Carpathian Large Carnivore Project

Annual Report 2000

R.N.P.

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Wildbiologische Gesellschaft

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Executive summary

Work of the Carpathian Large Carnivore Project is now going into its eight year. It has been a long time since we started but we are still not tired of it and we are quite satisfied with how things went. Research, unfortunately, still lacks of trapping success, currently we have two wolves, one lynx, and five bears radio-collared. There are three new components in our research work: we have for the first time equipped a number of shepherd camps electric fences and tested their effectivity. Further we began to study the densities of red deer and roe deer through a pellet count. Third we started with human dimension research through opinion polls about hunters' attitudes towards lynx, and attitudes towards habituated bears in Braæov. Our friend Alistair Bath from Memorial University of St. Johns, Newfoundland, one of the foremost authorities on human dimension research, had introduced us into the topic. Nicky Spencer, a graduate student of Alistair, stayed six months with us and did a great job in evaluating the questionnaires and polls.

In the field of management and conservation, we came a big step further to introduce electric fences and insurance systems to livestock raisers. However, we had to learn that shepherds are suspicious about everything new and they initially rather thought the American Secret Service sets up some bugging and monitoring devices than us trying to decrease conflicts with wolves. The new forest policy from the Romanian government lists management plans for species of interest as a high priority. We hope that we can contribute with the knowledge we have gained throughout the recent years substantially to a modern large carnivore management.

The rural development component has gone through a difficult year, but by the end things to turn towards the positive. For a while it looked like if we would lose the battle about the conservation of the Bârsa area. We fully understand that in these times of economic hardship people have other problems than conservation and it was our goal to turn conservation into an economic advantage for the community. As usual, things cannot wait for long, but we believe that this year brought the breakthrough. Tourism increased by over 150%, the year to come will bring again high growth rates, and there is good chances that we can start constructing the Large Carnivore Centre soon. And there is now the Zãrneæti Eco-Tourism Association, a group of enthusiastic people, which believe in the combination of conservation and eco-tourism. A strong ally for the future.

Our public awareness programme has increased the most. Over 50 journalists visited the area to report about our project activities, BBC Natural History Unit has finished filming (we hope for a great film) and National Geographic has asked to be next. We introduced the school education programme in 18 schools around Piatra Craiului and developed another school programme for the schools in Rãcãdãu/Braæov. For the inhabitants of Rãcãdãu, we also produced a leaflet of how to deal – or better how not to deal with their habituated bears. And for the University of Braæov, the National Forest Administration, and the Romanian Hunters Association we produced the first three brochures of the "Romanian Wildlife Series" – logically we wrote about wolves, bears, and lynx. As a result, we have hired Simona Buretea to work in the field of public awareness and we hope we can further increase the volume of this component.

Introduction

It was an early October evening, when I received an email from a friend from Brussels, environmental economist Britt Grossman. Britt wrote about the possibility of submitting a proposal for a substantial amount of money to a new foundation. The requirement was that the money should produce a fast outcome, e.g. eco-tourism with this donors funding to get going, while eventually generating its own income. That sounded exactly what we were up for. But we had to hurry up and produce a proposal within 48 hours to submit it before the trust's meeting. While Britt and I were exchanging emails and slowly shaping a project structure, the phone rang. Andrei, our man for the work with the Zărneşti community, had just heard that the local council had approved a granite quarry in the middle of the Bârsa mountains. I was shocked – this would not only mean the end of our eco-tourism programme, but possibly to all large carnivore conservation in the area. My next mail to Britt was somehow depressed, but we soon figured that these news possibly came in exactly the right moment. If we would be able to convince this foundation that they could create an economic alternative to the quarry, we might be able to stop it. We worked almost continuously for the next 48 hours and sent off a proposal to the foundation. Two weeks later we got a positive response, the foundation had approved a Cost-Benefit-Analysis of the quarry versus eco-tourism and had expressed itself favourably on the following stages (a horse riding centre and the Large Carnivore Centre). By the end of January, the Cost-Benefit-Analysis will be presented to the local council and we hope that both, council and the foundation, will approve the further investment in eco-tourism as sustainable alternative to the quarry. Sometimes, it seems, there are presents from heaven.

A few weeks later, Director George Capanu from the National Forest Administration came for a visit to Germany. After a workshop at the Munich Wildlife Society, we drove together to the Bavarian Forest. For three days, we could show him first hand, how a National Park and eco-tourism can have positive effects on a whole area. Director Capanu was excited about this concept and now strongly supports our development ideas for the Piatra Craiului area. We hope that our co-operation and relationship with the National Forest Administration will further grow and intensify in this year to come. Our goals are common: conservation of a unique eco-system and sustainable development for the people.

Acknowledgements

Without the help of many institutions and individuals, this project would not be possible. First and foremost, we want to thank our sponsors which supported us generously throughout the last year: WWF Switzerland and WWF UK, Jack Wolfskin Ltd., Liz Claiborne Art Ortenberg Foundation, Vier Pfoten e.V., and Friends of Conservation. Paul Lister and Hedi Wyss, provided again a generous donation and Paul furthermore put a lot of time and effort in the development of the project. On the travel sector Alpinschule Innsbruck, Arcatour, Bike Romania, Boojum Expedition, Colibri Umweltreisen, Ecovolunteer, GAEA Tours, Nature et Terroire, Natur-Studienreisen, OneWorld, Romanian Travel Centre, Zwerger & Raab, and a number of private individuals sent groups and thus helped in supporting our project philosophy on a local level. We want to especially thank the whole WWF Team: Magnus Sylvén, Callum Rankine, Elisabeth Samec, William Pratesi-Urquart, Heinz Stalder, and Helen Morf for their ongoing support.

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Hugo Baer, Yve-Olivier Gasser, Johanna Kellermann, Ion Mirea, Radu Bejenaru, and Sebastian Rogall assisted with great enthusiasm. They spent endless days and nights with us snow-tracking or radio-tracking the wolves, bears, and lynx in the mountains and helped out wherever necessary. We also thank all the Swiss, Austrian, Belgium, Danish, Dutch, and German ecovolunteers, as well as the team of the Scientific Exploration Society for their support. And last but not least we acknowledge our radio-marked wolves, bears, and lynx that carry their radio-collars for the future survival of their species in these wonderful mountains.

Large Carnivores in Romania

History of Large Carnivores in Romania

The Romanian Carpathians are the only place in Europe west of Russia where healthy populations of all three large carnivore species (bears, wolves and lynx) still exist. They are home to about 50% of all bears, 35% of all wolves and 30% of all lynx in Europe. After World War II, bears had decreased to less than 1,000 individuals whereas wolves were present in all forested parts of Romania and numbered over 5,000 animals. Excessive livestock depredation occurred as a result of the high wolf number and in the 50s, the government launched a campaign to control wolf numbers. Intensive hunting, trapping, searching for wolf dens and killing the pups, and particularly the use of poison, reduced wolves to only about 1,500 by the late sixties. During this anti-wolf campaign, lynx were legally excluded from persecution. According to reports from hunters during this time, they were, however, affected by the use of poison and intensive hunting. In the late sixties, bear management changed: Romania's leader Nicolae Ceausescu was a passionate trophy hunter and was interested in high bear numbers. As a result, bears and their habitat were strictly protected and the use of poison was banned. Due to these measures the Romanian bear population grew extremely fast, reaching a peak of almost 8,000 individuals in 1988. The high density of bears caused a lot of damage to agriculture and a on average four people got killed each year in human-bear encounters. As a consequence of the bear protection, also the number of wolves and lynx increased again.

After the political revolution in 1989, the situation changed again. The number of bears decreased substantially due to poaching, illegal use of poison, and a high legal harvest in order to decrease the conflicts with human interests. Currently, the bear population is estimated at about 5,400, which still represents about 50% of the European population west of Russia. The high densities of bears are partially due to abundant food sources provided by humans: livestock, orchards, beehives, and garbage dumps are still used as food sources for bears. The wolf population continued to increase slowly and, according to official numbers, reached about 3,400 individuals in 1999. For the same year the lynx population size was officially estimated to be almost 2,000 animals. Lynx occurrence is reported almost exclusively from areas with large, contiguous

forests. We believe, however, that this number is overestimated. Nowadays bears, wolves and lynx are distributed over app. 70,000 sqkm, which is the total of the Romanian Carpathians, their foothills, and the Apuseni Mountains, a mountain range in north-western Romania.

Legal status of Large Carnivores in Romania

The Council of Europe member states agreed on the '*Convention on the Conservation of European Wildlife and Natural Habitats'* (Bern Convention) on September 19th, 1979. Each contracting party is required to take legislative and administrative measures to ensure the protection of the species listed as protected. In 1993, Romania joined and ratified the Bern Convention.

According to the revised hunting law (n° 103/96) wolves and bears are completely protected, but can be licensed to hunting if high damage to livestock is reported from an area. Lynx hunting season is now limited to September 15th to March 31st with restricted harvest quotas. The managers of the hunting areas can apply for a specific number of licences for wolves, bears, and lynx in their hunting territory at the Ministry of Water, Forest, and Environmental Protection and are allowed to assign the licences to individual hunters.

Project structure

The *Carpathian Large Carnivore Project* started as a co-operation between the Munich Wildlife Society and the Romanian Institute for Forest Research and Management, part of the Ministry of Waters, Forests and Environmental Protection. Due to the extension of our project activities during the last years the number of our partners has increased: In 1996 we funded the Carpathian Wildlife Foundation as a legal basis for our activities in Romania and to assure their long-term sustainability. We employ currently a manager for the foundation, a rural development specialist and one person for public awareness programmes. In the next year we want to hire more staff and train them. Since 1999, the Romanian National Forest Administration is principal partner of the project. Part of the Forest Administration is Piatra Craiului National Park, with which we have strong bounds. Next to the Forest Administration, we co-operate formally or informally with a number of additional organisations:

- The National Hunters Association (AGVPS) supports our work and puts their hunting grounds to our disposition.
- We assist the Zărneşti Eco-Tourism Association "Plauiri Zărneştene" in the promotion of eco-tourism whereas the Association is a strong local voice for conservation and sustainable land-use planning.
- The town hall of Zărneşti is an important partner in the sustainable development and the conservation of the whole Bârsa area north of Piatra Craiului.
- The Environmental Protection Agency has to approve all economic activities and constructions, which might conflict with conservation interests.
- The Environmental Commission of the County Council is an important partner in the land-use planning in the greater Piatra Craiului area.
- The town hall of Braşov is responsible for waste management in Braşov and so we co-operate with them on the problems with habituated bears in Răcădău.

By co-operating with the existing institutions and promoting the creation of new organisations where needed, we want to make sure our activities are accepted, supported and progressively taken over by locals. In the remaining three years of the *Carpathian Large Carnivore Project* we believe there is sufficient time to assure the sustainability of the necessary activities for the conservation of large carnivores and their habitat.

Study area

The target area of the *Carpathian Large Carnivore Project* is located in the elbow of the Carpathians, surrounding the city of *Braœov* in the south (Fig.1). The chosen area covers approximately 2,000 sq km and is mainly located in the county of Braœov, but extends into the counties of Arges, Prahova, and Covasna. Elevations are between 600 and 2,500 m above sea-level and consist of several extended mountain ranges (*Ciucas, Bucegi, Piatra Craiului*) including their foothills. Piatra Craiului is the home base and its surroundings are the main focus of the project.

Fig.1. Map of the target area

Climatic conditions are moderate continental with warm summers and cold winters. The average annual precipitation in the mountains is around 1,000 mm with deep snow accumulating until late winter in the higher elevations above 1,000m.

Flora and fauna

With the exception of the lowlands south-west of Braæov, which is intensively used for agriculture (potatoes and corn), and many valley bottoms, which are used as hay meadows, most of the area is covered with forests. Forest composition is dominated by beech (*Fagus sylvatica*) in the lower altitudes (600 to 1,000 m), mixed mountain forest [beech, fir (*Abies alba*), spruce (*Picea abies*), and interspersed mountain maple (*Acer pseudoplatanus*)] in the lower mountains (1,000 to 1,400 m), and exclusively spruce in the areas next to timberline (app. 1,800 m). Timberline, however, is often as low as 1,600 m and all meadows above are intensively used for livestock grazing during summer months.

Almost the complete original large mammal fauna still lives within the study area: brown bears, wolves, and lynx as predators, red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wild boar, and chamois (*Rupicapra rupicapra*) as the natural prey. To a small degree, wildcats (*Felis sylvestris*) predate on roe deer. The only large mammals, which are missing nowadays, are bison (*Bison bonasus*) and moose (*Alces alces*). In the last couple of years, golden jackals (*Canis aureus*) have also shown up in the Carpathians. This species has not been known to exist in this area until now. The first record of a jackal was an animal shot in the study area in October 1995.

Research

Wolves

by Christoph Promberger, Peter Sürth, Marius Scurtu, and Ovidiu Ionescu

At the beginning of the year, two wolves had been radio-collared: Paltinu, alpha wolf of a pack in the area west of Ciucas Mountains, and Tiganu (*Tzi-ganu*), a male wolf from a pack, which uses the north-western part of Bucegi Mountains. Paltinu is collared since October 1995, Tiganu was caught and collared in December 1999.

Paltinu

Track counts revealed that the Paltinu pack was medium size, with at least five wolves plus pups. They used the same area as in the previous year and raised a litter of pups in the nearby of last years den, approximately 2 km further to the north-west. The pack uses an area of rolling hills with elevations slightly over 1,000 m altitude, interrupted by a series of long, narrow, and steep valleys in-between. A quarter to a third of the territory, often along the ridges, consists of pastures with a high density of sheep camps during summer season. Closer to the slopes and rock cliffs adjacent to Ciucas Mountain, the wolves had contiguous forests as shelter. These areas were less frequently used by the shepherds with their flocks and dogs. Due to the unusual dry summer, however, sheep grazing occurred regularly even in the remote parts of the forest. Furthermore, selective felling was undertaken in these forests throughout parts of the summer and fall.

