Investigation of the public opinion about three large carnivore species in Latvia – brown bear (*Ursus arctos)*, wolf (*Canis lupus)* and lynx (*Lynx lynx).*

Photo: Andris Eglitis

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SUMMARY

Latvia is one of the few European countries hosting a strong population of large carnivores. There are about 300-400 wolves, about the same number of lynxes and about 10 bears. The present study aimed at finding out the public attitudes towards the species in concern. The study was carried out in the end of 2001 and finished on 2002. In total, 558 respondents were included (401 respondent of the general public and 157 respondents of the audience of the hunters' and nature magazine "MMD"). A questionnare included 36 questions about the respondents' attitude towards the **wolf** ***Canis lupus***, **lynx** ***Lynx lynx*** and **brown bear** ***Ursus arctos***, as well as about the respondents' level of knowledge and willingness to obtain more information about the species. It was distributed in four regions of Latvia (rural and urban dweller in about equal proportions) and Riga as the capital and filled out according to the next birthday rule.

The general public was more supportive toward large carnivore conservation (including the hunting ban in summer time), while hunters had a more practical approach and favoured large carnivore control through unlimited harvesting. Humans and carnivores often shared the habitat, as outdoors activities like mushroom and berry picking etc. are very popular (74% respondents go into forest at least once a week). The current large carnivore numbers were assessed as sufficient in case of wolf (40%) and lynx (43.5%), and as too low in case of bears (74.8%). Negative opinions were usually justified by the impact that large carnivores have on livestock husbandry and game management. The level of knowedge about large carnivore biology was reasonably high, especially in the "MMD" sub-sample. Bear was regarded as the most dangerous (to humans) carnivore (61.7%) of all three species, followed by lynx (50%) and wolf (42.2%). The big proportion of respondents thought that wolves could be dangerous under certain circumstances like rabies, injuries, presence of juveniles etc. (37.9% versus 17-18% in case of lynx and bear). The majority of respondents thought that wolf and lynx numbers should be controlled (70% and 56.1% accordingly), 33.2% supporting lynx protection and 21.7% suporting wolf protection. 69.6% respondents thought that bears should be protected, but 24.4% think that bears should be controlled. Only 1.7% respondents supported the total extermination of large carnivores in Latvia. Generally, females were more afraid of carnivores than males. Some differences between rural and urban inhabitants have been found, more often (but not always) rural inhabitatnts being more in favour of carnivore control. The majority of respondents obtained information about large carnivores from nature films (76.7%), books (34.6%), magazines and newspapers (34.1%). 72.9% respondents (and 93% "MMD" respondents) would like to obtain more information on large carnivores, which implies that an education campaign could be started in the future.

1. INTRODUCTION

This study was carried out in order to investigate the public opinion and knowledge level on large carnivores in Latvia. Such a study has not been done earlier but the issue of large carnivore management has become very urgent because of the EU approximation process and the necessity to implement EC Habitat Directive 92/43/EEC. In the most of European countries all three species of the large carnivores are protected and their hunting is prohibited. However, also in these countries, where predator numbers are much lower, conflicts often arise between interests of different interest groups and the need for conservation of large carnivores.

Latvian conditions are unique because viable populations of wolves and lynxes have survived despite the centuries long history of persecution. It has happened due to large forest areas and fairly natural ecosystems, and to some extent also because humans have learnt to co-exist with large carnivores. During the last decade, competition for wild ungulates increased between large carnivores and human hunters, as wild ungulates are the staple food for the first and game species for the latter. It was the negative attitude from the hunters that caused a situation when from 1997 to 1999 bounties were paid for hunted wolves, which a practice that contradicts the known guidelines of carnivore conservation policy (European Wolf, Bear and Lynx).

At the same time, most of the public is absolutely ignorant of the situation with large carnivores; its opinion on large carnivores and their management is not known either. We initiated this study with the assumption that the majority of people were afraid of large carnivores and their level of the knowledge about the aforementioned species was low. Therefore, this study was aimed at two samples of respondents. First, at the general public, inquiring people according to the next birthday rule (401 respondent in total). Second, it was aimed at hunters, publishing the questionnaire in the hunters' magazine "Medibas. Makskeresana. Daba" ("MMD") (in the translation –"Hunting. Fishing. Nature"). This sample gave 157 respondents in total (mainly hunters but also other outdoor people).

Inquiry's questionnaire contained 36 questions, some of which were open questions where respondents could justify their opinion. The study has clarified attitude of the respondents towards large carnivores, their level of knowledge about these species, sources forming their attitude as well as their willingness to obtain more information in the future through specific communication instruments, i.e. TV, radio, books, information campaigns etc.

The study was carried out in 2001 and it was coordinated by WWF Latvia with financial assistance from WWF-Denmark.

This paper was researched and written by Mrs. Zanete Andersone (Kemeri National Park), Mr. Janis Ozolins (State Forest Service)

2. GOAL OF THE STUDY

The overall goal of the study was to investigate public opinion and their attitude on large carnivores, but more precise objectives are divided into several categories, which are shown in the questionnaire (*See* Attachment 1).
The questionnaire consisted of following parts:

1. **Demographic data** – respondents' sex, age, education, living place (urban/rural) and regularity of going into the field.

2. **Questions on wolves** – whether or not the current number (population is ca. 550 individuals, according to official statistics, and ca. 300 ind. according to expert estimate) seems to be too high or too low, attitude towards hunting ban in summer time (currently, wolves are hunted all year round), what is the diet of wolves and their distribution within the country, whether respondents have seen wolves in the wild and whether they would like to, whether they regard wolves as dangerous animals and what should be done with wolves in Latvia.

3. **Questions on lynxes and bears** – the same as in the case of wolves, only without a question on hunting ban in summer (the bear is completely protected and the season for lynx is closed from 16th March till 30th September).

4. **Questions on information sources**, about interest in obtaining more information and what information sources shall be used for that.

5. **Questions on which interest groups' opinion should be taken into account** when planning large carnivore management.

Respondents from the magazine "MMD" are shown separately as this sample consists mainly of hunters and other people related to nature activities.

Photo: Ž.Andersone

Wolf tracks in the snow in the Kemeri National Park, just 25km from the capital city Riga. Often only tracks witness the presence of the wolves in the area.

3. METHODS OF DATA COLLECTION

Data collection was carried out in 4 geographical regions of Latvia – Riga (because of the high urbanisation degree combined with a few satellite towns like Jurmala), Vidzeme (The Northern part of the country), Latgale (The Eastern part), Kurzeme (The Western part), Zemgale (The Southern part). Number of respondents in each region was chosen proportionately to the number of inhabitants in a region:

Riga -	137 respondents (34% from the total number of respondents)
Vidzeme (N Latvia) -	92 (23%)
Latgale (E Latvia) -	64 (16%)
Kurzeme (W Latvia) -	52 (13%)
Zemgale (S Latvia) -	56 (14%)

In total, there were 401 respondents.

Questionnaires were mainly distributed through schools, as it is the most convenient and cost-efficient way to cover large groups of respondents in particular areas. Schoolchildren were asked to fill questionnaires out in families according to the next birthday rule, which means that a person in a household whose birthday is next has to to fill out the questioonaire. However, taking into account the numerical prevalence of the first age class, many families did not take this principle into account. Obviously, parents often did not bother to fill out the questionnaire and left it up to their children. However, it was not really a problem. Quite the opposite, that has allowed better comparison of opinions in a younger and older audience.

Direct oral inquiring was used to collect missing questionnaires in the appropriate regions. In each region, except for the capital city of Riga, about the same number of respondents were inquired in rural and urban areas.

Additionally to the methods described, the same questionnaire was published in the hunters' magazine "Medibas. Makskeresana. Daba" ("MMD"). In total, 157 readers of the magazine (mainly hunters) answered the questionnaire. Considering the audience of the magazine (it is read mainly by people interested in nature, hunting, fishing, ecotourism etc.), the answers were summarised separately from the main sample. That allowed comparison between these two samples.

4. RESULTS AND ANALYSIS

Data obtained during the study were analysed according to the thematic categories of the questionnaire and according to the species.

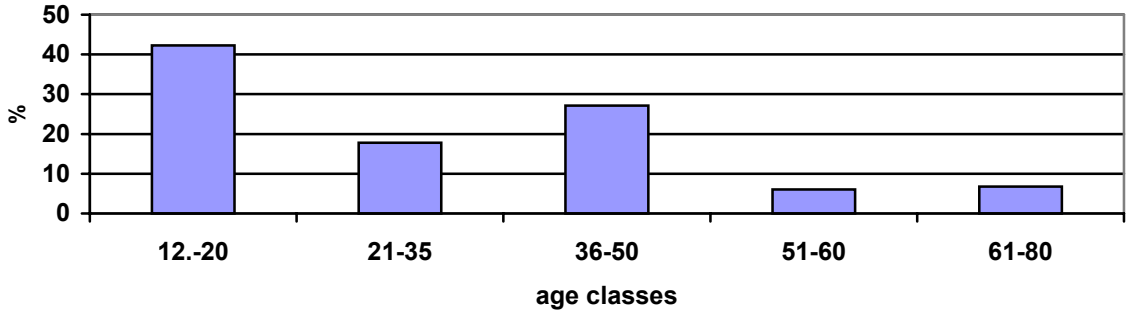
4.1. Demographic data

According to the next birthday rule, 161 men (40%) and 241 women (60%) were inquired, in total **401** respondents, which is a representative enough sample at the scale of Latvia. A separate sample of the readers of the magazine "MMD" includes **157** respondents, mainly hunters.

