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Human-Carnivore Conflict in Ukraine

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This publication includes original findings of the author's research. The book is intended for a broad reading audience ranging from people with vested interest in nature conservation to biology experts. The subject of this book is large carnivores of Ukraine, such as wolf, bear and lynx.

The book raises the issue of the human-carnivore conflict, coexistence of large carnivores and humans in a transformed habitat, and in some way serves as a guide for preventing injuries and property damage while interacting with wild animals.

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## INTRODUCTION

For some decades the human-carnivore conflict has become a certain catchy trend for research, journalism and even fiction. However the phenomenon is far from being new and permeates across our relationship with nature. A modern human has like never before honestly acknowledged the existence of the very conflict of interest and stopped hiding behind the conventional wording like 'relationship with the wild', 'fighting with forces of cruel nature' and even 'sustainable use of natural resources'.

In the modern world with its urban expansion and evolution of attitude to eco-intricacies at first it would seem that since the little-red-riding-hood times the stance on carnivores has changed. Nevertheless, stumbling blocks in fact are still the same. We are afraid of carnivores living outside the zoo fence, we compete with them while hunting deer and hares and we'll never soften on domestic animals being killed or property being damaged by carnivores. Certainly, urban dwellers tolerate carnivores better than in the Middle Ages. However, this is not the result of basic education or humanism. It's rather a neutral attitude to a certain image that does not have much in common with reality. This mainly may explain a huge perception gap of human-carnivore relationship among urban and rural citizens. If a city dweller finds himself in a situation when he has to compete with a carnivore, his stance changes radically.

What could the conflict bring to both parties? The impact would be most negative for carnivores that can only be compared with destruction of the habitat under a common human motto 'nothing personal, we just need to build a processing plant'. But it's also a slippery slope for humans. We're all in the same boat. Even if there are not so many virgin ecosystems left on Earth, it would be frivolous to think that disappearance of such components as wild animals will be seamless. Our stance on the issue is not the least to be considered. Recognizing and acknowledging the fact that we are singlehandedly cutting off something that has been an important part of the daily life throughout a long period, and a cultural and sacral element of the history of mankind, always comes as some kind of a shock. Since we're completely and utterly anthropocentric, at times we find it more important to consider ourselves humans taking actions to insure positive feedback from other people, rather than analyze implications for the environment.

Are there ways to overcome the conflict? There are many. The issue is their effectiveness and frequency of use. While many countries have gained considerable experience of trials and errors to overcome the conflict after acknowledging the problem, Ukraine has not yet adopted the realistic approach to the issue at hand. In the light of this, the most pressing issue is to analyze the situation and prospects for coexistence of humans and large carnivores in the country.

## **Thus, let's define Parties to the Conflict**

Ukrainian fauna is presented by 3 species of large carnivores. Let's consider one representative from three families: Canidae, Felidae and Ursidae. There were others that did not qualify to the finals. Take for instance wolverine, which disappearance was fostered not only by natural causes but also humans.

Each of the three, wolf, lynx, and bear have their own history of relationship with humans. Both pleasant and unpleasant details of this history are determined by many factors and occasionally by a whole set of such.

Consequently the attitude to these animals differs. Humans treat some of them neutrally and others quite aggressively. It is noteworthy that population of the 'unfavored' is likely to be greater. The most striking example is the wolf.

Comprehensive consideration of the conflict will be incomplete without a brief description of the other party to the conflict. Far from every citizen of Ukraine gets to encounter predators. The issue primarily concerns hunters by that according to Ukrainian Hunters and Fishermen Society account for two hundred thirty thousand members for slightly over thirty million hectares of hunting areas. Besides this also to the full extent affects the rural population, which, if you trust statistics and your own eyes, is unequivocally declining. If before the World War II cities and townships accounted for 30 per cent of the population, in 2011 this category got over 60 per cent.

The important aspect is population density. It varies in different regions of Ukraine, including its impact on different carnivore species, which we will consider in chapters on anthropogenic resources.

It makes sense that the question of the conflict zone also arises.

In order for any interaction, including a conflict, to exist, there has to be a territory for the parties to encounter. Wild animals, especially large carnivores, don't actively penetrate human environment. Thus, the main ground where a human can meet a carnivore is wilderness or its borderline with human settlement. Hence, the conflict zone spreads throughout rural settlements and manufacturing site located in wildlife areas and its adjoining settlements.

For the last 100 years population distribution has changed drastically towards concentrating in city regions. Century-old outlook of rural settlements has been radically transformed by a range of contributors, such as wars, industrialization, transport network and demographic processes.

Manufacturing sites and their settlements in the natural environment have been developing rapidly as part of Soviet land development plans. These included logging companies, peat extraction sites, transport infrastructure facilities, fishery and military settlements. In the second half of the twentieth century those types of processing plants and related settlements virtually ceased to exist in Ukraine.

Hence, it could be stated that the conflict zone has sufficiently decreased.

Therefore, humans and large carnivores mainly meet within carnivore's territory or next to populated places.

To further detail the reason behind the conflict in Ukraine (since we're not going to reinvent the wheel on the global scale, the only thing left is to search for regional peculiarities) it would be reasonable to start with biological features of said species.

## **WOLF**

### Biological Features

Wolves are active carnivores the size of a big shepherd dog relying on speed (up to 50 km/h while pursuing prey), jaw strength and good teamwork. Of course wolves do not always hunt in packs, and certainly do not always pursue a large ungulate running 50 km/h. However, in the light of the subject we've chosen, it's important to keep in mind that wolves are capable of that.

The weight of wolves harvested in Ukraine usually does not exceed 30-50 kg for males. This in general is typical for the specie. Stories about 80 kg animals so widely spread in our country are mostly of interest to psychologist and folklore aficionados.

Wolves in Ukraine mainly feed on wild hoofed animals, rodents and domestic animals (we will consider share of those in wolf's diet later). Besides that, wolf's diet includes many secondary feeds, such as wild-growing and cultivated plants, birds, fish, reptiles, amphibian, and insects. The diet varies with each climate zone of our country. Thus, in Polesia (woodlands), the Carpathian and Forest Steppe zones the diet is mainly composed of wild hoofed animals, according to our data up to 44%. In the Steppe zone the share of ungulates can decrease to 12% and at the same time the share of such feeds as rodents, domestic animals, plants, and insects increases.

Wolves hunting activity and selection of preys depends on the season and wolf's social status (in a pack or lone, young or old). Studies on the issue in Ukraine show that wild big animals are dominant among pack's prey, and by contrast the share of secondary feed and domestic animals is grater in lone wolves.

The important feature is the existence of a collective survival and interaction organization known as 'pack'. A pack in its essence is a family consisting of a parent couple and young wolves two to three years old. It's not uncommon for alien, not familiar wolves to become members of the pack. Pack sizes may vary. In Ukraine a common pack accounts for 5-7 animals, however standing groups of 3 or 12 wolves can be found. Also pack size variability is typical primary for the Steppe zone.

In the view our country-specific conditions a pack may cover from 130 (in the Steppe zone) to 390 sq. km (in Polesia). Such family territory provides for primary life activities of the group, such as reproduction, hunting, social interactions between pack members and neighboring packs.

Pack's family territory in Ukraine is not a neck-of-the-woods wildlife sanctuary as most people might think. On the contrary, wolves tend to keep their family territory in places with high degree of anthropogenic transformation. Also the following is quite frequent: one part of the family territory with the litter area takes up the natural reserve and the other part used for hunting prey can cover agricultural lands. Underlying causes are larger population of ungulates on farming lands with a higher anti-poaching protection and animal breeding; also natural reserves are safer due to hunting ban on carnivores and virgin landscapes.

Alongside wolves living in a pack, the population also includes a great share of 'single' wolves. Most of them are young sexually mature wolves that left their parents' pack and actively migrate in search of a suitable breeding territory. Usually such wolves stay in groups of two-three individuals of different sex. They can occupy a territory of several hundred square kilometers for several weeks or months following which wolves either establish their territory or move on, sometimes, many kilometers away. Old and wounded wolves can become lone also. Their fate is unfortunate. From now on they can only feed on prey leftovers of other wolves and live on secondary feed.

A females breed once annually. Mating period depends on the climate zone and ranges from January (in the Steppe zone) to March (in Polesia and the Carpathians). Gestation period makes up about two months or 62-65 days. An average litter has 4 to 6 pups.

Whelping takes place in a so called primary den, later on pups can be carried to another place. A den is arranged depending on a region and its landscape. Thus, in steppe regions a den is usually a lair dug into the ground in the midst of a gully with thick vegetation. By contrast, in the forest zone including mountain areas full-size burrows (dug out by a wolves, enlarged badger or fox den) are more common. The important condition for a wolf den is close proximity to a water source. It's likely to be within 100-300 m; however dens

a kilometer away from the nearest water source have been reported. Den's site altitude can make up over 640 m.

