

ABSTRACT

Slovakia is a central European country that plays host to the "big three" of European carnivores: the grey wolf *Canis lupus*, the brown bear *Ursus arctos* and the Eurasian lynx *Lynx lynx*. It is also a country finding its feet with a struggling economy after the peaceful break-up of Czechoslovakia in 1993. A great deal of Slovakia's industry is sheep farming, and the presence of large carnivores often leads to livestock loss. At present, compensation schemes are inadequate, leading to further antagonism between farmers and large carnivores. Although the lynx is fully protected in Slovakia, hunting of wolves and bears still takes place in the open season, and illegal poaching of all three species is a problem.

In order to protect the interests of large carnivores and the livelihoods of farmers, a solution must be reached. One possible solution is the promotion of ecotourism, whereby hunters are encouraged to act as guides and track wildlife with the aim of observing it, rather than shooting it. To explore the possibilities of such a scheme, it was necessary to find out what the general consensus of opinion was amongst Slovaks concerning their large predators. A questionnaire was distributed amongst livestock owners, foresters, hunters, conservationists, and the general public to satisfy this problem. It soon became apparent that Slovaks had limited knowledge of wolves, bears and lynx. Moreover, it also became apparent that Slovakia had infrastructure problems to address before it could consider welcoming tourists on a grand scale. This has led to the investigation of other types of schemes to remove the problem of livestock depredation. A possible solution was found in the Livestock Guarding Dog project currently underway in Slovakia.

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Keeping

THE WOLF FROM THE DOOR:

Can Ecotourism save Slovakia's Large Carnivores?



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1 INTRODUCTION

1.1 Motivation for study

Several European countries are lucky enough to boast what we would call in the UK "exotic" wildlife; animals which do not inhabit this country. Some of the most evocative animals within this definition are the large carnivores, or predators, long since absent from British shores, particularly wolves, bears and, Europe's little big cat, the lynx.

To many people these animals conjure up images of the wild, and represent a freedom, far from city life, so to see them in the wild is something very special. Unfortunately, not everyone shares this romantic image of predators, and people who have to live with the reality of these animals attacking and killing their livestock are keen to see them controlled. This can lead to unjustified persecution. This persecution often has its roots in a traditional fear and loathing of animals such as wolves, which are viewed as evil and blood-thirsty killers.

A compromise needs to be found whereby predators are not persecuted, and conservation is successful, but livestock is not put at risk as a consequence of the protection of the predator. Certain initiatives have been suggested, but many still involve the shooting of predators. Ecotourism as a possible solution is seldom suggested.

If wealthy city-dwellers are keen to see wild animals, there must be a way to raise revenue to compensate farmers. Hunters could earn money from showing tourists how to track and photograph animals, rather than track and shoot them. Tourism would bring much needed money into rural economies, such as those countries struggling after the democratization of Eastern Europe.

After reviewing a wide range of literature concerning the conservation of large carnivores world-wide and human attitudes towards them, two things became apparent. Firstly, an extensive published study of this sort has not

yet been conducted in Slovakia, a country with populations of large carnivores, and secondly, while similar studies have been conducted elsewhere, it is often difficult to see what action will be taken based on the results. If any solution is put forward, it tends to centre around compensation for the livestock owner, or better education for the public. Neither of these actions sets out to protect the predators, or to stop depredation. The aim of this study forms part of a wider assessment as to whether ecotourism is a possible initiative to save Slovakia's large carnivore species, and if it is not, what the alternatives might be.

By looking at current ecotourism operations to the area, assessing the legal status of large carnivores, and briefly looking at attitudes in other European countries, the aim is to build a background picture to the reasoning behind the questions on the questionnaire. The responses to the questions would hopefully help determine, along with other logistical problems facing the country, whether Slovakia is really ready to welcome ecotourists, and whether their presence can really help large carnivores.

In the end, it may be that ecotourism does not offer an immediate solution. After all, it cannot prevent attacks on livestock, and any revenue raised through tourism may not find its way to the section of the community who may be adversely affected by an increase in the number of carnivores in the wild. If ecotourism is not feasible, then the practice of protecting flocks with specially trained dogs may be the answer. Using dogs has been the traditional method of protecting flocks in many European countries. This practice died out in Slovakia over the last hundred years, but is currently undergoing a revival on selected sheep farms throughout the country. In the immediate future, it may be the best solution for livestock protection and in turn may cause farmers to think again about the status of large carnivores in Slovakia. Certainly, until Slovakia realises that it is able to exploit its rich resources through tourism, it offers the best hope for the wolf, bear and lynx.

1.2 Aims and Objectives

The aim of this study is to find out people's attitudes towards wolves, bears and lynx in Slovakia. Slovakia is taking the first steps towards welcoming visitors wishing to observe wildlife on ecotourism holidays. The public's attitudes towards these species is important in ascertaining whether they value them highly enough to be able to exploit them and promote them to visitors. Any opinions expressed could also have a bearing on how these animals are treated in terms of conservation efforts.

In order to be able to gather the necessary data to conduct this study, several objectives had to be carried out. By examining current literature in the literature review, it would become clear whether a study of this sort had been conducted before. The results of any previous studies would be noted and any recommendations considered for effectiveness. By concentrating on current management practices and attitudinal studies in other European countries, it would be possible to build a picture of how predators are viewed and treated in other countries where these animals exist. In order to obtain an up to date assessment of public opinion in Slovakia, it would be necessary to conduct a questionnaire covering personal opinions of large carnivores and attitudes to their management. Current conservation practices in Slovakia would also be examined

When all the necessary information had been gathered, it would be examined to reach conclusions concerning Slovak attitudes to large carnivores and the results related back to the original question of whether ecotourism can save these species. If it is found that ecotourism is not the answer, the alternatives will be discussed and recommendations suggested.

1.3 About Slovakia

Slovakia has an area of approximately 49,036km² with a population of 5.4 million. To the west, it borders Austria and the Czech Republic and Moravia, Poland lies to the north, the Ukraine to the East, and Hungary to the south. It has been an independent sovereign state since the break-up of Czechoslovakia in 1993 (Find'o, 2001a).

Since the fall of Communism, there has been a slow and difficult transition to a more capitalist-based economy, and Slovakia is still struggling. Unemployment is high outside the major cities, and rural areas are particularly hard hit due to the decline in markets for agricultural production (Find'o, 2001a).

Economic problems aside, Slovakia boasts a huge degree of landscape diversity, from the Carpathian Mountains in the north to the Danube flood plains in the south. Slovakia offers a natural beauty with mountains, lowlands, canyons, lakes, cave formations, forests and meadows, offering year-round opportunities for tourism. (Plates 1, 2 & 3). It is clearly a rich resource waiting to be exploited. The relatively slow rate of development has meant the survival of habitat for many species which are endangered elsewhere in Europe. These include wolves, bears, lynx, wildcat, beaver and many species of birds of prey. It is also a haven for butterflies on the meadows untouched by chemicals (Find'o, 2001a).

Plate 1 Klenovec, Central Slovakia



Plate 2 Nízke Tatry, Central Slovakia



Plate 3 Muránska Planina National Park, Central Slovakia



Forestry remains a major part of the Slovak economy, with 41% of the country being forested. Whilst many countries have suffered problems of deforestation in the last few decades, Slovakia's forest cover has actually increased. Some 40-45% of the forests are comprised of semi-natural stands which differ only slightly in species composition from the original forests. In addition, 70 fragments of virgin forest have been preserved (Find'o, 2001a).

About 50% of the land is used for agriculture. Ploughed arable land is a feature of the lowlands and in the lower parts of river valleys. Vineyards, hop fields, gardens and fruit orchards cover small areas dotted around the country which represent zones of higher biodiversity in these areas of intensively used land. However, the most valuable areas for biodiversity are the meadows and pastures, which make up one third of the agricultural land. Most of these have developed as a result of traditional land use practices in the past, and feature distinctive species diversity (Find'o, 2001a).

At present, over 22% of the country is covered by a network of protected areas, including seven National Parks and sixteen Protected Landscape Areas (figure 1). A number of areas in Slovakia have received international recognition. A recently completed World Conservation Union (IUCN) ECONET Project has identified thirty-five core areas of European importance. Two National Parks and two Protected Landscape Areas are included in the World Network of Biosphere Programme, seven areas have been recognised as Wetlands of International Importance under the Ramsar Convention and two locations have been inscribed into the UNESCO World Natural Heritage List (Find'o, 2001a).

Figure 1 Protected Areas



(Find'o, 2001a)

In asking the question, "can ecotourism save Slovakia's large carnivores?" clearly the potential is there. As illustrated in the many awards for its natural

beauty, international bodies realise that Slovakia has something worth conserving in terms of its natural resources. The native wildlife of Slovakia is part of the ecosystem and is also worthy of protection. Low scale ecotourism is a distinct possibility in the future, but until that time arrives, the landscape and wildlife must be protected. This can be difficult at times in a country with a strong hunting tradition. Some feel that management means hunting and hunting is merely the management of problem wildlife.

1.4 Overview of hunting regulations in Slovakia

The hunting tradition is deeply rooted in the culture of Slovak people and hunting activities are regulated by structured legislation. The majority of the forested territory belongs to the State, and so does the wildlife that lives in the forests. The territory of the country is divided into hunting management units, called hunting grounds. The management of these hunting grounds is regulated by plans usually produced by non-governmental management bodies. Different permits are issued for hunting game and trophy animals (Salvatori et al, 2002).

In Slovakia, deer are responsible for extensive tree damage. Foresters complain to the hunters, whose job it is to hunt and kill deer and other animals, including large carnivores who may be attacking livestock. If large carnivores were allowed to control the deer population, trees would not suffer so much damage, and there would be more deer available for large carnivores, who would not then need to prey on domestic livestock, and would not need to be controlled. Large carnivore populations are self limiting, based on natural prey available. In a study conducted by Meriggi and Lovari (1996), it was found that the presence of relatively few wild ungulate species was necessary to reduce predation on livestock. This scenario exists in a perfect world, however, and the reality is that hunting does exist.

Hunting quotas for each game species are established yearly on the basis of density estimates produced by hunting ground managers. There are regulations in place as to how population estimates are to be obtained which involves track recording on snow and direct sightings being recorded in

winter and spring every year. In reality, these methods are rarely used in a systematic way due to deep snow and a lack of available people to carry out such tasks (Salvatori et al, 2002).

The fact that large carnivores are hunted, points to the fact that these animals are perceived as being some sort of problem which has to be "managed", lest the country become overrun by marauding wild animals. This attitude has implications when considering attracting tourists to the area. Wildlife enthusiasts may find the concept of hunting difficult to take on board.

1.5 The Status of Large Carnivores in Slovakia

Wolves

The grey wolf (*Canis lupus*) primarily occupies the mountainous regions of central and eastern Slovakia. It occasionally recolonises former ranges and disperses to SW Slovakia, the Czech Republic and Hungary (Find'ò, 2001).

Hunters estimated numbers to be in the region of 1,281 in 2000, but would seem to be overestimation, with the real figure nearer 350 to 450 individuals. This figure is based on biological information such as average home range size (Salvatori et al, 2002).

The conservation status of the wolf is such that it can be hunted during the open season. This runs from 1st November until mid January. During the open season, wolves are hunted in specially organised hunts. The total number of hunters participating in such a chase can be up to 80 to 100 individuals. Wolves are also culled during wild boar hunts or individually at baiting sites. There is also some evidence that farmers in collaboration with hunters will attempt to illegally kill wolves that stray too close to the sheep camps during the night (Find'ò, 2001). In Slovakia, 118 wolves were killed in 2000 (Salvatori et al, 2002). Population trend estimates based on annual hunting figures indicate that the wolf population was increasing until 1993. Since 1994 it has slightly decreased as a result of overhunting (Find'ò, 2000).

