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Aims of The UK Wolf Conservation Trust

- To enhance the conservation, scientific knowledge and public awareness of the environment.
- To stimulate greater interest in Wolves, their food, their habitat and their behaviour.
- To provide opportunities for both ethological research and for people to interact with Wolves.
- To improve the chances of survival of European Wolves in the wild.
- To set up an education programme for schools, conservationists and dog trainers.

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E ditorial



I am delighted to announce that this year is the 10th anniversary of the UK Wolf Conservation Trust, and it is a good opportunity to reflect back on the journey we have taken.

Sadly, Roger Palmer, the founder and executive director of the Trust passed away last year, and we all know that this anniversary would have been one for him to be proud of. Although Roger is no longer with us, he has nevertheless, left a lasting legacy for the world.

The Trust was shaped and driven forward by Roger, who, year after year, was joined by an ever-growing team of volunteers. In its early days, the Trust was started as a hobby by Roger who had always had a passion for animals and wildlife. He recruited a small band of willing volunteers who shared his vision, and since then the Trust has gone from strength to strength. We now have over 150 volunteers and whole range of activities dedicated to wild wolf conservation.

As any wolf conservationist knows, one of the key strategies for the conservation of wolves is education – changing perceptions and attitudes is especially important when it comes to wolves because of the hatred and persecution they have suffered down the centuries.

Education has always been a key aim of the Trust and underlines everything we do from organising seminars to producing a range of publications (including Wolf Print). Our visits to schools reinforce this education message by aiming at the younger generations who will be the future stewards of our planet.

The Trust has seven ambassadorial wolves, and we are also hoping to have two or three puppies join us this spring. The wolves are at home in their surroundings, which comprise three large enclosures, the last of which was completed in 2003. Their role as ambassadors helps us to raise funds to support projects which focus on the protection of wolves living in the wild.

And all of this has been possible because of one man's vision, drive and determination and the commitment, dedication and hard work of the many volunteers who chose to share the journey and who continue to share the vision.

Over the years, the Trust has held at least two seminars each year. We have had the privilege of having many of the world's wolf biologists and researchers attend the seminars to give presentations (see our Website for more details on past speakers). The Spring seminar held in April was another great success, with guest speakers from Latvia and Bulgaria: Zanete Andersone-Lilley and Elena Tsingarska.

Zanete's presentation coincides very neatly with the publication of a series of articles in this issue focusing on the Baltic region.

A full write up of the seminar is on Page 6.

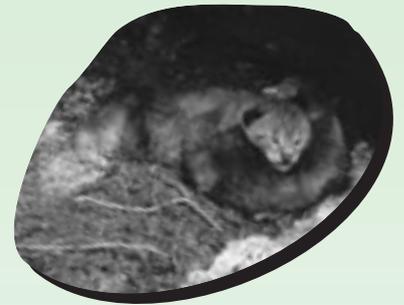
A guest at the seminar was Marco Musiani who has just been awarded a professorship at the University of Calgary, Canada. Our congratulations to Marco, who has also promised that he will give a presentation at the Spring seminar next year.

I would like to thank everyone who has supported our work at the Trust, and hope that you will continue to support us as we embark on the next ten years and beyond working to keep wolves in the wild.

FRONT COVER PICTURE CREDIT: UKWCT



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WOLVES

of the

WORLD . . .

ASIA

Central Asia

Extreme temperatures this winter have driven wolves into close contact with human communities in Uzbekistan and Tajikistan. In western Uzbekistan 20 villagers have reported being bitten by wolves in the past five months. In early February two people in the Muinak region are reported as having died of their wounds. In eastern Tajikistan villagers state that wolves killed and ate 150 sheep, cows and other animals in a two month period. Both regions have appealed to their central governments for help.

One option is that of a mass hunting campaign, such as that which took place in the Orenburg region of Russia in March 2005. Two hundred hunters were paid a bounty of 1,000 rubles (approximately £18) per animal killed. The aim was to keep the wolf population of the area to 500.

Temur Idrisov of the Tajik environmental group For the Earth has stated that he would prefer the introduction of a

system of indemnities for damage caused by wolves.

India

Kufri, a nature park on the outskirts of Shimla, has received six Himalayan wolves under an animal exchange programme. Recent DNA studies suggest that the Himalayan wolf could be the oldest wolf species in the world.

EUROPE AND SCANDINAVIA

Bulgaria

Over 2,230 wolves were counted in the latest game tally in Bulgaria, an increase of 11% since 2003. During the official hunting season which ended on January 31st, 13 wolves were killed in the region of Petrich and 15 further north in Blagoevgrad. In both regions, heavy snow had driven wolves down from the mountains in search of prey.

Finland

An inventor has designed an electric coat to protect dogs from an attack by wolves. When bitten into, the coat discharges a 1,000 volt shock. Wolves kill 20 - 30 dogs annually in Finland.

France

Gilbert Simon, vice president of Ferus, a group that defends the presence of wolves in France, says that compensation paid to farmers for the loss of an animal to wolf predation can reach up to 150% of the sale price of the animal.

Wolves were effectively eradicated in France during the 1940s, but in the 1990s wolves spread back into the country from the Italian Alps. While the French public have raised no outcry about the return of wolves, French farmers claim that wolves killed nearly 3,000 animals in the Alps in 2003, causing financial loss and hardship.

Environmental groups maintain that French farmers could adapt to wolves, using dogs and fences to protect their livestock.

Norway

A female wolf tracked by scientists made a journey of 660 miles from Norway to Finland, where she was shot by a reindeer herder. This may be a new distance record for wolves.

On January 6th 2005, Norway established a wolf cull, backed by the Minister of the Environment.

Permits were issued for the removal of five wolves from a Norwegian population of twenty. This follows a depredation report which stated that 544 sheep in Norway had been killed by wolves. The cull was supported by private landowners, moose hunters and dog owners.

The wolf is on Norway's list of endangered species. In May 2004, the Norwegian Parliament established a goal of maintaining at least three family packs within a wolf management zone.

NORTH AMERICA

United States

Alaska

An Alaskan wolf, a black male that was leader of the world's longest-studied wolf family, was killed by a hunter outside Denali National Park in April 2005. The kill was legal under Alaskan law. The family, known as the Toklat group, has been reduced to six pups and a mature pregnant female who has been separated from the younger wolves for more than a month. Although concerned about the wolves, park officials state they have no plans to relocate them.



In Delani National Park and across Alaska, wolves are healthy and abundant. Game officials argue that their management of wolves should be based on population figures, not on the protection of individual animals.

Idaho and Montana

The US Fish and Wildlife Service's new regulation 10(j) became effective in February 2005. The regulation affects grey wolves in experimental population areas and includes increased flexibility for private citizens to protect their livestock, livestock herding and guarding animals, and dogs. The regulation also provides

States and Native American tribes Service-approved wolf management plans.

At present, the regulation applies to some 580 wolves.

It allows that:

Anyone may harass a wolf in a non injurious and opportunistic manner (such as frightening it away). The harassment must be reported within seven days.

Wolves seen chasing, molesting or attacking livestock, livestock herding and protecting animals, and dogs on private land can be shot by the landowners or livestock owners without prior written consent. It must be

reported within 24 hours and there must be physical evidence of the wolf attack.

Wolves attacking or chasing livestock on public federal land can be shot by grazing permittees and guide/outfitters who use livestock as part of their federal land-use permits, and on public land ceded by Tribal members. Shootings must be reported within 24 hours and supported by physical evidence.

Wolves determined to be threatening the levels of wildlife populations, such as herds of deer and elk, can be killed by State or Tribal agencies. This can only take place after the completion of science-based

documents which must undergo peer and public review, and be approved by the State.