A den may be located in an anthropogenically transformed landscape. This can be a lair in the middle of a sunflower field, a burrow dug under a concrete pole of a power line, and even a burrow dug in loose soil of an abandoned cemetery.

Biotope preferences of the species are quite diverse. In the Carpathians those are valleys, foothills and slopes, forest at heights up to 1,200 m; forestland with swamp areas, reclamation canals and other bodies of water in Polesia; open plains with scrubby arroyo in steppes. In each region wolves also make use of anthropogenically transformed biotopes i.e. territories adjoining communities, crop fields etc.

### Population

Official statistics indicates that wolf population in Ukraine ranges from 2,500-3,000 individuals before the breeding season and by the end of the hunting season. Population reaches its maximum right after breeding and remains stable till the beginning of autumn stalking of ungulates during which, according to our data, the first mass wolf shootings occur. The second wolf hunting peak comes during the period of remaining snow cover.

### Distribution

Wolves can be found virtually throughout Ukraine in all climate zones. Yet the expansion pattern is unequal. Within one administrative district wolves can continue breeding in some sites and be quite a stranger in others, being noticed only by observers of potential habitats. Over the past several decades wolves have actively populated regions where no dens have been reported for quite a while. Examples include Vinnytsia region and the Autonomous Republic of Crimea. Repopulating process of the specie on said territories presents a new field of research in the years to come.

Most sustainable wolf territories are, in the view of the species preservation during decrease in population, considered to be forestlands of the country. However the highest (just as the lowest) wolf population is observed in steppe regions. The population in central forest-steppe regions of the country obviously relies on the feed source of neighboring areas. Also it should be noted that within the habitat of the specie the Carpathian and Polesia wolf groups are a part of the Carpathian population and the Russian Plain wolf population (also known as the East European Plain in the western world). In addition, there is no complete isolation between territorial groups and rotation of animals of Polesia, Carpathian and Steppe groups apparently occurs since animals from neighboring countries tend to populate the territory.

## Species Status

Wolves are a game species. However, compared to other game wolf hunting is not subjected to any regulations. Moreover poaching is practically encouraged. In accordance with the law wolf shooting is authorized on hunting areas to gamekeepers or huntsmen with a hunting permit in his pocket for any other specie for example a wild boar. Well-intentioned restrictions initiated recently by the green society are of no practical use. These so called conservation actions include a ban on wolf hunting from October to February and a ban to kill pregnant females and pups.

Anyone who bothered to go out of the office, obviously, understands that legal hunting is possible during the winter season, and in autumn during stalking of ungulates there more than enough opportunities to harvest wolves.

Regarding summer period due to lack of snow required for conducting more or less mass shootings, wolves can be hunted during said period with a snare trap, poison, and by using an aircraft. Each listed method is banned anyway; respectively the reasoning behind the summer conservation period remains questionable. A hunting ban on pups has a few interesting angles. On the one hand, hunting a whelp on the den is considered unethical and contradicts the very concept of reproduction of hunting species. On the other hand, thus far, this way has been the most sparing on wolf population. Since removal of a litter (in part of in full) does not destroy the habitat structure unlike mass shootings that kill adult wolves that preserve boundaries of the family territory and are experienced wild animal hunters (hence tending to avoid conflict with humans). However considering Ukrainian realities discussions are useless. Experts in finding dens are scares and mostly elderly. The tradition of professional wolf hunters has fallen into oblivion due to lack of any sufficient financial gain.

In case of accidental finds it's impossible to control a person, who decided to kill or take pups away. Since the law on managing wild animals is even in the worse shape than anti-poaching measures. And determining the gestation period of an animal in the field flashing within the flags (translator's note: during traditional hunting called 'flagging' or 'flag hunting') is more an isolated incident than a noteworthy regulatory restriction.

## **LYNX**

### Biological Features

Lynx are medium sized cats a bit smaller than a sheepdog. They have a short body, long and strong limbs with massive paws allowing it to move through snow with ease.

Lynxes hunt by pouncing on prey not engaging much time in pursuit. In Ukraine lynx feed mainly on roe deer, hares and mouse-like rodents. They

rarely prey on birds. Lynx do not usually hunt domestic animals. This is due to a high degree of anthropophobia. We recorded isolated reports of dogs, chicken, ducks and geese found in droppings and leftovers. Regarding poultry, it would not be proper to say that a duck swimming in a body of water nearby an isolated farmstead in the midst of a woodland hunted by lynx would be the 'use anthropogenic resources' in the common carnivore sense. Since there are no people nearby and a community of two houses is far away, and there is no 'private property' sign on the duck.

Lynx are mostly solitary creatures. Females raise kittens (commonly two in a litter) on their own. However males and females of neighboring areas may interact often and peacefully.

The individual territory occupied by a female and cubs usually does not exceed 50-70 sq. km, whilst a male can hold a territory of 200 sq. km. The male territory often partially overlaps those of one or two females.

Mating season takes place from the end of February to the beginning of March. Cubs are born after a little over two months. There are virtually no data on lynx den structure in Ukraine. There are records of finding lynx cubs in a hollow above tree roots and in a rock crevice.

Compared to wolves lynx tend to avoid humans choosing woodland with understory, swamp areas, former felling sites or rock ledges.

### Population

Lynx population in Ukraine is a blank spot in the national zoology. The issue with track surveying is that lynx avoiding roads do not get on the snow-tracking protocols. Most surveyors are likely to mistake lynx tracks for those of a wolf in deep snow. We will consider other reasons for observation errors later. Most accurate estimates would be 400-500 animals with the Carpathian region accounting for major part of the population.

### Distribution

Lynx inhabits Zakarpattia, Ivano-Frankivsk, Lviv, Chernivtsi, Kyiv, Chernihiv, Rivne and Zhytomyr regions. There are occasional reports of hunting the animal far beyond its common habitat. However considering national realities of private ownership of wild animals, it would be better not to place a mark on the map just yet.

### Species Status

In the Ukrainian Red Data Book lynx are listed as 'rare species'. Notwithstanding the aforesaid, conservation measures are purely implicit. Surely nobody will approve outsider poaching on the territory of 'his' farm.

Still it's not lynx having rare species status, rather the territory and resources, namely hunted ungulates that take priority. Thus lynx are conserved as part of hunting areas. Still for the very user of hunting areas lynx earned an image of a human competitor. And, at present, poaching is one of the most important factors of environmental degradation decreasing lynx population in Ukraine. Natural reserves and national parks often fail to provide proper conservation of the carnivore and its basic feed due to the state of the national economy.

## **BROWN BEAR**

### Biological Features

One of the largest living carnivores in Europe brown bears are plantigrade animals with a massive shoulder girdle, a large head and strong jaws. Distinct biological feature of the specie is winter hibernation. In Ukraine bear hibernation is relatively short and intermittent. Bears can survive through winter without hibernating or hibernate for a month or two. At that bears do not necessary have to be travelling bears. This can be explained by the mild Ukrainian climate and constant availability of food source.

Food habits of bears are the most diverse compared to other carnivores. Bears are omnivores which is the answer complex behavior of such a large animal constantly searching for food. Food habits have an expressly seasonal nature. In spring bears are not fastidious about food and forage roots and plant stems, catch insects and search for carrion. In summer bear's diet primarily includes berries and fruit. Autumn is the time for building up fat to make it through winter. Berries and fruit (including cultivated varieties), nuts, fish, small vertebrates and invertebrates help bears to build up necessary fatty deposits.

Anthropogenic source plays a certain role in bear's diet. In Ukraine those are primarily cultivated plants, such as fruit and nut cultures growing alongside communities, fruit and grains cultivated for ungulate feed as part of animal breeding. There were reported numerous incidents of apiary raids. Bears also frequently feed on domestic animals carcasses. Bears were reported to hunt primarily cows, sheep and less often horses. Besides, bear raids are primarily encouraged by people's ignorance in protecting property and livestock.

Individual bear territories have a complex structure divided into designated locations, such as feeding territories, dens, and main travelling areas. In a certain season the territories of different animals may overlap.

Females with cubs usually take up a territory of 50-60 sq. km. In spring mature males may travel through a territory over 150 sq. km, in autumn animals inhabit a small territory, do not travel much and devote most of their time to feeding.

Adult bears are generally solitary.

Bears mate in spring after leaving their dens. Cubs are born in winter in a den. Females raise cubs to the age of 2 years.

In Ukraine typical dens are so called partly closed dens located in rock crevices or thick bush/windthrow, or under uprooted trees.

Bears are mostly forest species. Animals tend to forest mosaic areas with scattered former felling sites or subalpine meadows. Bears may every now and then travel to anthropogenic landscapes.

### Population

According to our reports bear population does not exceed 250 animals which is 100-150 animals less than according to official statistics. This can obviously be explained by double recordkeeping, since records of the specie do not include its territorial structure. False estimation can be explained by unwillingness of area users to reveal decrease in the specie population in the comprehensive report.