Prior to July, 2002, (Find'o, pers. comm.) there was no compensation for farmers whose livestock was taken by wolves, leading to heavy poaching and hunting of wolves and a subsequent underestimation of losses caused by them as there was no incentive to report any damage. In 2000, wolves officially killed 68 sheep/goats (hunting statistics 2001). This loss was probably an underestimation (Find'o, 2001).

Bears

Brown bears (*Ursus arctos*) are common in mountainous areas. They are distributed more widely in the central part of the country, while in the eastern part they inhabit a narrow stretch along the Polish border. Hunters estimate the numbers to be in the region of around 1,467 individuals, but this is probably an overestimation, with the figure being nearer 700-800 individuals (Find'o, 2001).

Considerable damage is caused by bears. In 2000, bears destroyed 12 beehives and killed 247 sheep, 13 goats, 19 cattle and 1 horse. In Slovakia, compensation is paid to farmers for damage caused by bears to domestic livestock and beehives, but not to agricultural crops or fruits. (Salvatori et al, 2002). The total compensation paid was 10,380 USD. Damage to domestic animals and beehives is compensated for in two different ways:

- (1) Hunting clubs which are allowed to hunt bear during the year also have a duty to compensate damage to locals on their *hunting ground*.
- (2) Damage caused by bears on other land including hunting areas which are not granted permission to hunt bears, are compensated by the government via the Slovak Ministry of Agriculture.

Bear hunting in Slovakia is restricted to young individuals, as the population is composed of a high percentage of younger age classes and requires special permits issued by the Slovak Environment Agency and valid only for the period November to March. In Slovakia, 31 bears were killed in 2000 but numbers of bears are on the increase (Find'o, 2001).

Lynx

The elusive character of the lynx (*Lynx lynx*) makes it hard to hunt. In Slovakia, it is strictly protected and legal hunting does not occur, although poaching may be considerable. The lynx rarely causes damage to livestock but any damage now attracts compensation, as of July 2002. The main threats to lynx populations may be human-induced habitat modification, poaching and the decline of natural prey such as roe deer and chamois due to over harvest. In 1999, four special permits were issued to hunters in Slovakia, permitting them to control problem lynx. Damage to livestock caused by lynx is generally low, but its impact on the populations of roe deer can sometimes cause conflicts with hunters, who then apply for permits to kill lynx. (Salvatori et al, 2002). Numbers are decreasing and the lynx should be considered as the most endangered species of large carnivore in Slovakia (Find'o, 2000).

A new law which came into effect in July 2002 decreed that the hunting of wolves, bears and lynx using dogs was to be disallowed in the National Parks. Hunters are now only allowed to hunt alone from high seats or by stalking (Find'o pers. comm.). The only havens for wolves, bears and lynx are in small pockets in the National Parks. Hunting is not allowed at all in an area comprising 8% of the total area of National Parks. Some hunters consider this area to be too large (Find'o pers. comm.).

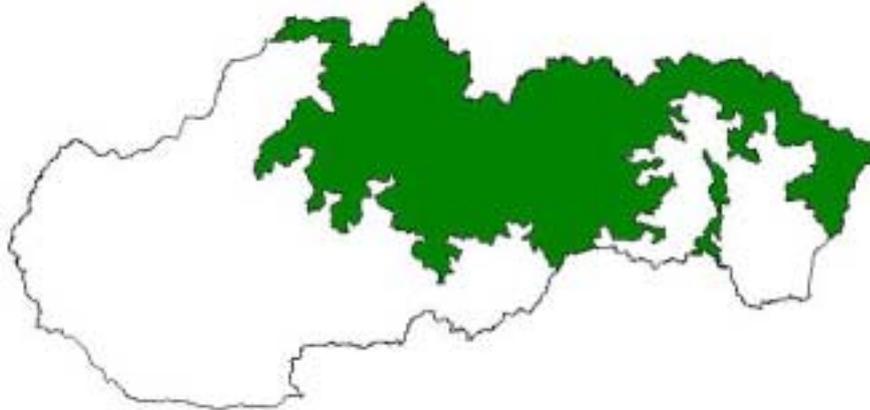
1.6 Distribution of the species

Wolves

Wolves are widespread all over the Carpathian range (fig. 2). The most important habitat for wolves is forest. The latest GIS analysis conducted at the Forest Research Institute in Zvolen showed a total wolf range of 20,777km², of which forest cover constitutes 11,542km² (55.12%). Wolves occupy areas from 300m up to the upper timberline and alpine meadows in summer. The wolf only uses open landscape for movement and hunting. Wolves inhabit coniferous and mixed as well as deciduous forests. The preference for forest habitat is mostly based on food availability and the

absence of human disturbance. Wolves also use small patches of forest in field areas as temporary resting places (Find'o, 2000).

Figure 2. Distribution of Grey Wolf *Canis lupus* in Slovakia



Source: Find'o (1998)

Brown Bear

Brown bears are distributed more widely in the central part of the country. In the eastern part, bears inhabit a narrow stretch along the Polish border (fig. 3). They are found in coniferous and mixed forests. In autumn, bears also frequent the lower beech and beech-oak forest belts searching for beechnuts and acorns. During snow-free periods, bears can be found in alpine meadows feeding on fruits. The main altitudes frequented by bears is 700-1250 metres (Find'o, 2000).

Figure 3. Distribution of Brown Bear *Ursus arctos* in Slovakia

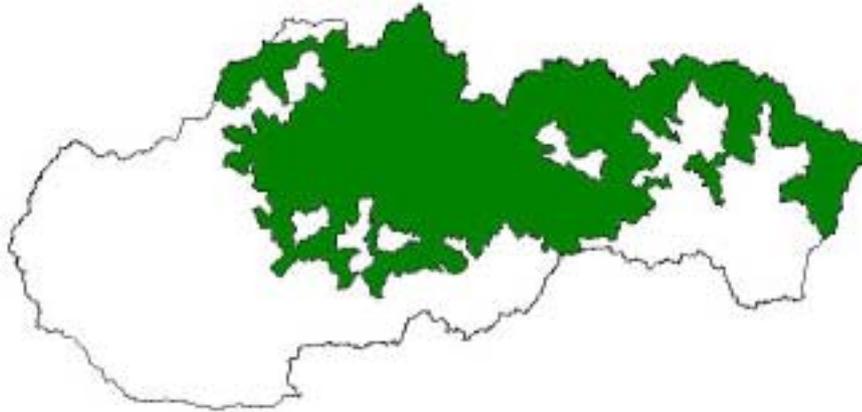


Source: Find'o (1998)

Lynx

Lynx are widespread over all the Carpathian range (fig. 4). Lynx can be found at heights from 150 to 2054m, with an optimal height of 800 to 1000m. The most frequent habitat is a fir-beech vegetation zone at 700-900m, beech vegetation zone at 500-700m and spruce-fir-beech vegetation zone at 900-1200m. In beech-oak or oak zones or above the timberline, lynx only occur transitionally (Find'o, 2000).

Figure 4. Distribution of Eurasian Lynx *Lynx lynx* in Slovakia



Source: Find'o (1998)

2 REVIEW OF CURRENT CONSERVATION INITIATIVES FOR LARGE CARNIVORES

Large predators have always been in competition with man for the same prey base. Man's evolution means that it is in a position to dominate rival species, and this has led to a drop in populations of predators in certain areas, due to direct elimination, and a reduction in prey available. Mishra (1997) cites Nowell and Jackson (1996) in observing that persecution by humans in response to livestock depredation in historical times has eliminated several carnivores, including the tiger, *Panthera tigris*, lion, *Panthera leo*, and puma, *Felis concolor*, from large parts of their former range.

When natural prey becomes scarce, predators turn to the best available alternative. Inevitably, this alternative is livestock, leading to further conflicts with man.

Livestock depredation by the snow leopard, *Uncia uncia*, and the wolf, *Canis lupus*, has resulted in a human-wildlife conflict that hinders the conservation of these endangered species. The compensation received by villagers in the trans-Himalaya region has amounted to 3% of the perceived annual loss. In turn, there has been a 37% increase in livestock holding in the last decade. With livestock densities up to 1500 per km², not surprisingly, livestock often greatly outnumber wild ungulates and also has the effect of reducing natural habitat. Such disproportionate presence of domestic ungulates results in the killing of livestock (Mishra, 1997).

There is also a tendency to attribute, often unintentionally, most cases of livestock death to wild predators, which accentuates the conflict. People often already have a negative attitude towards large carnivores.

Finding solutions to depredation problems in this region is so far confined to recommendations to introduce a fairer and more efficient compensation scheme. Suggestions on better herding methods, and more research into the abundance of prey species, along with assessments of the ecological impacts of the expanding livestock holdings have been put forward (Mishra, 1997).

In Europe, wolves, bears and lynx disappeared from all regions of high human activity during the 18th and 19th centuries because of direct persecution and habitat loss. Rural people still regard predators as pests and a threat to livestock and wildlife. This attitude is in stark contrast to the views generally held by urbanised populations, which have adopted a more romanticised view of carnivores. Breitenmoser (1997) cites old publications by von Tschudi (1868) on natural history which illustrate the general attitude of people towards all predators, and also reveal that people differentiated between the species. The wolf was the most feared and hated, and had to be eradicated. The bear was sometimes described as heroic, but an animal for which extinction was inevitable. The lynx, being the most elusive of the three was least known and least feared (Breitenmoser, 1997).

Slowly, large carnivores are returning to areas such as the Swiss Alps thanks to industrialisation which has drawn people away from remote areas and created a better habitat for them. Lynx numbers were not high enough to enable recolonisation, so a small number were reintroduced (Breitenmoser, 1997).

Large carnivores are believed to be keystone species in an ecosystem, as they control large herbivores, which overgraze habitats and damage trees. When the roe deer population was at its peak in the Swiss Alps, 50% of the total investment in forest management went to preventing browsing (Breitenmoser, 1997).

The return of large carnivores to the region has once again led to livestock depredation. Since the last century, the natural prey base has recovered, but animal husbandry methods have also changed. Sheep are the most vulnerable species to depredation and it is the most abundant livestock in remote areas. Large flocks are grazed, largely unattended on mountain pastures in the summer. Sheep breeders in Switzerland and in the French Alps have lost so much livestock to wolf attack, that they claim that the coexistence of wolves and sheep is impossible. Most likely, the recent policy of other western European countries, which all give strong legal protection to large carnivores when they were absent or in small numbers, will change as soon as the predators return and cause livestock damage (Breitenmoser, 1997).

Possible solutions put forward by Breitenmoser (1997) are zoning, where large areas of land are kept free of livestock husbandry, at present only practised in Slovenia, and probably unworkable in the Alps due to a lack of large open meadows; preventive measures and efficient compensation. In some cases, the only solution is either the removal of the predator or the removal of the sheep. He advocates public participation in any decision made, and an emphasis on education. Education only goes part way to solving the problems of conflict. It may be better to suggest further solutions tried and tested elsewhere, such as the use of dogs to protect livestock. It is not enough to know your enemy, you also need to know how to keep it from your door.

In Meriggi and Lovari's (1996) study of prey preferences of wolves in southern Europe, it was discovered that large prey were the most frequent food in the Mediterranean area. In Italy, wild ungulates were preferred to livestock, and studies conducted in Iberia suggest the same trend. When wild ungulates were absent, wolves often fed on rubbish. In Mediterranean areas, wolves fed on fruit more than at higher altitudes. Carnivores cannot easily digest vegetable matter, so fruit remains in scat may over-represent this type of food as a source of nutrition.

