolves	1	2	3	4	5
43. It is important to have protected areas such as Vashlovani in Georgia	1	2	3	4	5
44. All wild animals should be protected from hunting year-round inside protected areas	1	2	3	4	5
45. Grazing of sheep and cattle should be allowed inside protected areas	1	2	3	4	5

46. In your opinion, what is the most important issue concerning **wolves** in Georgia?

47. What do you think is the main role of protected areas such as Vashlovani?

IV. Please tell us where your knowledge of bears and wolves has come from.

Please circle all answers that apply.

48. What has formed your impression of **bears** and **wolves**? (Circle all that apply)

- | | | | | | |
|-------------------------------------|------------------------------|--|--|--------------------------------|-----------------------------------|
| newspapers
/ magazines
school | books/leaf
lets
family | fairy tales /
legends
farmers /
herders | hunters

protected area
staff | radio

own
experience | television

other (specify) |
|-------------------------------------|------------------------------|--|--|--------------------------------|-----------------------------------|

49. Are you interested in learning more about **bears** or **wolves**?

- yes no partly

50. If yes, in what form would you like to obtain information?

- | | | | | |
|---------------------------|----------|------------|-----------------------|----------------------|
| television/radio | internet | excursions | special
activities | protected area staff |
| newspapers /
magazines | books | leaflets | presentations | other (specify) |

V. We would like to learn about your experience with bears and wolves in Georgia.

Please tick or circle the answer that best describes your opinion.

51. How often do you go to places with wild animals such as wolves?

- Almost daily at least once a
week once a month seldom never

52. What do you usually do there?

- | | | | | |
|------------------------|-----------------|-------------------|-----------------|--------|
| sheep/cattle herding | hunting | wildlife watching | hiking | Skiing |
| berry/mushroom picking | mountain biking | fishing | other (specify) | |

- | | | |
|---|------------|-----------|
| 53. Have you ever seen a wild bear ? | yes | No |
| 54. Have you ever seen a wild wolf ? | yes | No |
| 55. Have you ever shot a bear in Georgia? | yes | No |
| 56. Have you ever shot a wolf in Georgia? | yes | No |
| 57. Have you or your family ever experienced damage caused by bears ? | yes | No |
| 58. Have you or your family ever experienced damage caused by wolves ? | yes | No |

59. If you or your family has experienced damage, please give details.

60. How would you react if you saw a **bear**?

61. How would you react if you saw a **wolf**?

If in childhood you were told stories about these animals, how were they described?

62. Bears	mostly positive	mostly negative	various	I wasn't told	I don't remember
63. Wolves	mostly positive	mostly negative	various	I wasn't told	I don't remember

VI. This final section will help us to learn more about the respondents of this survey. Your answers will be confidential.

Please circle or fill in the correct information.

64. How old are you? _____

65. Are you female or male?

66. Your occupation is:

livestock owner	herder	protected area staff	forester	police / border guard	hunter
tourism industry	teacher	student	school pupil	housewife	retired
currently unemployed	driver	fruit grower / wine maker	cereal farmer	other (specify):	

67. If you are a livestock owner, what kind of animals do you have and how many?
*sheep*___ *goats*___ *horses*___ *cows*___ *pigs*___ *other* ___ (*specify* ___)

68. What education have you completed?
primary *secondary* *higher*

69. Do you live in a village or a town?
village *small town* *big town* *other (specify* ___)

70. Which district do you live in? _____