### Disribution

The species inhabits Zakarpattia, Ivano-Frankivsk, Lviv, and Chernivtsi regions. There are also incidental reports in Sumy and Kyiv regions.

### *Species Status*

In the Ukrainian Red Data Book bears are listed as 'endangered species'. Similarly to the case of lynx, there are virtually no actionable conservation measures. Environment degradation, high disturbance and poaching are the reasons behind decreasing population. Before being listed in the Ukrainian Red Data Book bears were game species with restricted license issue. Naturally, under Ukrainian state of affairs, restrictions existed only before the necessity occurred. Bear hunting 'damaging farming or posing a threat to humans' miraculously coincided with visits of important guests or better still of environmental compliance inspectors. The situation did not become any better after the specie registered in the Red Data Book, since control of compliance with the Law on the Red Data Book is non-existent.

Before we discuss the conflict it's important to define basic notions, such as population and accuracy of its estimation.

## **Population and Count Issues**

Population and what is equally important its perception are important factors in creating attitude to the specie.

It's absolutely evident that the very population is not the reason for the conflict.

Since 5-6 lynx specimens can inhabit the territory of 100 thousand hectares without revealing their presence in any way, provided that they don't get shot. And even if the said population doubles, this will only be noticed by an experienced hunting manager paying attention to tracks alongside roads, who can determine the culprit by a killed roe deer. However a couple of dozens of wolves on the same territory constantly remind hunting area users and locals of their presence. And if their population is halved this will probably go undetected. Thus subjectively the list of factors, such as 'constantly observed tracks', 'howling is heard', 'someone caught a whelp' give the impression of a 'large' population. Namely such relative notions as 'large', 'small', 'have completely disappeared', 'good lord, their number has increased so much' are applied by most people to form their own opinion on the population of any given specie.

Indeed, common examples of estimating population size are as follows: Wolf population size directly depends on observation and training. Those completely unfamiliar with ecological features of the specie, consider that wolves either 'aren't here' or 'appear occasionally'. Moreover the notion 'appear occasionally' is applied with admirable determination absolutely ignoring such facts as constant reproduction on the territory and stable structure of hunting territory of the pack. People with some superficial knowledge of the specie often tend to overestimate the population size by 2-3 and sometimes even by 10 times. This may be because they take notice and cannot ignore tracks and other presence indicators. But being unable to see the whole picture they tend to go to much favored extremes. Mass media contributes greatly to such estimates. And a person will choose one of the two most broadcasted perceptions he or she relates to, such as 'hardly any' or 'quite a lot' without any in-betweens.

As for lynx and bears, two types of estimations are most often found: 'there are hardly any, and they appear occasionally' and 'there are a few, and there've always been here'. Also the mere fact of being undetected by humans and a special status in the Red Data Book already enhances the tendency to underestimate the population. The only exception are huntsmen, whose concern rises proportionally to the increase in competition with carnivores for game and zoologists, who go beyond gathering facts form people and apply scientific field methods to conduct monitoring.

Another aspect of managing animal population in Ukraine is methods used to keep records of large carnivores. Present official statistics comes down to a total number of “2TP-hunting” cards with columns for recording numbers of reported and harvested wolves or deer on the territory of a certain hunting farm. Hunting area users submit cards to regional Administrations of Forestry and Hunting Industry. Finally, the capital headquarters of the State Forest Resources Agency of Ukraine and the State Statistics Committee receive consolidated reports from each region. Natural reserves and parks additionally to the aforesaid can show off the data base called ‘Nature Records’ that in some cases is a register containing unorganized natural scientist’s notes that do not qualify for analysis. So how are data for recordkeeping retrieved? Users are recommended to apply proven methods derived from commercial hunting, such as double recordkeeping. Once and again there have been attempts to harmonize methods by enforcing different regulations that were filled with errors of different severity. But harmonization and standardization are not the main issues here. Any method capable to provide actual estimates on large carnivores is painstaking and requires professional skill. This mere fact eliminates any hope for accuracy. Determining sex and age is essentially a challenge. Even if it’s the main focus. Furthermore ‘bears’ and ‘lynx’ columns do not impact the hunting limits due to being on the Rad Data Book records. However decreasing numbers may raise questions. Therefore, if in the previous year ‘two bears’ were recorded the next year the figure is unlikely to change. On some territories statistical analysis shows the presence of nonbreeding immortal groups. As for wolves things turned out to be even more amusing. Management would consider it improper to have a large wolf population in a hunting area. Therefore, numbers of harvested wolves are recorded accurately and those of live animals are understated. Thus, if a small population of wolves inhabits a territory and they were not harvested during hunting there is a possibility that they will not go on the record since they are ‘just passing through’. If animals cannot be ignored due to damages and wolf harvesting, figures will depend on management policy that is underestimated due to fear of being charged with conniving with the ‘culprit’ or overestimated to lobby for example an off-season hunt. Therefore, a country-specific expert estimation is virtually the main method of keeping records of large carnivores in Ukraine. At that, the level of ‘expert’ qualification in most cases leaves much to be desired.

Let’s address conditions contributing to the conflict.

## **FREQUENCY OF ENCOUNTERS**

The important condition forming an opinion of a person to coexisting with the predator is the frequency of encounters with the animal or indicators of its presence. Preferred biotope of the specie, biotope trespassing frequency by humans and vice versa, and the extent of specie's dependence to anthropogenically transformed landscapes are important contributors.

Let's consider the issue for each specie in detail.

### **WOLF**

Wolves are the 'closest' to humans compared to other Ukrainian large carnivores. Despite a secretive life of the specie people tend to notice neighborhood with wolves rather than with lynx or bears. High distribution range of the specie and relatively high extent of anthropogenic resource use contribute to the matter. This also includes certain biological features of wolves.

Thus, small village dwellers quite often face the issue of domestic animals protection. Tourists may get lucky and hear a wolf howling. Game keepers frequently driving around hunting areas will very often find tracks and sometimes even see the animal running away from the road.

The encounter frequency is closely linked not only with the biotopic preferences of the specie but also with its distribution in genera. In Ukraine wolves can be found in all regions. However on different territories of the specie have a different functions: constant reproduction meaning the specie have been long inhabiting the territory and breeds frequently; occasional presence of the specie meaning the specie has not populated the territory and single animals have been reported; or during a certain time period there are no reports of the specie's presence on the territory.

Wolves have high ecological flexibility and do not avoid anthropogenically transformed biotopes. On the contrary such diversity provides the animal with additional territory and food sources.

In this chapter the territorial issues are the focus of our attention.

Where can a person encounter a wolf?

Most times such encounters take place on forest trails, unpaved, and paved roads. Two factors contribute to this. First, wolves actively use roads since this conserves the energy needed for travel. Besides, high fragmentation of the environment does not leave wolves with much of a choice. Second, humans use roads way more often than go deep into the forestland and steppe virgin land.

Such encounter is likely to occur while driving a car or horse-drawn wagon and, most unlikely, while going on foot.

Usually such fortunate are forest workers driving around the territory for conservation and animal breeding purposes, for example while delivering feed for ungulates to supplementary feeding sites; natural reserve workers staying on the territory during collection of research material etc.; inhabitants of small communities grazing livestock or poaching; tourists eager to bind with mother nature; hunters, border guards, logging workers, photographers, seasonal cottage residents, dogs, horses and hunting bird keepers, and other nature aficionados.

Hunters, poachers, mushroom harvesters, researchers and tourists are more likely of encounter a wolf off-road.

There is also a chance of encountering a wolf directly 'at your place of residence', that is near the dog's booth or in the fruit garden, feeding on carrion or hunting a mouse in the field, or simply a nosy wolf scouting a tourist tent or a logger's wagon. But that's rather an incidental occasion.

When can a person encounter a wolf? This is also important. Imagine yourself a late riser living next door to a morning person. That person will wake up at 6 in the morning and go out, and come back at 6 p.m. And you'll wake up at 11 a.m. when your neighbor has already gone out. And when you get home by midnight your neighbor will be sleeping like a log. Consequently, you two remain strangers. However you may notice indirect signs of neighbor's presence on your floor, say a wet umbrella or mail. The same is true for animals living alongside us. If we know their tracks and notice them, we will be aware of furry neighbors without even meeting them. But if we do not know or do not wish to know, we will consider ourselves the sole owners of the biotope.

And still, at what hours of the day we're most likely to see a wolf? Obviously, those are morning hours (dawn), sunset and twilight. This can be explained by twilight activities of the specie. Wolves rest during the day and in the dead of night. They are most active during morning and evening hours. All the more, this way wolves can avoid frequent encounters with people. Although, on the territories where wolves are at ease and have limited fear of humans, animals showing natural curiosity can be spotted in the face of day. However, such places are very scares. Also there's the mating season (in different regions of Ukraine it can vary from January till March), when wolves are active, travel a lot around the territory playing and interacting. During that time they tend to pay less attention to people.