In Italy, wolves have been shown to prefer re-stocked wild ungulates over livestock. However, predation on domestic livestock still remains. The economic importance of wolf predation on livestock has thus led to repeated requests to allow legal culling of offending individuals or packs, or to open a hunting season for the wolf. Two other solutions are the increase in the use of large, aggressive livestock guarding dogs, and the provision of an alternative prey-base for wolves. Several species of wild ungulates could be reintroduced simultaneously over a large area (Meriggi & Lovari, 1996). These last two solutions could work hand in hand. It has been proved that wolves prefer wild prey, when enough is available, and they tend to avoid flocks protected by dogs. The incentive to take livestock would be removed in two ways.

In a further study on livestock depredation in Italy, Cozza et al (1996) looked into the socio-economic and psychological factors that lead to situations of conflict between predators and livestock owners. They advocate further study in the areas of data collection on predation by a revision of the claim for compensation validation procedures; assessing the causes of livestock mortality and examining the role uncontrolled dogs play in the problem; improved livestock protection; and a strengthening of the compensation process.

In Slovakia, uncontrolled domestic dogs play an important role in sheep worrying and attacks. These attacks are often blamed on wolves for two reasons. If the attack is not witnessed by the shepherd, in areas with wolf populations it is fair to assume that the attack could have been by a wolf. Also, compensation is available in the case of wolf attacks, but not those committed by domestic dogs. Livestock guarding dogs, however, if well-trained will protect a flock from any threat, wild or domestic.

It is clear that conservation efforts are underway across Europe, but a lot of them focus on the need for education. That is all well and good as part of a

bigger picture which actually seeks a solution to livestock depredation. Learning about the habits of a particular animal is not going to change its behaviour. The kind of landscape which supports large carnivores is usually an attractive one, being composed of open spaces and areas of wilderness. This is also attractive from a tourism perspective. The problem with combining tourism with observing large carnivores is that again it does not solve the problems of livestock depredation, and can only be seen in terms of compensation or an alternative revenue for farmers. This in itself could be detrimental to large carnivores, especially wolves where compensation is available for attacks by them. Farmers may blame wolves for all livestock losses, which would not go towards improving their reputation. Also, ecotourism is not just about conserving wildlife, it is also about protecting local livelihoods, and ensuring traditional practices are not lost.

Seeing Livestock Guarding Dogs working with a flock of sheep has the potential of not only being interesting in itself, and a tourist attraction, but perhaps more importantly, the dogs keep the predators away from the flocks and well within wilderness areas where they can be observed by wildlife tourists. Therefore, a combination of methods would seem to be the best way to deal with the problems of livestock depredation.

The next section looks at how large carnivores are viewed across Europe, and the factors that contribute to public opinion. All of the countries represented have populations of either wolves, bears or lynx, or all three species.

2.1 Attitudes towards wolves/large carnivores across Europe:

France

Wolves have only recently returned to France and the Large Carnivore Initiative for Europe (LCIE) carried out a study in two regions, Savoie and Des Alpes Maritimes in southern France. The aim of the study was to provide direction for communications activities by obtaining data on

attitudes and beliefs. The results determined which interest groups to target, what messages were appropriate and to whom they should be addressed (Bath, 2001).

Knowledge about wolves remains low with all the interest groups and the general public in both provinces. Most respondents overestimated the amount of wolves present in France, with many believing that there were hundreds. Interestingly however, even with these beliefs, there is still support for the conservation of the species within France by most respondents (Bath, 2001).

Many residents and members of interest groups also still have a strong fear of wolves. This is interesting given that 17% of Des Alpes Maritimes residents and nearly 9% of Savoie residents claim to have seen wolves in the wild. Their fear cannot be said to be based on ignorance. Considering the small numbers of wolves in France, the percentage of people claiming to have seen one is quite high (Bath, 2001).

Residents of Des Alpes Maritimes indicated a much stronger interest in the issue of wolves and wolf management in France, a much stronger interest in learning about wolves, and believed the issue was more important than their Savoie counterparts believed. Pastoralism is important to both regions, but flock size in Savoie tends to be smaller. Savoie residents are not as highly dependent on just agriculture for a living as their counterparts in Des Alpes Maritimes. Savoie has a much higher percentage (85%) of its population living in a rural environment than Des Alpes Maritimes at 4% (Bath, 2001).

Finland

There has been a tradition of "predator hate" in Finland. During the first half of the 19th century, man was responsible for the decline in natural prey

species of the wolf which resulted in increased attacks on livestock. When many households lost their one and only cow, it is not surprising that they set out to kill all the wolves and other large predators in the area. This predator hate continues to this day (Pulliainen, 1992).

When Pulliainen began his studies on wolves in the 1960s, he noticed a continuing hatred towards them. People wanted to kill wolves wherever they found them and even men who did not normally hunt, were ready to go out and kill wolves. Even the army was called in to help with wolf eradication. Whenever a wolf was spotted in the vicinity of a village newspapers would run stories describing how dangerous they were (Pulliainen, 1992).

Thanks to an education programme started by the author, accurate information was spread about the wolf by way of radio and television programmes, newspaper articles and lectures. Consequently, the numbers of people willing to speak out for the protection of wolves is increasing yearly. People's attitudes are gradually changing, thanks in part to time and the attitudes of new generations (Pulliainen, 1992). At present, Finland has a population of approximately 100 wolves.

Norway

The Norwegian government's attitude to the country's large carnivores is well-documented. In February 2002, acting in breach of the Bern Convention on Endangered Species' decree to maintain a viable wolf population within its borders, Norway slaughtered two of the country's three wolf packs. (Mills, 2001a).

Later in the year, the Forest Owners' Association mounted a campaign to exterminate the country's remaining wolves, arguing that they ate moose and roe deer, thereby depriving forest-owners of valuable sport-hunting fees (Mills, 2001b). There is little scientific basis for this argument since

wolves are so rare following the cull earlier in the year. They have only a negligible impact on moose numbers, as there are only 16 left living permanently within the Norwegian territory, with a further 20-30 sharing the border with Sweden (Mills, 2001b).

Norway is inconsistent in the way it treats wild and domestic animals, which was highlighted in 2002 by the killing of a small boy by a pack of dogs. The police immediately destroyed the dogs, but the law surrounding the handling of such incidents seems unfair. At present, though a farmer may shoot a dog which is worrying sheep, this right does not extend to a parent trying to protect a child. This attitude contrasts starkly with that towards wild carnivores. Even though these animals pose no threat to humans, the government spent approximately £205,000 eradicating them in 2000-2001 (Mills, 2002a). This reaction seems part of the general irrational response to large carnivores which is inappropriate considering the way they really interact with people. Unlike domestic dogs, wild carnivores are afraid of people and try and avoid them at all costs.

Not content with eradicating the entire wolf population, the Norwegian government has set about a programme of extermination for wolverines, lynxes and bears. In spite of crashing populations of wolverines and lynx in particular, the government consistently sets unsustainable hunting quotas. This persecution is based upon the fact that large carnivores attack livestock. Rather than make any attempt to protect livestock, sheep are left totally unattended and unfenced on summer pasture making conflicts with predators inevitable. The predators are then seen as fair game and are shot (Mills, 2002b).

Redemption may come in the form of the ordinary Norwegian. A recent scandal came to the public's attention where reindeer herders were claiming compensation for the loss of 40,000 calves a year to wolverines and golden eagles. Researchers consequently placed radio collars on 100

free-ranging calves, of which only one was killed. Mortality was due to overstocking following the doubling of reindeer herds over the last 20 years. This, along with other fraudulent claims relating to predator compensation was aired in a television documentary in March, and it opened the public's eyes (Mills, 2002b).

The way one of the Norwegian wolf packs was wiped out was also shocking for the Norwegian public. Instead of farmers legitimately controlling predators that were threatening their livelihoods, as they had been led to believe, dozens of men armed with pump-action shotguns, hunted down the exhausted wolves from helicopters. The governing Arbeiders party, with strong links to the farming lobby lost the election of September 2001, with a severe drop in the opinion polls. So far, the new government has issued no further hunting licences for the killing of wolves (Mills, 2002b).

Germany

Most people in Germany view wolves irrationally. They still remember the stories of "Little Red Riding Hood", and the wolf is still considered a man-eater. In 1976, nine wolves escaped from an enclosure in the Bavarian Forest National Park. For weeks, these wolves were the most discussed topic in Germany until all of them were shot or had managed to escape into neighbouring Czechoslovakia. Hunters and police troops participated in the hunt. The funny thing is that the people who exhibited the most fear were those not even living in the forest, as they had the most preconceptions about wolves. It was these people who applied the most pressure for the elimination of these animals (Promberger et al, 1992).

Fortunately today, public attitudes towards wolves seem to be changing. Over several years, a pro-wolf lobby has started to build up throughout German society. For wolves to be efficiently protected, this lobby must join

forces with other pressure groups to educate the public that wolves will not attack people, and they can coexist with humans (Promberger et al, 1992).

Austria

A study conducted by the Large Carnivore Initiative for Europe (LCIE) assessed public attitudes to towards bear and lynx and examined whether attitudes may differ spatially and temporarily across the nine Austrian provinces. It found that while hunters are negative to both species, there are differences in attitudes between those who live in areas with bear and lynx populations and are used to them, and those who have had little experience of them. Vienna residents were supportive of large carnivore presence and reintroductions, although they were more positive about reintroductions of herbivores and birds of prey (ANON, 2002d).

Greece

In regions with permanent wolf presence, shepherds have larger and stronger dogs than in other areas, and they sometimes fit them with spiked collars. In these areas, an insignificant annual damage is attributed to wolves and is considered inevitable. In areas with only occasional wolf presence, the flocks are often left unattended, in which case the sheep is immediately persecuted by wolves (Adamakopoulos & Adamakopoulos, 1992).

In general, the wolf is considered to be a bloodthirsty animal that kills for pleasure. Until now, no significant effort has been made to educate the public and improve the wolf's image (Adamakopoulos & Adamakopoulos, 1992).

Croatia

The *Human Dimensions in Wolf Management* programme conducted by the LCIE has helped develop partnerships between organisations that

have not traditionally worked together in Croatia. A lynx action plan has recently been developed using a human dimensions approach and interest groups are working together on bear and wolf management issues. This wolf study has resulted in a report comparing human attitudes towards wolves and wolf management across three zones, Gorski kotar, Lika, and Dalmatia that lie in the Croatian wolf range. Attitudes differed across these three areas. Most general public residents supported maintaining wolves in Croatia for future generations. There was a large variation in responses between hunters in the three areas. Hunters in Gorski kotar (57%) and Dalmatia (52%) supported the statement about maintaining wolves for future generations, but only 22% of the Lika hunters supported this statement (ANON, 2001)

Fear of wolves was strongest amongst students in all three zones. This response is interesting as most of the residents of Gorski kotar (67%), Lika (64%) and Dalmatia (59%) claimed to have seen wild wolves at some time in their life (ANON, 2001)

While results from a small sample of shepherd reveal a strong disliking of wolves, nearly half of the shepherds still stated that it was important to maintain wolves in Croatia for future generations, which is an encouraging and progressive attitude. (ANON, 2001)

Slovenia

Attitudes towards and beliefs about brown bears and their management were studied by the LCIE to identify what factors influence public attitudes in Slovenia. Despite the overall positive attitude, support for a further increase was very low and was negatively correlated with knowledge, a somewhat unusual response. The perception of risk to humans and their property, either real or unfounded was the most important factor in predicting attitudes. Irrational fear seems to be a common theme running through most research on public attitudes to predatory species (ANON, 2002d)

Italy

Direct persecution of wolves by humans has been the main cause of wolf population declines in historic times. Despite legal protection, shooting, poisoning, trapping and traffic accidents still represent the most significant factors in their demise (Guberti & Francisci, 1991 cited in Boitani & Ciucci, 1992). General negligence in law enforcement, especially at a local level, historic, cultural and psychological attitudes towards wolves (Boitani & Zimen, 1979 cited in Boitani & Ciucci, 1992) and conflicts of an economic nature, such as livestock depredation form the main reasons for this persecution (Boitani & Ciucci, 1992).