Thank you to everyone who has contributed news and updates for Wolves of the World. Our special thanks to Pat Morris (Wolfseeker) for the regular supply of wolf news from around the world, and to Andrew Matthews for his sub-editing work. Articles that are reprinted in full are appropriately credited with the author's name and details of where the article was first published.



UK Wolf Conservation Trust 10th Anniversary - Spring Seminar 2005

by Pat Adams

Photos: Dominc Earl

What a fantastic day for the Spring Seminar and once again what a fantastic turnout!

John Denness, Welfare Office and Senior Hander, introduced the guest speakers. Zanete Anderson-Lilley is the Project manager for the Latvian State Forestry Research Institute. Zanete studied at the university of Latvia gaining her masters in Wolf ecology, since April 2003 she has been Latvian Manager for the international Project 'Large Carnivores in Northern Landscapes'

Elena Tsingarska is a Biologist and Project Leader of the Balkani Wildlife Society in Bulgaria. Elena has been undertaking research as a wolf biologist for a number of years and has been responsible for developing and providing an education programme for over 9,000 children. She was also instrumental in setting up a scheme for the purchase and training of Karakachan livestock guarding dogs; a programme which the UKWCT helped to support.

Once again, an auction of wolf-related items was held. All the auction lots had been donated to the trust and ranged from limited edition china plates, blankets, quite a few pictures and even wolf Christmas baubles!

The trust also donated a private walk which sold for £125.00. The total raised was £925.00 which is to be divided between the projects supported by the day's speakers.

ZANETE ANDERSON - LILLEY - 'WOLVES AND LYNX IN LATVIA: THEIR STATUS AND CO-EXISTENCE WITH HUMANS'

The Baltic area has very cold winters with lots of snow and also very hot summers. The region is mountainous with very large areas of forest. Habitats include Spruce / Pine forests, Broad leafed forests and large areas of bogs. These bogs are a good refuge for carnivores as they are inaccessible by man and isolated islands provide areas for them to make dens. Beaver numbers are also very high in these areas and so provide a good food source.

Rural areas contain many scattered non-intensive livestock farms.

Overview of large carnivores in the Baltic Area

| Population | Region | Wolves | Lynx | Bear |
|------------|-----------|--------|------|------|
| 1.3m | Estonia | 90 | 740 | 500 |
| 2.4m | Latvia | 670 | 750 | 10 |
| 3.6m | Lithuania | 350 | 100 | 10 |

Lynx populations are mainly in the large forested areas, Bear populations are high in Estonia as most come across from Russian. Wolves are present throughout Estonia Latvia and Lithuania although there are no wolves in the Gulf of Riga. This area is mainly agricultural and has been cleared of forest cover thus creating a barrier as the wolves are unable to cross safely.

Official counted species figures are considered to be twice as high as actual numbers. This was possibly to encourage hunters as many regions rely on revenue from sport. Wolves are considered a game species and as such can be hunted all year round with no quotas. Lynx are also a game species but can only be hunted during the winter months but they are protected in Lithuania. Bears can be hunted in Estonia but are also protected in Lithuania.

CONSERVATION PROBLEMS

There are many obstacles to conserving large carnivore numbers in the Baltic regions:

- Overhunting and poaching – hunters kill wolves on sight as they are considered competition
- Law enforcement – it is very difficult to enforce the anti poaching laws and to find the culprits
- Increase in human population and increase in road density
- Habitat fragmentation and lack of ecological controls
- Hybridation with dogs
- Economic conflicts

POPULATION TRENDS (WOLF)

Before World War II there were over 1000 wolves, and there was much more forest cover providing ideal habitat for the wolves. During the 90s more than 400 wolves were shot.

HABITAT FRAGMENTATION

Since 2002, in west Latvia the wolf population has become isolated by a large agricultural corridor which wolves are unable to cross as there is no cover. Any wolf carcasses are checked and examined, and genetic samples are taken together with samples of stomach contents. A high proportion of these wolves have been previously

injured and are not usually old as they do not survive to any great age.

HYBRIDS – DOGS

This usually occurs in areas of low wolf density at the edges of territories, female wolves are unable to find mates.

RADIO TRACKING

In 2003 for the first time a few Lynx were fitted with radio collars in order to monitor their progress. Subjects, when caught, were weighed. The first male that was weighed in March of that year was very thin; almost skin and bone. This was thought to be because he had spent most of the Spring chasing females and fighting off other males.

This study showed that their range took them very close to farms but not civilisation in general. In Spring the females' range was much larger often crossing roads and rivers as they were probably looking for a mate, where as during the Summer their range fell to 10 sq km as they were bringing up kittens.

Males on the other hand roamed much more with a home range of approx 158 sq km compared to females of 129 sq km. Males in Estonia actually had a home range of up to 600 sq km.

In 2005 it is hoped that a similar study will be undertaken on the wolf population.

CONFLICTS WITH HUMANS

There are many obstacles to conserving large carnivore numbers in the Baltic regions:

- Wolves are considered by hunters to be competition for their game animals. Hunters pay a lot of money for their hunting licence and in a sense believe that the wolves are thieves stealing their deer. They consider hunting a wolf to be the most challenging of sports, this keeps wolf numbers down.
- Livestock is not protected and often graze near to the forest edges. Farmers have no insurance so the loss of just a few animals means a great deal to them. This mostly affects sheep and cattle but some goats have been taken together with dogs.
- In the 19th century in Estonia there were 136 recorded attacks on humans by wolves and 10-30 in Latvia. In the 20th Century in Lithuania before World War II there were 15 recorded attacks and 3 between 1998 and 2000 of attacks by non rabid wolves. Many of



these cases have never been substantiated and it was more probable that these attacks were made by wolf hybrids or dogs.

In the last decade in Estonia there were 6 cases of Bears attacking humans and one case in Latvia of a Lynx attack but this animal was rabid.

HUMAN DIMENSIONS - LEVEL OF KNOWLEDGE

A study of the general population was carried out to ascertain their level of knowledge of large carnivores in the Baltic area. Questionnaires were sent out, 900 in Estonia, 500 in Latvia and 500 Lithuania.

The results were very interesting and showed that most people had gained their information from nature films, books, the mass media and from studying biology.

With regard to conservation the general public were more in favour than the hunters but agreed that protection of all large carnivores could cause problems. The bear should be protected but Wolves and Lynx should be regarded as a game species and hunted.

85% thought all carnivores were dangerous. 70% considered them to be valuable species and should be conserved.

25% were not aware of the true numbers present.

IN CONCLUSION

The general population showed a high degree of tolerance towards large carnivores, hunters were in favour of controls and urban populations were in favour of conservation. Fear of large carnivores was shown to be sexually biased, and was higher amongst the women surveyed.

ELENA TSINGARSKA – WOLF STUDY AND CONSERVATION PROGRAMME IN BULGARIA

The conservation programme in Bulgaria has three main objectives, Habitat Management, Law Enforcement and Education.

HABITAT MANAGEMENT

Mountainous regions, as high as 1700 metres, in central Bulgaria divide the country North to South. Near Sofia the northern slopes are urbanised with ski resorts but on the southern slopes there can be found large carnivores, namely wolves and bears. Almost 30% of the country is forest.

Bulgaria has a low population of 8 million which is decreasing due to people emigrating and they currently have a low birth rate. Many people are moving away from rural villages to find work in the towns.