## Brown Bear

Just like wolves this specie has a small population. Population distribution is limited to two regions. Moreover our records show that the specie is quite common in the Carpathian region and only few incidents were registered in Polesia.

Where can bears be spotted? In contrast to wolves, bears can be seen in the midst of the forest rather than from a car window. The encounter's location greatly depends on the time of the year. In spring a bear shadow figure can be seen from afar standing out on last snow when bears actively search for food. Forest workers, field zoologists, and active tourists register such encounters while making rounds of the territory. Encountering a bear in the beginning of summer is considered pure luck. Animals are less active than in spring, however they do not stay in one place. The same people can encounter bears in the midst of the forest with rich foliage. The second half of summer and autumn offer more chances to see bears, when they live a sedentary life than during previous seasons. Moreover the more food resources a territory has the less daily travels carnivores make.

When do chances to encounter bears increase? Again, in autumn bears building up fat can be seen in broad daylight in a raspberry field. It's precisely during this season bears biotopic preferences overlap with that of the local citizens going about to pick mushrooms and berries. In the beginning of summer bears travel actively throughout the territory, thus it's easier to spot the animal early in the morning or at twilight. Spring encounters on snow can occur both in the morning and at day time. Such are rare since most observers find it difficult to travel through bear biotopes at that time of the year.

## LYNX

Lynx in Ukraine are presented by the Carpathian and Polesia populations. Respectively, the specie can be found in Zhytomyr, Chernihiv, Kyiv, Rivne, Lviv, Ivano-Frankivsk, Chernivtsi and Zakarpattia regions.

However, regardless of the extended distribution of the specie in different regions, lynx can hardly ever be seen.

Having analyzed such facts, it became evident that the encounter location would be thick forestland. Moreover it's next to impossible to spot the animal on a trail, which can occasionally happen with wolves or bears. Lynx do not frequent beaten paths, roads and clear-cuttings. The animal fears humans more than other predators and will try to avoid being seen at any cost. Virtually, all analyzed encounters with lynx had two scenarios, namely while stalking other game or when a bog scared the animal away. Regarding the

later, lynx behavior is not the most effective, since trying to rescue itself lynx climbs up a tree and becomes an easy target.

Therefore hunters, poachers, and people walking their dogs in the forest are most likely to encounter lynx. Respectively, time of such encounters is determined by season and presence of large number of people in the specie's habitat. As a rule, it's autumn and winter at twilight.

The only exception to the aforesaid is the territory of Chernobyl Nuclear Power Plant (CNPP) exclusion zone, where power plant workers and visiting zoologists crisscrossing the territory spot lynx regularly on paved roads. Upon that, such encounters can happen in broad daylight.

## **CARNIVORES AND ANTHROPOGENIC RESOURCES**

We'd like to stress a factor facilitating the conflict with humans, such as carnivore use of anthropogenic resources. Since this is exactly what increases encounters, in some way explains the fear of being attacked and determines the extent of competition between the two parties: a human and a carnivore.

### **WOLF**

Compared to any other Ukrainian large carnivore wolves are the most synanthropic. This is not just an occasional event in a life of a specific animal, rather a part of evolution strategy of the specie. Wolves do not strive to avoid communities and transformed landscapes at any cost, but adapt to use those as an additional resource.

Essentially wolves use two main anthropogenic resources: food (livestock, cultivated plants) and territory (roads, bridges etc.). The issue of domestic dogs being used as genetic source is neither relevant nor investigated.

How important are anthropogenic resources for wolves? It's up to you to judge. Analysis of wolf's diet over eight years showed the following: the biggest percentage of livestock, cultivated plants, domestic waste is typical for the Steppe population (west and south regions) - 45%; the smallest was reported for the Polesia population - 29%. However not only the climate zone with its landscapes and the extent of potential prey, but also the social status of a wolf matters. Our studies in Ukraine show dominance of wild big animals in pack prey and by contrast a greater share of secondary feed and domestic animals for lone wolves.

And finally, wolf's diet is greatly influenced by feed availability. Steppe regions show high human population density that together with Ukrainian traditional slacker attitude to farm managing encourages wolves to use anthropogenic food source frequently and respectively increases the number of killed carnivores.

Now let's consider territory specifics of a wolf domain.

The family (or individual) territory should meet the animal's needs in full primarily providing permanent opportunity for foraging. The extent of food source determines the square footage of the territory and the number of wolves populating it. In Ukraine wolf family territories vary in size and quality depending on the region and specific location features. A major role in evaluating 'quality' of wolf territories is played by the type of prey and the effort required to hunt it, including such secondary feed as plants, agricultural waste etc. From our point of view, under conditions of Ukrainian anthropogenic environment wolves are always placed before a choice either to forage natural foods or anthropogenic. However, from wolf's point of view, there is obviously no such dilemma. The bigger and wider the choice, the higher are chances to procure food. Therefore, wolves will always grab the opportunity to vary their menu by expanding their habitat to anthropogenically transformed territories such as farm fields, landfill sites or cattle burial grounds, farm adjoining territories, small communities, and tourist camp sites. Besides the opportunity to use roads and bridges is a certain bonus. This allows optimizing energy to travel round the territory, which is crucial for animals spending most of their time on the move. According to our findings a significant percentage anthropogenic biotopes (20% to 39% of reports of tracks registered on such territories) clearly shows wolf's tendency to include said areas to pack's territory. Moreover this occurs in regions full of transformed areas. In this respect, dens in transformed biotopes are of special interest. Surely if the issue of additional food source on said territories is clear, dens with pups on such open sites seem odd. The biggest percentage of such dens in Ukraine was reported in eastern regions. This can be attributed to high degree of reclamation, wolf's main focus on food sources precisely from these areas, and a greater (in contrast to forest areas) number of young inexperienced wolf females among the actively populating young stock, including from densely populated by wolves Russia. In general, most dens including those traditionally concealed, are usually located within 3-4 kilometers from the nearest community.

## LYNX

Compared to all other large carnivores in Ukraine lynx are perhaps the last to rely on abundance of people.

Occasionally these big cats succumb to poultry or small livestock and even hunt stray dogs. But our findings show that such prey does not exceed 10% of lynx diet. Besides, most of such domestic animals are hunted outside the farm fence, far from the community with no protection what-so-ever. A lynx killing a duck on the pond in a forest a kilometer away from an isolated farmstead of two homesteads essentially does not go back on its natural behavior and does not show a single sign of adapting to anthropogenic

environment. Once more we face the important side to the problem, such as availability of anthropogenic food source and people completely lacking in basic environmental ethics. It's worth mentioning that most attacks on domestic animals are immediately assumed to be committed by wolves.

As for territorial resource, lynx have managed to get along without such a long time ago. Lynx avoid roads, communities, farm fields and other evident structures of human activity. Our estimates of track reports show that trails in such biotopes hardly make it to 4%.

Altogether, as we can observe Ukrainian lynx are not an active consumer of anthropogenic resources and a negative opinion of the specie results mostly from competing with people for game species. In some European states the issue of lynx preying on domestic animals is even worse. Such difference can probably be explained by the European degree of population density and anthropogenic transformation of territories leaving the carnivore fewer opportunities to stay away.

## BEAR

The gravity of conflict between people and bears in Ukraine is rather low, if compared to other countries. Key determinants are first and foremost small population of the specie and a lower degree of transformation of bear habitat in comparison to Western Europe (for example it would be unreasonable to compare our situation with the one in Russia). However bears cannot be considered indifferent to anthropogenic resources. The animal travels to gardens in search of fruit, digs out buried carrion, raids small apiaries, travels to supplementary feeding sites installed for game species and landfill sites, and less often attacks domestic animals. Moreover signs of bear activity are usually clearly identified and are unlikely to be mistaken for another carnivore.

As to the territorial anthropogenic resource bears take the middle between wolves and lynx. Percentage of tracks in such biotopes is relatively high, namely above 20%. However, this can be contributed to bear habitat features rather than the specie's activity in locations populated by humans. A large number of scattered communities, apiaries and similar sites a great distance apart and separated by forestland are common for the Carpathians. Consequently, as in the case of lynx, availability and distribution of anthropogenic resources in constant habitats of the specie promote their use. As to public awareness in matters of property protection from carnivores, the only people with relative experience are beekeepers. Apiaries in the Carpathians are often equipped with different home-made protection means. Thus, we and our colleagues have registered various solutions as a group of scarecrows on sticks, tin cans hanging on ropes to serve as an alarm system, intricate designs of homemade firearms made of trap spring and tubes loaded with shot intended to scare bears away. The oddest contraption was a radio

used by one beekeeper tuned to Lviv radio station 'Halychyna'. While the beekeeper was away absence the radio remained turned on, and chances are, that a bear utterly repelled by modern music would avoided the place.

### **COMPETING FOR GAME SPECIES**

An important determinant of the image and people's attitude to the specie is carnivore's impact on economic interests of people, and in particular on harvesting game species. The main game species of high value for both Ukrainian hunting industry and carnivore diet are roe deer, red deer, spotted deer, wild boars, and hares.