The attitudes of Italians towards wolves have only been investigated by way of a limited survey, carried out in the 1970s (Serracchiani, 1976 cited in Boitani & Ciucci, 1992) in Abruzzo. Interesting results were observed where fears and prejudices were strongly linked to ignorance about the wolf. Women were more frightened than men, and office workers more frightened than forestry wardens or hunters. A surprising degree of tolerance was exhibited by shepherds, who did complain about wolves but were prepared to accept them as long as they were causing no damage to livestock (Kellert, 1985 cited in Boitani & Ciucci, 1992). This finding proves that attitudes can change when predators cease to have a negative impact on livestock. This exhibits a strong case for using dogs to protect flocks.

In recent years, the general attitude of the overall Italian public has become more in favour of wolves, thanks to the ongoing efforts of conservation groups such as the World Wide Fund for Nature (WWF) to inform and educate people. There is also a greater appreciation of ecological themes in general (Boitani & Ciucci, 1992).

Spain

In general, most Spaniards are interested in the protection of wolves, and nature as a whole. However, in areas where the wolf is present, attitudes tend to vary. Most cattle owners see the wolf as an enemy. Some believe wolves should be exterminated completely, others think they should be kept in permanent enclosures, and some think their numbers should be

reduced. Young people see the wolf as a rebel, that has been fighting for survival for centuries, or as the last symbol of the wilderness. Shepherds feel that if there was proper compensation for livestock damage, there is a chance that there could be a peaceful coexistence (Vila et al, 1992).

Portugal

A human dimensions in wolf management study carried out by the LCIE aimed to establish a baseline assessment of public attitudes towards and beliefs about wolves among different interest groups, including hunters, livestock owners, students and the media. Attitudes were found to be generally positive or neutral, with only a few hunters and livestock owners registering a dislike of wolves. A new study is planned to look at the Portuguese wolf population at the Southern Douro River. At that time, student attitudes and beliefs will also be analysed by region to help guide educational programmes in the future (ANON, 2002d).

Public education, again would seem to be the most popular means of tackling conflicts with large carnivores. Learning to appreciate the importance of predators to maintain an equilibrium within nature, and to appreciate their beauty are two aspects of this education. Teaching people that these animals also have a commercial value is a step forward in their acceptance. Several countries have already realised this potential and already welcome nature and ecotourists.

Slovakia is a country that boasts spectacular scenery and is home to wolves, bears and lynx. At the moment, however, it is not capitalising on its natural resources, and welcomes relatively few tourists. This is in part due to a lack of advertising, stemming from a lack of funds, but also a lack of appreciation for the resource they have.

The following chapter explains how data were collected in Slovakia to try and find out that country's opinions and perceptions of its native large carnivores, to ascertain whether tourists in search of them would be welcomed.

3 METHODOLOGY

The aim of this study was to find out people's attitudes towards large carnivores to assess whether their perspectives were accurate and their attitudes positive or negative. In an area considering itself as a potential destination for ecotourism, it is important to know if the local population shares the visitors' enthusiasm for predatory animals, bearing in mind that negative attitudes could be transmitted to tourists. Also, any future decisions made on the fate of large carnivores might be based on what local foresters, hunters and farmers have to say.

Thirty respondents were chosen in areas with known populations of wolves, bears and lynx, (Fig. 5) and were chosen, for the most part on the basis that they were likely to have had some interaction with these animals, or had some other interest in them, such as their biology or conservation. A small sample was chosen who were not likely to have any contact with these animals to gauge what attitudes were among a more general public.

The survey was carried out by way of a questionnaire distributed between 18th June and 29th July 2002, and consisted of thirty-eight questions covering demographic information, personal feelings towards large carnivores, knowledge of these animals, and feelings towards their management. The majority of responses were based on Likert's scale, with a minority of questions calling for more creative thought, or estimates concerning populations of carnivores and their trends. Questionnaires were delivered personally, and completed at the time or, in some cases left for the respondent to complete in their own time, and collected a few days later.

Existing research has focussed on questionnaires as the most effective way of gathering information. Personal interviewing can yield the highest

response rate of any survey technique. Refusal rates are virtually none existent.

It was decided that people who had direct contact with large carnivores would be chosen to complete the questionnaire, as they were the people most affected by any decisions made about wildlife management, and would have a say in these decisions. These people are also the ones whose attitudes could be changed which could in turn lead to a change in government policy.

The original plan was to conduct interviews with groups of people and ask them where they thought the problems lay, in terms of large carnivore management and nominate another group to be interviewed. This idea was abandoned when it became clear that likely respondents would not have the necessary English to understand the questions and the interviewer does not speak Slovak. Therefore, the questionnaire was translated into Slovak.

The questionnaire was based on one used extensively by the large Carnivore Initiative for Europe (LCIE) to assess public attitudes towards wolves in two regions of France.

4 OVERVIEW OF EXISTING ECOTOURISM HOLIDAYS TO SLOVAKIA FROM THE UK

At present there would seem to be only three organisations operating from the UK that deal specifically with ecotourism holidays in Slovakia. The organisation British Trust for Conservation Volunteers (BTCV) offer several opportunities to assist in conservation projects. They run various species monitoring working holidays to the Tatra Mountains combined with observing livestock guarding dogs at work. In Bratislava, there is a project concerned with opening access in the Morava floodplain, essential repairs and improvements and invasive species clearing. On the Polish border at Pieniny there is an ongoing project in habitat conservation (ANON, 2001a).

The other organisation is the Slovakian NGO, The Carpathian Wildlife Society, who have a corresponding office in the UK. They offer trips either to help with their two ongoing projects or birdwatching and wildlife holidays where observations help towards research. Their two ongoing projects are the long-term study of the behavioural ecology of the wolf in the Slovak Carpathians, and observations of livestock guarding dogs and the future of conservation in Slovakia.

The third organisation is the Carpathian Large Carnivore Project who focus their trips on conservation efforts similar to those organised by the Carpathian Wildlife Society.

Other ecotourism organisations suggest Slovakia as a good place to visit for wildlife, but they do not organise the trips themselves, possibly because they are already aware of the problems caused by the infrastructure. There is clearly plenty of room for expansion into Slovakia, and the small number of organisations that deal with wildlife tourism to Slovakia illustrate just how unknown it is as a destination.

4.1 Case Study: Working Holiday with the Carpathian Wildlife Society

During July, the Carpathian Wildlife Society run a two-week working holiday to the Mur nska Planina and N zke Tatry National Parks. The trip is entitled "Resolving wolf/human conflicts" and involves observing Livestock Guarding Dogs at work. This trip is normally run for groups of 6-12 people. This year there were just two volunteers.

Resolving Wolf/Human Conflicts-Working Holiday with the Carpathian Wildlife Society

During this holiday, volunteers observe the behaviour of adult Livestock Guarding dogs and pups, working within flocks. Important things to observe are signs of close bonding between the dogs and the sheep as well as signs of inappropriate behaviour such as aggressiveness, chasing, and playing with other dogs working with the flock. A good guardian stays with the flock 24 hours a day, moving around the pasture with the sheep, and showing itself to be trustworthy. Many of the sheep farms lie on the fringes of the National Parks, so walkers and cyclists are common. Reactions to this type of disturbance is observed to see if the dog is overtly aggressive (Find'o, 2001a).

The presence of overseas volunteers in Slovakia studying human/wolf conflict and how to resolve it is important to help raise public awareness of the issues involved. This research is necessary to increase the understanding and to ensure the survival of large carnivores. The data collected by participants on large carnivore presence around the sheep camps contribute to existing data on the habits of large carnivores, as well as being useful to the Livestock Guarding Dog Project itself (Find'o, 2001a).

The two volunteers who participated in this project in July 2002 were asked a number of questions at the beginning of their holiday to assess their

expectations of the trip. They were interviewed again at the end of the holiday to see if these expectations had been met.

The two volunteers both expressed realistic expectations of the trip. Both stated that while it would be a bonus to see large carnivores, they had no high expectations of doing so. They were in Slovakia primarily to monitor the work of the Livestock Guarding Dogs, and hoped to be able to observe wildlife in their free time.

One of the volunteers had visited Slovakia in 2000, and was keen for her husband to see the country. They were also positive about the prospect of helping large carnivores. They thought this would be achieved by monitoring the dogs protecting the flocks and proving that wolves were not constantly trying to attack sheep. They wanted to "prove the wolves' innocence."

One of the volunteers had been involved in another project; wolf tracking in 2000 with BTCV. This holiday had not been entirely successful, and the volunteer had been concerned about how their funds would be used in wolf conservation. It was only when the Carpathian Wildlife society became involved, explaining telemetry and leading the tracking, that this particular trip improved. The volunteer felt the trip had been expensive and accounting for their contribution not transparent.

After the holiday, the volunteers were asked if their expectations had been met.

Due to adverse weather conditions, and a series of unforeseen events affecting the opportunities to visit many sheep farms, the volunteers felt that they had only minimally contributed to research in the project. They also felt that the trip lacked organisation and structure, and would possibly have

benefited from either more volunteers or research staff. They felt that they had gained an insight into the difficult life of a Slovak shepherd, and greater appreciation of the problems they faced due to livestock loss. They felt that the Livestock Guarding Dog programme was the most realistic method at present of keeping predators away from flocks, with the added advantage of preserving the life of the predator.

Both of the volunteers expressed disappointment at not spotting any large carnivores, and felt that several opportunities had been missed to try and observe them.

Overall, the volunteers had enjoyed their holiday and were interested to see the development of the Livestock Guarding Dog programme. They felt they would return to Slovakia at a later date, and were keen to recommend the country and conservation volunteering to their friends.

4.2 Overview of existing ecotourism holidays to Romania, Hungary and Poland from the UK

By looking at existing ecotourism initiatives to other central European countries with a similar ecosystem, the aim is to see the potential for the exploitation of natural resources. Romania, Hungary and Poland share the common ecosystem of the Carpathian Mountains with Slovakia, and are also making tentative inroads in the field of ecotourism holidays.

Romania is in a favourable position geographically, being situated only one hour away by plane from Prague, Vienna and Budapest. There is an effort underway to promote tourism in Romania with the privatisation of facilities in progress. Approximately 6.5 million tourists stay in Romanian accommodation per year, and in 1996, the country was visited by 5.2 million foreigners (Borozan, 1999).

Poland welcomed nearly 10.5 million visitors in the first quarter of 2002. In 2001, 25% of the visitors were there for recreational purposes. Of these, 6% were on package holidays, 11% were on self-organized trips with some help from an agency, and 83% were on trips that they had organized entirely independently (Polish Institute of Tourism, 2002). Most of the visitors were from the 35-44 age group, who are usually tourists with quite a high disposable income, which could bode well for ecotourism operations, which are usually the more expensive, tailor-made type of holiday.

In Hungary, the total travel and tourism sales in 2001 were 3700 million USD. Experts estimate that 10% of Hungary's GDP currently derives from tourism. Hungary welcomed some 30.6 million foreigners in 2001.

The Hungarian government has recognized the importance of providing incentives for the development of tourism and has guaranteed a priority role for the implementation of a modernization program in its most recent National Economic Plan. Objectives of the tourism development program include increasing the effectiveness of foreign tourism, strengthening domestic tourism, and improving the level of services (United States Department of Commerce, 2002).

All three countries have populations of the three large carnivore species, and are investing in all aspects of tourism. Slovakia has the same potential as these countries to earn a great deal of money from tourism, but needs more investment in infrastructure, and a willingness by the government to realise the potential of tourism and invest accordingly. There is no reason why Slovakia cannot be as successful as Hungary in earning revenue from tourism.

Table 1 gives a summary of current ecotourism ventures available from the UK.