The forestry authorities published numbers for Roe deer and Red deer show a sharp decline since 1988:

| | | |
|----------|------|---------|
| Roe Deer | 1988 | 140,000 |
| | 1994 | 60,000 |
| | 2004 | 40,000 |
| Red Deer | 1988 | 25,000 |
| | 1994 | 30,000 |
| | 2004 | 15,000 |

This fall in numbers is due mainly to over-hunting as no controls are used. Villagers kill deer for food and the economy relies a great deal on trophy hunters visiting the regions for sport. Forestry numbers may have been inflated to encourage this.

Threats to the Wolves in Bulgaria:

- There are no limits on the numbers of hunters - as many as 120K
- Hunting is allowed all the year round.
- Payments for a killed Wolf have increased from 25LEV (14 Euros) to 100LEV (50 Euros) When the average wage in Bulgaria is 50LEV these payments encourage the hunting of wolves.
- There is at present a lack of serious scientific information about the species and their status in the country.



From L-R: Prof. Marco Musiani, Toni Shelbourne, Denise Taylor, Peter Timbrell, Zanete Andersone-Lilley, Elena Tsingarska.



Threats to Bears in Bulgaria:

- Poaching, although illegal, fines imposed are very hard to collect.
- The destroying of habitat due to intense logging and the development of infrastructures in mountainous regions
- Lack of a clear definition of the concept of 'blood thirsty bear' (these are allowed to be shot)
- Lack of scientific information regarding the species and its status in the country.

Activities planned include the marking of all captive bears thus ensuring that no new bears are brought into captivity, a human dimension survey and also a detailed population study to prepare a species conservation strategy.

Threats to Lynx in Bulgaria

- Food base is insufficient.
- Not enough suitable habitat.
- Poaching (Lynx are protected under EU and Bulgarian Law)

PRIORITIES OF THE CONSERVATION STUDY

- Ascertain actual wolf numbers
- Measure home range and use
- Use of habitat
- Pack size and structure
- Study reproduction and mortality rates
- Monitor wolf diet.
- Activities and instances of depredation of livestock
- Ascertain the genetic purity of the wolf population
- Study the status of species which are the wolf's natural prey.

Methods used to study these areas included field work – winter snow tracking, analysing wolf scats to see what they are eating and the detailed study of any wolves found dead.

RESULTS OF THE STUDY PUBLISHED IN 2003

In an area of 450sq km evidence of 8 wolves were found, this gives a ratio of 1.7 individuals per 100sq km.

Samples of all dead wolves are sent to Poland for genetic testing. Results have shown that there is a high percentage of hybrid genes in the wolf population.

Studies between 2000 and 20003 showed that the wolf's diet is very diverse and consists mainly of hare, goat, dog, roe deer, pigs, cattle, sheep and small mammals. Wild prey made up 43.37% and domestic animals 56.63% due mainly to the fact that they are not protected from wolf attack.

ACTIVITIES TOWARDS LIVESTOCK

All attacks on livestock are checked to make sure that they were perpetrated by wolves. Villages are remote and populations are often small.

WOLF ATTACKS

| 1996 | 1999 | 2000 | 2001 |
|------|------|------|------|
| 75 | 20 | 15 | 18 |

LIVESTOCK KILLED BETWEEN 1996 AND 2002

| Sheep | Goats | Cattle | Pigs |
|---------|--------|--------|------|
| 59 | 74 | 10 | 2 |
| Donkeys | Horses | Dogs | |
| 4 | 3 | 6 | |

At one time domestic animals were protected by sheepdogs but under the Socialist regime all livestock were taken and reared in state farms. The villages therefore could not afford to keep the dogs and many were left in the wild. Some were hunted and many were shot during rabies control efforts.

Now the Karakachan breed is being re-introduced. Shepherds are given two puppies, one male and one female so that they will eventually breed. New puppies must then be passed on to new shepherds. These dogs are an ancient breed and do not need training, they already have the natural instinct to protect.

At first there were a few problems, not with the dogs but with people. Some dogs were not fed correctly, males were castrated so that they would not roam, and some were left chained and not allowed to roam with the flocks. Of the 50 dogs given to shepherds, 8 were killed by hunters. Hunting dogs are often left on the mountains by the hunters. They attack the flocks and are killed by the livestock guarding dogs.

EDUCATION

Since 1999, Balkani Wildlife Society has produced information and educational materials such as study booklets which are now part of the school curriculum. They have visited primary schools, giving slide show presentations, and it is hoped that this new generation will be able to re-educate other family members to the benefits of having wolves in their environment.

This initiative takes up a great deal of time, effort and funds so plans are now underway to open a new centralised Large Carnivore Education Centre in the village of Vlahi in the Pirin Mountains.

The seminar was a great success, and once again credit should go to Toni Shelbourne for her formidable organisation skills, and to the numerous volunteers who help to make all the Trust events run so smoothly.

Editor's Note

Zanete Andersone-Lilley's talk reflects the topics which you will find in a series of articles in this issue which focus on the Baltic region.



Photo: Dominic Earl



Would Baltic wolves vote for the EU?

by Zanete Andersone-Lilley, Linas Balciauskas, Janis Ozolis, Harri Valdmann

Throughout the centuries wolves have been hated and persecuted everywhere in Europe. The Baltic region is no exception. However, thanks to the proximity of vast forests of Russia they always managed to come back and restore their numbers as soon as the hunting pressure diminished (usually when humans were too busy fighting each other during wars). This traditional perception of the wolf as a pest that should be eradicated by all means persisted until the end of the 20th century. Often bounties were paid for to hunters. When a dead animal means a lump of money to the hunter the outcome is too easy to predict. In Latvia, bounties were stopped as late as in 1999. The present numbers for all three species of large carnivores in the Baltic are shown in Table 1.

When all three Baltic countries – Estonia, Latvia and Lithuania - joined the European

Table 1. Population sizes of large carnivores in the Baltic, 2004 (official numbers).

* - data for 2002

| | Wolf | Lynx | Bear |
|------------------|------|------|------|
| Estonia | 90 | 740 | 500 |
| Latvia | 670 | 750 | <10 |
| Lithuania | 355* | 111* | - |

Union in May 2004, it was good news for our large carnivores, especially wolves. The EU stricter nature conservation rules meant that unrestricted hunting will no longer be possible. But, does it mean that the dark past is left behind?

During the accession stage, the new hunting regulations were elaborated (Table 2). They determined the hunting season and quota, as well as the hunting methods. Changes regarding the status of lynx and brown bear were rather insignificant. The wolf was the species that gained most from the legislative changes as up

until then it suffered an all-year-round persecution without any quota.

In the hunting season of 2003/2004, the hunting quota for wolves in Latvia was 150 animals. The actual number hunted was a bit lower – 140. The same quota was kept for 2005. The quota is given for the whole country as it was found impractical to distribute quota between individual forestry units. As soon as the quota is fulfilled, the hunting season for the species is over. But even if the quota is not reached, the hunting is stopped from 1 April to mid-summer.

Table 2. Legal status of large carnivores in the Baltic after the EU accession.

| | Estonia | Latvia | Lithuania |
|-------------|---|----------------------------------|---------------------------------------|
| Bear | Generally protected, but hunting allowed in some places for damage prevention 1.08 -31.10 (excluding females with cubs) | Protected | Protected, extinct |
| Lynx | Season open 01.12- 28.02. quota | Season open 1.12-31.03., quota | Protected |
| Wolf | Season open 01.01-31.03. quota | Season open 15.07.-31.03., quota | Season open 01.08. – 01.04., no quota |



Photo: Dominic Earl



Traditional Methods and Findings of Wolf Research in the Tver Region of Russia

by Vladimir V. Bologov † & Jessica A. Wiegand §
December 2004

Every published paper regarding wild wolf research in the present day can be guaranteed to cite the use of radio or GPS tracking. All funding proposals will include collars in the expenses; it is as though wolf research cannot be done without them. And to most projects, with time a limiting factor, they are a necessity. But not always; a lack of funding from the wolf-antipathetical government in Russia has ensured that radio collars are not currently being used and never have been. In the Tver region of Russia in the Central Forest Nature Reserve, research has been carried out for the past 30 years using just tracking and howling. The research probably would not stand up to scientific scrutiny as it is based on thirty years of accumulative experience and thousands of collective kilometers of observation, not the methodical collection of data to answer a pre-prepared hypothesis. Without collars, the hypotheses are generated by the observation.