The degree of competition is determined by several factors:

The first factor is the specie population and distribution. In this respect wolves are second-to-none. Wolves commonly take the blamed for all losses of the hunting industry. Hunting area users just fail to comprehend the fact of a constant share of animals killed by carnivores. This is probably a part of Ukrainian mentality to treat hunting and farming in the same way. Besides wolves delay large scale recognition of other game species ranging from spotted deer (much loved by Ukrainians) to mouflons and other exotic animals.

The second factor is hunting frequency. What's interesting here is that lynx annoy hunting area users in the same way. Since a single male lynx can kill as many roe deer in a week as a pack of wolves. And given that lynx often leave most of the prey uneaten, finding such roe deer triggers a negative reaction in Ukrainian minds.

The third factor is the specie status. It's widely known that an endangered status of a specie without an extensive preliminary environmental propaganda in the case of Ukrainian is more likely to cause a bad attitude among common folk contributing to a negative image of the specie following to the opinion that 'if regulators protect a carnivore they are claiming layman's private property and the layman should take elimination of the competitor in his own hands'.

In Ukrainian realities competition with carnivores gave rise to other common phenomenon as 'admissible poaching'. This means that hunting area users are not only allowed to walk scot free, but also encouraged for killing large carnivores on their territory. This primarily concerns wolves. And that's not just turning a blind eye to locals and huntsmen settling scores like in most countries of the world. Such reports essentially are common practice and are recorded by statistic regulators more as a loud and proud accomplishment in combating with 'farming invaders'. You don't often hear words like 'this year our hunting farm staff has harvested three wolves and poachers have, despite our preventive actions, caught in a snare trap two animals, raided a

den and killed a litter'. It would rather be something like 'we killed ten wolves, because we work effectively'. And even if a poacher was prosecuted for the mere violation of the law or trespassing on private territory, the occurrence itself is considered favorable.

### **HUMAN FEAR OF BEING ATTACKED**

People have always threat large animals potentially capable to attack them. This is quite understandable and backed up by good reasons. However, such aspects as the history of the conflict and the current situation, and people's responsibility for instigating is usually overlooked, and moreover all somewhat large carnivores are immediately listed as dangerous regardless of actual statistics. Thus, in Ukraine the most falsely accused would be lynx. Though throughout entire modern history several isolated reports of lynx attacks occurred purely due to people's attempts to catch a lynx or its cubs or while interacting with lynx in an open-air cage.

Do carnivores pose a threat to people? Potentially yes. However not more than a passerby on the street. Physically by-passers can attack you, but chances of such an incident without any reasons or clear provocations on your side are very slim. So why aren't we worried when walking down a street with other people but anticipate aggression from wolves or bears? First of all because history is rich on reports of carnivore attacks on humans. Humans actually were a small, but a standing dish on the menu of large carnivores such as wolves, lions and tigers. Above all peopled in the past lived closer to nature and encountered wildlife more often while hunting, harvesting berries, grazing livestock, travelling on foot or on horse from one community to another. Therefore, apart from hunger, predators may have had other reasons to attack including protection of the territory, offsprings etc.

Yet times have changed. More people have moved away from wild nature destroying it in every possible way in the process. Large carnivore populations and habitats have decreased. Animal behavior has also changed. Since firearms have been invented it took wolves just a little while to go over feeding on humans and for the next generations to develop vigilance and caution. As for lynx and bears, these animals did not have to adapt their behavior since their habitats have reduced greatly due to anthropogenic transformation that the mere frequency of encounters has reduced significantly, if we consider the global outlook without referencing to a particular territory of possible regular encounters.

Not more than one or two attacks have occurred in ten years in modern Ukraine. Each attack happened as a result of unexpected encounters with an animal within a relatively small space such as a raspberry field, a narrow path etc. or due to huntsman pursuing a wounded bear. The later according to a hunting manager and a biologist Pavlo Khoretskyi, who analyzed several

such incidents in the Carpathians, is altogether quite common for our mentality. A person holding a rifle with a caliber for hare hunting spots a bear. Naturally this person fires without a second thought. Afterwards he pursues a wounded two hundred kilogram animal in an aspen forest with one meter visual range.

And consequently, tragically and, above all, due to unexpected turn of events, this person dies from being ripped apart by the vicious beast.

Also not more than one or two wolf attacks on humans are registered, mostly by rabid and not healthy animals. Incidental unconfirmed attacks of healthy wolves on people were related to attempts to fight back a domestic animal attacked by a wolf.

And there has been only one reported lynx attack on people that, after examining all evidence, happened during an attempt of several people to catch a young lynx that had broken out of captivity. After analyzing another similar attack, the killed animal was found to have suffered from rabies.

Thus, the main factor encouraging attacks on humans were instigations on the people's side, such as:

- unexpected appearance before an animal that finds it difficult to avoid the encounter (relevant to bears);
- attempts to defend prey animal (common to all carnivore species including domestic dogs and cats);
- pursuit of a wounded animal (related to bears);
- attempts to catch an animal or its litter (relevant to all except wolf dens, since wolves prefer to avoid contact).

At the same time every year accidents happen in zoos, with owners of private zoos or single animals. We consider an appropriate solution to this problem would be adopting adequate regulations and rules with compliance control system.

Thus, a threat posed by large carnivores to humans in Ukraine is mildly speaking an exaggeration. And the best preventive measure would be improving environmental awareness of people and anti-poaching measures.

What can be done to improve good-neighborly relations?

## **SPECIES IMAGE AND CREATING PUBLIC ENVIRONMENTAL AWARENESS**

In Ukraine the phrase above is widely spoken. It also has a wide interpretation. And no wonder, since an entire set of measures ranging from the impression given by stories in newspapers to lines in preschool recitals intended to promote a certain idea. And here we have the problem of unambiguity and, last but not least, the degree of comprehension the idea introduced to the public by promoters themselves. Ukraine has no clearly defined strategy for the environmental awareness policy. There are only intermittent outbursts for the purpose of writing a report rather than providing an effective process.

Preferably, it's important to determine the goal of such actions. At the present state of affairs, simplification of the classic concept of environmental preservation would be the most suitable for Ukraine, such as anti-poaching, nature conservation for future generations and rational use of resources.

All said items require a certain level of understanding. Primarily, this includes respect for the law alone and condemnation of trespassers. And also a realistic approach to natural resources intended for future decades rather than a quick-fix. And, by all means, ethics with regard to nature.

To develop a strategy for adjusting the attitude to large carnivores its necessary:

- to toughen the penalties for violations and pass adequate law compliance controls;
- to create a positive image of species;
- to promote the idea of 'benefiting from conserving the specie and its habitat'.

The first item is without a doubt the most challenging and should be addressed at the highest levels. Especially since law abidance is a comprehensive issue affecting to all lines of business in Ukraine.

As for the second and third items, actions in this domain can well be and should be taken by those on site. Such issues are fertile ground for various non-governmental organizations, action teams, individual specialists involved in projects with similar goals. Essentially, it's a social policy with biological rationale.

As for any attempts to introduce any environmentally friendly message contrary to real state of affairs and common sense, those would be doomed to failure. This is exactly what we observe in our country during development of 'nature conservation campaigns' and churning out 'declarations' implemented by uncertified 'green' theorists. The numbers of the later

increase each year, often sadly preceding the increase in their expertise. At the same time the work of professional environmental organizations is often neglected since their ideas are unpopular and too sophisticated for the general public.

Let's take a closer look at possible ways to accomplish the objectives we've mentioned. The real perception of specie image by the public is an interesting issue. The desired changes are hard to plan without understanding the actual state of affairs.

## WOLF

Wolves are without a doubt the most difficult species for implementing the image policy due to the extent of conflict with people due to farming and the traditional cliché of a threat.

First, there is the need to overcome the popular opinion needs shaped by many generations that wolves are a threat to humans and domestic animals. Moreover, compared to let's say a bat, there are good reasons backing this opinion and not just traditions.

Second, new desirable image should be more realistic rather than idealistic and beautiful, which would work only with the urban population.

In Ukrainian culture wolves have a very particular image. It cannot be said that wolves as characters of Ukrainian tales and legends have a clear negative image. Such demonization is more typical of West European countries. This can probably be explained by a history of spreading infectious diseases. There is no secret that densely populated medieval Europe saw many mass epidemics that took thousands of lives. It should also be noted that burning bodies of the deceased is not typical for Christian culture. It was not easy to bury a great number of corpses in a timely manner. In the Middle Ages large carnivores did not mind feeding on human flesh before mass proliferation of firearms. And such a large supply of 'food source' apparently contributed to increase in man-eating among carnivores.

Consequently fairytales by Charles Perrault, Brothers Grimm and Western Christian culture present a certain image of a devil incarnate with a bushy tail.