Pups were born in early May and the pack moved them several times throughout summer and early fall. We could locate the pups several times through their howling and found them always to the eastern part of the packs territory, right in the heart of these contiguous forests. The adult wolves themselves, however, often used the patchy forest further to the west, where all the shepherd camps were located. We expected them to be active mainly throughout the night due to the intensive human activity, but found them often roaming around in bright daylight and could witness a number of attacks on sheep at the edge of the forest or when sheep were taken into the forest. The wolves often seemed to wander from one flock of sheep to the next, trying to take a sheep. According to the shepherds, however, success of the wolves did not seem to be very high. As long as sheep were on the pastures away

from the forests, there were hardly any attacks. Justine Evans and her BBC team confirmed this: They spent two months with different shepherd camps and could not film any attacks.

Despite intensive searching even with trained dogs, we found only one den-site, which was situated in an open beech/fir forest. We are not even sure, whether this site was actually used, since the ferns and grass around the entrance of the den was not intensively trampled down. But since we had only the alpha male radio-marked and he changed his resting position almost every day, it was very difficult to locate the den-site as a result of his moving. Wherever we heard pups howling and saw a pup in one occasion, they stayed in young spruce or beech thickets.

On August 9th, Peter Sürth observed five wolves together from short distance, all of them adults. Paltinu, the collared wolf, did not seem to be the strongest wolf and since he is now at least 7 years of age, he might lose his alpha position throughout the next winter to one of the younger pack members.

Tiganu

Since 1994, we found wolf tracks each winter in the north-western slopes of Bucegi Mountains, indicating the presence of a pack. However, we never put much emphasis on trapping in this area. During December '99, we established a bait site in one of these valleys and caught an adult male wolf with 43 kg in mid-December. Due to nearby *Valea Tiganilor*, we named him Tiganu (= Gypsy). The wolf turned out to belong to a pack of three wolves and used a fairly large area between Bucegi Mountains and Piatra Craiului. There are three major parts of the packs territory: The slopes of Bucegi Mountains are difficult to access and consist of steep and contiguous forests with very little human activity. The middle part, Bran valley, is a wide and open valley with a high density of houses. Magura, one of the typical settlements scattered along the ridges west of Bran valley, is bare of forests with the exception of some small patches of birch and beech forest in the valley bottoms. The north-western part of Tiganu's pack territory, the slopes between Magura and Zărneşti, is again covered by extensive spruce forests. We expected the pack to use mainly the eastern part with low human activity and to some degree the forests between Magura and Zărneşti.

During the time, in which we followed Tiganu's radio-signal, however, the central area of Bran Valley and Magura turned out to be the most important part of Tiganu's territory. The wolves frequently crossed the valley and the main road using the only existing forest corridor right through the village of Bran, where hundreds of thousands of people visit the famous "Dracula's Castle". The wolves spent their days regularly along the small forest patches between the houses of Magura, which have a high density of roe deer and some wild boar. Furthermore sheep are grazing

free on the pastures in the nearby of the houses spread all over the mountainside. Despite the fact that there was only little forest coverage and high activity of people, we found Tiganu often active in the middle of the day, probably hunting roe deer or sheep.

In the last days of January, members of our team located the wolf again on the west slopes of Bran valley in a little birch forest, when they heard the shot of a shotgun and the wolf immediately getting active. They ran to the site and found two hunters, which had shot at the wolf. The hunters, which had no license to shoot a wolf, said that the wolf had wounded a sheep further down the valley and that they had been following the wolf tracks and been shooting at the wolf with slugs once in sight. There was blood in the snow and the wolf had been running off using only three legs. Our team followed Tiganu keeping distance to him and found him moving quickly back to Bran Castle, crossing the main road and heading towards the security of the big forests at the foothills of Bucegi Mountains. For the next day, we still found blood in Tiganu's tracks, but at times he was using all four legs. It seemed he was just slightly wounded. For the next days, we regularly found his tracks, but he was not with the other wolves. About one week later, Tiganu responded to our simulated howling and we assumed that he had recovered. Throughout February, we tracked Tiganu again on several occasions in the same little valley, where the poachers had shot at him.

In late February, however, we did not receive a signal from Tiganu anymore, although we continued to find tracks of three wolves in the area. Tiganu was a strong male and possibly even the alpha male of the pack, so we did not believe he would have dispersed. Nevertheless, we searched in the whole surrounding area of his territory and up from Piatra Craiului, where we had a view over several hundred sqkm of forest. In early summer, both hunters and shepherds reported that they saw a wolf with a radio-collar in Tiganu's old territory, indicating that the transmitter had failed due to technical problems. At this moment, we stopped searching with the exception of checking for his signals whenever we were going with a small air-plane (see chapter *Lynx*) with no results.

In late December, however, when this chapter was in fact already written, BBC filmed a radio-collared wolf in a pack of seven in the valley of Strâmba, some 30 km from Tiganu's pack territory. We checked for the signal and were surprised to hear the frequency of Tiganu's radio-collar. According to his behaviour within the pack, Tiganu is clearly the alpha male. We do not know, whether and when Tiganu left his old pack and joined the Strâmba pack, or if the complete Tiganu pack took over the Strâmba territory. And it remains unclear, which radio-collared wolf was observed by the shepherds and hunters.

Bears

by Annette Mertens and Avram Sandor

We continued our observations of the habituated bears that feed on the garbage in the quarter of Rãcãdãu, Braœov. This quarter is right at the edge of the forest, and there are 11 platforms with garbage containers right at the edge of the forest, in close proximity to the apartment blocks. The bears in the area got used to approaching the containers for looking for food. Doing that, they got used to being in close contact with the people on the road. Although no serious accidents have ever occurred between humans and bears in this area, the danger should not be underestimated. To find management solutions for this situation, we need to have an idea of the trend of this population and the interactions between the bears and humans. Since 1998 we observe the bears throughout all summer, the period in which the bears mostly show up at the garbage containers. We count the bears, adding a bear to the count only when we are sure we have not counted it before. We write down all the activities of the bears, we register the number of people on the road, the distance between people and bears, the behaviour of people and the reaction of the bears.

This year we counted at least 31 different bears, of which 14 adults, 11 yearlings and 6 cubs of the year. We excluded from our count 7 bears, where we were not sure whether or not they had already been counted. Considering that in 1998 we counted 20 bears and in 1999 at least 27 this shows that there might be an increase of the population of bears feeding on the garbage.

This year we noted an average number of 7,2 persons in the nearby of the bears, ranging from one to 30. People stayed at an average distance of 10 meters from the bears, approaching as close as up to two meters. From 1998 to 1999 there had been an increase of the number of humans approaching the bears and a decrease of the distance to which people approached the bears. We did not register any further change of these figures in this year, but looking at amount of the escape/ not escape reactions of the bears as response to human behaviour, we observed an increase of the relative amount of not-escape reactions.

As in the year before, this year we could observe many relatively close encounters between humans and the bears feeding on the garbage. Most of the

cases were ones in which people tried to approach the bears to feed them, to touch them, to chase them etc. Still, the bears mostly react very calmly.

The bears that feed on the garbage in Rãcãdãu mainly stay in the area around Braæov throughout most of the time of summer. However, this year we had the proof that the bears can come also from further away. We captured a big adult male bear in an area 15 km away from Rãcãdãu. After some weeks we found the bear feeding on the garbage in Rãcãdãu. To reach this place from the place where we captured him, he had to cross a whole mountain range and the main road Braæov-Bucharest, the busiest road in Romania.

Lynx

by Barbara Promberger-Fürpaß and George Predoiu

Snow-tracking

The main purpose of our snow-tracking efforts during last winter was to find fresh kills and to capture and radio-collar a couple of lynx. Well, easier said than done. Details about our trapping success (or failure) are described in the chapter *Experiences with different traps*.

Beside trapping, snow-tracking served as an important tool to learn about the composition of the lynx population in a small part of our study area. Between January and March we followed almost 100 km of lynx tracks in the region north of Piatra Craiului, an area of 130 km². We found three roe-deer killed by these cats, but no other prey species at all. Only once we could read from the tracks that a lynx tried to hunt a squirrel – without success. Along the tracks we also found 14 daybeds, spots where lynx were laying for a while. In eleven cases lynx selected a very exposed spot, usually high up on a slope or on a ridge, always overlooking a little opening or an old clear-cut. Two beds we found in a hollow trunk and a rock den, respectively.

We were amazed by the high number of tracks we found last winter in this special area. Although we used to work on wolves around Piatra Craiului for more than five years, we never came across that many lynx tracks. Of course we do not know what really had happened and therefor a lot of the following is only guesses. From the tracks we found, however, we believe that the territories of at least two males and two females reached into the observed area, probably bordering or overlapping just in its centre. This might explain the high number of tracks found. In addition, last winter had remarkable amounts of snow, accumulating deer in lower altitudes and on south-facing slopes. With all their prey species moving downwards to some certain areas, the lynx just followed.

Nimaia – the missing lynx

In August we succeeded to capture a young female lynx in about the same area that Tagla seemed to inhabit, the first lynx that was collared in 1999 and died a few months after. We started to monitor Nimaia right after she was captured, with a six weeks brake during rutting season of red deer. From the few locations we got

from her we could roughly outline her home range covering an area of about 40 km². It has to be mentioned, however, that almost half of the time we were searching for Nimaia, we did not receive a signal at all. This might mean that she could hide in an area unknown to us, it might also mean that the collar did not transmit correctly, since we sometimes lost her from one day to the other, even though searching in a very large area surrounding her "known" range. The region she seemed to inhabit contained forests in lower altitudes as well as high alpine meadows (up to 2,000 m) with a good population of chamois, and a number of steep, rugged mountain valleys. Due to the low density of forest roads and trails, not an easy terrain to radio-track such a far-roaming animal.

In the end of October, after not having found Nimaia for more than three weeks, we hired a small air-plane, to search for her on a larger scale. We found her after a short time in the heart of her home range. After that we could localise her again from the ground for three more times. The signal was still strong and the lynx was active from time to time, indicating that everything was alright. Since the middle of November, however, we are facing the same problem again. No signal. To cover a large area at the same time we searched in three teams. No signal. We once again hired an air-plane and checked even far away places. No signal. There is still a little bit of hope left to find her signal again, but it is fainting.

Livestock depredation

by Annette Mertens and Ciprian Anghel

Since 1998 we do a survey of the damage caused by large carnivores to livestock. We want to have information about the organisation and the economic background of livestock raising and the influence of damage caused by large carnivores. We randomly select shepherds to be included in the survey from the area around Braœov. We visit the camps every week and we gather information about the numbers of animals and the staff in a livestock camp, the methods of livestock protection, the cost-income factors, and we register all the cases in which livestock was killed by wolves, bears or lynx.

Tab.1. Characteristics of an average shepherd camp in the area around Braœov

Characteristics 1999	**Range**	**Average**
Sheep per camp	100-1000	468
Cows per camp	0-70	35.3
Pigs per camp	0-30	11.1
Horses per camp	0-15	3.7
Dogs per camp	3-13	7.6
Relation sheep/dog	1:11 - 1:128	1:64.4
Shepherds per camp	2-12	5.28
Relation sheep/shepherd	1:33 - 1:200	1:88.2
Losses of sheep to bears per camp	0-5	1.08
% losses of sheep to bears per camp	**0-2**	**0.37***
Losses of sheep to wolves per camp	0-16	1.84
% losses of sheep to wolves per camp	**0-4**	**0.47***
Total losses of sheep to carnivores per camp	0-16	2.92
Total losses of sheep in % per camp	**0-4**	**0.84***

* Unweighted loss rates

Shepherd camps included in the survey were 17 in 1998, 19 in 1999 and 26 in 2000. In 1998 and 1999 it resulted that wolves and bears killed 2.08% of all the sheep, for an average of 9.94 sheep per each camp during the grazing season. That makes an average economic damage of round 387 US$/camp and 29US$/sqkm in each summer. In 2000, the reported damage was much smaller, with 0.62 % (weighted rate) of all sheep killed, for an average of 2.92 sheep per camp, resulting in an economic loss of 117 US$/camp and 9US$/sqkm during the grazing season. Damage caused by lynx was insignificant in every year and so was also the damage caused to all other livestock apart from sheep. We don't now what the big difference of reported damage in summer 2000 compared to 1998 and 1999 was due to. The average amounts of sheep (476) and heads of cattle (35) in a flock and the average numbers of dogs (8.3) and shepherds (5.3) in the camps did not differ greatly in 1998-1999 and 2000. This suggests that the difference in the amount of reported damage in the years is probably not due to the difference in sample sizes. In 2000, the damage due to large carnivores killing livestock was 24.8% of the salary of the responsible for the shepherd camp and 3% of the total expenses of the camp. It is unknown how much of the damage the shepherds have actually to come up for.

Pellet Count

by Barbara Promberger-Fürpaß, George Predoiu, and Ovidiu Ionescu

Density Estimation of Roe Deer, Red Deer, and Wild boar

Problem

Reliable estimates of ungulate numbers are a basis for most aspects in wildlife management. A long-term monitoring of a species enables wildlife managers to understand, and to react in time on increase or decrease of populations, which might influence hunting activities or forestry. It also is crucial to predict the influence of factors such as increased mortality or immigration, on a population. In Romania, especially predation-caused mortality is of significant importance. To understand the quantitative impact of large carnivores on their prey species the subject has to be approached from both sides – the predators and the prey.

On the predator side, the number of roe and red deer that are killed by lynx and wolves can be determined. On the prey side, a reliable estimation of the population size of deer is needed, to calculate relative losses due to predation. In a synergy, differences in ungulate densities in certain areas can be related to differences in large carnivore densities and/or kill rates.

Therefor, our main objective for this survey was to get a first insight into the potential of the method used, and to compare various areas in terms of:

- densities of red and roe deer
- relation of red deer to roe deer
- abundance of wild boar as alternative prey

Description of method

To gain information on population parameters of free-ranging wildlife such as population size, survival rates, and net-increase, is one of the most difficult tasks in wildlife biology. Especially in the dense forests of middle and central Europe, where game species can easily hide, wildlife estimations based on direct observations are very limited. Therefore index methods have replaced direct counts as the basis for population monitoring. In mountainous areas, dung counts have proven to be the most objective and satisfactory method available at the moment.

The principle of this method is simple. It is based on the assumption that more deer in an area will result in a higher density of dung to be found on the ground. It also assumes that this relationship will follow a linear form.

Based on information of home ranges used by some of our radio-collared wolves and lynx, we selected four areas between 100 and 200 km² for this survey. Sample plots (areas of 100 m²) were distributed randomly in the survey area. Within the first two weeks in May, all sample plots were intensively searched for pellet groups of the three species of interest.