Table 1. Ecotourism holidays to Romania, Poland and Hungary

Country	Destination	Activity	Company
Romania	Danube Delta	cultural, biking, walking, wildlife safaris, birdwatching	Enzia Travel Service Ltd
	Bucegi Mountains	Improving visitor interpretation	British Trust for Conservation Volunteers (BTCV)
	Retzeat National Park	Improving access	BTCV
	Carpathian Mountains	Hiking, riding, helping farmers with electric fencing	Carpathian Large Carnivore Project (CLCP)
	Zarnesti	Large carnivore education	Exodus Travels/CLCP
Poland	National Parks	Snow & radio tracking of wolves	Biosphere expeditions
Hungary	Gomorzolos	Promoting sustainable agriculture, traditional handicrafts, nature protection	BTCV
	Petesmalon Reserve	Improving nesting sites for wildfowl, clearing streams for otters	BTCV

The previous section looked at how other countries have tried to exploit their natural resources and promote tourism. They are working to build their economies after the break-up of Eastern Europe, and are showing signs of

success. The next section looks at the various problems Slovakia faces in its fight to improve its economy through tourism.

4.3 Constraints of ecotourism in Slovakia

The likelihood of seeing large carnivores in Slovakia without an experienced guide is remote. Any observations have to be carried out late in the day or early in the morning, or an observer needs to be prepared to keep watch all night. People's expectations are quite often unrealistic, expecting to see wolves sitting at the side of the road at every turn. A keen ornithologist visiting Slovakia would not be disappointed, however, as they are likely to see interesting birds commonly found here but rarer at home. The same can be said about butterflies.

Small-scale ecotourism cannot hope to help many in the local community. Local guesthouses will probably only receive a small number of guests, who are unlikely to spend much money in the local community.

The idea of suggesting hunters turn into wildlife guides has been suggested, and they could certainly earn more money in this way than shooting animals. The problem is convincing these hunters to turn their back on government financed jobs for an irregular income from tourism. A complete change in mindset would have to take place. The problem is that unless tourism reached the state where tourists were visiting regularly all year round, it would not be a financially viable option. There are opportunities for wildlife watching in all seasons, and in many ways winter is a good time to visit, as animals are easier to track through snow. The reality at present is that there are not enough tourists visiting the region at any time of the year.

Despite many natural attractions and cheap services Slovakia has to offer, it is far from being overrun by tourists. One of the problems is that Slovakia remains a relatively unknown destination abroad. At present, there are not

the government funds available for a concerted effort to promote tourism. People tend to overlook Slovakia in favour of known destinations in neighbouring countries, such as Budapest in Hungary and Prague in the Czech Republic.

A change in mindset is one of the things required as tourism is underestimated by the government in Slovakia. No one perceives it as an industry, unlike in neighbouring countries. The government does not realise what a valuable asset it is sitting on and that people do want to visit a country where the natural beauty is its main attraction. With careful planning, tourism could bring in much needed revenue but care must be taken to not spoil the beauty of the country. That is the paradox of ecotourism.

The state-run Slovak Tourism Agency (SACR), which is in charge of promoting Slovakia as a tourist destination says it needs at least Sk80 million (£1.16 million) per year to adequately promote tourism in the country, but has yet to approach this budget since its founding in 1995 (Barecz, 2002).

In 2002, SACR received only Sk50 million (£722,239), Sk12 million more than in 2001, but still six times less than the tourism promotion budget in the Czech Republic and 20 times less than in Hungary. A portion of this increased budget will be used to open representative offices in Vienna, Moscow, Paris and Warsaw before the end of September, with plans for further expansion into Amsterdam, Budapest and Munich before the end of 2002. At present SACR's only current office is in Prague, which is not even in Slovakia (Barecz, 2002).

The Czech Republic has already launched 13 similar offices and sees annual revenues from tourism of around 3.5 billion USD. Slovak tourism

revenues, meanwhile, increased from 420 million USD in 2000 to 650 million USD in 2001, mainly because statistics included Slovaks changing their savings into Euros. According to the Statistical Office, the number of tourists crossing the Slovak borders actually fell from 28.8 million in 2000 to 27.8 million in 2001, forming part of the steady decline since 1996 (Barecz, 2002).

Most tourists, over 327,000 in 2001, went to Slovakia from the neighbouring Czech Republic, followed by Poland and the former East Germany. The country is frequently overlooked by the more prosperous travellers from the EU and the US in favour of Prague and Budapest (Barecz, 2002).

Moreover, 80 per cent of tourists go to Slovakia because of previous experience in the country, while only a tiny percentage visit based on information received abroad (Barecz, 2002).

A major logistical problem is that Slovakia does not have its own international airport. At present, international flights are served by Vienna's Schwechat Airport, situated forty-five kilometres away to the west and linked to Bratislava by a bus service. Bratislava is situated in the extreme west of the country, so onward travel is necessary to reach the mountain regions in the centre where the large carnivores are mainly found.

There has been talk of Bratislava extending its existing airport to accommodate international flights, but there has been some opposition to these plans from Austria. A better location would be a more centrally located town such as Zvolen or Poprad which already have military and small civil airports. It seems unlikely that NATO will ever agree to expanding the airport at Zvolen, however.

Negotiations are currently underway concerning Slovakia's proposed entry into the European Union in 2004. It is clear that many things would change then. One advantage would almost certainly be an improvement in the provision of foreign language teaching. Although English is officially taught in schools, in reality you are hard-pushed to find many people with even a basic understanding of English. The same can be said about the other major European languages. The older generation speaks Russian, but is sometimes reluctant to do so. Some also have a smattering of German. To compete in the tourism market, the Slovak government must address these problems.

Clearly, ecotourism is as yet an inappropriate method of securing the future of its wildlife. The following chapter analyses the results obtained from the questionnaire with the aim of trying to find some more immediate solutions to Slovakia's problems.

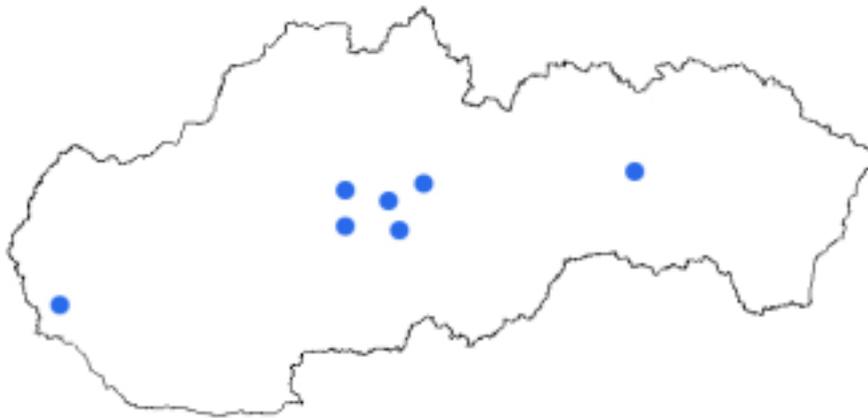
5 ANALYSIS OF RESULTS

5.1 About the respondents

Thirty respondents were chosen from a variety of backgrounds. Most of the occupations of the respondents were concerned with wildlife in some way. The nature of this type of work means that the majority of the respondents were male. The female respondents, of which there were nine, were composed of housewives, students, zoologists, a researcher and an expert on EU conventions, working for the State Nature Conservancy Department. The male respondents were shepherds, foresters and forestry researchers or engineers, university staff, zoologists, manual workers and one owner of a stud farm.

The sample was collected from mostly rural areas in central and eastern Slovakia (fig.5) in areas with populations of large carnivores.

Figure 5 map of respondents



5.2 Knowledge about and attitudes towards large carnivores

Out of the thirty respondents, twenty-one claimed to have seen either one or all of the target species in the wild. The lynx turned out to be the favourite species, with eight respondents reporting that they liked the lynx very much, and five reporting that they liked them. Eight respondents were indifferent. Only one respondent reported that they disliked the lynx. The wolf was the least favourite species, with three respondents reporting a dislike, and eleven indifferent. Four liked wolves and a further four liked them very much.

People's opinions of bears were somewhere in between, with two respondents disliking them, ten indifferent, four liking them and six liking them very much.

When asked if the presence of the three carnivores was a good thing in Slovakia, again the wolf fared the worst. The overall result however, was quite positive. Thirteen respondents thought that the presence of wolves was a good thing, with six thinking it was a bad thing and three were indifferent. The scores for the bear and the lynx were the same with sixteen respondents saying that their presence was a good thing, one saying it was a bad thing and five were indifferent.

Out of the remaining nine respondents who had not seen any of the animals in the wild, opinions were generally favourable. Again, the wolf fared slightly worse, with five people liking them very much, and three people liking them. Bears and lynx were the same, with six people liking them very much and two liking them. Only one respondent disliked all three species. All of the respondents except for one thought the presence of wolves, bears and lynx was a good thing. Of the nine respondents, eight were female. The respondent registering a dislike of all the species and an indifference to their presence was female.

Two important groups whose opinions were sought were the foresters and the shepherds. Foresters are often involved with hunting as well as forestry, and their opinions are important when policy is decided. How they feel about large carnivores could also be significant if in the future they are called upon to escort ecotourists on wildlife watching holidays. Their knowledge of the status of each species is important if they are involved in their management.

Out of the eight foresters, only one registered a dislike of wolves. Three liked wolves and two liked them very much. Two respondents were indifferent. Three people liked bears very much and two liked them. Three were indifferent. Again, the lynx fared slightly better than the rest, with three

respondents liking them and a further three liking them very much. Two were indifferent.

A majority (62.5%) thought that all three species encouraged visitors to Slovakia. Six respondents disagreed with wolves being hunted all year round, but five agreed with them being hunted in the Open Season. Only one respondent thought that bears should be hunted all year round, and the same for the lynx. One respondent felt strongly against hunting in any season. Some of the respondents answered that hunting should be allowed in the Open Season and all year round, confusing the results a little.

A majority (75%) thought that wolves and bears helped maintain an equilibrium in nature among large game species such as deer. For the lynx, 62.5% thought this to be true, one did not know. Two respondents disagreed with the statement.

Shepherds often come into contact and conflict with large carnivores and these interactions would have a bearing on their feelings towards these animals. Four shepherds were asked for their opinions. In this case, all of the shepherds had seen one or more of the predators in the wild.

Shepherds were, for the most part indifferent towards the three species. One liked lynx very much and one disliked wolves and bears. All of the respondents thought that wolves and bears caused an unacceptable level of damage to livestock, but only half thought that lynx did. Three out of the four had lost livestock to wolves and bears, but none to lynx. All of the respondents knew someone who had lost livestock to wolves and bears, but again, none to lynx. One respondent thought that wolves would only attack livestock when there was no other prey available, all of them thought that bears would only attack when no other prey was available and half thought that lynx would only attack under these circumstances. When predators lived in close proximity to livestock, three out of the four thought that wolves and bears would feed on it. Only one thought that lynx would feed on it in these circumstances.

Shepherds were questioned on how they protected their livestock. All of them made some effort to protect their flocks. All four shepherds mentioned dogs as a means of protection, but not all were specifically Livestock Guarding Dogs, or if they were, they had not been using them for long, or kept them chained. Night penning, enclosures and the presence of people were other methods mentioned. They all thought that farmers should receive compensation for attacks from large carnivores, but one respondent was undecided as to whether compensation was appropriate in the case of lynx attacks. All the respondents thought that compensation should only be available to livestock owners taking reasonable measures to protect flocks.

Since foresters are often involved with wildlife management, it is important to know whether what they do is sustainable or not. Respondents were asked about population numbers and trends of the three species and whether they were protected or not in Slovakia. The results are shown in table 2.