In Ukrainian fairytales wolves are rather unlucky simpletons, lazy and rowdy, rather than evil. Pagan ancestry also puts wolves in a favorable light thanks to the courtesy of Drevlyans, Polans and visiting Vikings. If what ethnographers say is true, wolves are the oldest archaism after Chudo-Yudo (translator's note: a dragon-like creature in Slavic mythology). A wolf coming to the rescue of Slavic fairytale characters is none other than a first domesticated dog.

Thus Ukraine has a rather fertile ground for creating a well-disposed image of this predator.

The question forms we distributed to locals and people involved with wildlife in their line of work (natural reserve, hunting farm workers etc.) contained a question requiring to rate species based on personal preference. Lynx, badgers, foxes, bears, wolves, and wildcats were on the list. People tended to be more sympathetic to wolves than foxes, but in most cases wolves lost the people's choice award to lynx and bears.

Certainly, there are differences in the species' perception caused by 'frequent interacting' with the species and signs of its presence. Country dwellers are suspicious about wolves. This is particularly so in small communities as isolated farmstead, villages becoming abandoned, where neighboring wolves are a fact of life that cannot be disregarded. In big villages wolf's image is created under the influence of personal beliefs of local members of the primary hunting farm and mass media. This results in an unimaginable mix of real facts, superstitious beliefs of various people, journalistic absurdity and recollections of old-timers. As for urban citizens the situation is quite predictable, that is the bigger the city the more mythical the predator's image becomes. An interesting fact is that older people have a more reasonable opinion of wolves expressing some degree of suspicion but without particular negativity. Young respondents, bred in concrete jungle, perceive wolves as fairytale creatures, an icon of lost wild nature or a sacrificial lamb of the civilization.

An important contributor to perception of wolf's image is his likeness with 'man's best friend' i.e. a dog. Wolves in open-air cages, chained and even living in apartments are quite common in Ukraine. Deliberate breeding of wolf-dogs is quite frequent. The ever living dream of romantics, geeks and members of subcultures is a brave, beautiful and free wolf, though tamed and safe at the same time and preferably on a leash.

According to my estimates, in Ukraine over 1000 wolves are kept by private owners (private open-air cages, restaurants, mobile zoos, and dog breeding kennels). And that's just three times less than the size of natural population in Ukraine. Moreover some of such animals could be of foreign origin, there are reported cases of breeding, hybridization with dogs, deliberate release or escape. Animal welfare, diet, prevention of parasites and infections (sanitary and epidemiological surveillance), open-air cage safety for animals and people involved varies greatly and often does not meet the basic requirements. Wolf's interaction with the owners usually ends on the second year of an animal's life after the it tries to put the power hierarchy to the test. Afterwards the possible ways out appear to be killing the animal, trying to give it away to another private owner or 'setting the wolf free'.

## BEAR

The way modern people perceive bears can vary substantially depending on the specie's habitat. Essentially, a balance between fear of being attacked and value of each animal can be observed. The specie is rare in most countries of Western Europe while reports of attacks on humans are a part of history. In some regions of Russia the specie is not qualified as endangered and can be hunted. Bears living alongside humans make a threat of attack due to frequent encounters very real. Respectively, it is claimed that carnivore behavior also depends on the degree human fear.

Historically, attitude to bears took a long time to shape and a great part in the relationship played a 'likeness' to humans. There are well known 'Bear Festivals' involving a sacrifice of bears caught beforehand or simply dressing up and dancing impersonating animals. An example could be the festival of spring bear awakening that has been celebrated in Belarusian Polesia till the 19th century. A bear cult is perceived as a certain cult of animal awakening, a cult of game fecundity. Common bear nicknames like 'old man', 'grandpa', and 'master' stress certain anthropomorphism of the image. For a long time bear hunting has been a sophisticated ritual. Ukrainian fairytales, like Belarusian and Russian ones, feature a half-man and half-bear character. A renowned ethnographer B.A. Rybakov argued that a bear cult became deeply engraved and made it to the Middle Ages.

Modern Ukrainians consider bears to have a relatively positive image gleaned from folklore and Discovery programs. In fairytales and legends bears are not evil, they are not too sly, just and soft-hearted not because of their weakness but due to confidence in their own strength.

Low population and dietary specifics of Ukrainian bears (tending to herbivory) wins the predator a less suspicious image. However, the important factor is the size of the animal and the very fact of possible dire consequences of encounter. All the more so, because such encounter does not require roaming in the woods at night in a snowstorm (as one may visualize wolf's attack), it's enough to go to a berry field with a basket. Media plays an important role in preserving fear of bears. Frequent TV-programs produced by USA and Canada are focused on bear attacks on humans. And the fact that those programs feature bears from national parks of North America spoiled due to being constant fed by gullible tourists does not change the message that gets stuck in the layman's mind, namely 'bears can easily kill a human'. Moreover this idea is kept in minds of big city dwellers and not just people living alongside wildlife.

But there is another equally important factor of perception, that is the appearance of the animal and, specially, of cubs. The memory of Winnie-the-Pooh and Teddy Bear combined with a touching and

misleadingly phlegmatic appearance of bears draw people to reach out their hands to open-air cage bars in a zoo and keep cubs as home pets. The later especially highlights the difference in the attitude to a cub and an adult bear. 'No one kills bear cubs' is a common expression often vocalized on conferences dedicated to bear conservation.

According to my conservative estimates there are over 200 bears kept by private owners in Kyiv region alone, including Kyiv, which almost exceeds the wild bear population in the Carpathians. Most of these animals originated from Russia after being smuggled into Ukraine in mobile zoos or by other means. Once again, not to mention that it's illegal to keep animals that way, human and animal safety rules are violated in 99% of such cases.

After growing up a bear does not become safe just because you have been raising, feeding and taking care of the animal since it was a cub. Those are predetermined by biological features of bears. For example, in the wild bears live solitary and not in a social group (the only exception is reared cubs that remain with their mother a certain period of time). They communicate with those of their kind only when necessary, namely during mating season or fighting. Another sweet peculiarity is that cannibalism is a widespread phenomenon for the specie. And here's a question for you: why should an aggressive and 'unsociable' animal after becoming sexually mature overcome its hormones and be nice to you? However traditions die hard and, regardless, bears are often turned into pets, until the time comes.

## LYNX

Lynx probably have the most favorable ground for image improvement. Since most people, except especially opposed huntsmen, favor lynx quite a lot. The degree of the conflict with the animal is far less than with wolves. Due to the size, lynx are not as scary as bears. However a strong conviction remains that lynx can jump on people from trees with bad intentions. In general, lynx are a symbol of pristine nature, they are considered a mysterious and secretive animal, very secretive in fact. By being featured on old coat of arms and in fairytales lynx give rise to many disputes and doubts.

And at present the main peculiarity of lynx image in Ukraine is absolutely no awareness of the general public about the animal. Question forms show that lynx compared to other carnivores score highest points on people's preference scale But few people know about lynx habitat, size and whether they exists in Ukrainian.

Lynx are very unlikely to be kept by private owners. First, since the specie is rarely hunted. Second, lynx as well as wildcats, manuls, jungle cats and many other Felidae are very hard to tame.

To summarize findings of this opinion poll of the general public, it can be safely assumed that perception varies with the carnivore population density and social and demographic factors, depends on previous reports of encounters with carnivores, the degree of fear predetermined by the level of education, ethics in general and local traditions.

So how can the situation for all species be improved?

#### STEP ONE. INFORMATION

You cannot change your opinion of the unknown. The less information a person receives on any animal, the higher is the risk of getting negative information. Since according to Murphy's law and general tendency to recall the worst, a person is more likely to remember a blood churning story about a man-eating wolf told by an aunty, who visited family members in Siberia, rather than 'In the Animal World' program where a scary word like 'ecosystem' is uttered. And here lies the problem of conveying information. Information should be interesting, preferably a sensation, and any journalist gets that there is nothing more boring than good news. Which web-link a person is more likely to follow: 'Lynx population in Ukraine' or 'Lynx bites mushroom harvesters to death'? The answer is, regrettably, included in the question.

Information accuracy is equally important. The level of Ukrainian journalism is not very high. Promoters of environmental protection are very scarce and some of them do more harm than good. And professional zoologists, game managers, zookeepers, and university professors sometimes utter absolute nonsense with a solemn face. There is even no comprehensive strategy for the notion 'specie image'. Nonetheless vocalized words create awareness. It would be nice if news hosts in news blocks stopped using expressions like 'man-eating predator', 'mutant wolves are attacking', 'savage beast' including ingenious thoughts of 'experts' like 'wolves migrate to Crimea from Chechnya due to hostilities', 'only wolf-dog hybrids inhabit Ukrainian steppes', 'Carpathian bears invade villages trying to save themselves from floods that destroyed their dens', 'remember a rabid wolf wounds a man and a healthy one kills him' and so on.