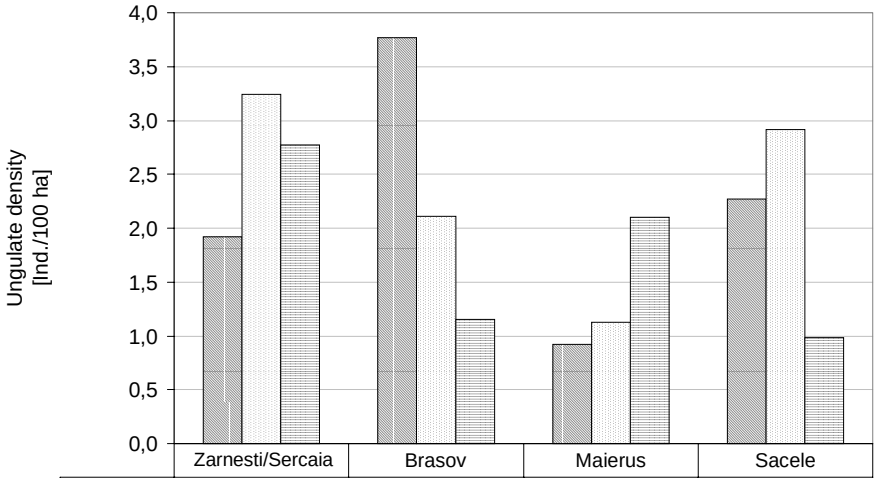
To calculate back from these pellet groups to absolute deer numbers we used following formula, which includes some influencing factors such as defecation rate and time:

$$D(\text{Density of deer per ha}) = \frac{M \times 10000}{N \times A \times F \times T}$$

M = number of pellet groups found
N = number of sample plots
A = size of sample plots
F = defecation rate (average number of defecations per day)
T = time period in which the pellet-groups could accumulate (in days)

Results

The four surveyed areas differed in the number of pellet groups found and therefore in the ungulate density and the ratio between the three species (Fig.2).



	Zarnesti/Sercaia	Brasov	Maierus	Sacele
Roe deer	1,92	3,77	0,92	2,27
Red deer	3,24	2,11	1,13	2,91
Wild boar	2,77	1,15	2,10	0,99

Fig. 2. Differences in ungulate densities in the four surveyed areas.

Zãrneœti/Æercaia can be considered the richest area of all, with the highest densities of red deer and wild boar, and the highest overall ungulate density. *Braœov* appears with an outstanding roe deer number and a comparable low wild boar density. *Maierus* shows the opposite with very low roe and red deer numbers, but at the same time a reasonable wild boar population. Overall ungulate density was by far the lowest in this area. *Sacele* can be characterised by the lowest wild boar number beside comparable good red and roe deer densities.

Also the ratio between roe deer and red deer differed in these areas. With a ratio of 1.8 *Braœov* was the only area that had more roe deer than red deer; in *Maierus* and *Sacele* we found a ratio of 0.8, in *Zãrneœti/Æercaia* red deer was the dominating species (0.6). These variations can in future be used to relate densities of large carnivores and to investigate their influence on the different prey species.

Distribution of pellet groups

In the area of Zãrneœti/Æercaia we measured for every sample plot altitude and exposition to gain some information about the winter distribution of these ungulates. Pellet groups of roe and red deer were not evenly distributed throughout the five altitude classes (from less than 800 m to 1,600 m). The number of roe deer pellet groups were decreasing with increasing altitude (Fig.3), whereas exactly the opposite was the case for red deer pellets. This means that roe deer seem to avoid higher altitudes during winter, while red deer still prefer these habitats.

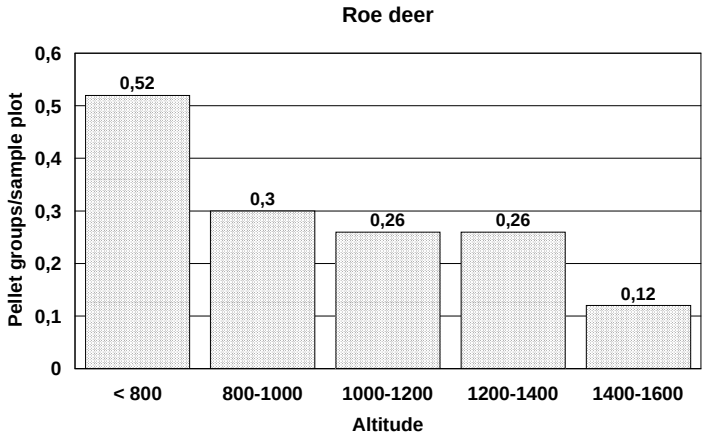


Fig. 3. More roe deer pellets were found in lower altitudes

Pellet groups of wild boar were found in all altitude classes with a light peak between 800 and 1,200 m. Exposition did not have any influence on the distribution of pellet groups for none of the investigated species.

Altogether this pre-study showed that this method can represent a useful tool to gain reliable information on ungulate densities in mountainous regions. Therefore we plan to do this survey again next spring on a much larger scale to cover all important regions in our study area.

Tree-damage through ungulates

by Christian Gick

Problem

A major problem in forestry management all over central Europe is the damage of trees by browsing and bark peeling through wild ungulates. There is evidence that in some areas where wolves and lynx are keeping red deer at lower densities, these problems do not occur.

To get a first insight into this field, we compared the intensity and distribution of browsing and peeling damages caused by wild ungulates in the forestry district of Zărneşti with two forestry districts in the Bavarian Alps (Germany). The damages were used as an indicator for the density and the distribution of the ungulate population.

To be able to compare the data of the different districts, the damage in both areas were quantified with a method that has been used for several years in Bavaria. At each sample plot, where damages were quantified, we additionally measured habitat factors that possibly could have an effect on tree-damage. These factors were: exposition, altitude, inclination, density, and kind of forestry management.

Results and Conclusion

The intensity of browsing damages differed significantly in the two areas of interest. In Bavaria the intensity of browsing was ten times higher than in Romania. Peeling damages were quite low in the Bavarian districts.

In Bavaria, the factor 'density of the forest' had a significant influence on the intensity of browsing: in open areas browsing damage was much higher. In Romania, browsing pressure was higher in high altitudes. None of the remaining factors did have an effect on the distribution of damages, neither in the Alps nor in the Carpathians.

Differences in tree-damage can be explained by differences of the sampled forestry districts. Official estimations of ungulate numbers in both areas show higher deer densities in Bavaria. The intensity of tree-damage is not necessarily

exactly correlated with increasing population densities, meaning that there are additional factors influencing the feeding habits of ungulates. Browsing damage, however, is higher with higher ungulate populations.

In Bavaria, ungulates are fed regularly during winter seasons in contrary to the Romanian study area where feeding is unusual. In Bavaria the main part of the red deer population is kept in fences during winter season to reduce peeling and browsing damages, and the road density in mountain valleys is much higher. This makes natural migration of red deer down into river valleys, which would be their natural habit, almost impossible. In addition harvest of red deer is insufficient.

Small clear-cuts with rich natural regeneration, common in the forestry district of Zărneşti, enlarge the food supply for large herbivores. Nevertheless there is a large back country with natural, mixed forests in the Romania mountains offering only few patches with good food supply. Missing winter-feeding in a comparable poorer habitat and a strong predation pressure from large carnivores seem to keep wild ungulates in smaller densities in Romania. A higher portion of deciduous trees and silver fir in Romanian forests increases the regeneration potential of the natural tree types. In addition, there are also no winter fenced areas and therefore damage is distributed over the entire region.

Winter fenced areas are the main reason for little peeling damages in the Bavarian districts.

It is very difficult to give reasons for the spatial distribution of tree damages. The relatively high browsing intensity in open areas in the Bavarian Alps indicates that hunting techniques in place are obviously little disturbing. The trend of an increase in browsing intensity in higher altitudes confirms the theory that ungulates retreat into higher and steeper areas when large carnivores are present. To answer the question, however, whether large carnivores can influence tree-damage, requires a variety of experimental field studies over a extended period of time.

Experiences with different traps

by Barbara Promberger-Fürpaß, Annette Mertens, and Christoph Promberger

Elusive, far-roaming animals such as wolves, lynx, and bears are difficult to study. To get even a short glimpse on carnivores is usually a lifetime experience, to gain information through direct observation of wild individuals is impossible.

Nowadays, in most research projects on large carnivores animals are captured to attach a transmitting system, that allows to follow these animals over great distances. When it comes to trapping, however, capturing these animals alive is one of the most difficult tasks. Instead of simply using the most effective trapping techniques, which have evolved during the long history of carnivore persecution, safety of the animals has nowadays highest priority.

Throughout the last decades, wildlife projects could gain a lot of experience with a variety of live-trapping methods. In fact, these trapping techniques never stopped to develop, since they usually have to be adjusted to the local situation – what might work in one country might not work in another.

In the following chapters, we summarised experiences and success with different trap types used in the Carpathian Large Carnivore Project.

Wolves

Leg-hold traps

Often, copying the old, traditional trappers' methods is the most successful way of catching wildlife. In our case this is at least true for wolves. We have been using modified *steel leg-hold traps* (type McBride) since the first days of the project, and they have proven to be the most successful technique. Lured to a bait or another interesting spot, a wolf has to step into a trap. Several modifications minimise the risk of injury for the animal. As lures we mainly used wolf urine, wolf scats, skunk-oil, 'Timber wolf call', or similar incredibly bad smelling pastes wolves feel so attracted to. In most cases, we used these traps along 'trap-lines', which means we set up to 30 traps in a distance of 20 to 200 m along trails regularly walked by wolves.

Fig. 4. McBride leghold traps

From 1994 to 1999, we had more than 50 trap-lines in our study area, each of it lasting between four days and four weeks. An average of 21 traps has been installed on each trap-line. To measure the success of trap-lines, we calculate in trap-nights, in which each activated (baited) trap counts as one trap-night. Throughout these years it summed up to 8,961 trap-nights – almost 9,000 opportunities to capture a wolf!

Tab. 2. Summary of successful trap-lines since 05/1995

Date	Wolf name	Trap-nights	Days till capture
05/1995	Timis	57	3
10/1995	Sebes f	69	2
	Sebes m	99	3
	Strâmba	156	5
10/1995	Paltinu	66	4
09/1996	Azuga	148	6
	Tigai	379	15
10/1996	Zizin	12	1
10/1996	Strâmba	135	5
5/1997	Nimaia	190	7
10/1997	Orban	75	3
	Zânoguta	216	8
10/1998	Zânoguta	122	12
8/1999	Pup	39	2
12/1999	Tiganu	178	7
AVERAGE		**129.4**	**55**

So far, however, we succeeded to capture wolves only 19 times, 18 times with leg-hold traps – an average of 472 trap-nights per wolf:

- 2 were pups and had to be released without being radio-collared
- three individuals were caught twice or three times respectively
- 13 animals could be equipped with a radio-collar

The majority of wolves we caught within less than one week (5.5 days). Three times we managed to capture two or even three animals on the same trap-line. Especially young, inexperienced individuals were most likely to be trapped - more than half of the wolves we captured were pups and yearlings. This, however, might also be a result of the higher proportion of pups and yearlings in the population. From three wolves (Timis, Tiganu, Paltinu) we know that they had the alpha-position within their pack.

Usually, wolves caught in leg-hold traps had no other injuries than small cuts at the paw – if at all. One problem connected with life-trapping is the question how to avoid non-target-species (NTS). No kind of lure can ever be so selective to not attract several carnivores, such as other canids, bears, or badgers. Even though we tried to reduce NTS being captured by adjusting the trigger mechanism of these traps to the weight of wolves and by using mainly wolf urine, we believe that it can not be totally avoided. In the past five years, we captured a total number of 8 different species and 69 individuals in traps set for wolves. Dogs made up for most of the NTS captures. This is due to the high number of stray and shepherd dogs in the forests. Not being very suspicious, they can be easily attracted to these scents. At the same time, trails or forest roads used by wolves often serve as paths for shepherds and their flock of sheep. Consequently, many sheep were caught just by stepping accidentally into the traps. Hence, trapping here in Romania has always been a compromise between the best spot to catch wolves and its accessibility for humans.

Bears can be a real problem for trapping, especially cubs being caught and the mother around. Bears have an incredible good sense of smell, are curious, and not extremely suspicious towards human scents. We found traps that bears had dug out without even triggering it. Therefore, even though leg-hold traps worked best for capturing wolves, the risk of catching bears was reason enough to also go for alternative methods.

Fladdry

A fladdry is an old hunting technique originally used for large ungulates, but is also effective for wolves. A place where it is known that wolves stay (e.g. through snow-tracking, active den-site, or a radio-collared animal), is surrounded by ropes with coloured flags hanging down each half a meter. The wolves are scared to pass these ropes and beaters can push them into a funnel with nets at the end.

In Romania we tried it for six times on three different packs, always with the intention to re-capture a radio-collared wolf and/or to collar more individuals of the same pack. We succeeded only once, when we caught famous Timis for the third(!) time, around her den-site. We exchanged her collar with a new one, which failed after a few months, while the original one kept on working for another year and a half.

One out of six sounds quite good – at first glance. The effort in time and people is very high. As a first step a radio-collared animal has to be followed intensively for several weeks to get an idea where the pack stays or has its rendezvous-site. Then an area of about 1 km² around the pack has to be examined to see whether it is suitable at all to do a fladdry. The forest should be open so that the coloured flags can be seen from a distance, with a thicket at one end where the nets can be hidden. If it is decided to go for a trial, a number of about 25 people has to be engaged to do the final preparations. In the mountains it takes us at least a whole day only to set up the fladdry line and the nets. Only after that beaters will try to chase the wolves into the nets, which takes again at least a full day.

When we captured Timis, everything worked out 100 percent. The other five trials, however, failed, mainly due to two difficulties. One problem was that in some cases the wolves got disturbed while we were working on setting up the rope, and moved out before we managed to completely close the area the wolves were staying in. In another case, the wolves obviously smelled that there is something wrong and instead of running into the nets, they turned around and sneaked through the beaters line – unseen. It seems to us that once a wolf had made the experience with a fladdry, there is nothing that can force him to jump into the nets.