Sex distribution is close to the average sex distribution in Latvia – 53.7% women and 46.3% men. Age distribution shows that 42% were young people up to 20, which can be explained by the choice of the inquiry method (Fig.1).

The second most represented group of respondents is age class from 36 to 50 (27%), the third one – from 21 to 35 (18%).

Fig.1. Age structure of respondents



Proportion of urban and rural dwellers in the sample was approximately the same - 46.4% and 56.6% accordingly. Riga and Jurmala with 137 respondnets were combined into a separate category.

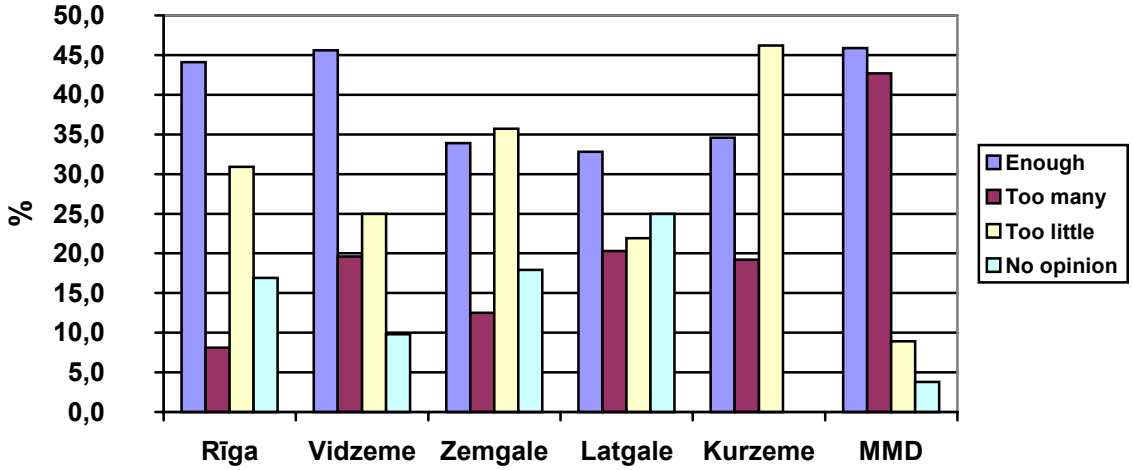
When classified according to the education level, the second most common group (after the schoolchildren and students with 33%) were respondents with secondary professional education (17.9%) and higher (university degree) education (19.3%) followed the respondents with secondary school education (14.9%), primary school education (13.9%) and elementary school education (0.8%).

Most of respondents regularly go for a walk in nature. Moreover, 39.7% do it every day and 34.4% - at least once a week. 14.3% respondents go to the forest once a month and only 11.6% do it more seldom.

The reasons of going into the field are very different, but most often it is just for a walk (72.1%), as well as for mushroom-and/or berry picking (41.6%). Hiking (20.7%) and fishing (20.2%) are second most popular outdoor activities. Collecting herbs (16.5%) and animal watching (11.2%) is less popular and only 4.5% respondnets go hunting. 16.2% respondents go out into the forests for other reasons, mainly for business (when their work is related to forestry).

4.2. Questions on wolves

Fig.2. Estimation of the current wolf numbers



Most of the respondents regard that the current wolf number, mentioned in the questionnaire (300), is enough for Latvia (Fig.2). However, many people think that 300 wolves are too rare, especially in Zemgale (35.7%) and Kurzeme (46.2%). On average, 40% respondents think that 300 wolves are enough, 30.8% - that it's too too rare, 14.7% - that it's too many, and 14.5% have no opinion.

Many urban dwellers think that amount of volves is too low (35.6%) while only 21.3% rural inhabitants have similar opinion. 21.9% rural dwellers consider the current population of wolves is too high, while only 9.9% urban dwellers think the same. The proportion of respondents estimating polulation of wolves as sufficient is about the same in towns and countryside – 39.1% and 41.9% accordingly.

Opportunity for open questions was offered by questionnaire to allow the respondents give some comments on their points of view concerning population size. Explanations to number estimates, which could be writen by respondents in the open question, varied significantly. Moreover, respondents understood the open questions (also regarding lynxes and bears) dually – many people has misunderstood and mentioned the reasons for the current numbers instead of their personal opinion about it. However, these two different categories of answers are not separated in this analysis.

Those, who thought that wolves are too many, most often mentioned that wolves cause losses to livestock husbandry and game species (47.8%) as well as that wolves are predators (23.9%). Other reasons mentioned were the following:

- Wolves are dangerous to people (4.3%)
- Lack of appropriate habitats (4.3%)
- There are too many wolves than it is necessary for Latvia and much more than in EU countries (2.2%)
- Wolves breed fast (2.2%)
- Wolves are insufficiently controlled (2.2%)
- Wolves have a good prey base (2.2%)
- 80% wolves are migrants from Russia (2.2%)
- There is no good from wolves (2.2%)
- There were fewer wolves before the 2nd World War (2.2%)
- Wolves are distributed unevenly (2.2%)
- Wolves are vectors of diseases (2.2%)

More than a half of the respondents (63.3%) support hunting ban in summer time when wolves have pups. 16.1% do not support introduction of the closed season and 11.3% have no opinion. 9.5% respondents propose to make the closed period shorter, namely:

- From 1.04. to 1.07. (44.4%)
- From 1.04. to 01.09. (22.2%)
- From 1.04. to 31.07. (11.1%)
- In certain areas (11.1%)
- To prohibit wolf hunting at all (11.1%)

Opinions of males and females in this question do not differ much – 62.7% women and 61.8% men are against summer hunting and 13.7% women and 19.1% men support continuation of summer hunting. Inhabitants of Kurzeme (72.5%) and Riga (70.4%) supported hunting ban most of all, while the highest proportion of hunting supporters was in Vidzeme (22.8%).

The questions on wolf distribution in Latvia and its diet allowed more than one answer, therefore, the percentage sum exceeds 100. Most of the respondents (60.1%) think that the highest wolf numbers are in Latgale, 29.8% - that in Vidzeme, 28.3% - in Kurzeme, and only 9.7% think that the highest wolf numbers are in Zemgale. On the whole, it corresponds to the real situation in the field.

To the question on the wolf diet, most of the respondents answered that the staple food for wolves are wild ungulates (60%), 50.8% thought that it is rodents and hares, 22.9% - livestock, 20.4% - carrion, 2.3% - berries, insects, plants etc. 27.6% respondents thought that wild ungulates was the only main food item for wolves.

Almost a half of the respondents (42.2%) thought that it is dangerous to meet a wolf in the forest. 37.9% respondents thought that it could be under certain circumstances. Only 12.6% do not regard such an encounter as dangerous and 7.3% have no opinion (Fig.3).

Interestingly, proportion of people who regard wolves as dangerous was slightly higher in Zemgale and Kurzeme, while there are relatively more respondents who were not afraid of wolves in Riga and Vidzeme.

46.7% women and 35.4% men regarded wolves as dangerous. 19.6% men thought that wolves are not dangerous while only 7.9% women have the same opinion. Proportion of those females and males who think that wolves can be dangerous under certain circumstances only was about the same – 35.8% and 41.1% accordingly.

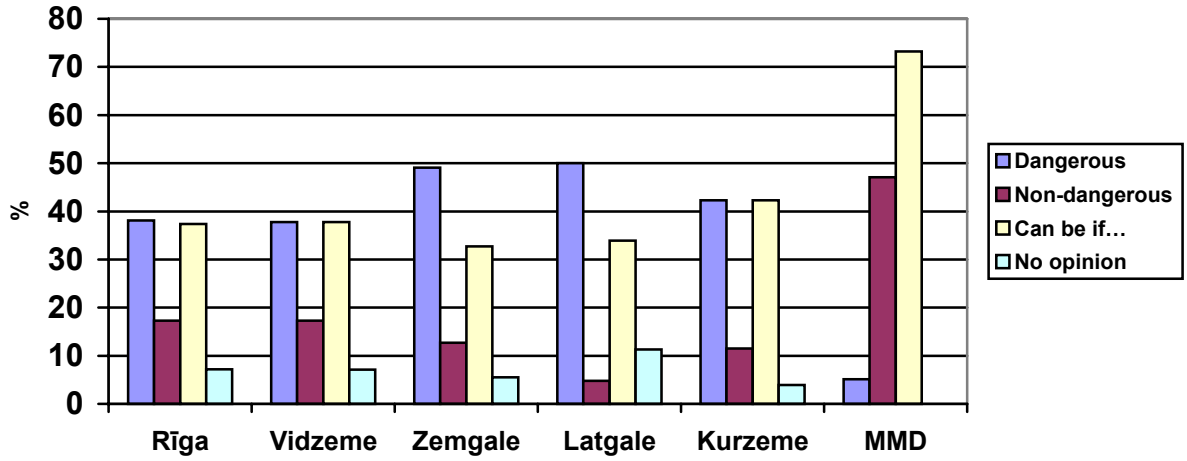
Respondents mentioned various circumstances under which wolves can be dangerous to humans. The most common ones were as follows:

- If wolf is hungry (32%)
- If there is a den in the vicinity or a wolf is with pups (15.5%)
- If it is a rabid wolf (32%)

The most real reason is only the third one mentioned. Additionally, many other reasons when wolves can be dangerous to humans were mentioned:

- If a wolf is injured (9.7%)
- If it is ill (without mentioning the disease) (7.8%)
- If a wolf is attacked (self-defence) (3.9%)
- If a wolf is scared (3.9%)
- If a wolf is provoked (3.4%)

Fig.3. How dangerous is wolf when met in the forest

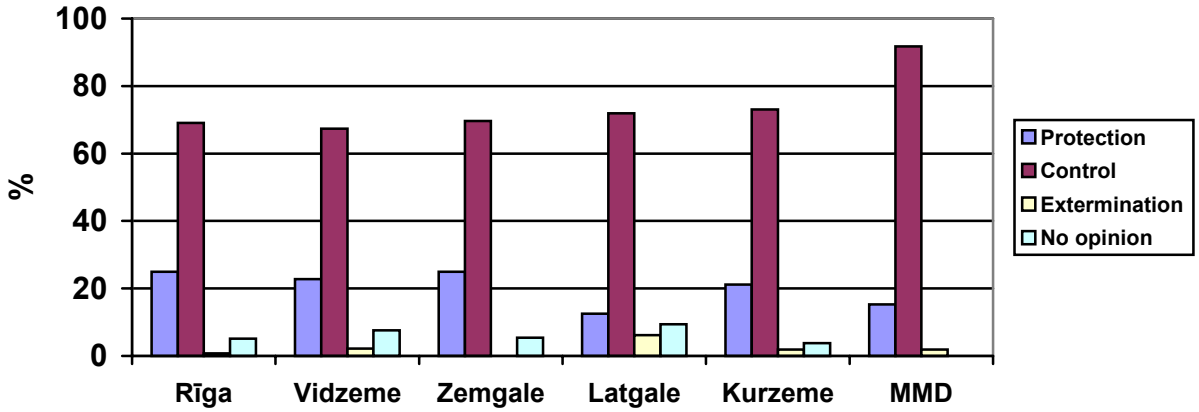


- If wolves are in a pack (3.4%)
- If a wolf is angry (2.4%)
- If a human being is alone or helpless (1.4%)
- If it is a pregnant female wolf (1%)
- If a person does not know how to act (1%)
- If it's a wolf "wedding" (during mating season) (0.5%)
- If a wolf defends its prey (0.5%)
- If the natural balance is destroyed (0.5%)

23.7% respondents have seen a wolf in the wild but only 47% would like to see it. Moreover, there is a pronounce sexual dimorphism in this questions: only 35.8% women would like to see a wolf in the wild while the majority of males (63.7%) would like to. That is another indication that people tend to regard wolves as dangerous animals.

Most of respondents (70%) support control of wolf population, only 21.7% respondents support wolf protection, while very few (2%) respondents are in favour of total wolf extermination in Latvia. 6.3% respondents have no opinion about it (Fig.4). The highest proportion of wolf extermination (6.2%) and the lowest number of wolf protection (12.5%) supporters is in Latgale, the region with traditionally high wolf numbers where livestock depredation regularly happens. Wolf protection most often is supported in Riga and Zemgale (25% in each region).

Fig.4. What should be done with wolves in Latvia?



Proportion of wolf control supporters is higher among rural inhabitants (76.8%) compared to the urban dwellers (66.8%). In their turn, urban dwellers more often support wolf protection (26.5%) (Table1). Differences between male and female opinions are insignificant.

Table 1. Opinions of different inhabitant categories on wolf management (%)

	RURAL	URBAN	WOMEN	MEN
Protection	12.3	26.5	21.6	22.6
Control	76.8	66.8	69.3	70.3
Extermination	3.2	1.2	2.1	1.9
No opinion	7.7	5.5	7.0	5.2

Elderly respondents (4th+5th age classes) are more negative toward wolves – 7.7% support wolf extermination, while only 1.2% schoolchildren and students as well as 1.7% adults (3rd age class) has the same opinion. 30% schoolchildren support wolf conservation while only 11% adults support it. In all age classes, the majority support wolf control - 60.4% schoolchildren, 83.6% adults (3rd age class) and 75% older generation.

Respondents with higher education tend to support wolf protection slightly more than the respondents with secondary school education - 21.3% versus 17.2%. The difference in opinions about wolf control is not significant – 76% and 77.6% accordingly.

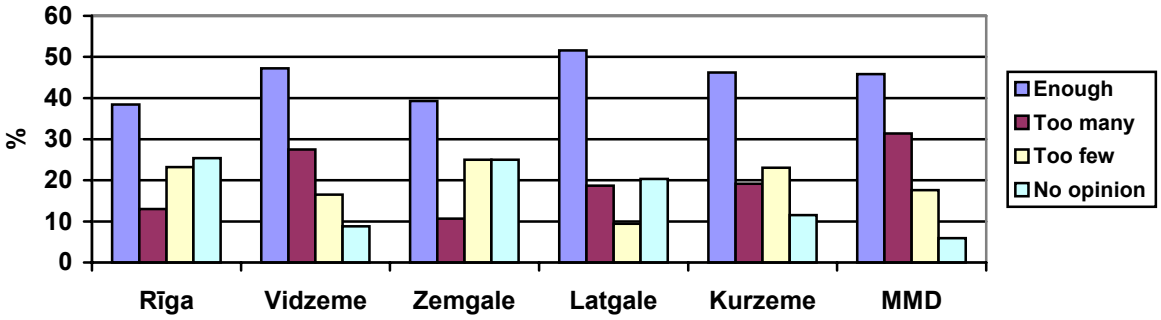
4.3. Questions on lynxes

Almost a half of the respondents (43.5%) think that the current lynx number (400) is enough for Latvia. 19.8% respondents consider this number too low and 17.7% - too high. One fifth (19%) of the respondents have no opinion about this issue, which is an indication of insufficient information on the species status.

Riga (23.2%) and Zemgale (25%) have the highest percentage of people who think that the current lynx number is too low while in Vidzeme, the region with the highest lynx density in Latvia, 27.5% respondent think that there are too many lynxes in Latvia (Fig.5).

Similarly as with wolves, urban dwellers more often think that the current lynx number is too low – 23.7% versus 12.3% among rural inhabitants. People in the countryside more often think that the lynx number is sufficient (49%) or too high (21.3%) versus 40.7% and 15.4% accordingly among rural dwellers.

Fig.5. Estimation of the current lynx numbers



Respondents mentioned many different reasons for their estimates of lynx numbers. Those who thought that there are too many lynxes most often mentioned that lynxes are predators (60.5%) and, therefore, cause damage to livestock and game species. The second most popular reason was that they pose a threat to human beings (16.3%). Others reasons mentioned were as follows:

- Lynx have no positive role in nature (4.6%)
- Nature does not like plenty (2.3%)
- There should be about 200-300 lynxes (2.3%)
- Lynxes do not consume the prey completely; therefore, they hunt more than they need (2.3%)
- There is not enough food for so many lynxes (2.3%)
- Latvia is small (2.3%)
- They are not controlled enough (2.3%)
- It is more than in EU countries (2.3%)
- There are many lynxes as there is a favourable environment to them (2.3%)

Those who thought that there are too little lynxes most often mentioned that they can easily go extinct at such a small population size (16.7%) and that there are too few of them because one cannot see them in the wild (16.7%). The same percentage of the respondents also mentioned that the reason of low lynx numbers is their valuable pelt for which they are hunted. 14.6% respondents thought that the territory of Latvia could sustain more lynxes. Other reasons were as follows:

- They are beautiful animals (8.3%)
- Lack of appropriate habitats (6.2%)
- Environmental pollution (4.2%)
- Lynxes are mentioned very seldom, hence, there are too few of them (4.2%)
- Latvia should protect its animals (4.2%)
- Natural environment is destroyed (2.1%)
- Population size is determined by the prey base (2.1%)
- There were more lynxes previously (2.1%)
- Lynxes are not harmful animals (pests) (2.1%)

Most of the respondents are convinced that the highest lynx numbers are in Vidzeme (42.2%) and Latgale (32.1%), one third of the respondents (29.4%) think that it is Kurzeme and only 15.8% think that it is Zemgale. On the whole, it reflects the situation in the field.

Lynx diet is not so clear to the respondents. Rodents and hares as the staple food for lynx were mentioned in 66.8% questionnaires, wild ungulates were the second most commonly mentioned category (42.8%), and the third most popular answer was – berries, insects, plants etc. (6.3%). In 6.1% questionnaires, carrion was mentioned as the staple food for lynx and 5.3% respondents thought it is livestock. Surprisingly, 3.8% respondents were sure that lynxes have vegetarian diet. Some answers were even more precise, e.g., “lynxes eat leaves”. 45.1% respondents mentioned rodents and hares as

the only staple food for lynx while only 23.8% thought it was wild ungulates. 13.5% respondents mentioned both categories – rodents and wild ungulates.

A half of the respondents regard lynx as a dangerous animal and additional 17.3% think that it can be dangerous under certain circumstances. 17.7% respondents think that lynx is not dangerous but 15% respondents have no opinion.