Central to the start of wolf research is the knowledge of the wolf pack territories and their borders. The research was originally started by Viktor Bologov, a game biologist who worked as a head ranger from 1974 until 1990 in the Central Forest Nature Reserve. He was able to begin unfunded wolf research as his work required him to spend time in the forest. Throughout his time as a ranger he walked over 30 000km, recording traces of and visual meetings with wolves. Their tracks were followed, and by imitating the howls, lairs and temporary dens were discovered. The wolf pack territories within the area were determined by connecting the most remote tracks from the den in a convex polygon to result in approximate demarcation. Based on prior knowledge of wolf behaviour, most prints found within the borders of each territory belong to the resident pack and so individuals could be recognised and their behaviour studied. Research without money or technology is possible: in Russia, it is proven.

METHODS

1.1 Print Recognition

Wolf packs consist of three levels of importance to the wolf population as a whole. Of first importance for the present time is the breeding pair, the alpha male and female. Second are the wolves that are able to breed but do not as they do not have alpha status (non-breeding adults). However, should something happen to the alpha pair they could take on breeding status, therefore making them important for the

future. Last are the pups that, until old enough to breed, are irrelevant to the survival of the wolf. The composition of these levels within a pack may change up to 30% annually (without human intervention) due to pup births and deaths, and natural immigration and emigration. These changes can be established by assessing the number and size of prints found within a territory each year (Table 1).

The best substrate will leave a print approximately 2mm deep; this is clear enough to see without distorting the size. From year to year a researcher in the field can learn to identify individuals within the pack and follow their progress from pup to adult without ever seeing the wolves. The sex of the pups can only be identified after a minimum of one year but their numbers established much earlier. Once individuals are identified, patterns of behavior can start to be recognized.

1.2 Tracking Insight

Tracking is best carried out during the long winters when snow cover occurs for up to five months. Throughout the time of

research, it was found that wolves generally travel about 17 kilometers per day in the winter (the distance in summer is not known as long-distance tracking can only be carried out during snow). By human standards this could take all day; for wolves this is just several hours of traveling. This means that for the rest of the time they are not very active and are not the constant travelers often portrayed by films. Observations of hand-reared wolves over three years appear to confirm this.

When tracking it is important to bear in mind the differences between wolf and human abilities. A wolf out of sight of another does not necessarily mean they are not together; their acute sense of smell and hearing enable them to discern the whereabouts of others without needing to see them. The distance between them may seem large for a human but a wolf could potentially cover a kilometer in five minutes. This can be important when attempting to analyze behavior by 'reading' tracks found apart. Conversely, tracks found together do not indicate that the wolves traveled together; sometimes wolves were

| Wolf age and sex | Size of track in 2mm substrate including claws | Notes |
|------------------|--|---|
| PUPS | 4 months: 8cm long x 6cm wide 10 months: 10cm x 7cm | The tracks of wolf pups are smaller than adults and are always found either near the den or with with another adult. The size is the same for males and females up to +/- 1 year old. After this the male paws start to grow quicker than the females and the differences in size can start to be seen. |
| MALES | From between 11cm x 8cm at 1 _ years old, to 12cm x 9cm at three years old (fully grown) | The male paws are fully grown between three and four years of age. |
| FEMALES | From 2 years old onwards: 10 _ cm x 7 _ cm | Female paws are generally fully grown by 2 years old. |
| ALPHA MALE | 12 cm x 9 cm or bigger | The largest print found on a territory will belong to the alpha male. |
| ALPHA FEMALE | See notes | Generally female prints do not get larger than than those stated above. However, the alpha female is usually older than the other females (due to dispersal) within the pack and her prints can, on occasion, be up to 11cm x 8cm. |

Table 1: Size of Grey wolf (Canis lupus lupus) tracks ≤ 2mm in depth in Tver region of Russia



observed following tracks made earlier by others. Analysis of tracks must therefore be made with care and assumptions intimated cautiously.

FINDINGS

2.1 Wolf Pup Locations

Within the reserve, it was found that breeding wolf pairs have a preferred denning area of around 20 square kilometers in which to give birth to the pups, although the actual den itself could be anywhere within this area. The pups tend to stay within the area up until late August or the beginning of September, after which they start to follow their parents throughout the territory. It is well known that the pups are left in areas while the parents hunt, commonly termed 'rendezvous sites'. Research on wolves is easier during the breeding season as the pups tend to stay within these sites for certain lengths of time and the parents return regularly, as opposed to winter when they tend to move and rest in different places every day.

At the time of the research, three adjacent wolf pack territories lay within the Central Forest Nature Reserve and buffer zone borders. As the wolf density within the region was fairly high, the territory margins were relatively fixed. Rare to that year was the discovery of the den areas of all three wolf packs, established by a mixture of tracking, howling and the checking up of reports from rangers. When the three den areas were plotted on a map, an equilateral triangle could be drawn with a distance of approximately 18.5km between each den area. Mid-August, one of the packs relocated. Tracking and howling over three days proved fruitless in the search to locate them again and so the second pack was looked for. They had also moved, although were found by howling four kilometers north-west of their original den area. As there was wild boar fur in the adult faeces, it is thought that they moved due to a kill, although the carcass was not found. Tourists were brought to hear this second pack howl and, possibly due to the disturbance, the pack later moved even further north. After reports from rangers, the first pack was rediscovered two weeks later, an unusually distant eight kilometers away from their original site. Between the 1st and 10th October, all three packs were found once more. When their new locations were

plotted on a map, another equilateral triangle could be drawn, this time with 22km between their positions. It appeared that the packs could somehow establish where the adjacent pack was located and strove to keep as far a distance away as possible within the inflexible territory borders. It could be argued that this was simply fluke; any of the three packs could have only been within the area where they howled back from for a day and then moved on. However, in 1997, a ranger gave information about the location of a fourth breeding wolf pack which he heard howl in 1996 in late August. Again, it was a similar distance away. This system will only work with high wolf density when the territory margins are fixed; when the wolf density lowers they expand their territory borders and the distances between their locations increases. It also requires homogeneous habitat throughout each territory. This system can help find the vicinity in which to search for wolf pack denning areas if the whereabouts of two or more are already known.

2.2 Diet Specialization

For scientific ease, the diet of wolves is normally grouped into the percentages of different prey found in x number of wolf scats. What is little known is that the diet of wolves varies not only among territories, but also individuals within a pack. Within the reserve, faeces were never closely examined by the rangers (understandably), but simply glanced at to establish what obvious remains were present as moose, beaver, dog and livestock are easy to identify. The wolf prints were then tracked back to the carcasses to gain insight into their diet.