Table 2 Foresters' knowledge of wolf, bear and lynx status (n=8)

Question	Respondents' Answers							
Population of wolves	?	?	1500	?	?	?	250	?
Population of bears	?	800	800	?	?	?	700	?
Population of lynx	?	?	1200	?	?	?	enough	?
5 year pop. trend: wolf	S	S	I	I	S	D	I	I
5 year pop. trend: bear	I	I	I	I	I	D	I	I
5 year pop. trend: lynx	I	S	I	S	D	D	I	S
Wolf protected in Slovakia?	Y	Y	Y	Y	N	Y	N	N
Bear protected in Slovakia?	Y	Y	Y	Y	Y	Y	Y	Y
Lynx protected in Slovakia?	Y	Y	Y	Y	N	Y	Y	Y

I=Increasing, D=Decreasing, S=Stable, Y=Yes, N=No, ?=Don't know/no response

5.3 Discussion

A high proportion of respondents claim to have seen large carnivores in the wild. Considering the occupations of the respondents, this is perhaps not surprising. Rather predictably, the wolf is again proved to be the least popular species. Old habits die hard and prejudices linger in rural Slovakia. Much of this hatred is entirely unjustified, especially when measure against attitudes

exhibited towards bears. Every year several people are victims of bear attack, which is something which cannot be said about wolves. Generally they try and avoid people, but when confronted with humans are much more likely to stand their ground than a wolf. The fact that more wolves than bears attack livestock could be part of the reason for their unpopularity.

Foresters, who apart from the group of zoologists exhibited the most knowledge about the species were not, on the whole great lovers of large carnivore species. The seemingly negative correlation with knowledge of the species bears out the study done in Slovenia assessing public attitudes to large carnivores. This has reaching implications for an educational approach to the problems presented by the presence of large carnivores. Education would have to focus on more than teaching people solely about large carnivores. People must be taught the importance of maintaining the ecosystem for all in Slovakia and an appreciation of natural resources.

It is also interesting to note that although foresters are sometimes involved with wildlife management, the majority have no idea what the populations are of wolves, bears and lynx, or even what the population trends are for these species. They were also unclear on the legal status of large carnivores. Currently there are between 350 and 450 wolves in Slovakia. This population has been steadily decreasing since 1994, partly due to overhunting. Wolves as an unprotected species, can be hunted during the Open Season. Their only safe haven is several pockets of protected areas within the National Parks. There are between 700 and 800 bears in Slovakia, and this population is on the increase. They can be hunted with special permits issued by the Slovak Environment Agency which are valid from November to March only. Bears, currently on the increase have better protection than wolves, such is the prejudice surrounding the wolf. The lynx is the only species which is strictly protected under Slovak law. However, due to poaching, their numbers are only between 400 and 500 and are falling. There are far from "enough" lynx in the wild in Slovakia, and their future is by no means certain.

The negative feelings shepherds have towards large carnivores are understandable, but they do recognise which species are responsible for attacks on livestock. The lynx fares better than wolves and bears as they are seldom implicated in the taking of livestock. Plate 4 shows a young sheep that managed to escape from a wolf during an attack on the flock in Slovakia. The sheep is kept apart from the flock and monitored until it has recovered.

Plate 4 Sheep attacked by wolf



There is evidently some room for improvement in the predator / human / livestock relationship. While Slovakia relies so heavily on a rural economy, it is not practical to see things in terms of just protecting wildlife. The livelihoods of farmers need to be taken into consideration. The fact that foresters are no great lovers of large carnivores is not encouraging if they, along with hunters are called on to escort parties of ecotourists. There may be hope for a better relationship between predators and shepherds if they could be kept away from livestock. Livestock Guarding Dogs would be one solution to this problem.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Originally, four objectives were set for this research. They were to examine current literature surrounding wolves, bears and lynx and the problems their presence can provoke; looking at existing conservation initiatives; investigating current views of large carnivores across Europe, and exploring alternatives to ecotourism as a means to solving large carnivore and human conflicts.

The literature review proved to be the most straightforward means of looking at large carnivore problems and initiatives for their management. Of the other three, the original research was limited to a certain extent by research funding. It would have been better to have a wider sample of respondents. Having said that, the thirty respondents covered a range of professions.

The key to the future of all of Slovakia's large carnivores lies in man's perception of these animals. It will influence the legal status of each species, a willingness to protect habitat, the tolerance level for damage and the kind of control exercised when it is considered necessary (Schröder & Promberger, 1992).

Public awareness and understanding of large carnivores needs to be improved using different methods, from co-operation of the media, to introducing education on native wildlife in schools, particularly in areas where people live in close proximity with large carnivores. More will have to be learned through research, particularly concerning such problems of how large carnivores interact with prey and how they relate to different habitats in Europe. Research is fundamental for a sound conservation plan that includes damage prevention. This includes ensuring a consistent prey

base is available. Prey populations and their habitat should be managed with provisions for natural food ecology and hunting conditions. (Schr der & Promberger, 1992).

Education is only part of the solution, and it is not necessarily the case that the more the public know about a species, the more likely they are to accept it. After all, of the respondents who had seen large carnivores in the wild, relatively few had a great love of them. The foresters who probably knew a lot about the habits of large carnivores, were lacking in important knowledge concerning populations, trends and status. Even if they were aware of the true facts, it is unlikely that their personal feelings would change. The first step is to try and stop predators attacking livestock and then they will cease to be regarded as pests, and attitudes will change.

At present, it is unlikely that ecotourism can be relied on to be the future of Slovakia's large carnivores. Too much has to change within the infrastructure of the country, and too many attitudes have to be changed before this method can be considered viable. The country is also not that well known in the UK and considerable efforts would have to be made to promote this country as an attractive destination for nature tourism. All of this will take time.

That is not to say that visiting Slovakia is not worthwhile with a view to contributing towards a better understanding of these animals and to show locals that more money can be made if these animals survive than if they are hunted to extinction. Research projects are always ongoing and desperately in need of volunteers to carry out surveys and studies. With more research, and a continuing and concerted effort to educate people in the realities of large carnivore behaviour, rather than perpetuating myths, hopefully things will change and the future will be brighter for wolves, bears and lynx, at least in this part of the world. In the meantime, other initiatives

are showing promising results, which may enable people and predators to live side by side. One such initiative is the use of Livestock Guarding Dogs.

6.2 Recommendations

6.2.2 If ecotourism cannot save Slovakia's large carnivores, what can?

Currently, the breeding of livestock is not very profitable and people employed in this sector are amongst the poorest group of people in Slovakia. To convince farmers and shepherds to adopt better methods of livestock protection or to change their attitudes towards large carnivores requires extraordinary effort. Many farmers and hunters favour the regulation of large carnivores over full protection, and a minority would like to see them eradicated completely. This attitude does not bode well for ecotourism as large carnivores are clearly seen as a problem rather than a natural resource to be cherished and ultimately exploited. This problem needs to be addressed before any further progress can be made.

6.3 Livestock Guarding Dogs

In 2000, The Carpathian Wildlife Society, in association with the Born Free Foundation started the project "Livestock Guarding Dogs Carnivore Conservation in Slovakia" which aims to revive the traditional use of working breeds. Slovenský ňuvaã, Caucasian shepherd dogs (Plates 5, 6 & 7) and crossbred Podhalanský shepherd and Slovenský ňuvaã are placed at selected farms to guard livestock. Five farms were chosen initially on the criteria that the farm was prosperous and had suffered depredation within the last two years and that the operator had to be committed to the idea of better livestock protection. The idea is to help resolve the conflict between large predators and farmers, and to encourage local understanding and tolerance of these predators (Find'o, 2001b).

Plate 5 Slovenskã áuvaã



Plate 6 Caucasian shepherd dog



Plate 7 Caucasian shepherd with sheep



Preliminary results have been promising. In 2001, of the five farms where dogs were placed, only one recorded livestock loss. However, flock protection failure at this sheep camp was caused by the shepherds themselves rather than as a result of the dogs. One dog was allowed to leave the camp in pursuit of a bitch on heat, and another two dogs were permanently chained. As signs of activity from large carnivores were observed around the other farms and camps selected for trial, preliminary conclusions suggest that allowing Livestock Guarding Dogs free-range within a flock reduces the likelihood of attack or even protects it completely from attack by large carnivores (Find'o 2001b).

If Livestock Guarding Dogs become a more common feature around farms and sheep camps, it is possible that large carnivores will lose their reputation as sheep killers and attitudes towards them may change as hunters no longer feel it necessary to "manage" the populations. If wolves and bears in turn prey on more deer, maybe the forests will be at a lesser risk of damage. Little by little, a natural equilibrium may return to the forests of Slovakia, and the future of large carnivores may be more assured. At that time, Slovakia's economy and profile may well have moved on sufficiently to enable it to welcome more visitors, some of whom will want to visit with the sole intention of enjoying the wildlife and ecotourism will finally take off in Slovakia.

References:

Adamakopoulos, P., Adamakopoulos T. (1992). Wolves in Greece: Current status and prospects. *Proceedings of the workshop "Wolves in Europe - Current Status and Prospects"*. Oberammergau, Germany: 56-61

ANON. (2001). Human Dimensions in Wolf Management in Croatia: Understanding attitudes and beliefs of residents in Gorski kotar, Lika, and Dalmatia towards wolves and wolf management: Executive Summary.
<http://large-carnivores-lcie.org/execsum44.htm> [Accessed 2/7/02]

ANON (2002a) <http://www.btcv.org> [Accessed 2/7/02]

ANON (2002b) <http://www.enzia.com> [Accessed 2/7/02]

ANON (2002c) <http://www.responsibletravel.com> [Accessed 2/7/02]

ANON. (2002d). A summary of Human Dimensions Projects. LCIE.
<http://large-carnivores-lcie.org/dimen.htm> [Accessed 1/7/02]

Barecz, P. (2002). Tourism boosters envy foreign promotion budgets. *The Slovak Spectator* 8 (24) p.5

Bath, A., (2001). Human Dimensions in Wolf management in Savoie and Des Alpes Maritimes, France: Executive Summary
<http://large-carnivores-lcie.org/frenchreport.htm>
[Accessed 2/7/02]

Bath, A., Farmer, L. (2000). Europe's Carnivores: a survey of children's attitudes towards wolves, bears and otters. WWF-UK Report, March 2000
<http://large-carnivores-lcie.org/dimen.htm> [Accessed 2/7/02]

Boitani, L. (1998). An Action Plan for the Conservation of the Wolf in Europe. In: Draft Action Plans for the Conservation in Europe of the Brown Bear,

Eurasian Lynx, Iberian Lynx, Wolf and Wolverine. A Large Carnivore Initiative for Europe.

Boitani, L., Ciucci, P. (1992). Wolves in Italy: Critical Issues for their Conservation. Proceedings of the workshop "Wolves in Europe - Current Status and Prospects". Oberammergau, Germany: 74-90

Borozan, A-M. (1999). Info Romania - Tourism
<http://www.ici.ro/romania/tourism/index.html> [Accessed 2/9/02]

Breitenmoser, U (1997). Large predators in the Alps: the fall and rise of man's competitors. *Biological Conservation* 83 (3): 279-289

Breitenmoser, U., Breitenmoser-W rsten, C., Okarma, H. Kaphegyi, T., Kaphegyi-Wallmann, U., M ller, U.M. (1998). The Action Plan for the Conservation of the Eurasian Lynx (*Lynx lynx*) in Europe. In: Draft Action Plans for the Conservation in Europe of the Brown Bear, Eurasian Lynx, Iberian Lynx, Wolf and Wolverine. A Large Carnivore Initiative for Europe.

Cozza, K, Fico, R, Battistini, M-L. (1996). The damage-conservation interface illustrated by predation on domestic livestock in Central Italy. *Biological Conservation* 78: 329-336.

Find'o, S (2001a). *Brochure 2002*. Carpathian Wildlife Society

Find'o, S (2001b) Livestock Guarding Dogs and Carnivore Conservation in Slovakia: Annual Report 2001

Meriggi, A and Lovari, S (1996). A review of wolf predation in Southern Europe: does the wolf prefer wild prey to livestock? *Journal of Applied Ecology* 33: 1561-1571

Mills, S (2001a) Wolves to the Slaughter. *BBC Wildlife*. February 2001, p37.