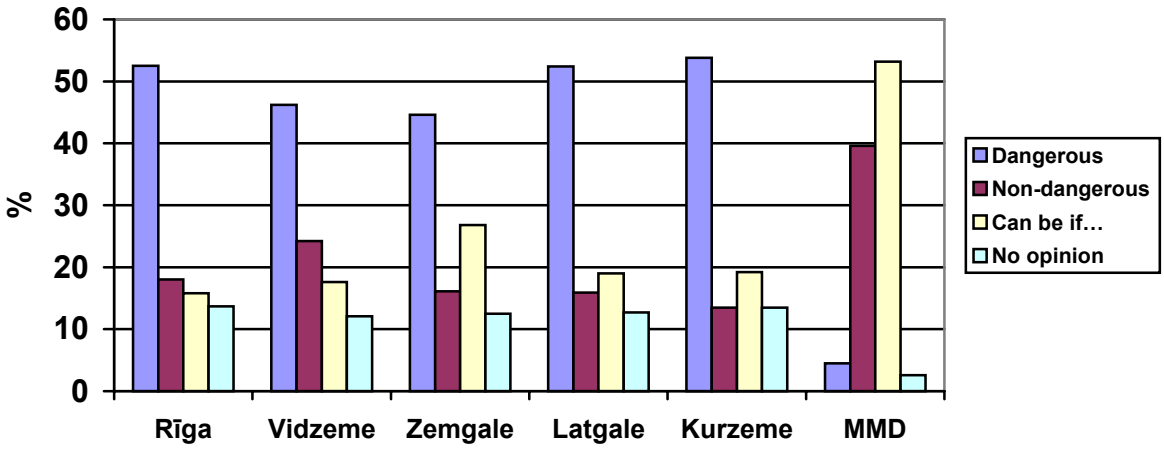
The proportion of those people, who regard lynx as a dangerous animal, is about the same in all regions, it is slightly lower in Zemgale and Vidzeme (Fig.6). At the same time Vidzeme outstands with a higher percentage of people who do not regard lynx as dangerous (24.2%).

Women more often than men regard lynx as a dangerous animal – 69.7% and 63.5% accordingly. However, sexual dimorphism in answers to this question is less pronounced than in the case of brown bear. 22% males and 14.9% females think that lynx is not dangerous to humans but 20.7% and 14.9% accordingly think that it can be under certain circumstances.

The most often reasons, when lynx had pose a threat to people, were as follows:

- If lynx is ill (without mentioning the disease) (13.4%) or rabid (12.2%) (In total, 25.6%)

Fig.6. How dangerous is lynx when met in the forest?



- If lynx is hungry (17.1%)
- If it is injured (13.4%)

Other circumstances, which can cause lynx' aggressiveness to humans, were the following:

- If lynx is with kittens (12.2%)
- If is it provoked (6.1%)
- If one teases a lynx (4.9%)
- If a lynx is startled (4.9%)
- If a person misbehave (3.6%)
- If lynx is hunting (2.4%)
- If a person is afraid of lynx (1.2%)
- If a lynx was bigger (1.2%)
- If one meets a lynx very close (1.2%)
- If there are many lynxes and they are big (1.2%)

Only 17.3% respondents have seen lynx in the wild and 54.7% would like to. Similarly to the case with wolves, there is a pronounced sexual dimorphism in the answers to this question. Less than a half of females (47.3%) would like to see a lynx in the wild while 66.7% males would like to.

Opinions on lynx management in Latvia distributed quite unevenly. Slightly more than a half of respondents (56.1%) think that lynx number should be regulated, 33.2% think that lynx should be protected, 2% are in favour of the idea of the total lynx extermination and 8.7% have no opinion. Lynx control is more supported by inhabitants of Kurzeme and Vidzeme while conservation – in Riga and Zemgale (Fig.7).

Lynx conservation is more supported by young people (39.1%) and less by adults (22-25%). Lynx control is supported by 46.1% of schoolchildren and students, 72.2% adults and 59.6% elderly generation. The same as with wolves, it is the older generation (4^{th}+5^{th} age classes) that more support extermination of lynxes – 5.8% (compared to 1.2% among the young people).

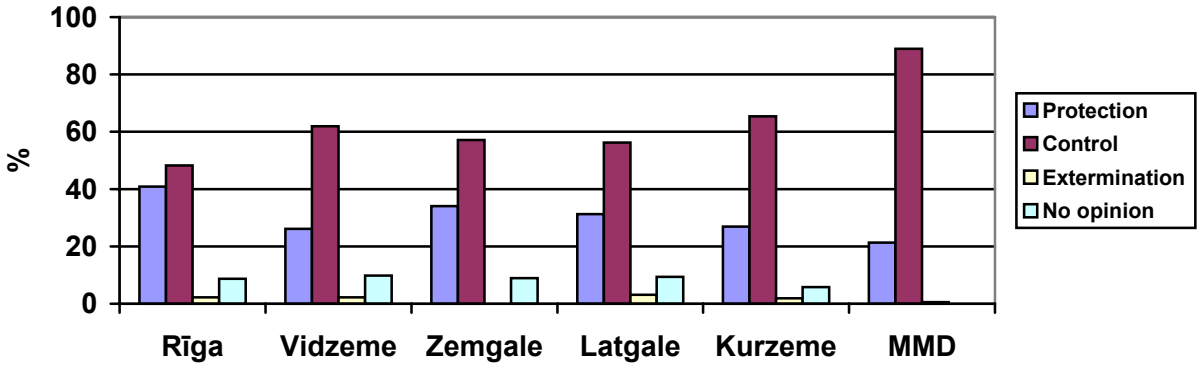
Percentage of conservationists among countryside's inhabitants is lower (25.2%) than among urban dwellers (36.6%). People in the countryside more support control of lynx numbers (64.5%). Strange, but these are urban dwellers who support extermination of lynxes slightly more, however, this predominance is insignificant. Differences between males' and females' opinions in this issue are insignificant (Table 2).

Respondents with higher education more often support lynx conservation compared to the respondents with secondary education – 36% and 25.9% accordingly. Most of the respondents with secondary education (70.7%) think that lynxes should be controlled while only 61.3% respondents with university education have the same opinion.

Table 2. Opinions of different inhabitant categories on lynx management (%)

	RURAL	URBAN	WOMEN	MEN
Protection	25,2	36,6	32,4	34,4
Control	64,5	51,9	55,2	57,5
Extermination	1,3	2,4	2	1,9
No opinion	9,0	9,1	10,4	6,2

Fig.7. What whould be done with lynxes in Latvia?



4.4. Questions on bears

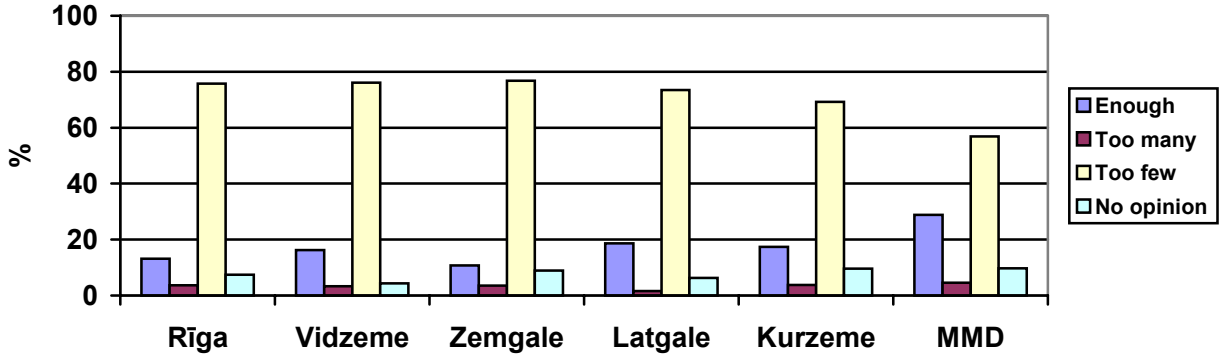
The brown bear is the most rare large carnivore in Latvia probably not having a permanent population. Nevertheless, local forest service offices particularly in the Northeast of the country annually record 5-10 individuals.

The majority of the respondents (74.8%) think that the current number of bears in Latvia is too low15% think that it is enough and only 3.2% respondents think that there are too many of them. The rest (7%) have no opinion.

Zemgale (76.8%) and Vidzeme (76.1%) have the highest proportion of people who thought that there are too few bears in Latvia while Kurzeme had more of those who think that there are too many bears (3.8%) (Fig.8).

Rural inhabitants more often assess bear number as sufficient (20%) while only 11.5% urban dwellers have the same opinion. People in towns more often than people in the countryside think that the current bear number is too low - 79% versus 68.4% accordingly.

Fig.8. Estimation of the current bear numbers



Most of respondents answering that the bear number is too high justified it by the lack of appropriate forests (66.7%). 11.1% respondents mentioned that climate in Latvia is not appropriate for bears and 11.1% mentioned that bears are dangerous to humans. 11.1% answered that bears did not occur in Latvia before the 2nd World War. Interestingly, many respondents of older generation have chosen that time as a reference point.