Thus, an ideal version of feedback would be an arranged collaboration between mass media and experts. An honest journalist preparing a story on fauna should beforehand refer to an official acknowledged scientific organization. Press offices (and there should finally be appointed in such organizations) in their tern should provide information on any experts on staff or on staff of similar institutions on the relevant issue. A truly honest journalist would listen to comments of several experts. However the situation at hand is the following. A journalist refers to one of the many planet aura research and salvation centers, where a person with a shady qualification of

‘ecologist’ (which does not necessarily imply a relevant degree, rather a notion used to define his own world view) is happy to advise on any possible issue ranging from bear behavior to radioactive contamination fluctuations. On the other hand, a call made to an official institution does not always guaranty reliable information. Since for the last decade the level of professional competence of many scientists, ministry employees and other red tape officials engaged in science, forest or game managers, zookeepers and natural reserve workers has dropped without a doubt due to overall decline in professionalism in post-soviet states. Thus, amid decrease in professions’ credibility and pay and, hence, a reduced competition, the number of biology amateurs has sharply risen. And, an amateur taking part in environmental campaigns supervised by a professional is known to be a good thing, but an amateur amending state draft laws is a loose cannon.

Let's not be too dark and gloomy though. Let's consider possible ways for enlightening the general public, aside from waiting in silence for a call from some journalist.

A widely recognized approach is local environmental awareness campaigns for people facing daily decisions as whether to shoot a bear that appeared within the hunter's designated target range while hunting ungulates; whether to set a snare trap, whether to pick berries on your own on the skirts of the wood frequented by bears, and finally what to teach your kids - to fight with predators for a place in the sun or to take pride in the fact that wildlife has been preserved in the native land.

Children are by all means the main focus group in such campaigns. It's hard and at times almost impossible to change the opinion of their parents. At least I personally believe that adults can reconsider their philosophy in isolated cases through personal experience of direct reasoned communication and preferably strengthening of controls. For instance my colleagues and I have carried out a small environmental awareness campaign in two national Carpathian parks. A colorful booklet with funny pictures contained reports on biology, endangered status and advices on safe coexistence. As expected, booklets were a big hit with the youngest group. One can only hope that they will not forget this as they grow up.

There are many ways to create environmental awareness, for example distributing booklets on the specie and rules of conduct in its habitats, calendars with beautiful pictures of nature and unambiguous positive messages, campaigns like ‘Harvesting acorns for bears’ in schools, question contest on knowledge of the specie or creating the best home village emblem featuring the carnivore, hosting meetings with experts that will answer pending questions, and engaging locals in research projects.

What are the hurdles you may stumble on your way to hosting such an event? First of all, when inviting a big number of people to join science projects or environmental campaigns, there is always a risk that the information might fall into the wrong hands. For that matter, standard conditions such as making local citizens join in on projects are difficult to meet. One should not be too eager to demonstrate to locals ten ways to take a picture of a bear at luring sites as a type of promising eco-tourism. Since a rifle of a local poacher may be used instead of a camera.

The man would of course come up with something without your help; however it's better not to tempt fate. Science-based arguments on wolf population control should be presented very carefully, because details will be left out and the message 'to shoot' is sure stick.

And of course a great deal depends on the motivation of each person. Delivering pocket calendars with lynx cubs' pictures and leaving them to gather dust in the forest farm director's office is not a very effective way to go. The process requires supervision, search of like-minded people, convincing, persuading and even a bit of blackmailing emphasizing your connections with competent authorities.

Getting locals to join is also a daunting prospect. Surely it's not easy to get people away from work, bring them to the forest and suggesting putting up a sign 'Warning! Bear in area'. This needs a certain change in mentality. Perhaps, during soviet times it was easier to do since it was mainly for the sake of appearances. Now you need to really think through the motivation behind such actions.

Let's examine some conflict settling measures in detail, which as a matter of fact should be communicated to people. First, these are different ways of preventing carnivore attacks on livestock or raiding farm fields, apiaries etc.

It should be kept in mind that there are many methods that proved to be effective, however few can be applied in Ukraine. Thus, many countries have been long and successfully using electric shepherds and other types of electric fences. The operating principle is quite simple, the device is easy to use, and the electric charge released is minor yet good enough for a horse trying to escape from the grazing site or a lynx willing to familiarize with particulars of pedigree livestock breeding. Such equipment farmers buy on funds provided by multiple government programs and private initiatives. Surely in terms of Ukraine this method is pricy. An average rural dweller is likely to rely on attack figures than to buy an electric fence worth hundreds of dollars for one cow and ten sheep. As to sponsoring such a purchase, there are concerns that people falling victim to our mentality would rather sell such a token than put it to good use. Though as private farming continues to

develop, sooner or later Ukrainians will surely see the benefit of electric fences.

There are more affordable ways to install a fence for livestock. Primarily those are average wood fences. In Ukraine such are likely to be equipped with barbed wire. I personally could only wish for a wider application of such method. Also a good and inexpensive method would be to hang flags, in simple terms pieces of cloth or oilcloth. For protection against wolves it's absolutely necessary to make sure that flags or the top of the fence is twice the animal's height. Since this predator is very suspicious about unfamiliar objects located above. Some tinkers use contraptions made of tin cans, wiring and other improvised materials to protect apiaries from bears.

It is important to note that a fence does not provide a 100% protection guaranty. Predators have a tendency to adapt, explore new things, and try to overcome obstacles. Bears are the most persistent. But still this way the attack is less likely, especially if compared to neighbors not taking any protection measures at all. Since it's common knowledge that when trying to escape from a bear you should worry about outrunning your companion and not the animal.

In general, the most effective way is to stop letting domestic animals move a considerable distance away from the community without supervision.

In Ukraine you can usually observe cows or goats on a leash grazing in the midst of a forest clearing along a steppe boundary a kilometer away from the village or unleashed bogs running around seasonal cottage settlements searching for trouble.

Here is one example from a small village in Chernivtsi region. The village is surrounded by four wooded gullies with thick understory and windthrow. Cows graze on forested slopes around the village moving over a kilometer deep into the forest. Thus, after you can observe cows approaching a forest clearing and only after a 30-minute brisk walk you can finally reach the village. In other words for a carnivore the dish is served on a silver platter. Sheep on the other hand are placed in wood fence pens with barbed wire on top on open unforested slopes on the outskirts of the village. Cows and sheep suffer occasional attacks. During the examined period cows were killed once or twice a year, however none of the sheep were killed.

Certainly, an important measure preventing attacks on livestock are local landscape and a closed forest or shrubs that enable animals to come near to a community or grazing site. However, the overriding factor is the stance people take on protection.

Another method, as old as installing fences, is guardian dogs. A predator guarding from another predator is the oldest and the most cunning solution in

the book. Special breeds would be ideal for this task such as Caucasian Shepherd Dog, Central Asian Shepherd Dog, Carpathian Shepherd Dog, Maremma Sheepdog, Slovak Cuvac and others. But also a mongrel barking in due time in the yard can be quite useful. Also one must bear in mind that a pedigree dog without proper training is actually as good as any country mutt.

Besides, it should be understood that supplementary feeding sites for ungulates, waste dumps, burying animal carcasses in close proximity to your home can cause repeated visits of carnivores during a long time period. We've often registered reports of wolves and bears continuous visits to sites that were not used as dumping grounds for animal carcasses and waste for over a year. Creating such supplementary feeding sites you're contributing to two dire consequences. First, you're providing a precedent for a carnivore to use anthropogenic sources near your home on regular basis. Second, you're giving an excellent opportunity for poaching on luring sites.

Apart from private property protection a person should also consider his own safety. You could always wait for an accident to happen and blame the government, or you could reduce the risk to a minimum. For example, you should not go out at twilight to move your cows grazing on forest clearing. Also during your camping trip don't make stops in forest areas where year in and out bear cubs are reported. Don't try to catch a bear cub or a lynx chased by dogs into a tree. And make sure to vaccinate dogs and cats for rabies.

And, above all, you needn't be afraid! The odds of being attacked by a large carnivore in Ukrainian are close to zero. Singular reports of bear or rabid wolf attacks are consequences of violating basic safety rules and a lack of proper government policy on rabies control.

We were bold enough to offer simple recommendations on preventing the human-large carnivore conflict. There's nothing groundbreaking about them and most countries advertise them to local population, and Ukraine should not be an exception. We communicated these recommendations as part of environmental awareness initiatives to the population living alongside bears. Most of them are relevant to bears and to a lesser extent to wolves. Lynx pose no threat to humans and the only warning would be 'don't try to catch or keep carnivores as pets'.

Safety rules in bear habitats.

People should be attentive and cautious in bear habitats. Try to keep on open sites, avoid long travelling through shrubs with limited field of view. Try to stay in a group. Warn the animal of your presence using your voice or other sounds to avoid being attacked due to sudden appearance. Do not move around the forest at night. Do not approach animal carcasses.

Before setting up your tourist camp or an overnight stop, make sure there are no signs of bear's presence around such as tracks, droppings, scratches on trees. If possible try to avoid overnight stops in bear habitats. Set up your tent on open sites.