The three wolf pack territories on the reserve covered different habitat types. It was found that whilst the adults and pups of all three territories lived on a diet of predominantly moose, the non-breeding adults within the packs sometimes hunted separately and therefore had a different diet, the contents of which were determined by their territory. (In Russian, these small bands of individuals are known as 'staya', as opposed to the entire wolf pack which is known as the 'semya'). The first pack's territory was mostly off the reserve and buffer zone border and contained a large network of roads which hunters used. Three members of the resident pack were found to scavenge the remains of moose killed by hunters, although as far as was seen, the alpha pair did not scavenge. The second territory contained two villages on its border but no roads within it, and three of the pack preyed on loose dogs in the villages. The final territory also contained few roads but housed many streams, and beaver formed part of the diet of two individuals (interesting in that once the remains of the first seen beaver kill by these individuals was discovered, seven more were found in two weeks. After this, beaver became a regular part of these individuals' diet. This is typical of the opportunistic hunting nature of wolves; novel prey will be tried and if

successful, the hunts repeated). These observations of separate feeding activity fly in the face of the traditional idea of a wolf pack as a mutual prey-sharing entity; kills are obviously not always commonly distributed.

2.3 Methods of Livestock Defense against Wolf Predation

Wolf predation on livestock has been one of the foremost reasons for the world-wide extermination of wolves. It also cannot be discredited; for small-scale farmers in Russia (where no compensation system exists) it is a threatening prospect. In 1976, Viktor Bologov began experiments to try and frighten off wolves from livestock. Based on hunting knowledge of wolves' suspicion of landscape changes he placed simple objects such as balloons, jackets, bottles and bags between 40 and 150cm above the ground in areas with recurring predation (as well as close to wolf-killed carcasses). By returning to the site each day and measuring the distance from the site to the closest fresh wolf track, he assessed wolves' reactions to the objects. Using this simple method he concluded that predation could be prevented by placing novel objects on the predated site and moving or changing them every 10 to 15 days to avoid habituation. Between 1976 and 1990, not a single attack occurred on any of the research sites. The results were widely published in newspapers and magazines throughout Russia and any feedback received from people who had tested the method was positive. However, the findings were largely ignored by the state agricultural department and farmers alike, and in 2002 the Russian State Game Department estimated livestock predation by wolves at US\$1.6m.

The research on wolves continues today although it is now located approximately 150km from the main area of the Central Forest Nature Reserve in a small satellite site known as 'Chisty Les' Biological Station. The emphasis of the research has changed as the territory borders and the approximate den areas used by the wolves are already known. The single track of an alpha male crossing a stream in a particular area can indicate whether the pack is using the usual den site or not; the wolves' habits and movements are so ingrained that knowledge is almost instinctive. The study of an animal from scratch such as this, without the use of any technology, will probably not occur again. As animals in the wild become more and more rare, international interest in them is generated and so money, and therefore technology, becomes available for research. The use of GPS collars in behavioural research will ensure that essential data is rapidly revealed, although this is perhaps at the expense of the fuller understanding gained only through a lifetime of unhurried observation.

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Who's afraid of big bad wolf in Estonia

by Tiit Randveer, Katlyn Mäe
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Estonia is a small country with a land area of 45,000 sq km, about 50% of which is covered with forest. According to the monitoring data, gathered by game biologists in spring 2004, Estonia was inhabited by 100 wolves, 500 bears and 750 lynx. However, official counting data based on the hunters' reports indicate even larger number of all three species. Whatever the numbers, Estonia seems to be one of the richest places in terms of large carnivores in the temperate zone.

All three species have always been hunted, and the wolf has even been considered an 'outlaw'. Now, as a member of the EU, Estonia has to follow the rules and regulations of Central Europe where large carnivores are rare and protected. To suddenly stop the hunting of predators in Estonia would be out of the question.

Ten to twenty years ago, when Estonia and its neighbours in Eastern Europe were going through a turbulent period of social transformations hunting was hardly the first priority and wolf populations sky-rocketed to 700. After that the number of animals shot started to increase, reaching 302 in 1995!

The Estonian National Action Plan for the wolf, lynx and brown bear, which set out the principles of management, was completed in 2002. It also prescribed the maintenance of a wolf population of between 100 to 200 specimens (Lõhmus, 2002). The earlier outlaw species was included among the big game, which now means that strict limitations have had to be set for hunting wolves. The annual hunting limits are established on the basis of the monitoring data.

When making predator management decisions it is, of course, absolutely vital to consider the opinions of local residents.

Similarly, when planning the management of large predators, decision makers have to take into account the attitude of the wider population.

Human attitudes towards wolves, and large predators in general, in any country are shaped by the history of human/wolf relationship (i.e. by real conflicts, but perhaps even more by myths, beliefs and prejudices), and environmental and economic conditions typical of the region. This historical background is more or less the same everywhere and current attitudes are determined mainly by local nature and economy. And there may well be other cultural and socio-economic factors such as urbanisation, levels of education, religion, etc.

The History of Wolves in Estonia

Wolves have inhabited the territory of present-day Estonia as long as humans, i.e. throughout the entire post-glacial period. This means that in the course of approximately 9,000 years wolf and man have had an opportunity to get to know each other well. Wolf researcher Ilmar Rootsii has shown that in Estonian folk legends, the wolf appears as a predominantly positive character. However, conflict between humans and wolves increased in the 16th - 19th centuries. Literary sources of the period describe wolves as extremely bloodthirsty beasts and give numerous instances of wolves killing people.

Olaus Magnus, a Swedish clergyman, describes the wolf of Old Livonia in his "History of Nordic Peoples", published in 1555. Adam Olearius (17th century) also gives many examples of the dangerousness of wolves.

By a careful study of parish records Ilmar Rootsii (2001) has managed to establish that on the territory of the present-day Estonia between 1804 to 1853 wolves killed 111 people, 108 of whom were children. The highest number of victims (45) dates from 1809. From 6 September 1873 until today there have been no known incidents of healthy wolves killing a man, although there are some recorded killings done by rabid wolves (Rootsii, personal communication).

What changes have then occurred in Estonian nature? Firstly, the area covered by forest was then considerably smaller than it is today and wild ungulate numbers were small. During the so-called 'little ice age' both roe deer and wild boar had disappeared and the

number of moose was small too. Cattle were grazed in the woods and animals were often left in the care of children. It was equally important that only a few wolves were hunted in these centuries. As a consequence, wolves were gradually losing their fear of humans. Wolf hunting intensified only at the beginning of the 19th century, when a bounty was put on every killed wolf.

Later, wolves were killed mercilessly by searching out their dens and killing cubs and putting out poisoned meat. Thus, 578 wolves were killed in 1835! Similar Draconian measures were also applied after World War II to solve the 'wolf problem'.

In short, Estonian wolves have been treated the same as in other countries where this species is found, but nevertheless has managed to "keep its ground". So the wolf has never completely disappeared from both Estonia and from Russia. This is not because Russian and Estonian wolf hunters were less competent than a German Jäger, but because the **natural conditions** of a region play a far more important role than hunting and poaching.

During the last couple of centuries the forested area of Estonia has increased and amounts now to around 50%. This may seem unbelievable to a Western European but this is the actual situation. At the same time, the human population density remains low. Even today, there are areas in Estonia that are rarely visited by humans, maybe only during cranberry season in late autumn. There is enough room for man and wolf.

It would seem that there are not many ways that Estonian wolves can hurt the local economy. It is well known and documented that the majority of conflicts wolves encounter around the world are due to the killing of livestock, especially sheep. Sheep rearing, which has never been particularly popular in Estonia, is currently only of marginal importance. On the other hand, as long as there is no damage compensation mechanism in place, every killed animal is a considerable loss to the owner. Domestic animals are seldom insured, because it is expensive. Killing of hunting dogs, which appears to be relatively frequent in Scandinavia, seldom happens here. In Scandinavia, it is not uncommon that hunting is carried out by one hunter and several dogs. According to Estonian hunting customs, many hunters and one or a couple of dogs at a time can roam the woods, and wolves are careful to avoid such large hunting parties. Although it is not uncommon for wolves, that are not afraid to approach a



village/settlement, kill domestic dogs. In fact, it would seem that, from time to time, some packs specialise in killing domestic dogs.