Reasonons of answers mentioning the bear numbers as being too low was much more variable. Most often (22.2%) respondents mentioned that bears can easily go extinct with such a low population size. 16% thought that the territory of Latvia is sufficiently big to sustain more bears while 13.2% thought that the reason for the low bear numbers is their over hunting. The other reasons were as follows:

- Bears are beautiful animals, not harmful or dangerous (9%)
- Lack of appropriate habitat conditions (7.6%)
- There are much more bears in other countries (6.2%)
- Bears pose a threat to humans (5.5%)
- They cannot be seen in the wild, which means that they are scarce (4.9%)
- Low reproduction rates (2.1%)
- Degradation of nature (2.1%)
- There were more bears previously (1.4%)
- Disturbance from humans (1.4%)
- Lack of food (1.4%)
- Low number compared to the numbers of wolves and lynxes (1.4%)

And one answer of each of the following kinds (0.7% each):

- It is too little but I am not sure there should be more
- If there were more bears they would regulate wild ungulate densities without any assistance from the human side
- The majority of these bears come from the neighbouring countries
- Nothing is heard about bears
- Bears are a wonder of nature
- Bears are wandering about a lot
- The number of bears will set up by itself
- Bears are necessary for the ecosystem

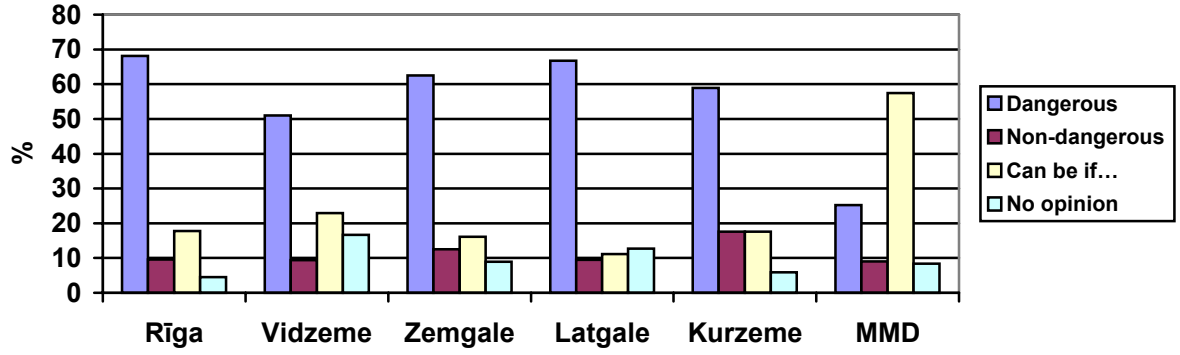
A half of the respondents (52.7%) think that bears are most common in Vidzeme while 42.2% respondents think it is Latgale, which on average reflects the situation in the field. However, a high proportion of people think that bears are common in Kurzeme (21%) and Zemgale (13.2%).

The majority of respondents (62.5%) think that berries etc. are the only main food for bears. Berries as a part of its diet were mentioned by 87.8% respondents, 17.6% justifiably thought that bears feed on wild ungulates, 13.3% - rodents and hares, 9.2% - carrion, 5.4% - livestock. Only 0.8% respondents were convinced that bear is an omnivorous animal.

61.7% respondents thought that it is dangerous to meet a bear in the forest, 17.9% think that it can be dangerous under certain circumstances, 10.8% - that it is not dangerous, and 9.6% have no opinion. People in Riga (68.1%) and Latgale (66.7%) are afraid of bears most of all while in Kurzeme (17.6%) and Zemgale (12.5%) there were more people who do not think that bear is dangerous. Interestingly, in Vidzeme, almost a quarter of respondents (22.9%) think that bear can be dangerous under certain circumstances. (Fig. 9).

Most of the women inquired (83.2%) thought that bear poses a threat to humans (65.1% think that it is dangerous regardless the circumstances while 18.1% think that it can be dangerous under certain circumstances only). Fewer men (74.2%) have the same opinion (56.6% - always dangerous, 17.6% - under certain circumstances). 18.9% males, however, think that bear is not dangerous while only 5.5% females have the same opinion.

Fig.9. How dangerous is a bear when met in the forest?



Those, who mentioned that bears could be dangerous under certain circumstances, listed the following reasons:

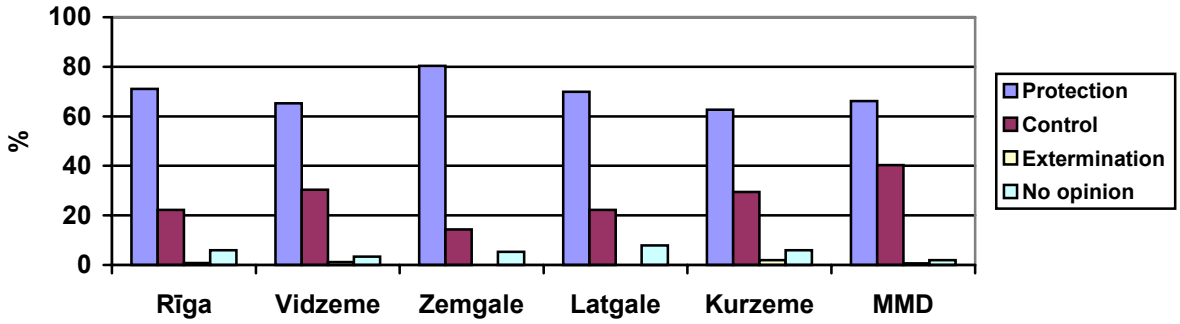
- If bear is with cubs (28.7%)
- If bear is teased (14.9%)
- If bear is hungry (14.9%)
- If bear is injured (9.6%)
- If it is startled close to the people (9.6%)
- If it is waken up during wintertime (7.4%)
- If it is ill, including rabies (6.4%)
- If it is met in winter (2.1%)
- If it is an aggressive individual (2.1%)
- If bear is scared (1.1%)
- If a person is alone (1.1%)
- If it is a big bear (1.1%)
- If a person misbehave (1.1%)

Only 11.8% respondents have seen a bear or its footprints in the Latvian forests but a half of the respondents (50.4%) would like to. Similarly as with wolves and lynxes, respondents' willingness to see a bear in the wild differs by the sex: less than a half of females (42.7%) would like to while 61.8% males expressed such a wish.

The majority of respondents (69.6%) regard that bears should be protected, a quarter (24.4%) think that bear numbers should be controlled, 1% support extermination of bears and 5% have no opinion. Inhabitants of Zemgale (80.4%) and Riga (71.1%) are the most positive towards bears, while in Vidzeme and Kurzeme there is a higher percentage of control supporters – 30.4% and 29.4% accordingly (Fig.10).

The proportion of people who support bear conservation is slightly higher among the rural inhabitants – 71.6% versus 68.5% among urban dwellers. A quarter (25.9%) of urban dwellers support bear control while only 21.3% people in the countryside are in favour of this idea.

Fig.10. What should be done with bears in Latvia?



Interestingly, females support bear control more than males – 28.2% versus 18.5% accordingly. 75.8% men and only 65.6% women support bear conservation. At the same time, females do not support the total extermination of the species in Latvia (Table 3).

Table 3. Opinions of different inhabitant categories on bear management (%)

	RURAL	URBAN	WOMEN	MEN
Protection	71,6	68,5	65,6	75,8
Control	21,3	25,9	28,2	18,5
Extermination	0,6	1,2	0	2,5
No opinion	6,5	4,4	6,2	3,2

Young people (schoolchildren and students) support bear conservation (79.6%) while the older generation supports it less (55-57%). 36.4% adults (3rd age class) think that bear numbers should be controlled while only 16.8% of young people admit this idea. Among respondents of the older generation (4th+5th age classes), 1.9% support extermination of bears (to compare – only 0.6% of young people support that).

Contrary to the case with wolves and lynxes, respondents with secondary education supported bear conservation more than respondents with higher education – 70.7% and 65.3% accordingly. However, the respondents with secondary education also supported bear control – 27.6% versus 24% among the respondents with university education.

4.5. Other questions

Answering the question "What have formed your conception of large carnivores?" the majority of the respondents have answered that these were nature films (76.7%). The second most popular source of information were books (34.6%), newspapers and magazines (34.1%), the third one – Biology lessons (31.6%) as well as fairy-tales, legends etc. (30.3%). 17.3% respondents have obtained information on large carnivores from the movies and 15% - from other sources. One third of the respondents mentioned how significantly they were influenced by fairy-tales, which can explain a deeply rooted fear of large carnivores and that many people regard carnivores as dangerous.

72.9% respondents would like to obtain more information on large carnivores. 6.1% respondents did not want to get more information while 9.5% answered that they were not interested in large carnivores. 11.5% were not sure if they wanted to obtain more information.

TV and/or radio (68.9%) as well as magazines and newspapers (40%) seem to respondents to be the most convenient way of getting information. 21.3% respondents would like to obtain information through books, 20.3% - through leaflets and brochures, 16.1% - during specially

organised events, 13.4% - via Internet and only 10.3% - with posters. Interestingly, Internet was most popular in Zemgale (20.4%) and Kurzeme (16.7%); Riga with 12.8% was only the third one. Women more than men would like to obtain visual and interactive information – through leaflets (22%), during special events (16.3%) and from posters (12.8%).

Preferences of information sources depend on the age class of respondents. All age classes prefer TV / radio (62-81%) and articles in magazines and newspapers (28-56%). However, young people (students and schoolchildren) also would like to obtain information via Internet (23.9%) and during specially organised activities (23.9%) while the adults (3rd age class) would like to be informed through books (25%) and leaflets (23.1%). The older generation (5th age class) prefer passive ways of getting informed – through TV/radio (64%) and magazines / newspapers (56%). Internet does not play a significant role to the adult audience (0-3%).

The majority of respondents (78%) regard nature conservation problems as important, 15.4% - as less important compared to the others (e.g., economical, educational etc.), only 1.5% respondents think that these problems are insignificant.