The advantage of this trap type is fairly safe in respect to capturing NTS. During the six trials two roe deer jumped into the nets, but could be released without any problems.

Altogether we now believe that the effort is too big to consider fladdry an important method to trap wolves in the Carpathian mountains. However, the method has proven very successful in Bialowieza/Poland, where terrain and accessibility are much easier.

Throughout the year 2000 we mainly used a third trap type (*Belisle snares*), which will be explained in the lynx chapter. Success, however, has been very low.

Lynx

Trapping lynx in Romania has so far not been a success story. During the past one and a half years, we used three different trap types, two of which have proven successfully in other research projects.

Box traps

Box traps are the most common way to capture lynx alive, and are still well known within the older hunters generation in Romania. We installed these tunnel like boxes along known travel routes of lynx, preferably on narrow spots, where it is difficult to pass without walking through the trap. In theory, curiosity, created by odours and coloured bird-wings in the box, should encourage the lynx to enter.

In 1999, we distributed 10 of these traps in remote places in our study area. Even though we tried to attract lynx with a number of irresistible scents, no animal ever entered the traps. Due to perfect snow-conditions during last winter we could indirectly 'observe' lynx behaviour around these box traps. In one case, a lynx used a certain forest road every few days. We put a box trap next to a rotten trunk that served him as a scent-post. As predicted the lynx came back regularly – but showed no intention to enter the trap. While at the first time he at least went to the entrance, he did bigger and bigger bends around the trap, the more we tried to block his by-pass routes.

Tagla, the first lynx we captured, was actually supposed to step into a box trap. Instead, she preferred to get caught in a leg-hold trap set and baited for wolves, placed in a distance of about 70 m from the box.

In most of the other cases, lynx passed the traps in a distance of 50 cm to 5 m. From the tracks in the snow we could tell that these lynx never even stopped at the trap to have a closer look or to sniff, no matter which lure we used.

When these traps were used only in very remote places, it was very time- and cost intensive for us to verify each box every morning. In addition, even remoteness did not help to safe the traps from being stolen: out of ten, two boxes disappeared from the middle of nowhere and another one was destroyed throughout the last year. Therefore we will use these trap type in future only for a limited time-period and under certain conditions.

Foot-snares

In our project we worked with two different types of foot-snares. In the *Swiss snares* the foot gets caught by the loop of a steel rope, which is attached to a spring in a long aluminium pipe to minimise the risk of injuries. This is especially practicable around a fresh kill, since it can be installed very quickly without a lot

of preparation. It is also quite selective since wolves or foxes would be too suspicious to approach a location with so much human scent. The only difficulty is to find a fresh kill! In Romania, we very much depend on the snowy season to find kills while snow-tracking. In all the years, only twice we by chance came across fresh lynx-kills during summer-time. There is no way to actively search for kills in summer and even hunters and game wardens can usually not provide information.

Throughout last winter we found three roe deer killed by lynx. One carcass was probably already too old to still attract the lynx, especially since the cat was close when we installed the traps in the evening. The following morning, we found tracks surrounding the kill-site, but after that the lynx abandoned what remained from the carcass. In another case we had technical problems with the traps, and at the third carcass – once again – the traps were stolen after the first night: some kids from the neighbouring village followed our tracks right to the kill-site. Even though we could retrieve the snares after a few days, another good chance was lost again.

On few occasions we used this trap type along trap-lines, especially on spots that were scent-marked by lynx on a regular basis. It is a Murphy's law that exactly on one day, when the traps were inactivated, a lynx passed by and stepped on the trigger plates of three traps. We believe, however, that these snares are functioning, but a tiny bit of luck is always needed.

Throughout spring and summer 2000 we mainly worked with *Belisle snares*, another type of foot-snares, that can be used for lynx and wolves at the same time. Similar to leg-hold traps, the foot at first gets caught between the two jaws of the trap. At the same time, a snare is closing around the foot. With little effort the animal can get rid of the trap, but is still captured in the snare. The advantage of

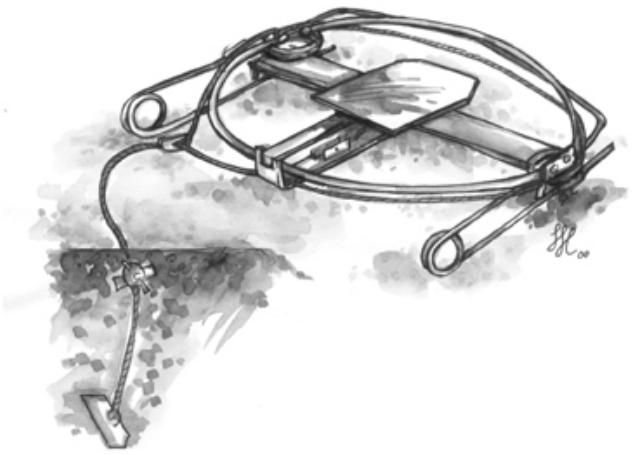


Fig. 5. Belisle foot snares

this trap is that it can be set quickly, enabling us to leave as little human scent as possible at the trap site. Another positive aspect is that bears can not get caught in there. We used to set these snares in the same way as we did with leg-hold traps for wolves.

Throughout five months of intensive trapping, we captured one lynx, a young female, which we radio-collared last August. Two wolves got caught, but one could pull out of the snare, before we arrived, the other one bit through the snare wire. One fox did the same, another three got caught, as well as four dogs. There was a high number of traps that were triggered without anything being caught. In some cases, lynx or wolves might have been the cause. Learning from these first experiences, we tried to adjust the traps by using stronger snare wires and by reducing the sensitivity of the trigger plate. Since we have been trapping with a new team this year, we also believe that due to their inexperience many good chances were missed.

Bears

So far, we used exclusively cage traps for capturing bears since they have proven to work well enough for our needs. The traps are big iron cages, 2.5 m long, and 1.5 m high and wide. The trap doors are triggered through a wire connected to some meat in the middle of the cage if a bear pulls on it. We usually start baiting the traps with meat and fruits up to three weeks in advance. During the capture period we bait the trap only with meat. Shortly before it gets dark we open the trap doors, and close them again in the morning. Since all bears caught were bears visiting the garbage bins in Rãcãdãu, there was no need to prevent human scents or to camouflage the cage. The trap doors are equipped with a trap-transmitter, which enables us to keep the trap under "observation" throughout the night. Like that we can tranquillise and handle the bear as soon as it is captured and reduce the time the bear has to stay in the trap.

We gained most of our experience from trapping bears in the area around Rãcãdãu. Here, we have so far captured 11 different bears, three of them twice and one three times. In most cases, there was a bear inside the trap after a few hours. Overall trapping effort with these cage traps was 1.7 trapnights/capture.

Furthermore, we captured one bear in an area far away from Braœov and other settlements. We chose this spot, since we wanted to capture bears that were not too strongly habituated to the presence of humans. Two weeks before we started capturing we started to bait the cage. The bear was captured in the fifth trap-night. This bear, however, showed up in Rãcãdãu as well.

The high trapping success in the area of Rãcãdãu can be easily explained by the fact that the bears in that area are habituated to humans and thus do not fear the presence and smell of humans in the forest.

Impact of scavengers on lynx and wolf kills

by Kerstin Kellermann

Wolf and lynx are the top-predators in Europe. They lose, however, parts of their prey to other mammals or birds, summarised as scavengers. There is evidence that wolf-kills attract a lot of scavengers such as foxes (*Vulpes vulpes*), martens (*Martes martes*), wild-boar (*Sus scrofa*), ravens (*Corvus corax*), or magpies (*Pica pica*). It has been shown that ravens are the most important scavengers on wolf-kills in the USA, Canada, and Poland. Observations in the Yellowstone National Park demonstrated that ravens follow wolf-packs while hunting. In contrast to wolves, lynx usually hide their kills, which makes them more difficult to detect. In Poland, wild boar was the most common scavenger at lynx-kills.

These results raise questions about the situation in Romania. Do scavengers maybe influence the amount of food available to lynx and wolf? Could this affect the kill rates of these predators?

This study mainly deals with following question:

- how big is the amount of food-loss through scavengers?
- which scavenger is the most important one at the lynx kill and which one at wolf kills?
- do the different strategies of wolf and lynx in treating their kill – on the one hand hiding the carcass (lynx) and on the other hand non-hiding the carcass (wolf) – have an influence on the amount of food-loss through scavengers?

The study consists of two parts:

1. Natural kills

By the use of radio-tracking, snow-tracking, and through information from game wardens I hope to find natural kills of wolves and lynx. I will check these kills regularly to see which animals scavenge and to find out how long a pack of wolves or a lynx stay before they abandon the kill. To not disturb the predators, I will not touch and weigh kills of wolves.

2. Simulated (artificial) kills

In the period from the end of November until the beginning of June I will distribute livestock carcasses (pieces of horse or sheep) in the study area. As locations for simulated kill-sites I will use places where natural kills have been found before and similar spots. I will hide simulated lynx-kills by covering them with leaves or snow, whereas carcasses of wolf-simulations will be visible, with blood and bones spread all over the place.

I intend to set three carcasses every five days. Each carcass has to be controlled twice a day (in the morning and in the evening). Some places will be observed with binoculars or a photo-trap. Furthermore I will try to identify scavengers by footprints and scats around the kill-site and estimate their number. At each control I will weigh the carcasses to measure the loss of meat.

Human Dimensions Research

by Nicky Spencer

In June 2000, a Human Dimensions Workshop lead by Dr. Alistair Bath was attended by the members of the CLCP in order to get a better understanding of the importance of implementing this kind of management strategy into the Project. Human Dimensions of Wildlife Management should involve the integration of the following into any Conservation Program:

- Baseline Assessment to begin Attitudinal and Belief Monitoring
- Educational Report – Targeting Specific Weaknesses in knowledge that affects attitudes
- Building Partnerships – bringing groups together around a common goal.

  - Understanding visions, obstacles, opportunities, strengths and weaknesses.

- Identification of areas of Support and Disagreement over Management Options

  - Trade-offs and scenarios.

- Identifying the Nature of Conflicts between Groups and Partners

From this Workshop several major tasks were established by the Project team for specific Human Dimensions attention. Over a six- month period, I undertook the following activities and produced the subsequent reports and documents.

- Meeting of CLCP members to establish goals and future activities to familiarise myself with the project.
- Getting involved with the biological aspect of the project as well as the social for a more integrated understanding.
- Understanding attitudes and beliefs toward brown bears in Rãcãdãu and thereby directing the public awareness campaign in a positive direction.
- Understanding attitudes and beliefs of hunters in Romania toward the Eurasian lynx and thereby providing valuable information to bring to the Ministry for needed adjustments in the legal system.
- Tourist assessment involving learning the economic benefits for the area, what tourists expect, where they are coming from and what can be improved within the CLCP visit.

➢ Designing of questionnaires at the university and grade school levels, in order to discover what students know and believe about large carnivores in the Romanian Carpathian Mountains. These questionnaires were designed from the Wildlife Series produced by the CLCP and other educational material produced by Hariet Homm, that will be implemented into the school curriculum this year.

➢ Giving a human dimensions point of view to help various activities involving CLCP work such as the evaluation of the educational material intended for distribution among the schools in Braœov county.

The activities involving the bears of Rãcãdãu, the Eurasian lynx and the tourist evaluation, included data entry and statistical analysis of the information obtained through questionnaires. This information was then documented and illustrated in reports by various tables and charts enabling project staff to better understand people's perceptions, knowledge and attitudes toward wildlife as well as the eco-tourism programme.

A summary of the human dimension workshop in June was also produced and given to each CLCP member for reference purposes. This will be useful for future activities that the project will be involved in with the public, and also to better unify the project members as a more productive team.

The Lynx Report

Some basic findings in the Human Dimensions Research of the Hunter/lynx questionnaire were as follows:

➢ Knowledge levels of hunters about lynx and their habitat /biology is limited.

➢ 30 % of those questioned were close in their lynx population estimation (~1,500).

➢ The majority of hunters think that the management of the animal is an important issue.

➢ Hunters in the Hungarian speaking county of Covasna are slightly more positive in their attitude toward the lynx than their Romanian counterpart.

➢ Generally, hunters do not believe that the lynx is responsible for livestock damage.

➢ They do think that the animal kills more prey than necessary.

➢ Hunters are split on the total protection of the Eurasian lynx in the Carpathian Mountains of Romania – some in favour, some against.

➢ Hunters in Covasna think application of the law should improve regarding poaching.

➢ Generally, the lynx is seen in a positive way but some consider them to be a competitor for deer.

Main concern of the CLCP is the socio-economic and political change currently in progress is expanding infrastructure, thus interfering with prime wildlife habitat. This makes the problem and concerns more complex. By understanding the views and attitudes of hunters, the project can lobby for management adaptations in favour of both hunters and lynx.

The Bears of Rãcãdãu Report

Some basic findings in the Human Dimensions Research involving the habituated brown bears in Rãcãdãu and the residents of the area were as follows:

➢ Generally, the people of Rãcãdãu like the bears in the area.

➢ Residents are proud of the healthy population in Romania.

➢ They are concerned with the potential danger that bear/human interaction could bring. They do not however feel threatened on a day- to- day basis.

➢ 71% want something to be done about the situation.

➢ Residents of Rãcãdãu have a low knowledge of bear biology and also do not know what to do if confronted by a bear.

➢ The majority of people (85%) believe that the number of bears visiting the garbage bins is around 10. (there are actually 35 +)

➢ Over 80% of the people questioned believe that the garbage management should improve.

➢ Generally, people do not want the bears harmed in any way.

➢ Approximately 70% do not even want rubber bullets to be used to deter the bears from the streets.

➢ Practically all residents are accepting of an education programme for their children and for the general public.

The concern of the CLCP is with an increase in the number of bears feeding on the garbage bins in Rãcãdãu the risk of human injury and fatality is increasing. People have an unnatural perception of bears because of this situation. A management strategy involving the town council as well as an education campaign to improve the situation is the goal of the project.

Economic Evaluation

by Christoph Promberger, Annette Mertens, Barbara Promberger-Fürpaß, Andrei Blumer

Areas of high importance for nature and biodiversity conservation are often situated in mountain areas and/or along national borders. This is due to a lack of human development because of bad soils, climatic disadvantages, and few investments from outside. Human economic activities have been restricted, usually through topography and accessibility. People, which still settled in these areas typically lived of forestry and livestock raising, activities which did not always alter the ecosystem as dramatically as it happened in the lowlands.