Mills, S (2001b) Call to kill all wolves in Norway. *BBC Wildlife*. October 2001, pp42-43.

Mills, S (2002a) Who's afraid of the big, bad dog? *BBC Wildlife*. April 2002, p31.

Mills, S (2002b) Norway's carnivores: The final solution. *BBC Wildlife*. June 2002, pp64-66.

Mishra, C (1997). Livestock depredation by large carnivores in the Indian trans-Himalaya: conflict perceptions and conservation prospects. *Environmental Conservation* 24 (4): 338-343

Okarma, H., Dovahnych, Y., Find'o, S., Ionescu, O., Koubek, P., Szemethy, L. (2000). Status of Carnivores in the Carpathian Ecoregion. Carpathian Ecoregion Initiative.

Polish Institute of Tourism (2002). Tourism sector - Data, analyses, forecasts <http://www.intur.com.pl> [Accessed 3/9/02]

Promberger, C., Schröder, W. (Eds.) (1993). Wolves in Europe: Status and Perspectives. Proceedings of the Workshop "Wolves in Europe-Current Status and Prospects" Oberammergau, Germany. Munich Wildlife Society

Promberger, C., Vogel, C., Von Loeper, M. (1992). Wolves in Germany. *Proceedings of the workshop "Wolves in Europe - Current Status and Prospects"*. Oberammergau, Germany: 30-35

Pulliainen, E. (1992). The Wolf in Finland. Proceedings of the workshop "Wolves in Europe - Current Status and Prospects". Oberammergau, Germany: 14-21

Salvatori, V., Okarma, H., Ionescu, O., Dovhanych, Y., Find'ò, S., Boitani, L. (2002). Hunting legislation in the Carpathian Mountains: implications for the conservation and management of large carnivores. *Wildlife Biology* 8 (1): 3-10.

Swenson, J.E., Gerstl, N., Dahle, B., Zedrosser, A., (1998). Draft Action Plan for conservation of the Brown Bear in Europe. In: Draft Action Plans for the Conservation in Europe of the Brown Bear, Eurasian Lynx, Iberian Lynx, Wolf and Wolverine. A Large Carnivore Initiative for Europe.

United States of America department of Commerce (2002). US Commercial Service: Hungary Travel and Tourism.

www.buyusa.gov/hungary/en/page117html [Accessed 2/9/02]

Vila, C., Castroviejo, J., Urios, V. (1992). The Iberian wolf in Spain. Proceedings of the workshop "Wolves in Europe - Current Status and Prospects". Oberammergau, Germany: 104-109

Title page:

Burnie, D (Ed.) (2001). *Animal*. Dorling Kindersley, London

Orr, R (1983). *Mammals of Britain and Europe*. Pelham Books Ltd, London

Bibliography:

Beedell, J., Rehman, T. (2000). Using social-psychology models to understand farmers' conservation behaviour. *Journal of Rural Studies* 16:117-127

Bjerke, T., Reitan, O., Kellert, S., (1998). Attitudes towards Wolves in Southeastern Norway. *Society and Natural Resources* 11: 169-178

Bjerke, T., Vittersø, J., Kaltenborn, B., (2000). Locus of Control and Attitudes toward Large Carnivores. *Psychological Reports* 86: 37-46

Find'o, S. (2000). Wolves and Wild Boars in Slovakia. *Wolf Print* 8: 18-19

Find'o, S. (1995). Present Situation and Perspectives on Conservation of the Gray Wolf *Canis lupus* in Slovakia. *V_ skum a ochrana cicavov na Slovensku* (II): 37-46

Gillingham, S., Lee, P., The Impact of Wildlife-Related Benefits on the Conservation Attitudes of Local People around the Selous Game Reserve, Tanzania. *Environmental Conservation* 26 (3): 218-228

Glenz, C., Massolo, A., Kuonen, D., Schlaepfer, R., (2001). A Wolf Suitability Prediction study in Valais (Switzerland). *Landscape and Urban Planning* 55: 55-65

Kaltenborn, B., Bjerke, T., Vittersø, J., (1999). Attitudes toward Large Carnivores among Sheep Farmers, Wildlife Managers, and research Biologists in Norway. *Human Dimensions of Wildlife* 4 (3): 57-73

Kellert, S. (1991). Public Views of Wolf Restoration in Michigan. *Transactions of the North American Wildlife and Natural Resource Conference* (56): 152-161

Larivière, S., Jolicoeur, H., Crête, M. (2000). Status and Conservation of the Gray Wolf (*Canis lupus*) in Wildlife Reserves of Québec. *Biological Conservation* 94: 143-151

Liepins, R. (2000). New Energies for an Old Idea: Reworking approaches to "Community" in Contemporary Rural Studies. *Journal of Rural Studies* 16: 23-35

Macdonald, D.W., Johnson, P.J. (2000). Farmers and the Custody of the Countryside: Trends in Loss and Conservation of Non-Productive Habitats 1981-1998. *Biological Conservation* 94: 221-234

McDonald, A., Liu, J., Prince, H., Kress, K. (2001). A Socio-economic-ecological Simulation Model of Land Acquisition to Expand a National Wildlife Refuge. *Ecological Modelling* 140: 99-110

McDuff, M. (2001). Building the Capacity of Grassroots Conservation Organizations to Conduct Participatory Evaluation. *Environmental Management* 27 (5): 715-727

Mech, L.D. (1995). The Challenge and Opportunity of Recovering Wolf Populations. *Conservation Biology* 9 (2): 270-278

Mehta, J., Heinen, J., Does Community-Based Conservation Shape Favorable Attitudes Among Locals? An Empirical Study from Nepal. *Environmental Management* 28 (2): 165-177

Papageorgiou, K. (2001). A Combined Park Management Framework Based on Regulatory and Behavioral Strategies: Use of Visitors' Knowledge to Assess Effectiveness. *Environmental Management* 28 (1): 61-73

Appendix 1 Descriptions of the species

Carnivores respond to human activities according to their ability to react to environmental changes, which in turn also depends on the individual species' characteristics. Table 3 provides a summary of some of the biological and habitual features of wolves, bears and lynx that may have a bearing on the species' reaction to changes in its natural environment. The wolf is least adapted to live in alpine regions, but can survive well in a park-like environment and feed on livestock and carrion. The lynx has suffered most from the effects of deforestation and the resultant loss of its natural prey, as it is a solitary ambush animal and does not scavenge. The bear, on the other hand is well adapted to an alpine environment, and, as it also feeds on fruits and plants and sleeps through the winter, depends less on wild or domestic prey (Breitenmoser, 1997).

Table 3. Ecological and ethological features of the Eurasian lynx, the wolf and the brown bear

Feature	Lynx	Wolf	Bear
Habitat requirements	Forest (dense cover)	Forest, tundra	Forest to open (alpine and tundra)
Social structure	Solitary; J with F for 10 months	Families or packs	Solitary; J with F (1-2 years)
Social mobility	Low; mutual avoidance	Group size adjusted to available resources	Indifferent or tolerant towards conspecies at food clusters
Land tenure system	Exclusive home ranges, those of M and F overlapping	Exclusive group home ranges; roaming singles	Overlapping home ranges
Hunting tactic	Ambush, individual	Pursue, cooperative	Gathering, individual
Main diet/prey	Small ungulates	Large ungulates	Meat, fruits, plants
Alternative diet/prey	Sheep, hares, grouse	Livestock, carrion, garbage, plants	Livestock, honey, carrion
Diversity of diet	Small	Large	Very Large

Scavenging	Very rare	Occasionally	Frequently
Use of clumped food resources	No (except F with J)	Yes (within social group)	Yes (tolerance between conspecifics at food clusters)
Food intake rhythm	Regular	Regular	Irregular
Body fat deposit	Low	Low	Large
Winter dormancy	No	No	Yes

The classifications are relative and compared to the other two species. M, male; F, female; J, juvenile. Source: Breitenmoser, (1997):284

Wolves

Wolves (Plate 8) are the second largest carnivore species in Europe after the brown bear. Since the species has a large distribution area and lives in a variety of habitats, its phenotype variation is very high. Pelt colour is highly variable, from pure white in the arctic areas to brown, reddish, grey, pale grey and silver (Boitani, 1998).

An adult male wolf weighs from 20-80kg; females are smaller, from 15-55kg. Larger animals are found in more northern latitudes; the average weight of Mediterranean wolves is 25- 35kg, rarely as much as 45kg. Total head and body length of an adult wolf is 110-148cm; the tail is usually less than a third of the body length (30-35cm). Height at the shoulder averages 50-70cm. Wolves walk on their toes and their tracks are similar to a large dog, showing four toes and their claws; the fifth digit, found only on the front limbs does not touch the ground (Boitani, 1998).

Plate 8 Grey Wolf *Canis lupus*



(Burnie, 2001)

Bears

Brown bears (Plate 9) have a massive head with a short nose, rounded, inconspicuous ears, small eyes, short tail, and a heavily built body with a prominent shoulder hump. The colour varies considerably, and some individuals may seem light or dark from different angles, due to variegated guard hairs (Swenson et al., 1998).

Adult males are larger and heavier than females. On average, males weigh 140-320kg and females weigh 100-200kg. All European brown bears are found inland and do not reach the extreme body sizes typical of coastal populations with access to protein-rich spawning salmon such as in Alaska and eastern Siberia (Swenson et al., 1998).

Plate 9 Brown Bear *Ursus arctos*



(Burnie, 2001)

Lynx

The Eurasian lynx (Plate 10) is the third biggest carnivore in Europe after the brown bear and the wolf. Its appearance is very characteristic. It has a short body, long legs and large feet, a round head with a short neck, triangular

ears with black tufts, and a short black-tipped tail. The front feet have five toes, but like the wolf, the fifth digit does not come into contact with the ground. The hind feet have only four toes, also like the wolf. The claws are sharp, strong and retractable, perfect for seizing prey. As a result of the Eurasian lynx' vast geographical distribution, it shows high phenotype variation (Breitenmoser et al, 1998).

Pelt colour is very variable within and between different parts of the species' area. It always, however, consists of a combination of two elements: general colouration and spotting. The coat is greyish with various tints, either rusty, yellowish or reddish, along the back and sides of the body, but creamy to white underneath on the belly. There are three major coat patterns: spotted, striped and unspeckled (Breitenmoser et al, 1998).

Sexual dimorphism is pronounced in lynx, males being larger than females. Individuals from the northern and eastern part of the species' range are larger than individuals from latitudes that are more southern or the west. Body mass of adults ranges between 12-35kg. Total body length is 70-130cm and the height at the shoulders is 65cm (Breitenmoser et al, 1998).

Plate 10 Eurasian Lynx *Lynx lynx*



(Burnie, 2001)

Appendix 2 Questionnaire in English

My name is Wendy Humphreys and I am a Masters student at the University of Portsmouth in England. I am conducting a survey into Slovak attitudes towards certain wildlife in Slovakia. All answers will be treated in the strictest of confidence. Your input is appreciated.