Answering the question about which interest groups should be listened to when deciding on large carnivore management, the majority (78.5%) thought that scientists' opinion should be taken into account. A half of the respondents (49.6%) thought that hunters' opinion should be taken into account and 42.5% - farmers' opinion. Tourists and EU got the minimum support from respondents – 21.3% and 18.9% accordingly. Respondents thought that partly the following groups' opinion should be taken into account – farmers (45.7%), EU (40.9%), tourists (40.4%), hunters (37%), scientists (17.6%). One third of the respondents thought that the opinion of tourists and EU should not be taken into account (31% and 30.2% accordingly), 10.8% thought the same about hunters, 7.6% - about farmers, and only 2.1% - about scientists. There were no significant geographical differences in answers to this question.

4.6. Respondents of "MMD"

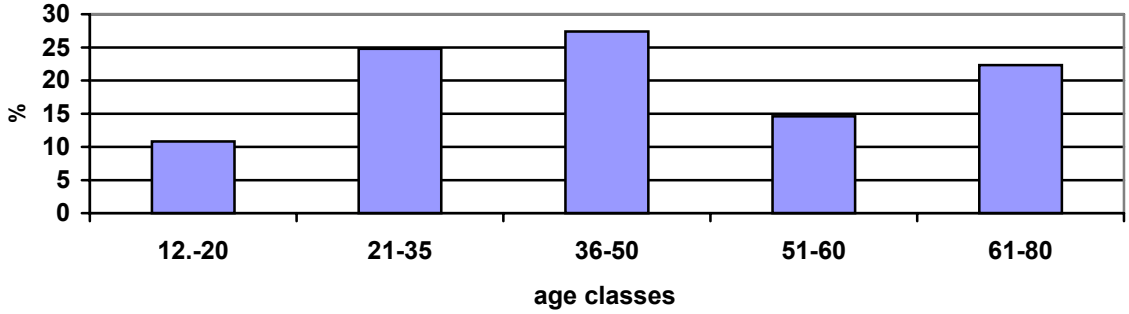
157 respondents were inquired through the hunters' magazine "MMD". Due to the obvious reasons, opinion of this audience differed from the opinion of the general public.

Demographic data

Sex distribution is uneven and dominated by males – only 5,7% women and 94,3% men. Age distribution is shown in Fig.11. Only 11% were young people up to 20, which can be partly explained by the fact that it is possible to become a hunter after 18 only.

The most common age class is from 36 to 50 (27%), followed by the age class from 21 to 35 (25%).

Fig.11. Age structure of respondents of "MMD"



The percentage of urban and rural dwellers among the respondents of "MMD" was 35,5% and 64,5% accordingly.

According to the education level of respondents, apart from schoolchildren and students (10.8%), respondents with professional secondary education (36,5%) and with higher education

(30,8%) prevail, followed by the respondents with secondary school (13,5%) and primary school (8,3%) education.

Almost all respondents regularly go to the forest. Moreover, 42,3% goes into the field every day and 53,2% - at least once a week. Only 2,6% respondents go into the forest once a month and 1,9% do it even more seldom.

The reasons for going into the field are various but most often it is for hunting (74,4%), as well as for mushroom- and berry-picking (64,7%). Fishing (44.9%) is almost as much popular (44,9%), also watching wild animals (38,5%) and walking (35,3%). Collection of herbs (12,2%) and hiking (11,5%) are the least popular occupations. As many readers of "MMD" are professional foresters, 44.2% respondents go into the forest for other reasons, mainly business (forestry).

Questions on wolves

45,8% respondents thought that wolf number mentioned in the questionnaire (300) is sufficient for Latvia (Fig.2). However, among hunters the proportion of those people, who think that there are too many wolves, is higher (42.7%) than among the general public and less respondents think that there are too few wolves in Latvia (8,9%).

Reasons of the number assessment, which was written in the open question, is quite similar to that of the general public. Also in this sample, answers to this question can be divided into two parts: some respondents mentioned the reasons of the number shown while the others expressed their personal opinion about the number.

Those respondents, who thought that there are too many wolves, most often mentioned that wolves cause damage to game species, decrease densities of other animals including wild ungulates (49,3%). Only 19,4% respondents mentioned losses to livestock. The other reasons or consequences of high wolf numbers mentioned by respondents were as follows:

- Census is incorrect, in fact, there are even more wolves than indicated in the questionnaire (14,9%)
- A proposal to decrease wolf number (9,0%)
- Wolves are vectors of diseases (4,5%)
- Wolves hunt in packs (4,5%)
- Wolves often can be seen (3,0%)
- Hunters' competitors (3,0%) – this category of answers can be added to the above-mentioned 49,3%
- Wolves move around a lot, which causes many problems (3,0%)
- Fewer wolves would be enough for the ecosystem (1,5%)
- Hunters are not interested (!) to hunt wolves (1,5%)
- Wolves tend to concentrate in one area (1,5%)
- Wolves transmit rabies (1,5%)
- Wolves breed fast (1,5%)
- Wolves have no natural enemies (1,5%)

Readers of "MMD" less than general public support hunting ban during summer period when wolves have pups (39,7%). 44,9% respondents do not support hunting ban at all, while 5,8% have no opinion. 19.9% respondents offered to make the period of the hunting ban shorter.

The question on wolf distribution in Latvia and wolf diet allowed more than one answer, therefore, the sum exceeds 100%. Also the majority of "MMD" respondents (72,7%) think that the highest wolf numbers are in Latgale, 42% think it is Vidzeme, 52,7% - Kurzeme, and only 5,3% think it is Zemgale. On average, it corresponds with the real situation in nature.

In the question about the wolf diet, almost all (96,8%) answered that wild ungulates are the staple food for wolves, 49,4% thought it is rodents and hares, 30,1% - livestock, 29,5% - carrion, and 5,1% - berries, insects, plants etc. 37,2 % respondents mentioned that the only main food for wolves are wild ungulates.

Only 5,1% respondents thought that it is dangerous to meet a wolf in the forest which can be explained by obviously greater experience of this audience. However, 73,2% respondents thought that it could be dangerous under certain circumstances. At the same time, 47,1% respondents do not regard wolves as dangerous and there are no respondents without an opinion (Fig.3).

"MMD" respondents mentioned similar conditions when wolves can pose a threat to humans but their proportions differ from those among answers of general public. Three the most popular ones were as follows:

- If a wolf is ill (27% out of 115 respondents)
- If a wolf is injured (40,9%!). It is a surprising answer as there are no examples known from hunting practice contrary to wild boar, which attacks hunter quite regularly if injured.
- If a wolf is rabid (48,7%)

This audience has indeed placed the most real reason as the first one. Besides, other reasons, when wolves can pose a threat to humans, were mentioned as well:

- If a wolf is hungry (13,9%)
- If wolves are in a pack (7%)
- If a wolf defends its pups (5,2%)

And one answer of the following kind:

- If there are too many wolves (too high density)
- During mating season
- If a wolf defends its prey
- If a wolf is in a deadlock

Much more respondents compared to the general public (79,5%) have seen a wolf in the wild and even more would like to (81,3%).

The majority of respondents (91,7%) support wolf control, only 15,3% respondents support wolf conservation, while very few people are in favour of the complete wolf extermination – 1,9%. There were no respondents without an opinion (Fig.4).

Questions on lynxes

Almost a half of the respondents (45,8%) thought that the current lynx number (400) is sufficient for Latvia. 17,6% respondents thought that it is too few, and 31,4% - that too many. Only 5,9% respondents have no their own opinion on that issue, which indicates a better knowledge level about the species status compared to the general public (Fig.5).

Arguments of the estimates of the lynx number were more precise among "MMD" respondents than among the general public. Those, who thought that there are too many lynxes, most often mentioned that lynxes destroy roe deer population (37,5%) and therefore, cause losses to hunters. The second most common reason was that lynxes decrease densities of all other wild animals (25%). The rest reasons mentioned were as follows:

- Lynxes eat only fresh meat (12,5%)
- Optimal number is lower (8,3%)
- They are harmful to game species (4,2%)
- The real number is higher than that mentioned in the questionnaire (4,2%)
- There is not enough food for lynxes (4,2%)

And one answer of the following kinds:

- Lynxes do not control number of moose which is a forestry pest
- Lynxes are simply "predatory"
- Insufficiently controlled
- Lynxes are difficult to be hunted
- Literature mention other population estimates
- Lynxes can be often seen
- Lynxes have no natural enemies
- They attack livestock

Those, who thought that there are too few lynxes, most often mentioned that they are seen too seldom or not at all (29,6%). Three respondents mentioned that it is impossible to get a valuable trophy because of the low lynx numbers. Two out of those 27, who thought that there could be more lynxes in Latvia, consider that lynxes are unable to cause any losses, and two more respondents were not happy with uneven distribution of lynx. There were also the following answers:

- Lynxes are beautiful animals and there should be more of them
- Respondents would like to continue their hunting in the future
- Lynxes are disturbed by forestry activities
- Lynxes are unlimited game (Lack of quota system causes overhunting)
- There is not enough food for lynxes

Lynx distribution was clear to only 144 readers of "MMD" (91,7%). Most of the respondents were convinced that the highest numbers of lynxes are in Vidzeme (56,3%) and Kurzeme (49,3%), one third of the respondents (34,0%) thought it was Latgale, and 23,6% thought it was Zemgale, which on the whole correspond with the situation in the field.

Lynx diet seemed to the respondents of "MMD" more acceptable than it could be expected from their view on lynx "harmfulness". Rodents and hares were mentioned as the main food for lynx in 86,9% questionnaires, wild ungulates took the second place (69,3%), carrion being the third most often mentioned food item (5,2%). 3,3% questionnaires mentioned also berries etc. and only 2,6% - livestock.