The Carpathian Mountains are one of these examples, and the fact that they are the most important stronghold for large carnivores in Europe is not only due to democratic decisions of the society. Nowadays, the social and economic conditions in Romania are changing fast and the country is in transition towards a western-style democracy and a market economy. Forests are being privatised and their future management is uncertain. It is clear that conservation has to challenge these economic developments.

In rural Romania, large carnivores have traditionally been viewed as nuisance animals, as pests without much value. Even though the opposition against carnivores isn't as strong as in other parts of Europe, such as the reindeer areas of Fenno-Scandinavia or the sheep breeding areas of the western Alps, a negative attitude in Romania is prevalent. A positive economic impact of large carnivores would be the best argument for the conservation of the species.

Four main factors of the large carnivore presence can be directly quantified in monetary values:

- Losses of livestock
- Costs associated with guarding livestock against carnivore depredation
- Income through hunting activities
- Income through eco-tourism

Costs for livestock management and depredation, and benefits from trophy hunting and eco-tourism are the most important factors and give a good overview over the economic dimension of large carnivores. In the year 2000, we have, as in the years before, collected all relevant economic data for a defined area and tested for trends throughout the last years.

Is sustainable development possible?

Our data cannot give a fully accurate cost-benefit analysis, since "social" costs and benefits aren't included in this quantification. Social costs are e.g., when a person gets injured or killed by a bear, social benefits could include positive emotional feeling of hearing the howl of a wolf or finding signs of carnivores.

Environmental economy has become increasingly important throughout the recent years and many concepts of sustainable development have been proposed for various countries and areas. We are aware, however, that an economic system with input of fossil energy cannot be sustainable in the long-term. And of course our programme for developing nature-based tourism isn't fully sustainable either, since it depends on people, which travel by car, train, or aeroplane, and on the affluent lifestyle of western societies, where people can afford to spend a thousand Euro or more for a one-week-holiday.

It is, however, important, to judge these ideas in relation to alternative scenarios. There is a human population of more than 50,000 people in the greater Piatra Craiului area who have to make a living. Industry has collapsed, the private sector has not yet developed enough to counteract this, and for this very reason pressure on natural resources is already increasing and will further increase. Forest privatisation creates additional threats to the integrity of the ecosystem. A combination of traditional consumptive land-use with non-consumptive use of natural resources can therefore at least lower the impact of the socio-economic changes, since eco-tourism depends on a careful and non-destructive management of natural resources.

Methods

In 1998 and 1999, we have compared costs and benefits of large carnivores in the area of our livestock survey. However, many shepherds move around with their flocks throughout the year and might spend their summer months many kilometres away from the winter months. For this reason, we cannot tell exactly, how many camps are within the area, which benefits from the eco-tourism programme. Alternatively, we have calculated the average costs for each shepherd camp and compared, how many camps could be compensated through the benefits of large carnivore presence. This enables us to understand the trend of costs versus benefits throughout the years.

To determine the losses of livestock through wolves and bears (lynx are of no importance for livestock, since they hardly ever manage to kill livestock when guarding dogs are present), we have visited 26 shepherd camps a minimum once per week (see chapter *Livestock Depredation*). We gathered data about their direct losses and about their costs of guarding livestock. From the total numbers we calculated the average loss and costs for each shepherd camp.

The county headquarters of the state forest administration and the hunters association provided the figures about the income achieved from trophy hunting for bears.

For the part of the eco-tourism, we have summarised all revenues and analysed, who received what money.

Costs of large carnivores

Livestock

Since large carnivores obviously killed less livestock this year compared to the previous two years, the reported economic loss is almost 25% lower.

Tab.3. Direct costs through livestock depredation during summer 2000 in a selected area of 1,000 sqkm (in Euro)

Species	Average loss per camp	Average value per individual	Losses per camp (Euro)
Sheep	3.6	40	144
Loss of sheep milk			42
Cattle	0.08	300	27
Loss cow milk			18
Goats	0.04	30	1
Horses	0.04	250	11
Total			**243**

To these direct costs, we add indirect costs for guarding livestock, since this is a necessity due to large carnivores presence. Salaries and food for the herders, and the costs associated with keeping the dogs are the only relevant costs associated with large carnivores. Three permanent shepherds, however, would always be necessary to milk the sheep and process the milk to cheese and thus are not considered for our calculation of indirect costs. Guarding dogs, however, add fully to indirect costs due to large carnivore presence. On average, there was one shepherd

and one dog less per camp in the year 2000 compared to the previous year. Since the losses were nevertheless lower, guarding seems to have still been sufficient.

Tab.4. Indirect costs for livestock owners during summer 2000 associated with large carnivores (in Euro)

Cost factor	# per shepherd camp	Costs per individual per month	Average costs per camp (7 months) in Euro
Food and salaries shepherds	2 (+3)	110	1,540
Dogs	8	7	392
Total			1,932

Based on the 70 shepherd camps in the area, each camp had average costs due to large carnivores of 2,165 Euro. Compared to the previous year, this is a decrease of costs through large carnivores of almost 30%. This is due to two reasons: Lower depredation numbers and less intensive guarding.

Wildlife management

Costs through wildlife management are difficult to assess, since they are usually not exclusively connected to large carnivores. Game wardens are necessary for all wildlife management, just the maintenance of the bear bait sites relate directly to carnivores. Food for bears is provided throughout springtime, but usually old and sick horses are used, which have very little value. According to the Forest Administration, not more than 1,000 Euro are spent for these bear sites in our study area each year.

Benefits of large carnivores

Trophy hunting

Bears are powerful animals and consequently have always been a valuable trophy. The Carpathians are one of the prime areas in Europe for hunting big game and most of the largest bear trophies ever shot came from Romania. As a result, many hunters from affluent countries are willing to spend large amounts of money to shoot a bear and gain a trophy for their collection.

Lynx and wolves contribute only to a very small degree to revenues, since very little trophy hunting with paying guests is done and the value of the harvested furs is a) not very high, and b) very difficult to assess since many of the killed lynx and wolves are not reported.

In 2000, four bears were shot by trophy hunters within the area. Total revenues for the county directorate of the National Forest Authority summed up to 27,050 Euro. The Hunters Association rented only a small portion of the hunting grounds around Piatra Craiului and has not shot a bear in the area, which we consider that our eco-tourism programme has direct financial impact.

Eco-tourism

This section is based upon the results of our eco-tourism activities as described in the chapter *Development of Tourism Programme*.

We consider that the persons booking trips in our programme "*Wolves, Bears, and Lynx in Transylvania*" and journalists, which come to report about our project activities represent the financial input of carnivore based eco-tourism. The western tourism agencies keep some parts of the revenues for its costs and profit, and distribute the remaining money for transport, food and lodging, all local services, costs for the development of the programme, and a donation for our large carnivore research.

In this calculation, we excluded the money for the tourism agency and the airfare, but included all other benefits, since this money in one way or the other ends up locally. To this amount, we added the amount of money, which tourists spent locally for souvenirs, beverages, or other small spending.

Tab.5. Money generated through the tourism programme 2000

	Euro
Overall amount generated through the travel agencies	**310,328**
Additional amount spent locally for souvenirs	**5,292**
Total revenues	*315,620*
Transport to Romania (airfare or train)	**89,448**
Costs and profit travel agencies	**119,846**
Non-local portion	*209,294*
Money remaining on local level	**106,326**

Revenues through large carnivores in the Piatra Craiului area

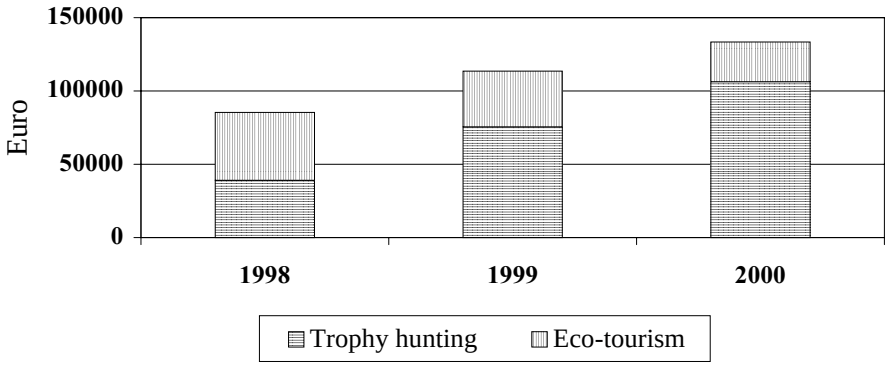


Fig.6. Despite the decrease of trophy hunting revenues, revenues through large carnivores have increased from 1998 to 2000 by over 56% due to the increase in eco-tourism (all data from 1998 and 1999 calculated back into Euro).

Costs versus benefits

To determine the economic dimension of large carnivores, we have now calculated costs versus benefits. Many factors, however, are very indirect and almost impossible to assess: wolves and lynx might create economic benefits for forestry through their impact upon large herbivores; on the other hand, wolves and lynx kill deer and thus might lower the revenues from trophy hunting on stags. But maybe hunters pay more money for hunting in the Carpathians due to the image of a wilderness area – where large carnivores might be a crucial part thereof. Factors like this would require a whole lot of speculation and, for this reason, we have not even made an attempt to include them into a calculation.

To compare the cost-benefit ratio to the results of 1998 and 1999, we have calculated how many shepherd camps could be compensated for their costs due to wolves and bears with the economic benefits of carnivores.

In 1998, benefits could compensate the average costs of large carnivores for 36 shepherd camps. In 1999, this figure increased to 39 shepherd camps. In 2000, the benefits of large carnivores could already compensate for the costs in 62 camps. We believe that there is not more than 20 shepherd camps in the area, which is influenced by the tourism programme. So there is definitely a net profit through large carnivores for the area.

Management and Conservation

Rãcãdãu bears

by Annette Mertens and Vasile Boronia

No serious accident has occurred yet between the habituated bears in Rãcãdãu and humans. However, people and bears seem to get more and more used to each other and more fearless of a direct contact. The danger is big that a person gets killed by one of the bears. In 1999, as a response to our lobbying activities, the big garbage containers without lids, which had been standing in Rãcãdãu, were replaced by smaller containers that could be closed. However, this measure did not have the desired effect as people began to open the containers in order to allow the bears to feed on the garbage. The bears very quickly learned how to open the containers themselves. This year the general manager of the company of garbage management was replaced, and the new manager does not support our management efforts as did the former one. This is why we addressed the section of garbage management of the town hall of Braœov directly. Also, we gained the support of the governmental agency for environmental protection. With the help of an architect we designed a project for a construction to be built around the container platforms, the way that the bears can not approach the garbage anymore. These constructions would have a window through which people could throw the garbage, but could be opened only by the staff that picks up the garbage. Our project was included in the budget of the department for garbage management of the town hall of Braœov for the year 2001. This increases the chances that the constructions will be built in winter 2001-2002.

We are still lobbying at the general hunters association for some form of aversive conditioning. With these two activities together with the public awareness program (see chapter *Public Awareness campaign in Rãcãdãu*) we hope that the danger represented by the bears that feed on the garbage will decrease.

Livestock conflicts

by Annette Mertens and Vasile Boronia

Electric fences

In many countries the use of electric fences has shown to be effective for protecting livestock of attacks of large carnivores. The advantage of electric fences is not only the fact that they prevent predators from approaching the flock but also that they avoid the dispersal of the livestock. An additional advantage is that the animals can graze also during night but at the same time are protected from depredation by large carnivores. We want to test this protection method on the Romanian situation. By now we set up electric fences at four different shepherd camps. Three of the fences were installed for short periods of approximately two months and one for one year. No animal was ever killed at any of the shepherd camps in the time in which the fences were installed. In coming May we want to install all our 10 electric fences and observe how well they protect the livestock, and what kinds of problems the shepherds have with using them.

It is not easy to find shepherds that are willing to co-operate in testing the fences. Most of them are suspicious because they are not used to somebody giving them something for free, without asking them to pay for it. Also, electric fences are completely unknown in Romania and many shepherds are afraid the fence could harm their animals. They often are not willing to make the effort of learning to handle the fence. However, the shepherds that have used the fences have been very satisfied, and through oral propaganda the use of electric fences is slowly getting known among the livestock raisers.

Insurance

The Romanian law of hunting grounds and game protection includes provisions to reimburse livestock owners for losses caused by protected game species with funds from the Ministry of Waters, Forests and Environmental Protection, in cases where it can be demonstrated that the livestock was properly guarded, and that the managers of the hunting ground were responsible for the damage. However, procedures for requesting reimbursement for damage are extremely complicated, and in reality, very little public compensation is paid for livestock losses caused by wolves or bears.

We believe that a compensation system is not recommendable for the Romanian situation. The Romanian livestock raisers are still relatively self-sufficient in coping with large carnivores. A compensation system would encourage them to abandon their traditional protection methods and make them dependent on the state. The use of an insurance that offers insurance policies that are easier to afford by private small-scale livestock raisers could help to decrease the economic burden these people have to carry.

We contacted the general manager of the Agricultural Insurance, who is willing to co-operate with us in making known the possibility of insuring animals among livestock raisers, and consequently working out a convenient set of offers. Together we produced and are distributing a leaflet to inform about the agricultural insurance company and the use of electric fences.

Forest Policy Workshop

by Christoph Promberger and Ovidiu Ionescu

The Romanian Ministry of Water, Forest, and Environmental Protection (MWFEP) received a grant from the GEF to develop a new forest policy. The project team of the MWFEP organised a series of workshops on future management and ownership issues, marketing, legal issues, use of non-timber products, and wildlife related issues.

We were invited by the MWFEP to participate in two workshops on wildlife related issues and on the development of the non-timber product sector due to our experience in eco-tourism.