Conclusion

Theoretically, the prevailing attitudes of the Estonian population towards wolves should be relatively balanced/rational. But is this really the case? Only a sociological survey can provide an answer

Two such surveys have been arranged. The first survey, during which only the attitude of people toward wolves was studied, was carried out 5-6 years ago, 898 people were questioned. The second survey, which studied peoples' attitudes towards all large predators, was arranged recently with funding from Norwegian state and which covered Norway, Poland and the three Baltic countries.

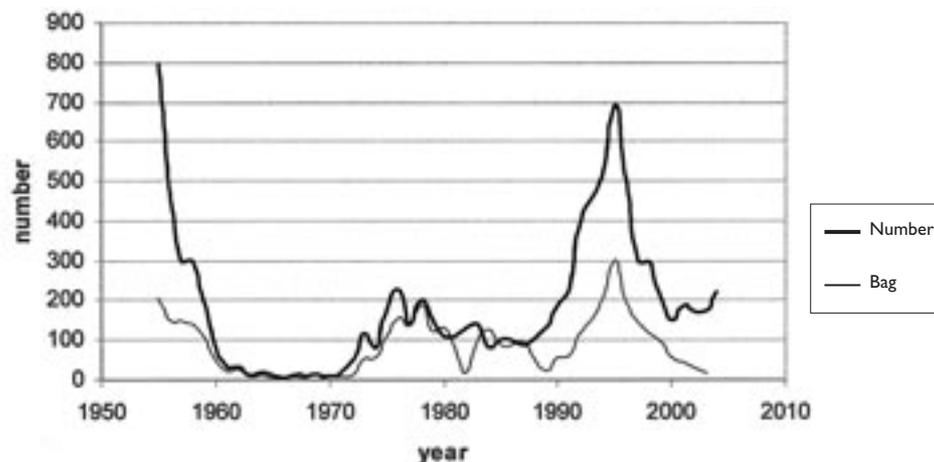
A unified methodology was used in all countries. In Estonia 1670 people were questioned in the capital and four counties (in rural areas and small towns). Questionnaires were distributed through schools and pupils were instructed to give these to a family member whose birthday was next. Respondents also included a number of pupils and hunters. Along with personal data (incl. demographic characteristics: sex, age, level of education, etc.) the questionnaire posed 22 different questions designed to reveal the following:

- attitude towards population size and dispersal patterns of large predators
- acceptable distance to large carnivores
- personal experience with large carnivores
- general (and environment-related) values and attitudes in life as a background

Data processing is still in progress. Therefore, it is only possible to outline some very general and most obvious trends, which became apparent in the last survey. Likewise I am not going to compare different groups of people here. I would also briefly report on some of the results of the previous survey (Randveer, 2001).

First of all, we wanted to know how many of the respondents have actually met a wolf in the wild. 27.7% of the respondents of the first questionnaire and 29.1% of the second have met a wolf at least once in the wild! This is a surprisingly high number indeed, all the more so, as the pupils were not excluded from the sample. At a recent meeting where we introduced the results of the research, some expressed doubts about these figures. But when we asked those among the audience who had encountered a wolf in the wild to put up a hand, only a very few didn't. True, the majority of the people present were hunters.

We also asked **whether this kind of meeting would be welcome or not**. As it turned out 46.6% of the respondents would avoid a meeting with a wolf, answering "no" or "rather not". 40.7% had nothing against meeting a wolf ("yes" or "rather yes"). 12.7% did not have an opinion. Incidentally, 42.0% of people would avoid an encounter with a bear, which - unlike when meeting a wolf - can indeed sometimes be dangerous, whereas 45.5% would have nothing against that. 38.0% of the respondents would avoid and 49.9%



would love to see lynx. It has to be remembered that these figures illustrate the attitudes of the whole sample, and that viewing hunters, for example, separately may have produced a very different result. No doubt, when hunting a wolf (a bear, a lynx) 100% of hunters would definitely like to meet the animal they chase.

Why hunt then in the first place? Our previous poll included a question which we had formulated: Do you regard an encounter with a wolf dangerous? It turned out that 25.6% of men and 41.3% of women were afraid of wolf.

The most important, indeed central, question in our research was the following: **"what to do about wolves?"** 1.5% would like to eradicate the species completely. 12.1% find that it would be sufficient to cut back their numbers considerably. 24.0% would curb the number of wolves only a bit. Nearly half of the respondents (49.2%) think that the present number is just right. 10.5% would like to see a slight and 2.6% a considerable rise in the number of wolves. How many of the respondents are aware of the actual number of wolves (which they recommend to increase or decrease) is of course a separate question. It is possible to find this out, which we are planning to do. We also intend to determine how, and to what extent, does the opinion depend on age, education, place of residence, and so on.

According to the results of the previous questionnaire, which offered only three possible answers, the overwhelming majority (92.7%) was of the opinion that the number of wolves has to be regulated if need be. Only 1.8% wanted to extinguish the wolf as a species and 3% preferred to leave it completely to its own. The number of "extremists" was very small in both surveys and, which is very important, rather similar, which confirms the trustworthiness of these figures.

It needs to be said that during the time both surveys were carried out the number of wolves remained relatively unchanged, staying between 100 – 200 specimen.

In the first questionnaire we asked: **Should we enable wolves to choose their habitats freely** or should they be confined to the wildlife reserves? The answers were as follows: 74.5% answered yes – wolves can choose the habitats freely. 19.3% would prefer

to keep them within the limits of wildlife reserves or national parks and 6.2% proposed some third possibility.

With the next question we **tried to identify the opinion leaders** in discussing the topics related to large predators. We asked: "How much do you think you can trust the following when they discuss large carnivores"? The ranking of potential opinion leaders according to their trustworthiness is as follows:

- Scientists (66.9% completely trust, 24.8% trust to some extent, 2.0% don't trust, 6.2% don't know)
- Experienced hunters (49.4%; 39.5%; 3.9%; 7.1%)
- Employees of the state forest service (31.9%; 46.2%; 6.5%; 15.3%)

Farmers, representatives of conservationist NGOs, people from the areas where large carnivore exist, and also (what a pity!) newspapers and TV occupied the middle places.

At the bottom of the list came politicians:

- Local politicians (3.1%; 22.6%; 54.7%; 19.6%)
- Members of parliament (0.9%; 14.7%; 63.6%; 20.9%)

The results from both surveys confirm that extreme views are almost completely lacking and a rational attitude seems to prevail. To the majority of respondents the present number of large predators appears to be ideal. It must be emphasised, though, that the survey results reflect just the current situation. We have every reason to believe that a decade ago, when there were approximately 700 wolves living in our country, we would have received very different answers.

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Wolf – livestock relationship in Latvia and Estonia

by Zanete Andersone-Lilley, Harri Valdmann

Photo: Chris White



There has always been a conflict of interests between humans and large carnivores when it comes to sharing the same environment and the same resources. Whenever both humans and wolves live in close proximity to each other, the conflict seems to be inevitable as both species tend to share the same resources.