Only 4,5% respondents regard lynx as a dangerous animal while more than a half (53,2%) think that it can pose a threat to humans only under certain circumstances. 39,6% respondents think that lynx is not dangerous and 2,6% have no opinion (Fig.6).

The most often mentioned reasons when lynx can pose a threat to humans were as follows:

- If a lynx is ill (without mentioning a disease) (34,1%) or rabid (28%) (in total, 62,1%)
- If a lynx is injured (54,8%)

This point of view is a bit surprising; as there are no proved cases when injured lynx would attack a human.

Other reasons mentioned were the following:

- If a lynx has kittens (13,4%)
- If a lynx is hungry (4,9%)
- If a lynx is startled (3,7%)

Not too many respondents (57,2%) have seen a lynx in the wild, but 92,5% would like to.

Opinions on lynx management in Latvia are different among "MMD" respondents compared to the general public. Much more respondents (89%) think that lynx number should be controlled, less respondents (21,3%) aptaujāto consider that lynx should be protected and only one non-hunter (0,6%) is in favour of the complete lynx extermination in Latvia. There are no respondents without an opinion.

Questions on bears

Most of the respondents (56.9%) think that currently there are too few bears in Latvia. 28.8% thinks that the current number is sufficient and 4.6% think there are too many bears. The rest of the "MMD" respondents (9,7%) admitted that they have no opinion (Fig.8).

When justifying the assessment of the current bear numbers as being too high, most of the "MMD" respondents (57,1%) answered there are no forests suitable to bears. 28,6% respondents think that bears cause losses to farmers and about the same percentage mentioned that bears are dangerous to humans. One respondent thinks that bears cannot find food in Latvia.

Justifications of the bear numbers as being too low were more diverse. Most often (however, only in 6,9% out of 87 answers of this kind) respondents mentioned that bears cannot be seen (which is an indication of low numbers), about the same percentage confirmed the lack of suitable habitats and about the same – disturbance of bears by forestry activities. 5,7% respondents think that bears can easily go extinct at such a low population size. About as many respondents think that a bigger bear number wouldn't cause any harm to other fauna. 4,6% respondents would like to have more bears in order to be able to hunt them. About the same number think that Latvia is big enough for a bigger number of bears as well as that the bears would considerably enrich our fauna. 3,4% respondents justify their views by the Estonia's example, which has much more bears, the same percentage of respondents regret bears' uneven distribution. Only 2,3% respondents refer to ancient times, when bears were numerous, 2.3% propose to increase bear number and more 2.3% thinks that bears coming to Latvia are simply shot by somebody.

Other views very expressed in singular cases:

- Bears could distract people from the forest
- Bears are exterminated (not mentioning how)
- They could inhabit a bigger part of Latvia than currently
- Bears breed slowly
- They are nice
- Lack of food

To the question of bear distribution in Latvia, more than a half of respondents (69,3%) justifiably think that they are more numerous in Vidzeme, but 44,7% respondents think it is Latgale. Fewer people think that bears occur in Kurzeme (8,7%). People mentioning Zemgale (21,3%) perhaps thought of those bears occurring in Selija (SE Latvia) as the borders of the regional division were not specified in particular.

Only 37,3% respondents think that berries etc. are the only food for bears. In total, 96% respondents mentioned berries as a part of bears' diet, 34% justifiably thought that bears prey on wild ungulates 39,3% - carrion. 26% assume that bears eat hares and rodents, and 8,7% - livestock.

25,2% respondents think that it is dangerous to meet a bear in the forest, 57,4% think that it can be under certain circumstances, 9,0% think it is not, and 8,4% respondents have no opinion (Fig.9)

Those, who answered that "it can be dangerous if…" mentioned the following reasons:

- If a bear is with cubs (37,1%)
- If a bear is injured (37,1%)
- If a bear is ill (21,3%)
- If it is waken up during wintertime (13,5%)
- Self-defence (in a deadlock) (10,1%)
- If it is irritated (9,0%)
- If it is a non-hibernating individual (6,7%)
- If it is hungry (6,7%)
- If it is rabid (5,6%)
- If bear is scared (5,6%)
- If it was a habituated bear (5,6%)

Even being the outdoor people, only 36,4% respondents having seen a bear or its tracks in the Latvian forests but relatively many (82.7%) would like to see it. Among those are 6 out of 9 women respondents. The majority of the respondents (66,2%) think that bears should be protected, but a big proportion (40,3%) think that bear numbers should be controlled, 0,6% thinks that bears should be exterminated, and only 1,9% have no opinion (Fig.10.).

Other questions

Answering the questions "What has formed your opinions on large carnivores?", also most of the "MMD" respondents replied that these were nature (79,0%). Books (66.2%) and newspapers and magazines (65%) played a bigger role than for a general public. Other sources of information (including own experience) were the third most important information source (43.9%). A quarter of respondents (24,8%) remembered to mention the knowledge obtained during Biology lessons in school. 8,9% mentioned movies, and 15,3% respondents were influenced by the fairy-tales and legends.

94,8% respondents would like to obtain more information on large carnivores. Only 1,9% respondents do not want to. 1,3% answered that they are not interested. 1,9% respondents were not sure whether they want to get such information.

TV and/or radio (80.6%) seem to the respondents to be the most convenient ways of obtaining information as well as publications in newspapers and magazines (72.9%). Much more respondents compared to the general public would like to obtain information through books (44,5%). 32,3% - through leaflets and brochures, 15,5% - during the specially organised events, 7,7% - through Internet, and only 1,9% - through posters.

The majority of respondents (92,9%) estimate nature conservation problems as important, only 3,8% - as less important compared to the other problems. Even less respondents (1,3%) think that these problems are non-significant.

Answering the question about which interest groups should be taken into account when planning large carnivore management, the majority of "MMD" respondents (80.9%) think that hunter's opinion is the most important one. Almost as many respondents think that scientists should be consulted (77.1%). Less than a half (40,1%) thinks that farmers' opinion should be taken into account. The least support was given to tourists and EU – 9.6% and 5.7% accordingly. However, partly the following groups' opinion should be taken into account: EU (52.2%), farmers (51.6%), tourists (47.8%), scientists (19.7%) and even hunters (15.7%) Thus, the hunters themselves are more ready to compromise than it could originally seem. The most categorical part of the respondents think that tourists' and EU's opinion should not be taken into account (38.2% and 38.9% accordingly), 5,1% think that farmers' opinion should be neglected, 3,2% - hunters', 1,9% - scientists'.

5. MAIN FINDINGS

- The majority of respondents regularly visit the potential large carnivore habitats - 74% respondents go into forest at least once a week. The most common reason for that was walking and berry- and/or mushroom picking. "MMD" respondents used to go into forest more often, mainly for hunting.
- The current large carnivore numbers are assessed as sufficient in case of wolf (40%) and lynx (43.5%) and as too low in case of bears (74.8%). 30.8% respondents think that there are too few wolves while only 19.8% think that there could have been more lynxes. "MMD" respondents, compared to the general public, more often regard the number of carnivores as sufficient or too high, most often justifying it (in case of wolf and lynx) by damage to game fauna, therefore, regarding them as competitors.
- Justifying the number assessment as high, respondents mentioned that there are too many wolves and lynxes as they are harmful to livestock husbandry and game management, while in the case of lynx 16.3% respondents think they pose a threat to humans. In the case of bears 66.7% respondents think that there are no forests suitable to bears in Latvia. "MMD" respondents more seldom thought that carnivores pose a threat to humans, which can be explained by their better knowledge of the subject.
- 63.3% respondents thinks that wolf hunting in summertime (when wolves are raising pups) should be banned while 44.9% "MMD" respondents do not support this idea.
- On average, the level of knowledge of both samples about the carnivore distribution in Latvia corresponded with the real situation in nature.
- In most case, ideas about the wolf diet were close to reality – 60% respondents think that the staple food for wolves is wild ungulates. In the case of lynx, the role of hares and rodents in its diet was over-estimated (66.8%) but bears are regarded almost as vegetarians that feed on (87.8%). "MMD" respondents seem to be better informed about the carnivores' diets.
- Bear is regarded as the most dangerous (to humans) carnivore (61.7%) of all three species; it is followed by lynx (50%) and wolf (42.2%). At the same time, much more people think that wolves can be dangerous under certain circumstances (37.9% versus 17-18% in case of lynx and bear). Circumstances, when carnivores can pose a threat to humans, varied from realistic ones (rabies or the presence of cubs in the case of bear) to quite unclear statements like "… can be dangerous if a person behaves improperly". Interestingly, hunters often mentioned that injured wolf and lynx could be dangerous to humans, although there are no proved cases from the hunting practice in Latvia.
- 23.7% respondents have seen a wolf in the Latvian forests, 17.3% - lynx and 11.8% – bear or its tracks. These figures have to be treated with caution, as it is unlikely that such a high proportion of respondents have actually seen the species in concern. But many respondents expressed a wish to see wolf, lynx or bear - 46.9%, 54.7% and 50.4% accordingly. Moreover, men more often expressed such a wish compared to women. Hunters, due to the obvious reasons, more often than the general public have seen large carnivores in the wild.
- The majority of respondents think that wolf and lynx numbers should be controlled (70% and 56.1% accordingly). 33.2% respondents support lynx protection and only 21.7% support wolf protection. 69.6% respondents think that bears should be protected, but 24.4% think that bears should be controlled. On average, only 1.7% respondents support the total large carnivores' extermination from Latvia. Hunters more support the control of large carnivores – 92% thinks that wolf numbers should be controlled, 89% – lynx, 40% think that also bear numbers should be controlled.
- The majority of respondents obtained information about large carnivores from nature films (76.7%), books (34.6%), magazines and newspapers (34.1%). Also Biology lessons in school (31.6%) and fairy-tales and legends (30.3%) played as significant role. For hunters, the third most important source of information was "other source" including own experience (44%).
- 72.9% respondents (and 93% "MMD" respondents) would like to obtain more information on large carnivores. Taking into account certain gaps in the respondents' level of knowledge, it is

essential to pay more attention to education of different target audiences and to inform them on large carnivore status and management in Latvia.