Large carnivore management plans

Our objective for the wildlife workshop was to introduce the concept of wildlife management plans in the future forest policy. We believe that the past and current forestry and wildlife management system was excellent to assure viable and healthy populations of carnivores, ungulates, and their supporting habitat (see chapter *Large Carnivores in Romania*). Due to the changing socio-economic conditions in Romania, however, it will not be able to cope with the challenges ahead for the conservation of wildlife. Only modern management plans, which take all economic, social, and environmental aspects into account will assure the future prosperity of Romanian wildlife. The workshop went well and all participants agreed that the current concept of wildlife management needs to be adapted to the new situation. The Ministry now plans to initiate wildlife management plans for all relevant mammals within the next years.

Eco-tourism

Our objective for the other workshop related to the development of non-timber products was to help develop eco-tourism based on large carnivores. We consider this important for two reasons:

1. It is likely that in the future economic aspects increase in importance for the hunting business and wildlife management in total. As long as the National Forest Authority had control over all the forests and much of the hunting in the core areas of large carnivores (which are at the same time also prime areas for red deer and chamois), they could run

the business as a holistic enterprise. Now, that forests are being privatised on a large scale and less than 25% of the hunting units left to the NFA, this holistic approach is rather the exception than the rule.

2. Many people do not like carnivores, because they have only disadvantages through their presence. Livestock owners or hunters will get a more powerful voice in the future and it is likely that they will ask for the reduction of carnivore populations. If these species have beyond their natural value an economic value, it is easier to argue for their conservation as a national issue.

This workshop was as well successful and there was consensus about the importance of eco-tourism. The new Forest Policy will contain the objective to form partnerships with NGO's and local communities to promote and develop this activity.

Rural Development

Development of Tourism Programme

by Christoph Promberger, Andrei Blumer, Peter Sürth, and Barbara Promberger-Fuerpass

People in rural areas usually have only disadvantages, when large carnivores are present: They loose livestock, they need to protect the flocks, and they are restricted in their grazing regimes. Just few people gain value from large carnivore furs and most money generated in the hunting business goes into the administration or to non-local private businesses. What creates only losses is of little value.

Risks and chances of eco-tourism

The term 'eco-tourism' has been widely used throughout recent years. Often, however, people in fact talk about nature tourism. Eco-tourism is more than nature tourism and includes economical and ecological sustainability as well as socio-cultural aspects. Eco-tourism can help in financing protected areas, but it needs to incorporate sustainable and attractive economic alternatives to non-sustainable land use practices for the local people. Only if revenues from eco-tourism end up with these people and thus give them economic alternatives to overusing their natural resources, it can change attitudes towards the conservation of target species' and their supporting habitats.

Our integrated management approach defines the need to support the implementation of conservation activities with economical instruments on a local level. The development of eco-tourism, however, is a difficult tightrope walk and needs to be carefully designed from the very beginning.

The tourism programme "Wolves, Bears, and Lynx in Transylvania"

In 1995, we hosted four tourist groups as part of a fundraising scheme, which were sent from a British travel agency via *The Born Free Foundation*. Based on these experiences we decided in 1996 to add a touristic component to our project activities with the goal to demonstrate to local communities that wolves, bears and lynx are not only a burden for livestock production but that their presence and conservation can be used to generate income.

Consequently, we developed the eco-tourism programme "Wolves, Bears, and Lynx in Transylvania", which should help in establishing local businesses where people can earn a living by offering services to visitors. We focussed all efforts on local people to avoid that affluent people from the cities or even from foreign countries would take over and the local population has no advantages from our programme.

The promotion of the area would be based on the presence of wolves, bears, and lynx in one of the most spectacular landscapes of central-east Europe.

Our plan was to focus on three aspects:

- Develop a **tourism infrastructure** in the communities around Piatra Craiului based on local, small-scale family businesses
- Design **attractive programmes** with special focus on large carnivores
- **Attract tourists** from Western European countries

Infrastructure development and local know-how

When we initiated the programme, it was clear that we could gain sufficient influence on local policy only, if we would focus initially on one particular community and not spread the revenues over a large area. The valleys and hills around Piatra Craiului form the core area of our project and the mountain itself offers one of the most spectacular scenery in the whole of Romania. For this reason we decided to develop the infrastructure in and around the community of Zărneşti, which included much of the Northern part of Piatra Craiului. Our plan was to initiate the programme and develop step by step a local infrastructure for all activities, such as guesthouses, tour operators, guides, or transport services.

Until 1997, Zărneşti had no infrastructure for tourism whatsoever, since the city was site of armament industry and thus tourism was not desired. For this reason, we had to use initially the facilities for rural tourism in the area around Bran, famous for its 'Dracula'-castle, but some 20 km away. In 1998, we could persuade the first Zărneşti entrepreneur, Gigi Popa and his family, to open a local guesthouse. Due to the good success in summer 1998, the family enlarged their facility to eight rooms in 1999 and to 17 rooms throughout 2000. The news of the success spread, and three more families joined our programme in early 2000. The Surdu family renovated their house and now can host guests in eleven new rooms. Two other families offered a few rooms throughout the summer season 2000, if a group was too big to be hosted in only one guesthouse.

Hermann Kurmes, a Saxon which grew up in the neighbouring village of Zãrneşti and his wife Katharina registered and opened in summer 2000 a tourism agency in Zãrneşti and have had a successful first year as tour operators. We expect that they will be very, very busy in 2001!

To further increase the involvement of locals and to assure the local capacity for the increasing amount of visitor groups, we offered a course for tourist guides in spring together with Piatra Craiului National Park. Seven locals applied for participation (conditions were excellent foreign language skills and interest and experience in nature and mountain hiking) and followed the course for three months. The course covered the following topics:

Contents of the tourist guiding course:

- History, geography, politics of Romania
- The Carpathian Large Carnivore Project
- Piatra Craiului National Park
- Carpathian ecosystems (forests, meadows, wildlife, geology)
- Traditional land-use (forestry, agriculture, livestock farming)
- Regional and local history
- Behaviour towards guests and tourist groups

For topics, where we lacked sufficient knowledge ourselves, we asked specialists to give the lectures. The tour operators hired three of the new guides and kept them busy throughout the summer season 2000. We presented this activity to the National Tourism Agency, which approved the course and encouraged us to continue in this way.

As an important step for the future, we proposed to all people involved in our tourism programme the establishment of an *Eco-Tourism Association*. This Association (‘*Associatie de Ecotourism Plaiuri Zarnestene’*) was set-up and registered in September 2000. Since than, it has been very active in establishing concepts to promote the area, get involved in local policy, and prepare the merchandising of local products for the next tourism season.

The infrastructure development has been very successful throughout the last year, yet there is an urgent need to get much more people involved to a) provide the capacity for the increasing demand and b) to make conservation an important issue within the community of Zãrneşti.

In November 2000, we signed a new contract with the County Directorate of the National Forest Authority, which assures the involvement of the NFA into the tourism programme. In spring 2001, a new bear observation hide is being built only for tourism purposes and, if proofed successful, the NFA intends to extend these activities to observation of other wildlife such as red deer, wild boar or capercaillie.

Programme offers

When we first promoted the programme "Wolves, Bears and Lynx in Transylvania", we designed an offer for a one-week trip to our study area, including two days of special large carnivore information. We would visit places such as wolf dens, bear bait sites, recent wolf kills, or other places of interest, guided by project staff.

For the rest of the week we suggested a programme through a Romanian tour operator, which would include hiking in the mountains, visits to traditional shepherd camps, and a bit of cultural sightseeing such as Dracula's castle. This offer still represents the heart of our programme and made up for over 80% of all guided groups in 2000.

Throughout time, tourist agencies requested a larger variety of offers. Consequently, we developed more programmes together with the local tour operators, yet large carnivores remains the focal point of all trips. Currently, the following programmes are offered by travel agencies:

- "Wolves, Bears, and Lynx in Transylvania"
  (eight-day hiking trip)
- "Large Carnivores and Humans"
  (ten-day hiking trip with more culture)
- "Horses and Wildlife"
  (eight-day trip and 14-day trip)
- "Carpathian Winterworld"
  (eight-day trip)

On top of these complete offers, we are able to carry out specifically designed programmes for organisations with a more detailed interest about large carnivores.

Our plans for 2001 are to include further activities such as family holidays, hiking and rock climbing trips, mountain bike tours, and incentive tours for companies. Most of these ideas are being developed together with the Eco-tourism Association Plaiuri Zarnestene.

Development of tourist groups

In our first approach back in 1996, we sent offers to a number of agencies in Germany and Switzerland. Two Swiss agencies, GAEA TOURS and Arcatours, responded and, together with a journalist group and a members group of the Munich Wildlife Society, eight groups visited in summer 1997.

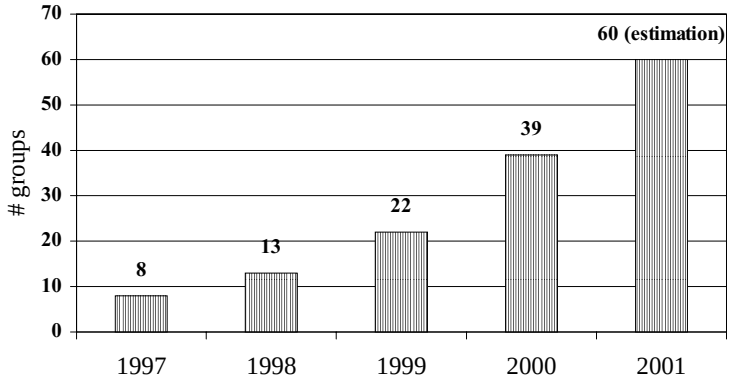


Fig.6. Development of tourism programme 1997-2001

In the following years we continued to approach travel agencies all over Europe and, due to the increasing media coverage, several agencies approached us as well. Consequently, the number of tourist groups increased steadily (Fig.6). Between 1997 and 2000, a total of 569 visitors booked the offered tours.

In 2000, we had seven European countries (Switzerland, Germany, Austria, UK, Netherlands, Belgium, Sweden) and the US covered, however, there is still a number of countries, where there might be interest to experience large carnivores in their natural environment. With the exception of this one US agency, where people came for two weeks, we will restrict our focus on the European market since the burning of fossil energy through long-distance travel would be in no relation to the local advantages such groups can bring.

Distribution of revenues

One of the main characteristics of eco-tourism is that large parts of the revenues remain on a local level. Travel agencies need to take their share and transport to the target area consumes part of the overall tourism income as well. The portion for the local market, however, should still be high enough to represent an attractive economic alternative versus non-sustainable land-use practices (Fig. 7).

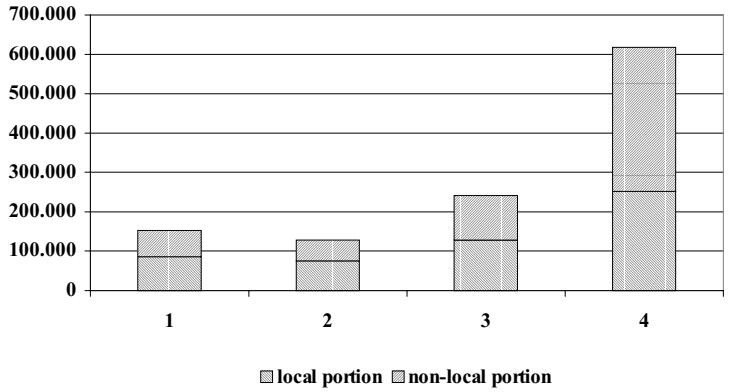


Fig.7. Total turnover, local portion, and non-local portion of the revenues of the tourism programme.

In 2000, our tourism programme has generated a total turnover of 315,600 Euro, of which 40,8 % ended up locally (the donation to the CLCP is eventually also spent in the area). This is a good ratio and demonstrates that the tourism programme is to the benefit of local people (Fig. 8)

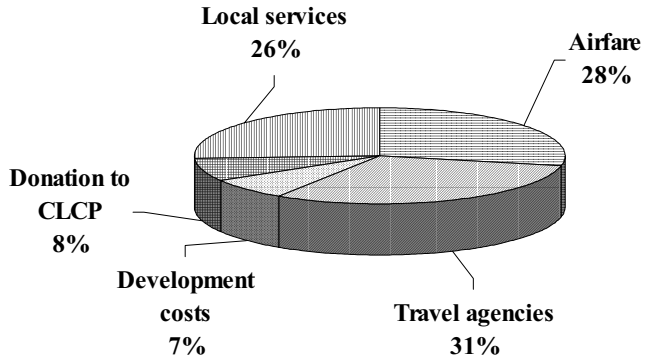


Fig.8. Distribution of tourism revenues in 2000

Compared to the years before, the local portion has decreased. This has two reasons:

1. An increase in airfare because of the strong $US

2. The general increase in average group number, which resulted in a discount for all local services

Nevertheless, the total financial benefit on the local level almost doubled compared to last year. This is a great success.

Future of the tourism programme

Zărneşti has about 27,000 inhabitants and tremendous economic problems: both local factories, where the majority of the people in town were employed, have laid off most workers. It is clear, that eco-tourism will not offer a significant economic alternative unless its dimensions will grow considerably throughout the coming years.

The future perspectives of the tourism programme are excellent, since a number of new programme offers (horse riding, winter programmes, incentive tours) will be taking off throughout the year to come and are likely to have high growth rates for the next two or three years. At the same time, group size increased in the last year and will further increase. This is due to partnerships with bigger travel agencies. We expect to reach the number of 100 groups with 1000 visitors the latest by the year 2003 (not counting the visitors of the Large Carnivore Centre).

Our strategy is threefold:

- Increase visitor numbers through
  - An increase in agency offers,
  - Better promotion of the offered trips e.g. through slide presentations,
  - Increased media coverage;
- Increase the programme offers to activities such as horse trekking, mountain biking, hiking, rock climbing, survival training, family holidays, incentive tours etc. – still large carnivores being the major attraction;
- Create a Large Carnivore Centre as additional attraction for tourists to visit the area (see separate chapter).

Development of horse-riding tourism

In September 1999 we successfully conducted a pilot horse-riding trip, which encouraged us to go on and further develop a horse trekking component. During the long winter brake Sorin Staicu, the owner of the stable invested in three more horses, thus increasing his stock to 12 horses. This enabled us to enlarge the possible group-size to up to eight participants.

For the year 2000 we offered four trips, three of which were marketed directly through Carpathian Nature Tours, the agency of Hermann and Katharina Kurmes. Another trip was organised from the Swedish Carnivore Association. Unfortunately only for the latter enough people booked to really conduct the journey. In April, Boojum Expeditions from the USA approached us, with interest in a two week holiday on horseback. Hence, we could fill three weeks in this first year. In addition we guided five day-trips, and a number of ten individuals explored the countryside on horseback on our recommendation.