In Latvia and Estonia, livestock husbandry is not as extensive as elsewhere in Europe. Besides, both countries have a vast forest cover (40-70% depending on the region), which provides carnivores with plenty of natural prey. But this causes the other conflict – with hunters. Often hunters are those who blame large carnivores, particularly wolves, for reducing wild ungulate numbers. Like human hunters, wolves in the Baltic prey mainly on wild ungulates (roe deer, red deer, moose, wild boar), and hunters regard this resource as their own because they pay rent for the hunting grounds and fee for licences. Besides, many commercial game clubs and even state owned hunting areas earn money by selling trophy hunts. Therefore, every ungulate taken by carnivores is regarded as direct economic loss by these people. At the same time, one must admit that large carnivores cannot be expected to feed on grass and wild animals are their primary food. It is when they attack the indisputable property of the man – livestock – that everyone agrees that this should be prevented. When the natural prey base is rich, wolves seem to prefer that to domestic animals, though an unattended sheep or a calf can lead a predator into temptation even when the forest is full of deer and wild boar in same way as a handful of money found on the pavement would tempt a human being. Some wolves seem to have specialised in taking dogs having killed more than 60 of them in around Laekvere in North of Estonia.

Livestock farmers in Latvia and Estonia often neglect safety of their animals by leaving them in pastures overnight, even in wolf areas. Fencing is not carnivore-proof and is meant only to prevent livestock from straying, and wolves have an easy access to animals. Since both Latvia and Estonia are very forested, pastures are rarely further than a few hundred metres away from the forest, often meadows are surrounded by the forest from at least two sides, or the forest is adjacent to



Photo: Andrew Lilley

the pasture. If there are wolves in the area, it is easy to foresee the outcome of the situation when unattended animals are left grazing at night. Shepherds and guard dogs are never used, and livestock is often chained in the pasture to keep it from straying, which makes it an extremely easy target for predatory attacks. In most cases, this is small-scale or subsistence farming where only a few animals are kept for the own use, which makes it unprofitable to invest into predator-proof techniques. Moreover, the overall economic situation of small-scale farmers is so poor that they cannot afford insuring their livestock. Basically, they just take risks and hope for the best.

However, even with the high exposure of livestock to potential predation, the predation rate is low compared to other locations in Europe. In 2003, there were only 33 depredation cases reported to the State Forest Service in Latvia, in 2004 – <30 attacks (Fig. 1). In Estonia (2004) appr. 70 sheep were killed. Most of the cases happened during night time when livestock was grazing outside. Sheep are most vulnerable to predation, as they often are found in small flocks and surplus killing can

happen. Also, guard dogs chained in the yards of farm-houses are often a target for wolf attacks.

The wolf is the only large carnivore species that causes any significant damage in the Baltic. Every year there are a few bear attacks on bee hives or apple orchards or occasionally livestock and a few cases of lynx predation are recorded so far (one lynx attacked and killed 11 rabbits in an outdoor enclosure and even ripped apart the mesh wire of the cage to get to the rabbits, another lynx killed a dog). A notable exception is Estonian island Hiiumaa, where lynxes have killed 26 sheep.

If such problems are to be avoided in the future, some education of farmers is necessary. In the majority of cases, simply turning livestock in for the night would prevent damage. Electric fences also seem to help.



Photo: Zanete Andersone-Lilley

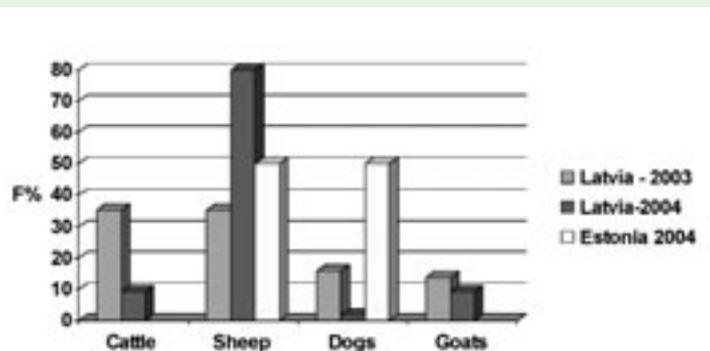


Fig. 1.



People and carnivores in Latvia: attitude survey

by Zanete Andersone-Lilley

In 2000, WWF-Latvia with the financial support of WWF-Denmark carried out a study on public opinion about large carnivores in Latvia. The questionnaire was distributed through public schools but the pupils were asked to use 'the next birthday rule' in families to ensure the random sample. In total, 400 replies were obtained. In addition, 157 questionnaires were received from 157 readers of a national hunters' magazine.

The Latvian public generally supported large carnivore conservation. Among the three species considered (wolf, lynx and brown bear), the most positive attitudes were toward brown bears, probably because of its endangered status (there are less than 10 bears in the country) (Fig. 1). Negative attitudes were a result of real or perceived effects large carnivores have on livestock husbandry and game management. Nearly 70% of respondents thought protection of bears should be continued, whereas only 24% of respondents supported control of bear populations (Fig.2). A majority of respondents believed that wolf and lynx populations should be controlled, but very few respondents (less than 2%) supported total eradication of large carnivores in Latvia (fig.2). A greater proportion of rural inhabitants favored control of carnivore populations than residents in other locales. In contrast, hunters (the sample being almost entirely male, mostly rural, and somewhat older) favored unlimited harvesting of large carnivores.

The majority of respondents regularly visit the potential large carnivore habitats - 74% respondents go into forest at least once a week. The most common reason for that was walking and berry- and/or mushroom picking. In most cases, ideas about the wolf diet were close to reality - 60% respondents think that the staple food for wolves is wild ungulates. In the case of lynx, the role of hares and rodents in its diet was over-estimated (66.8%) but bears are regarded almost as vegetarians that feed on plants and berries (87.8%). The audience of the hunting magazine generally had a better knowledge of large carnivore ecology which can be explained by the greater interest of this audience in the subject.

The bear is regarded as the most dangerous (to humans) carnivore (61.7% of all three species, followed by the lynx (50%) and the wolf (42.2%). At the same time, more people think that wolves can be dangerous under certain circumstances (37.9% versus 17-18% in case of lynx and bear). Circumstances, when carnivores can pose a threat to humans, varied from realistic ones (rabies or the presence of cubs in the case of bear) to quite unclear statements like "... can be dangerous if a person behaves improperly". Interestingly, hunters often mentioned that injured wolf and lynx could be dangerous to humans, although there are no proved cases from the hunting practice in Latvia. It is also characteristic to the hunters' sample that certain opinions are usually held which can potentially cause problems with regard to trying to change attitudes, and especially where the attitudes are based on incorrect facts.

The majority of respondents obtained information about large carnivores from nature films (76.7%), books (34.6%), magazines and newspapers (34.1%). Also Biology lessons in school (31.6%) and fairy-tales and legends (30.3%) played a significant role. If fairy-tales play such an important role, it is easy to understand why some people grow up being prejudiced, especially against wolves which traditionally have a negative image in folklore.

Respondents mention that when planning large carnivore management, the following groups' opinions should be taken into account: scientists (78.5%),

hunters (49.6%) and farmers (42.5%), while European Union's and tourists' opinions should be taken into account either partly (40.9% and 40.4% accordingly), or not at all (30.2% and 31% accordingly).

At the moment, another attitude survey is being done within the framework of the international project funded by the Research Council of Norway. It covers Estonia, Latvia, Lithuania and Poland and the first results should be ready by the end of the year. It will provide an updated information about public opinion in a format that will be comparable between these countries and which can be used for further planning of public education and large carnivore management.