<p style="text-align: center;">SECTION A: THIS SECTION DEALS WITH YOUR PERSONAL INFORMATION</p>
--

1. Sex:

- a) Male b) Female

2. Age:

- a) Under 18
b) 18-30
c) 31-50
d) 51-70
e) over 70

3. Do you live in the:

- a) City
b) Town
c) Countryside

4. What is your monthly income:

- a) > 10,500 Sk
b) between 8,000 and 10,500 Sk
c) < 8,000 Sk

5. What is your occupation?

6. If you are a livestock owner/raiser, what kind of animals do you have?

- a) Sheep b) Goats c) Cows d) Horses

7. How do you protect your livestock?

<p>SECTION B: YOUR EXPERIENCES OF AND ATTITUDES TOWARDS NATIVE WILD ANIMALS. (PLEASE CIRCLE THE STATEMENT THAT BEST CORRESPONDS TO YOUR OPINION).</p>
--

8. Which of the following animals have you seen in the wild?

- a) Wolf b) Bear c) Lynx d) None

9. Which of the following animals have you seen in captivity?

- a) Wolf b) Bear c) Lynx d) None

10. Which of the following statements best describes your feelings towards:

	Strongly dislike	Dislike	Indifferent	Like	Strongly like
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

11. The presence of wolves in Slovakia is, for you:

- a) A good thing b) A bad thing c) You are indifferent

bears

- a) A good thing b) A bad thing c) You are indifferent

lynxes

- a) A good thing b) A bad thing c) You are indifferent

Please choose the answer that best describes your opinion of the following statements according to the scale.

12. It is important to maintain the following animal populations in Slovakia for future generations:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

13. It is important for me to know that the following animals exist in Slovakia, without me having to see them:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

14. The following animals have an unacceptable impact on large game (eg. deer, chamois, etc.):

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

15. The following animals have an unacceptable impact on small game (eg. marmot, wild boar, etc.):

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

16. It is not necessary to have the following animals in Slovakia because there are already viable populations in other European countries:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

17. The following animals should be completely protected by law against hunting in Slovakia:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

18. In Slovakia we should be allowed to hunt the following animals during the legal hunting season:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

19. In Slovakia we should be allowed to hunt the following animals all year round:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

20. The following animals help maintain an equilibrium among populations of large wild mammals (eg., deer, chamois, etc.)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

21. The presence of large carnivores encourages people to come to Slovakia

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5

22. The following animals cause an unacceptable level of damage to livestock:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

23. Attacks on man are more frequent in regions where the following animals live in close proximity to humans:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

24. In regions where the following animals live in close proximity to livestock, they feed primarily on this livestock:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

25. In your opinion, which of the following animals are most dangerous to man?

- a) The wolf
- b) The bear
- c) The lynx
- d) They are all dangerous
- e) None is dangerous

**SECTION C: YOUR KNOWLEDGE OF NATIVE WILDLIFE. PLEASE
CIRCLE THE ANSWER THAT BEST CORRESPONDS TO YOUR
OPINION**

26. Presently in Slovakia, what is the population of the following animals?

- a) wolves
- b) bears
- c) lynxes

27. What is the population trend over the last 5 years for the following animals?

Wolf: a) Increasing b) Decreasing c) Stable

Bear: a) Increasing b) Decreasing c) Stable

Lynx: a) Increasing b) Decreasing c) Stable

28. Are the following animals protected by law in Slovakia?

Wolves: a) Yes b) No c) Don't know

Bears: a) Yes b) No c) Don't know

Lynxes: a) Yes b) No c) Don't know

29. How many sheep and other domestic animals were killed last year by:

Wolves: a) sheep . b) other animals .

Bears: a) sheep . b) other animals .

Lynxes: a) sheep . b) other animals .

30. Do you know anybody who has lost livestock to the following animals:

Wolves: a) sheep . b) other animals .

Bears: a) sheep . b) other animals .

Lynxes: a) sheep . b) other animals .

31. The following animals only attack sheep if there aren't enough wild prey available:

Wolves: a) True b) False c) Don't know

Bears: a) True b) False c) Don't know

Lynxes: a) True b) False c) Don't know

32. The following animals kill sheep out of cruelty, not for food:

Wolves: a) True b) False c) Don't know

Bears: a) True b) False c) Don't know

Lynxes: a) True b) False c) Don't know

SECTION D: YOUR FEELINGS WITH RESPECT TO THE DIFFERENT MANAGEMENT PRACTICES OF THE PROTECTION OF NATIVE WILDLIFE AND YOUR BEHAVIOUR TOWARDS THEM. PLEASE CHOOSE THE ANSWER THAT BEST DESCRIBES YOUR OPINION FROM THE SCALE.

33. I would agree with farmers killing the following animals responsible for attacks on livestock:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

34. I would agree with the government killing the following animals responsible for attacks on livestock:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

35. I would be willing to contribute 1% in tax/annum to financially compensate livestock owners for their loss of animals due to:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

36. Livestock owners should receive compensation for loss of livestock due to attack from:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Wolves	1	2	3	4	5
Bears	1	2	3	4	5
Lynxes	1	2	3	4	5

37. Compensation given due to attack should only be given to livestock owners who use preventive measures to protect their animals (nocturnal regrouping, surveillance by shepherd, guarding by dogs...)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5

38. Given that tourists are interested in the large carnivores of Slovakia, to what extent you think that revenue from tourism should go towards the compensation of farmers for loss of livestock through depredation?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

This concludes the questionnaire. Thank you for your time and participation.

Appendix 3 Questionnaire in Slovak

Volám sa Wendy Humphreys a som študentka posledného ročníka na vysokej škole v Portsmouth, Anglicko. V dotazníku vám predkladám sériu otázok na o postoji Slovákov k určitým druhom zvieratám na Slovensku. Vaše odpovede budú uchované v tajnosti. Vopred ďakujem za spoluprácu.

_AST' A: TÁTO _AST' UDÁ VA _E OSOBNÉ ÚDAJE

1. Pohlavie:

- a) Muž b) žena

2. Vek:

- a) Pod 18
b) 18-30
c) 31-50
d) 51-70
e) Nad 70

3. Bydlisko:

- a) Veľkomesto
b) Mesto
c) Vidiek

4. Mesačný zárobok:

- a) > 10.500 Sk
b) Medzi 8.000 a 10.500 Sk
c) < 8.000 Sk

5. Povolanie?

6. Ak chováte hospodárske zvieratá, aké druhy zvierat máte?

- a) Ovce b) Kozy c) Kravy d) Kone

7. Ako chránite svoje zvieratá? ...

**_AST' B: VA_E SKÚSENOSTI A POSTOJ K DIV_M ZVIERATÁM.
(ZAKRÚ_KUJTE ODPOVED', KTORÁ ZODPOVEDÁ VÁ_MU
NÁZORU).**

8. Ktoré z nasledovných zvierat ste videli v prírode?

- a) Vlky b) Medvede c) Rysy d) Žiadne

9. Ktoré z nasledovných zvierat ste videli v zajatí?

- a) Vlky b) Medvede c) Rysy d) Žiadne

10. S ktorými nasledovnými názormi súhlasíte:

	Vel'mi nem m r d	Nem m r d	Nevad mi	M m r d	M m vel'mi r d
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

11. Prítomnosť vlkov na Slovensku pre teba znamená:

- a) Dobrá vec b) Zlá vec c) Netaká sa ma to

Medvede

- a) Dobrá vec b) Zlá vec c) Netaká sa ma to

Rysy

- a) Dobrá vec b) Zlá vec c) Netaká sa ma to

Vyberte si odpoveď, ktorá najlepšie vystihuje váš názor na nasledovné postoje. Vyberte jednu z daných odpovedí.

12. Je veľmi potrebné udržať populáciu nasledovných zvierat na Slovensku pre budúce generácie:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Veľmi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

13. Je dôležité pre nás, aby druhy nižšie spomenutých zvierat existovali na Slovensku aj keď ich nikdy neuvidím:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Veľmi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

14. Nasledujúce druhy zvierat majú neelateľný vplyv na veľkú zver (napr. jelene, kamzíky, diviak atď):

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Veľmi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

15. Nasledujúce druhy zvierat majú neelateľný vplyv na malú zver

(napr. svi_te atd'):

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

16. Je nevyhnutné mať nasledovné druhy zvierat na Slovensku preto_e tieto sú aj v ostatn_ch európskych krajinách:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

17. Nasledovné druhy zvierat by mali byť úplne chránené proti poľovaniu na Slovensku:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

18. Na Slovensku by ľudia mali mať dovolené poľovať na nasledovné druhy zvierat po_as poľovníckej sezóny:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

19. Na Slovensku by mal byť povolen_ celoroèn_ lov na nasledovné

druhy zvierat:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

20. Nasledovné druhy zvierat napomáhajú udr_iavat' rovnováhu medzi**populáciami div_ch cicavcov:**

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

21. Prítomnosť veľk_ch mäso_ravcov prit'ahuje l'udí na Slovensko:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

22. Sposobujú nasledovné druhy zvierat ne_elatel'nú _kodu na**hospodárskych zvieratách:**

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

23. Sú útoky na l'udí _astej_ie v oblastiach, kde _elmy _ijú v blízkosti

obyvatelstva:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

**24. Myslite si, _e tam, kde velke _elmy _iju blízko hospodarskych sa
nimi aj prednostne zivia:**

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlky	1	2	3	4	5
Medvede	1	2	3	4	5
Rysy	1	2	3	4	5

25. Podl' a va_o nazoru, ktoré zo seliem sú najnebezpečnejšie pre l'udí?

- a) Vlky
- b) Medvede
- c) Rysy
- d) V_etky s nebezpe_n
- e) _iadne nie s nebezpe_n

**_AST' C: VEDOMOSTI O PRÍRODE. ZAKRÚ_KUJTE ODPOVED S
KTOROU SÚHLASÍTE**

26. Aká je momentálne na Slovensku populácia nasledovných druhov zvierat?

- a) vlky
- b) medvede
- c) rysy

27. Ako sa populácia nasledovných druhov zvierat zmenila počas posledných 5 rokov?

- Vlky:** a) Zväčšila sa b) Zmenšila sa c) Nezmenila sa
Medvede: a) Zväčšila sa b) Zmenšila sa c) Nezmenila sa
Rysy: a) Zväčšila sa b) Zmenšila sa c) Nezmenila sa

28. Sú nasledovné druhy zvierat chránené na Slovensku?

- Vlky:** a) no b) Nie c) Neviem
Medvede: a) no b) Nie c) Neviem
Rysy: a) no b) Nie c) Neviem

29. Koľko oviec a iných domácich zvierat bolo zabitých minulý rok:

- Vlkmi:** a) Ovce . b) Iné zvieratá
Medvedmi: a) Ovce . b) Iné zvieratá
Rysmi: a) Ovce . b) Iné zvieratá

30. Poznáte niekoho kto mal škodu na hospodárskych zvieratách od nasledovných druhov zvierat:

- Vlky:** a) Ovce . b) Iné zvieratá
Medvede: a) Ovce . b) Iné zvieratá
Rysy: a) Ovce . b) Iné zvieratá

31. Nasledovné druhy zvierat zaútočia na ovce iba vtedy, ak nemajú dostatok prírodzenej potravy:

- Vlky:** a) no b) Nie c) Neviem

	nes hlas m				s hlas m
Vlkom	1	2	3	4	5
Medved'om	1	2	3	4	5
Rysom	1	2	3	4	5

36. Chovatelia by mali dostat' kompenzaciu za _kody sposobené selmami:

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
Vlk	1	2	3	4	5
Medved'	1	2	3	4	5
Rys	1	2	3	4	5

37. Kompenzacia skody na hospodarskch zvieratách by sa mala dat' iba t_m chovatel'om zvierat, ktorí sa sna_ia predist' útokom a chránit' statok (zatváranie do ohrád na noc, strá_enie zvierat valachom, pou_ívanie strá_nych psov...)

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
	1	2	3	4	5

38. Braním do úvahy, _e turisti sa zaujímajú o vel'ké mäso_ravce na Slovensku, aká finančná čiastka z turizmu by sa mala pou_it' na kompenzaciu _kod na hospodarskych zvieratách?

	Z sadne nes hlas m	Nes hlas m	Neviem	S hlas m	Vel'mi s hlas m
	1	2	3	4	5

T_mto sa kon_í môj dotazník. Vel'mi pekne d'akujem za vá__as a spoluprácu.