Even though visitors tremendously enjoyed their stay and the riding, we also faced serious problems. Since both trips were scheduled only for September and October, Sorin obviously lost interest in the horse-riding facility throughout the year and started to neglect the horses. Without being trained on a regular basis, the horses lost their fitness in short time. In addition, the animals were not fed in a proper way, so that they turned into a bad condition shortly before the first group arrived. With the equipment (saddles, bridles) his employees dealt with in the same way. Our intervention unfortunately did not change their careless behaviour.

Although taking in consideration that keeping and handling animals in Romania is quite different to western countries, we in the end decided to quit our working relation with Sorin. Visitors that feel sorry for the horses they were riding would leave the country with rather mixed emotions. In a first reaction we thought to completely abandon the horse-riding component, to avoid this kind of troubles. However, the very positive over-all feedback of people that had joined the horse-treks encouraged us to try and find another solution. In addition, we also got to know a few, young fellows from Zărneşti with horse-spirit and a heart for animals. Since we already had gained some experience with the horse-riding tourism, it would also be easier the second time.

To us it seemed essential that the Eco-Tourism Association of Zărneşti would be the owner of any new facility. Since members of the Association (owners of guesthouses, guides, ...) are the ones to profit most from the development of such an additional attraction, they naturally have a strong interest that highest priority would be put on satisfying the clients. Like that we could ensure that the stable and the keeping of horses will follow western standards.

At the moment there is a big chance for a horse-riding facility to be realised. In a pre-proposal to the *Nando Peretti Foundation* we applied for a modern horse-centre including several hectares of hay meadows in the Bârsa-valley. The development of such stables could boost horse-riding-tourism in Zărneşti.

For the coming year, ten horse-trips are already scheduled between June and October. The strong interest from agencies in different countries sounds promising for the future of such a facility.

The Struggle for Bârsa Area

by Christoph Promberger, Andrei Blumer, and Barbara Promberger-Fuerpass

Who has been visiting us in Romania knows Bârsa valley. Coming from the city of Zãrneşti, it is the entrance to our core area, the endless forests of Bârsa Mountains just north of Piatra Craiului. The forests are full of wolves, lynx, bears, red deer, wild boar, capercaillie and all kind of other wildlife. Bârsa valley is one of the most scenic valleys with spectacular landscape all around. The valley is traditionally managed for hay production, but livestock is allowed to graze in spring and fall. Due to the unchanged relief of the valley bottom, formed by the old meanders of Bârsa creek, the meadows consist of a mosaic of different plant communities in the depressions, gravel bars, sand hills, and flat parts. During summer months, many dozens of different species bloom next to each other and form a carpet of colours.

Since Bârsa valley is easily accessible and well known by many Romanians, pressure for development started a few years ago. Many affluent people started to buy property in Bârsa valley and throughout the last three years, a number of small houses were built on the 12 km stretch between Zãrneşti and Plaiul Foii, a traditional tourism 'resort' with some 10 houses. In summer 1999, construction on a large property started and we found out that an entrepreneur from Braşov planned for a 100-room hotel in the middle of the valley. At the same time, the local council had proposed to open 60 ha of the valley for development with another 60 ha already under review. The county council however, had not yet approved the plan, and thus all constructions were in fact illegal. It was obvious that this development would create a disaster both in ecological and economical aspects. In terms of conservation, the valley bottom is most valuable due to its mosaic of different plant communities and the abundance of insects and birds. For the further development of eco-tourism, the community would loose one of the major attractions of the area. Most of the new owners would be non-locals, and further development such as electricity, an asphalt road etc. would be inevitable. Sound eco-tourism would not be possible without the valley.

We decided to focus all our efforts to stop this development and guide it in a sustainable direction. Together with the administration of Piatra Craiului National Park we organised a meeting with the mayor, some councillors, and several people already engaged in the tourism business. On this meeting, we gave an introduction into eco-tourism and a vision for the development of eco-tourism in Zãrneşti. The

meeting was perceived very positively and, after a council meeting in October '99, the council established a working group with councillors, representatives of the National Park, our project, and some local entrepreneurs to develop a vision and an outline for eco-tourism development. At the same time, the community blocked all further plans for construction in Bârsa valley and offered to develop a new land-use plan together with us.

Starting from October '99, we started a series of workshop sessions and explained the concept of eco-tourism in terms of social and economical benefits for people from Zărneşti. We provided examples with similar conservation projects all over the world and how these projects brought social and economical benefits to local people or failed. We further explained the competition on the nature tourism destinations in the world and the necessity for Zărneşti to find a proper niche in the nature tourism market to become a destination.

All these benefits were related with the need to keep Bârsa Valley free from development. After a couple of workshops, we reached consensus with the councillors about the necessity to Bârsa Valley undeveloped. As a consequence, the working group decided to start designing a new land use plan of the surface of the community of Zărneşti. In a first step, we worked out a vision for the development of Zărneşti for the next 20 years and presented it to the local council. This vision was adopted unanimously by the councillors, which, at the same time, gave the working group the mandate to propose a new land-use plan.

A VISION FOR THE CITY OF ZĂRNEŞTI FOR THE YEAR 2020

"The economy of the community consists of tourism, traditional activities in the field of agro-forestry, trade with local products, and sustainable industry. Tourism is based upon local family businesses, respecting ecological aspects, and is well organised and promoted.

A land-use plan is designed, which considers the specific local architectural character and protects those zones adjacent to the Natural Park, which have high ecological value.

Zărneşti is internationally recognised for its Piatra Craiului Natural Park, the presence of large carnivores, and as an ecological sustainable model area. The local population and the visitors have a high degree of conservation education."

(adopted unanimously by the Council of Zărneşti, Dec 16th, 1999)

In the following workshops, the working group identified the economic needs of the community of Zărneşti. As a result, we defined four different categories of land use: natural zone, agriculture zone, tourism development zone, and urban zone. A set of criteria was designed to select the tourism development zones. Following these categories, most investment would still be possible in Zărneşti, but only in specific designated areas. Bârsa valley would remain almost completely free of development, only one area additional to Plaiul Foii, where a few houses existed since long time would be given free for construction. The working group proposal was presented to the whole local council on January 27**th**, and was accepted by the councillors.

Later on, we discovered that there was still an old Local Ordinance from August 1999 in force, which allowed 160 ha of area for constructions in Bârsa Valley. We presented this situation to the local council on their last meeting prior to the local elections in May and the councillors voted to cancel this old Ordinance. During summer, however, we had to find out that this cancellation never showed up on any official document.

Local election took place in June 2000. 20 out of 21 councillors were not re-elected and the mayor was exchanged as well. Before we could even build up new contacts, the newly elected council voted in a big rush once again to open the whole Bârsa Valley for development, cancelling the previous Local Ordinances. We had to start back from Zero.

In a first step, we tried to join forces with other organisations. The co-operation with Piatra Craiului National Park had already proven successful during the process with the working group. We further established partnerships with the Environment Protection Agency (EPA) in Braşov and the Environmental Commission from the Braşov County Council (ECCC). At the same time, one of the parties in opposition in the Zărneşti council went to the media about the issue and all summer long, articles and reports appeared against the illegal constructions in Bârsa valley. This media campaign increased the attention of the official bodies up to such an extend that even the Minister of Environment had to give an official statement in the Parliament. As a result, the land-use plan prepared according to last Local Ordinance was not approved by the County Council, implying that the construction of buildings in Bârsa valley was not legally supported. Although, some influential people continued to build their holiday houses during the summer without any interference from the local, regional, or national government. The situation, however, was so emotional that it was difficult to contact councillors about our intentions without being blamed for all the negative publicity.

In mid-October, we heard new problems coming up: the Zărneşti council approved in principle a grano-diorite quarry on one of the tributary to Bârsa Valley. A powerful company from Bucharest had asked for the approval. Not only that the

trucks and the explosions would scar the last tourist away, this was a clear signal in which the future development of Zărneşti would go. For us it seemed like we had failed to reach our goal on the local level. Still, we kept on fighting and a shimmer of hope came over the horizon. We had produced a brochure to propose a Large Carnivore Centre for Piatra Craiului. Just when we thought about our next step to fight against the quarry, the European Sustainable Use Specialist Group of the IUCN approached us with the request for ideas for a proposal to a new Swiss Foundation. Time, however, was running short and within 48 hours, we had to produce a pre-proposal (see chapter "The Carpathian Large Carnivore Centre") for the Foundation. We knew that this could be our last chance – if the investment would come, we could increase the flow of tourists in the area considerably and the council might vote in favour of our concept. This could, in fact, decide the whole struggle about Bârsa Valley in the favour of conservation and in fact in favour of the people of Zărneşti.

We approached the mayor and vice-mayor with the possibility and they were open to discuss it. As a sign, they wrote a letter to *The Nando Peretti Foundation*, where they assured that 'no decisions will be taken for the next three months in favour of the quarry, to allow your specialists to finalise the cost-benefit analysis'. As result, the foundation approved a Cost-Benefit Analysis for eco-tourism versus the quarry and we now hope that the outcome of the study will be in favour of eco-tourism and the Large Carnivore Centre.

The Carpathian Large Carnivore Centre

by Christoph Promberger and Barbara Promberger-Fuerpass

Two years ago we developed an idea to increase the volume of the eco-tourism programme by creating a major tourist attraction – a Large Carnivore Information Centre. Wherever we travelled we looked at similar interpretive centres, exhibitions, and wildlife parks in Germany, Austria, Canada, the USA, Croatia, Sweden, and Switzerland. The most inspiring Centres were the 'Hans-Eisenmann-Haus' in the National Park Bavarian Forest/Germany, the International Wolf Centre in Ely/ Minnesota, and the Beringia Interpretative Centre in Whitehorse/Canada. We found and collected many good ideas, which we – together with our own ideas – assembled to a project design for the Carnivore Centre.

We than produced a detailed brochure with a description of the Large Carnivore Centre, which was printed in summer 2000 in English, German, and Romanian language. The brochure was produced to spread the idea of the Centre on a local level and to find donors for the Centre.

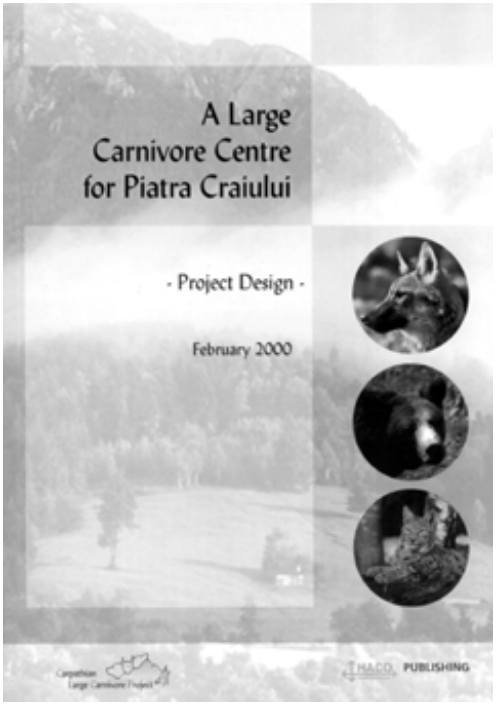


Fig. 9. Large Carnivore Centre Brochure in English

We gave these brochures to many people in Zărneşti and its surroundings, such as the mayor, the councillors, and other important people. The feedback was generally positive, however many people were sceptical that we would find the money to construct it. At the same time, we presented the brochure to different organisations and potential donors. In October, we were approached from the *IUCN European Sustainable Use Specialist Group* with a request for ideas for a proposal, which they would submit to a foundation. We presented to them the situation with the potential quarry (see xx) and developed together a proposal which consists of three steps:

1. A Cost-Benefit-Analysis of eco-tourism and the LCC versus the quarry and non-sustainable development
2. An investment into the tourism infrastructure such as a horse riding centre or a mountain bike rental
3. The Large Carnivore Centre

Together, we submitted a pre-proposal to *The Nando Peretti Foundation*, which approved the first step and outlined the possibilities for funding steps 2 and 3, if the results of the feasibility study are encouraging and the local authorities commit to a sustainable development. We proposed the idea to the town hall, which formally committed to *The Nando Peretti Foundation* that they would not sign any contract with the company for the quarry until the feasibility study is finished.

In December, economists Britt Grossman and Gil Yaron came to Zărneşti to start work for the Cost-Benefit-Analysis. By the time we write this report, they have collected a lot of economic data on which they intend to build a model. This will be presented to both the town hall and *The Nando Peretti Foundation* and further steps will be discussed together.

Public Awareness

Introduction

Throughout the last year, the public awareness component of the CLCP has increased a lot in importance for project activities. This was made possible to the increase of funding for these activities and through the fact that we formed partnerships with two people. Gheorghe Pamfil is a freelance designer from Braæov, which we met in December 1999. Pam, how everybody calls him, has a great talent and excellent knowledge in designing brochures, leaflets, or any other print material. This is especially astonishing since people in Romania didn't have the possibilities until very recent times to develop such skills. The fact that our print material looks now professional and attracts people is to a large portion due to Pam. The other person is Cornel Ghirisan, who owns a printing company in Ghimbav, just outside of Braæov. Cornel has been very interested in the CLCP and took extra care for the printing of our material. When we present some of our brochures nowadays in western countries, people often would not believe that this is being produced in Romania. So we do not only raise the public awareness about large carnivores, but about Romania as well.

As additional act to further develop this component, we hired from January 1st, 2001, Simona Buretea as a public awareness officer. We hope she can give us another push to make our work better known and to increase the awareness for large carnivores locally.