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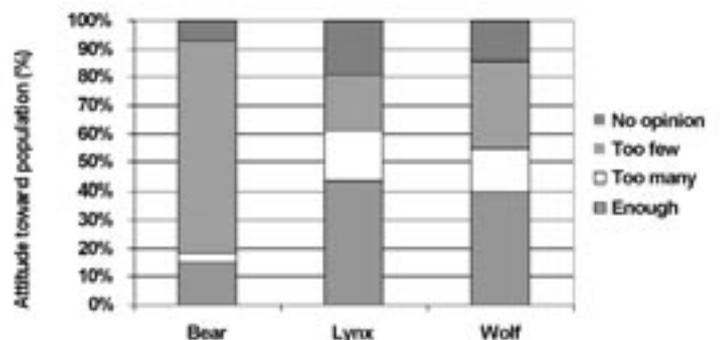


Fig. 1. Respondents' opinion on the numbers of large carnivores in Latvia.

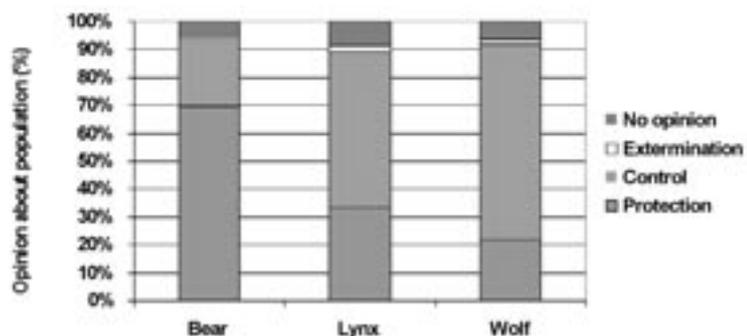


Fig.2. Respondents' opinion on the necessary large carnivore management in Latvia.

Private life of the Latvian lynx: first results of the radio-telemetry study

by Zanete Andersone-Lilley

In 2003, an international research project "Large carnivores in northern landscapes" funded by the Research Council of Norway was started in the Baltic. The project will last until the end of 2005. It involves partners from Norway, Baltic countries (Estonia, Latvia and Lithuania) and Poland and aims at studying large carnivores in a mosaic landscape of the Baltic in order to obtain a broad overview of the situation with large carnivores in the region.

Radio-telemetry study was one of the aspects of the project, and it was done in Latvia and Estonia. It was the first radio-telemetry research of large carnivores in the Baltic states and the excitement of researchers was great. Lynx was chosen first as it is easier to capture compared with wolves.



Wolf tracks in the bog. Photo: Andrew Lilley

The Roja forestry district in western Latvia was chosen as a study site, as this area has a high lynx density, which increased the prospects of animal capture. At first, lots of snow-tracking was done in order to find out



Lynx tracks on the road. Photo: Zanete Andersone-Lilley

about lynx movements and favourite spots and rendezvous sites. After that, two box traps equipped with various smells that might seem enticing to lynx were set up in strategic points. Initially, lynx only examined box traps



Lynx female asleep by the box trap. Photo: Zanete Andersone-Lilley

from the outside not daring to step inside but we were hopeful – as the mating season was approaching, the lynx activity increased together with their curiosity. On 17 March 2004, the first lynx was trapped. It was an adult female in a very good condition weighing 15.4 kg. She greeted us with angry snarling but was soon fast asleep and had her collar fitted. She was closely followed by the radio signal for the first two weeks, after that her location was checked 1-2 times a week.

A month later, on 21 April, an adult male was trapped in the same locality. Although he was slightly bigger than the female, he was just



Lynx male immobilised. Photo: Zanete Andersone-Lilley

as light – weighing only 15.4 kg. He was extremely skinny, which was obviously as a result of the mating season when males are busy fighting for females and hunting is a distraction from the important mission of breeding. This specimen had lots of old scars on his ears from his past battles with other male lynx.

Regular radio-tracking of those two animals was as exciting as it was useful for better understanding of lynx ecology in Latvia.



Lynx Kittens. Photo: Zanete Andersone-Lilley

During the first 8-9 months of tracking it was found out that the home range size for a male and female on average was 155 and 129 km² accordingly (Fig.1). The home range size for the female during May - August was very limited (<10 km²) due to the kittens, she stayed in a limited part of the big forest massif all those months (Fig.2). By autumn, she crossed the river and went back to that part of her home range where she was captured in spring. Snow-tracking in late November revealed that both kittens were alive and accompanied the female. Unfortunately, in January only one kitten was left.

The central part of the home range was about 100 km² for the male and 60 km² for the female. The home range size varied seasonally – it was biggest in early spring, then decreased in summer and started increasing in autumn again (Fig.2). Most of the female's home range fits within the home range of the male, though direct contacts between the two animals seem to be very rare apart from the breeding season.

During these months, it was found that both lynx avoided open landscapes (agricultural lands) and larger human settlements, though they often crossed a big road which was in the middle of their home range. Single farms were not an obstacle to them, and lynx were often found nearby, at the edge of the surrounding forest, though they did not go too near the bigger coastal villages. Both lynx were not found going into small forest patches outside the main forest massif (to the SW from it), which illustrates their reluctance to cross open fields. It seems like forest fragmentation on a bigger scale (e.g., the area to the south of Riga, the main agricultural region) can be a barrier to lynx dispersal between western part of the country and the rest of Latvia, which is a potential threat the genetic diversity of the population in the west. Forestry as such is not a threat to lynx (though active logging and chainsaw noise did change their activity pattern and made them move further away from these noisy forest parts) as long as the logged area are re-forested afterwards, either naturally or by planting.

The UK Wolf Conservation Trust has contributed towards purchasing wolf radio-collars for the project, which we hope will be used this year, i.e., if unstable snow conditions this winter make wolf capture possible.



Fig 1

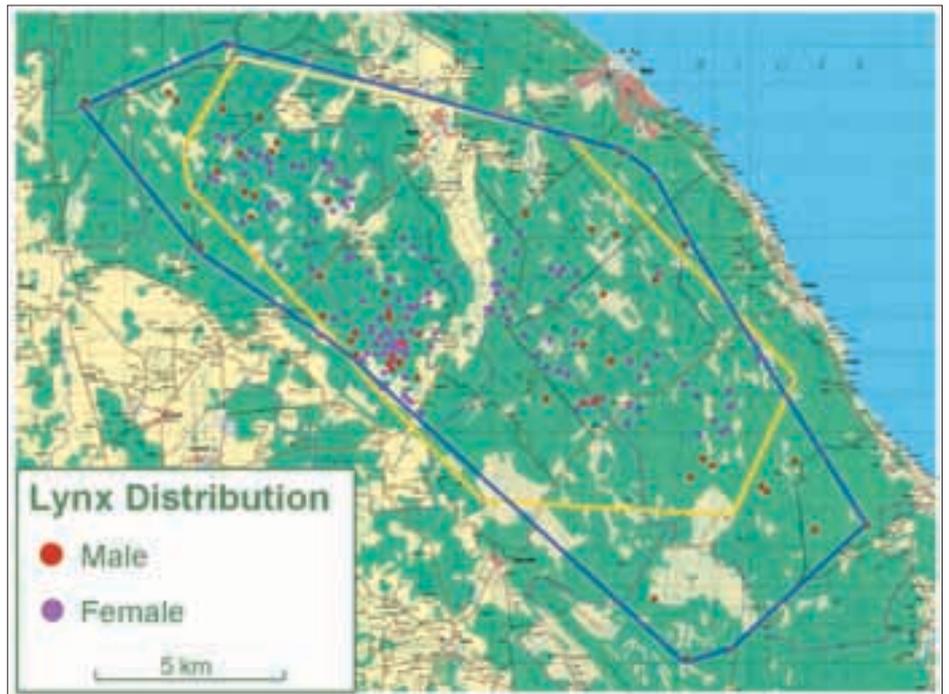


Fig 2



Photo: Andrew Lilley