- As a source of information, respondents prefer TV/radio (68.9%) and magazines and newspapers (40%). Women more than men support visual information sources (leaflets and posters) as well as information during the specially organised events. Different age groups have different preferences for information sources – older generation prefers passive way of obtaining information – through mass media, while younger people prefer information during the special event sand through Internet. Hunters, compared to the general public, more often want to get information from books (45%) and leaflets (32%).
- Respondents agree that when planning large carnivore management, the following groups' opinions should be taken into account: scientists (78.5%), hunters (49.6%) and farmers (42.5%), while EU's and tourists' opinions should be taken into account either partly (40.9% and 40.4% accordingly), or not at all (30.2% and 31% accordingly). "MMD" respondents, however, think that first of all hunters' opinion should be considered (81%) and only then scientists' (77%). Like in the general public, also among hunters EU and tourists got the least support.
- On the whole, "MMD" sample's level of knowledge about large carnivores was better which can be explained by the greater interest of this audience in the subject. It is also characteristic to this sample that it always have a certain opinion, which can potentially cause problems to change the attitude, if their attitude is based on incorrect information.
- When planning the further education campaign, it should be taken into account that the ordinary audience should be provided more basic information on large carnivores, while hunters require a specific approach considering their knowledge, which is not necessarily based on scientifically correct information. Therefore, in this case it can be necessary to break stereotypes, which are not common in the audience that has not dealt with large carnivore issues before.

6. CONCLUSIONS

- On the whole, the attitude of people in Latvia towards large carnivores is positive and rather pragmatic. Very few individuals are in favour of total extermination of those species, the majority supporting the reasonable harvesting. That suggests that conservation of carnivores in Latvia should be channeled through the management of the large carnivore populations, including controlled public hunting of wolves and lynxes.
- If the total protection of carnivores becomes a future priority, it is essential that a serious multi-targeted education campaign is carried out beforehand, because the current attitude of the public (especially that of hunters) does not favour hunting ban and would inevitably cause high level of poaching.
- Based on the results of this preliminary study an education campaign for schoolchildren can be recommended. Also, an already ongoing human dimension work with hunters through publication of conservation-oriented articles in "MMD" should be continued.
- The current study should be followed by a more detailed research using a unified method in order to make it comparable with other studies across Europe. The perspective study should aim at revealing the reasons for people's attitude towards large carnivores.
- The results of the present study are being published in the hunters' magazine "MMD". It is also planned to prepare a scientific publication of the results as well as to present the bear part of the results at the 14th International Conference on Bear Research and Management in August 2002.

7. SAMPLE OF THE LARGE CARNIVORE QUESTIONAIRE.

Inquiry on large carnivores

The objective of this questionaire is to find out the attitude of the Latvian public towards three species of large carnivores: brown bear, wolf, and lynx. Your answers will help to reveal the current attitude in regard to these species and will be used for further planning of management and conservation activities.

Please answer all questions, ticking in the appropriate box (or in several if necessary). That will take you just a few minutes.

Data on the respondent

1. Sex:
   □ - M
   □ - F

2. Age:
   □ - 12-20
   □ - 21-35
   □ - 36-50
   □ - 51-60
   □ - 61-80

3. Education:
   □ - University education
   □ - Secondary professional
   □ - Secondary
   □ - Primary
   □ - Basic
   □ - I am a student

4. Living place: town…… or countryside (district)……...

5. How often are you in the field:
   □ - Every day
   □ - At least once a week
   □ - Once a month
   □ - More seldom

6. You go into the field in order to:
   □ - Hunt
   □ - Fish
   □ - Pick up berries / mushrooms
   □ - Observe birds and other animals
   □ - Collect plants
   □ - Hike
   □ - Go for a walk
   □ - Other……

QUESTIONS ON WOLVES

7. There are about 300 wolves in Latvia at the moment. Do you think it is:
   □ - enough
   □ - many
   □ - few
   □ - I don't know

8. Please explain why you think that 300 wolves are too many or too few.
   ……
   ……
   ……

9. Wolves are allowed to hunt all year round. Do you think there should be a hunting ban in the season when wolves are having pups (1 April till 31 August)?
   □ - Yes
   □ - No
   □ - Hunting ban should be shorter (specify)……
   □ - I don't know

10. Where, do you think, in Latvia wolves are more numerous:
    □ - in Kurzeme (west)
    □ - in Zemgale (south)
    □ - in Vidzeme (north)
    □ - in Latgale (east)

11. What, do you think, is the main diet of wolves:
    □ - Berries, insects, plants etc.
    □ - Rodents and hares
    □ - Wild ungulates (roe deer, red deer, elks, wild boar)
    □ - Livestock
    □ - Carrion

12. Do you agree that meeting a wolf in the forest is dangerous:
    □ - Agree
    □ - Disagree
    □ - Can be if (specify)……..
    □ - I don't know

13. Have you ever seen a wolf in the Latvian forests:
    □ - Yes
    □ - No

14. Would you like to see:
    □ - Yes
    □ - No

15. What, do you think, should be done with wolves in Latvia:
    □ - They should be protected as an integral part of nature
    □ - Humans should control wolf numbers
    □ - All wolves should be eradicated
    □ - I don't know

QUESTIONS ON LYNXES

16. At the moment there are about 400 lynxes in Latvia. Do you think it is:
    - □ - Enough
    - □ - Many
    - □ - Few
    - □ - I don't know

17. Please explain why you think that 400 lynxes are too many or too few. ……
……
……

18. Where, do you think, in Latvia lynxes are more numerous:
    - □ - In Kurzeme (west)
    - □ - In Zemgale (south)
    - □ - In Vidzeme (north)
    - □ - In Latgale (east)

19. What, do you think, is the main diet of lynxes:
    - □ - Berries, insects, plants etc.
    - □ - Rodents and hares
    - □ - Wild ungulates (roe deer, red deer, elks, wild boar)
    - □ - Livestock
    - □ - Carrion

20. Do you agree that meeting a lynx in the forest is dangerous:
    - □ - Agree
    - □ - Disagree
    - □ - Can be if (specify)……..
    - □ - I don't know

21. Have you ever seen a lynx in the Latvian forests:
    - □ - Yes
    - □ - No

22. Would you like to see:
    - □ - Yes
    - □ - No

23. What, do you think, should be done with lynxes in Latvia:
    - □ - They should be protected as an integral part of nature
    - □ - Humans should control lynx numbers
    - □ - All lynxes should be eradicated
    - □ - I don't know

QUESTIONS ON BEARS

24. At the moment there are less than 10 bears in Latvia. Do you think it is:
    - □ - Enough
    - □ - Many
    - □ - Few
    - □ - I don't know

25. Please explain why you think that 10 bears are too many or too few.
……
……
……

26. Where, do you think, in Latvia bears are more numerous:
    □ - In Kurzeme (west)
    □ - In Zemgale (south)
    □ - In Vidzeme (north)
    □ - In Latgale (east)

27. What, do you think, is the main diet of bears:
    □ - Berries, insects, plants etc.
    □ - Rodents and hares
    □ - Wild ungulates (roe deer, red deer, elks, wild boar)
    □ - Livestock
    □ - Carrion

28. Do you agree that meeting a bear in the forest is dangerous:
    □ - Agree
    □ - Disagree
    □ - Can be if (specify)……..
    □ - I don't know

29. Have you ever seen a bear or its footprints in the Latvian forests:
    □ - Yes
    □ - No

30. Would you like to see:
    □ - Yes
    □ - No

31. What, do you think, should be done with bears in Latvia:
    □ - They should be protected as an integral part of nature
    □ - Humans should control bear numbers
    □ - All bears should be eradicated
    □ - I don't know

General questions

32. What have formed your conception of wolves, lynxes, and bears?
    □ - Fairy-tales and legends
    □ - Movies
    □ - Nature films
    □ - Magazines and newspapers
    □ - Books
    □ - Biology lessons at school
    □ - Others

33. Would you like to obtain more information on large carnivores?
    □ - Yes
    □ - No
    □ - I am not interested
    □ - I don't know

34. In what form would you like to obtain information:
    - □ - Books
    - □ - Articles in magazines and newspapers
    - □ - Leaflets
    - □ - Posters
    - □ - Special activities
    - □ - TV and radio
    - □ - Internet
35. How do you rate nature conservation problems in comparison to the others (economic, educational, health care etc.):
    - □ - As important
    - □ - As less important
    - □ - As non-important
    - □ - I don't know

36. When deciding on large carnivore management, do you think the opinion of the following groups should be taken into account:

	Yes	Partly	No
Hunters			
Farmers			
Scientists			
EU			
Tourists			

THANK YOU FOR CO-OPERATION!