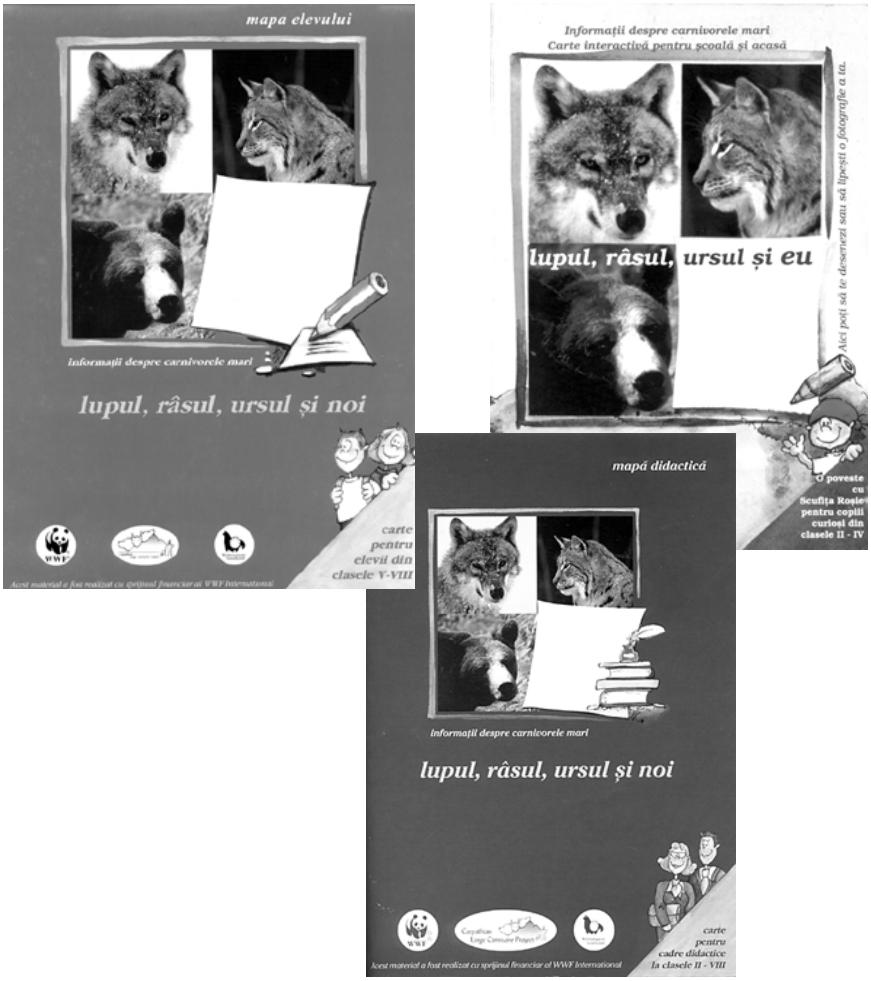
A School Education Programme for Piatra Craiului

by Christoph Promberger and Hariet Homm

We initiated the school education programme in summer 1999, when Hariet started to work on her masters thesis. Based on a first seminar with 13 teachers, similar school programmes from other countries, and loads of own ideas, Hariet starting drawing, painting, and writing. In winter 1999/2000, Hariet was done with all the material. However, translation into Romanian language and the transfer of all the drawings into computer files suitable for the printer took longer then we had expected. Only in summer, we finally could start printing the material.

By then, we had received an additional grant from the Liz Claiborne Art Ortenberg Foundation to print a few more thousand copies of the material and so would be able to distribute it to much more schools than originally anticipated.

We contacted all schools in the greater Piatra Craiului area and presented the idea of the programme to the grade 2-4 teachers and the biology and geography teachers of grade 5-8. Most teachers were very interested to receive the material and so we organised an official presentation of the material in mid-December. Despite bad weather, which made it too difficult for some of the teachers from the remote villages to come, over 60 teachers from 18 different schools showed up at the presentation. We could also welcome one of the directors of the County Education Agency, which acknowledged the programme and encouraged the teachers to make use of it.



The local media reported about the new programme that the pupils of the schools around Piatra Craiului have now a "Discovery Channel-style material" available.

Since we have now hired Simona Buretea to support us with the public awareness programme, we are convinced that we can further develop the work with the local schools through field excursions or competitions. One idea is to do a competition for school classes to create a 3-D habitat model for large carnivores with Styrofoam, Clay, miniature trees, and natural components. The model should display the Bârsa Mountains and should contain all necessary elements for large carnivores and their prey species. All participating classes will be invited to join an excursion into the Bârsa Mountains and the winners will receive a special price.

Public awareness campaign in Rãcãdãu

by Annette Mertens, Gheorghe Pamfil, Hariet Homm

We believe that in order to avoid conflict situation, people in the quarter of Rãcãdãu need to be informed about bears, their natural way of living, the problem the habituated bears that feed on the garbage represent, and the ways to solve this dangerous situation.

We contacted the supervising authority for education and staff of the schools in Rãcãdãu and proposed them to co-operate in an education programme for school children. Especially from one of the schools we had a very positive feedback. With their assistance we are producing a booklet about bears and the habituated bears in Rãcãdãu. The booklets will be distributed to the children in coming spring, when we will also begin to organise excursions and video/slide presentations for the children.

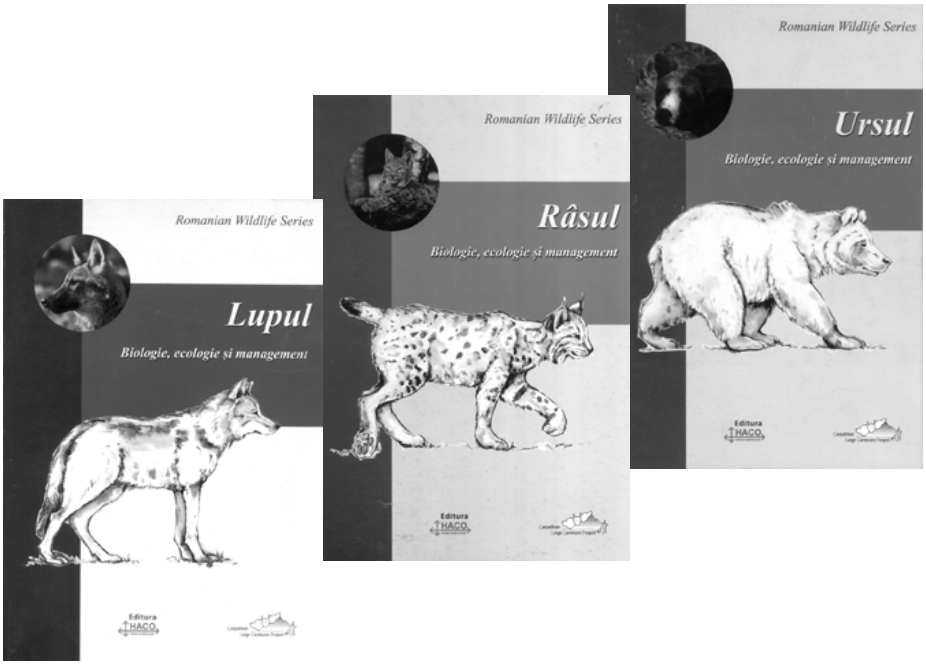
We further produced a leaflet that informs about the bears in Rãcãdãu and about the ecology of bears. The leaflets will be distributed with the help of the children of the school in Rãcãdãu, as part of the school education programme.

Romanian Wildlife Series

by Barbara Promberger-Fürpaß, Christoph Promberger, Annette Mertens, and Ovidiu Ionescu

Hunters and foresters are currently the people who perform the wildlife management tasks. They are responsible for counting wildlife, which is used as basis for management decisions, and for all hunting. Prior to our project, no comprehensive research on the ecology of large carnivores was carried out in Romania. Current international research is usually published in English, and since this language was not widespread during communism, very few people had and still have access to international literature.

The future foresters and staff of the hunting administration are students recruited from the Forest Faculty of the University of Braæov and the Hunting College in Braæov. Due to financial limitations, availability of educational material about large carnivores is not satisfactory. Education of the forestry students about large carnivores, however, can ensure knowledge of the people responsible for their survival in the future.



Ovidiu Ionescu already gives classes about wildlife biology to the students. In support of this, we produced brochures about wolves, bears, and lynx on a Carpathian and European scale. This Romanian Wildlife Series has a focus on education of forestry students, but on request of RNP, the National Forest Administration, it will also be distributed to interested hunters and foresters all over the Romanian Carpathians.

Each brochure covers 26 pages and contents information on following subjects: status and distribution, situation in Romania, research, biology and ecology, management, field notes, and a short description of the species. We summarised available information from international literature and adopted it to the special Romanian situation. Also case studies from different countries were included.

We will put the Romanian Wildlife Series also on the CLCP website (www.clcp.ro) to make it available to a broader public. The printed version will be distributed by February 2001 to the hunters and foresters, and Ovidiu will start working with this material at the beginning of the following semester. In the course of the coming year we will continue with the Romanian Wildlife Series by producing similar brochures on the ungulate species red deer, roe deer, wild boar, and chamois.

Website

by Christoph Promberger, Barbara Promberger-Fuerpass, Annette Mertens, and Gheorghe Pamfil

It has become almost a must for every organisation to have an own website. Often, however, websites are not updated on a regular basis and have little other value than to inform whoever would be interested about the organisation. We were often asked to produce a website as well and so we did.

We defined target groups for the website as:

- People interested in wildlife and conservation
- Wildlife managers and biologists
- Visitors
- Donors
- Students

The objectives for the site were threefold:

1. To be able to react to various requests (general information, student volunteer applications, photos for publications, publication of documents) faster and more efficient by providing all relevant information online.
2. To attract people to either join one of the tours offered through our tourism programme or to book two or more weeks as eco-volunteers.
3. To present the various partners and their involvement in the project.

As result, we defined nine sites, which are online since October 2000. So far, people have reacted very positively to the website.

Media Work

by Christoph Promberger, Barbara Promberger-Fuerpass, Annette Mertens, and Peter Suerth

The interest of journalists has further increased throughout this last year. AlpinSchule Innsbruck, one of our partners in the eco-tourism programme, organised two journalist trips to our project, WWF UK another one. On top, some 30 additional journalists travelled to our study area to report about our work. We have lost track of all the publications, but overall resulted in more than four dozens of newspaper, magazine, radio reports, and TV documentaries. We were featured by print media such as STERN (D), New York Times (US), Outside Magazine (US), Frankfurter Allgemeine Zeitung (D), Sueddeutsche Zeitung (D), Svenska Dagbladet (S), Sunday Times (UK), or Mail on Sunday (UK).

Furthermore, we presented the project on a seminar of WWF UK in London, on the International Wolf Symposium in Duluth, Minnesota, a Hunters Fair in Sweden, and seminars of National Park Hohe Tauern/Austria and the UK Wolf Conservation Trust.

For ourselves, one of the highlights was a visit by famous US writer David Quammen and photographer Gordon Wiltsie, which did a reportage for the Outside Magazine. Barbara and myself went with David and Gordon on a never forgotten trip up into the snow-covered mountains to trap wolves and lynx. It was, however, us that were trapped in an enormous winter storm with drifts over 2 metres high. Since we had left all our gear behind trying to reach a little cabin with our two snowmobiles in the middle of nowhere, we stayed all night around a little wood-heated stove trying to keep warm. While frying some old sausages and melting snow, David recited to the sound of the howling storm poem after poem from Yukon Goldrush poet Robert Service.

BBC/Discovery Channel Film Production

Camerawoman Justine Evans and Producer Mike Salisbury worked 18 months to produce a documentary about the large carnivores in the Carpathians and about our project activities. Now, in early January, they left back to the UK with loads of material.

Filming has been extremely tough for this outstanding team throughout this year. The goal during summer months was to film a wolf or bear attack on livestock and to film wild wolves in their natural habitat. Justine and her team have spent over two months night after night at various shepherd camps trying to document such an attack. But with the exception of a few short glimpses on wolves, the carnivores had been too cautious.

All trials to film the wolves of Paltinu pack in the nearby of their dens or rendezvous sites, failed. Since only the alpha male was collared and he didn't spend longer periods of time at the den, it was very difficult to locate the pups until they were big enough to howl. Once we found an active den, but the wolves had either moved the pups the previous days or had dug this den only as a spare den. No wolves came back, once the remote camera was installed.

Bears, however, have not been a problem and BBC got wonderful day and night shots from bears in the forest. Lynx never showed up by chance and due to the technical problems in lynx research (see chapter *Research Lynx*), we couldn't assist with roe or red deer kills of lynx, which would have made filming much easier.

BBC came back in early December for a last trial to film wolves at a bait site. The site had been prepared two months in advance and the first night that BBC sat in the hide, the pack showed up. Not only that the wolves came on average two to three nights per week and sometimes even throughout the day, the pack even had a radio-collared alpha wolf (see *Research Wolf – Tiganu*). Justine filmed hours of interactions within the pack, between wolves and bears, and with ravens around the bait site. After 18 months of hard work, the film seems to turn out as an excellent documentary about wolves and bears. Lynx, unfortunately, will have to wait for another camera team.

A Manual for Integrated Field Projects

The CLCP has developed the *Integrated Management Approach* for wildlife conservation field projects. This approach considers that sustainable solutions for conflicts between wildlife conservation and human interests need to take all economical, environmental and social aspects into account.

The Large Carnivore Initiative for Europe and WWF International have asked us to produce a manual for integrated field projects such as the CLCP, since one of the LCIE's objectives is to initiate such projects in several regions of Europe. We were happy to share our experiences with project leaders in other countries and assist in the development of such projects.

I started working on the manual about a year ago and now published it. I tried to keep it as practical as possible with step-by-step instructions of how to go ahead when setting up a project. While the experiences of the CLCP are a central part of the manual, I still kept it open enough that it can be used for integrated field projects in other areas under different conditions with other species.

The manual starts with an explanation of what an integrated field project is and what conditions have been met to make such a project successful. After a detailed description of the components of a integrated field project, the manual continues with four major blocks:

1. The planning phase:

This phase describes, how to develop a project outline, a project design, and how to plan the implementation. If further gives time and cost estimations of different components and describes the legal framework around a project.

2. Raising funds:

This chapter describes possible sources of funding and a fundraising strategy.

3. The implementation phase:

This chapter starts with a job description and requirements to a project leader. After establishing the area and the necessary contacts, the manual continues with a detailed description of how to start working and what is necessary to successfully carry out the project.

4. Communicating and reporting:

What sorts of communication exist and how to do it best.

After writing the manual, I thought I should have read the manual before I started the CLCP.

"If I would have known at the beginning what I know now, I would have done things differently!"

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Carpathian Large Carnivore Project

Annual Report 2000

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