Do not leave food scraps or leaked fuel near populated places, tourist camp sites, and fixed walking routes. Do not feed bear cubs that express interest in human activities and do not run away in case of an encounter.

Upon spotting a bear try to stay calm and leave the animal territory without drawing attention. The best case scenario would be if a bear does not notice your presence and remains at a considerable distance. If a bear saw you in a close proximity don't panic and don't run. Try to scare the animal away by making loud sounds. However there cannot be one-size-fits-all recommendation. Dogs in the forest can also trigger an attack. Under no circumstances should you approach cubs. Do not keep cubs as home pets. An adult bear is very dangerous to such owners, even if they are experienced animal trainers.

Make sure to take care of your property and domestic animals. Install fences, electric shepherds, use guardian and shepherd dogs.

Safety rules in wolf habitats.

Do not leave food scraps or pet carcasses near populated places, tourist camp sites, and fixed walking routes. Do not approach animal carcasses.

Keep your dogs on a leash. Upon encountering a wolf do not lose sight of him and do not take any actions. The animal will try to escape. If the animal shows signs of rabies, try to avoid any contact at any rate.

Vaccinate your pets, both cats and dogs, especially if you let them move around and outside the community.

Do not try to catch whelps. Do not keep whelps as home pets since they will never become tamed or safe.

Make sure to take care of your property and domestic animals. Install fences higher than wolf height, electric shepherds, guardian and shepherd dogs.

Be careful while trying to take back the animal attacked by a wolf. This is probably the only contributor sharply increasing the chances of being attacked by a wolf.

## STEP TWO. LEGISLATIVE INITIATIVES AND COMPLIANCE

Theoretically, a law should balance the interests of both parties, but in reality humans are always a priority. The most important legislative issue as to carnivores would be conservation of their habitats and anti-poaching. Western countries took the path of trial and error that brought results we can

judge for our part. One of the most outstanding examples is compensating for losses caused by wildlife. The idea seems good. A wolf eats a sheep. The farmer files a complaint and is compensated by the government without any grievances against the wolf. Everybody's happy, except for the sheep. But in the real world things don't turn out that way that is the farmer receives compensation and sets a wolf trap. This is human nature. The farmer is scared to go outside at night, he's not willing to go through trouble applying for compensation or expert opinion, that sheep was his favorite, her name was Liusia. And anyway, he'll have his revenge on the wolf. If you consider the effectiveness of such method based on presentations, articles and statements of foreign colleagues trying to resolve the issue or working for 'expert appraisal - compensation' system, you'll see that it's a complete fiasco. At present I don't see any possibility of applying such methods in Ukraine.

The 'carnivores are beneficial' approach has shown good results. For instance when a Tibetan dweller living on a territory of a snow leopard commits not to harm the animal, protects his sheep thoroughly and provides reports on tracks and encounters to scientists. And in exchange he becomes eligible for exempts on certain types profit of tourists. For example snow leopards aficionados will make a good sale of stone handicrafts. Thus, he would rather make money of leopard lovers than of breeding sheep thinking himself to be a folk art bearer and a wildlife expert. This approach is quite possible in Ukraine. I think for a small reward most would turn their neighbor in to the authorities and make regular photos of tracks for the database.

The code of anti-poaching laws is as old as the hills. But as ancient Romans put it 'do not declare laws that cannot be enforced, since that can shake faith in the law in general'. In Ukraine poaching is such an easy crime to commit and avoid prosecution that it's very hard to consider any means for combating this negative phenomenon. Everyone agrees that the rate of poaching is disastrous, however it just reflects the state of economy, disregard for the law and ethical standards of people. Consequently, encouraging wolf poaching by hunting area users is fine as long as it gives the same users an additional opportunity to poach roe deer or wild boars. Since it's much easier to kill a wolf once a year, than to spend money on regular security of hunting areas and wild animal breeding. Besides, if ungulate protection has practical value, carnivores are of no use to anybody. Even if users do not intend to hunt bears and lynx that are on the Red Data Book record, there are not eager to protect them either. They regard it not as their legal obligation and condition of hunting area use, but as a charitable, entirely volunteer and insignificant duty that was imposed on 'the lords of lands and forests' for no good reason. That naturally begs the question: how to supervise user compliance with laws, how to control an old undying habit of locals to commit poaching for fun and profit? Evidently, this is a huge

complex challenge that should be solved by the government declaring to itself to be governed by the rule of law.

Another important detail is the level of professionalism of people drafting laws. Grievous examples are failed draft law on hunting ban in Ukraine and a passed law on hunting ban on pregnant wolves. Which raises a question, how can an entire industry sector of economy be whipped out in one fell swoop? And also how during a hunt can anyone determine wolf's sex not to mention whether a female's 'got one in the oven'? Furthermore an honored country environmentalist suggested to neuter wolves in the wild. That's not the end of it. And most importantly, why finding solutions to these issues are often assigned to some cultural environmental center of extraterrestrial aura instead of experts from several relevant institutions? The answer lies right before our eyes. Those with a vested interest are the most proactive. Unfortunately, before getting involved not many people bother to consult professionals on consistency of such actions. And experts tend to be inactive. Hence we end up with complete and utter rubbish, and the things that really matter (for instance much anticipated laws on wild animals rehabilitation centers) are discussed only in smoking rooms of national research institutes and on small-town conferences. We can only hope for collaboration and understanding of all interested parties. Meanwhile, to put it simply, there is nothing to hope for. A silver lining in the cloud is non-governmental environmental organizations of experts capable to analyze the situation adequately to gain results rather than good graces of the public.

### STEP THREE. CARNIVORES STAND FOR BENEFIT AND PRESTIGE

In my opinion, the best preservation guarantee for anything at all would be its benefit for the general public. Moreover this should not be a one-time benefit, rather a benefit derived from long-term existence and prosperity of the preserved site just like in the case of snow leopards. Thus, let's not make any inspiring speeches or take conservation measures for sheer pleasure. People who comprehend the importance of biodiversity don't need our advices to refrain from setting up traps. How can large carnivores become beneficial for rural dwellers, hunting area users, hunting farm and natural reserve workers, local officials and travelling layman?

First, a large carnivore is a valuable part of natural and cultural heritage of the region. In simple terms, it's a tourist trap. Predators strongly emphasize favorable environment and pristine nature that perfectly fits the classical region positioning strategy for a place for recreation and green tourism. And it's another leverage for officials working for the good of the people and the country. This is also good news for local inn keepers, owners renting rooms and stables, handicraft stalls, locals selling dairy and fruits that is everyone, who wants to make money of tourists. And you can go way beyond a mere mentioning of predators. Compliance with certain safety rules and intention

to avoid destroying nature will help to make use of sights. Above all, it's not a guaranteed extreme entertainment such as 'pay a dime and watch a bear dance' that should be emphasized, but an opportunity to become familiar with a wonder of the wild and the past of the Earth devoting a certain degree of effort. Here are some examples of such events.

One of them is attending a public wolf howl. This is a long and successful practice in North America used to entertain while educating tourists. People prepared beforehand and looking forward to the event are brought on a moonlit night to the dark forest with ancient trees and hooting owls. There in complete silence a ranger would imitate wolf howls. No one will be underwhelmed after hearing a pack howling in the night forest intimidating and fascinating, cutting to the heart and awaking primordial fears. And if wolves fail to respond that particular night, that's no big deal - an assistant will play a recording. Gullible people will not tell the difference from a big distance, and satisfaction is guaranteed. But that's a last resort measure for the public with little education settling for bread and circuses, like public wolf howl during a sauna visit. By the way Ukraine has quite a few of those.

Symbolic value of large carnivores should not be underestimated. A region emblem featuring a bear placed on road billboards, pages of a foreign passport, and border guard uniform patches would remind of a mere existence of the animal in the country. Featuring notions 'lynx' or 'bear' in a mountain hotel name together with other trip recollections are likely to arouse pleasant emotions than fear of a large carnivore.

Proper use of animal pictures is sure to promote image of species. This includes national park emblems, names of recreations, insignias of scout and Plast (translator's note: National Scout Organization of Ukraine) troops, souvenirs sold in regions of specie habitat. It would seem logical to use the expertise of Kenya and Canada that were able to favor national economy by exploiting carnivore preservation and benefits of tourism.

First and foremost, carnivores should not remain just a symbol in our life.

## SUMMARY

Strange as it may seem, improvement of the overall standard of living in our country will aggravate the problem of conserving large carnivores that populate natural ecosystems. Each country in the world follows one and the same path: intensive use of natural resources, division of territory by quality highways and railways, development of recreation and tourism sectors, and only after accomplishing all that, turning around and taking a deep breath people think of the lost nature and initiate conservation, reintroduction of species etc. Right now Ukraine is more concerned about lack of roads and tourism infrastructure than conservation of large carnivores. We can only hope that when we finally have the time, there will still be carnivores on

national fauna records. And this can be fostered by our stance on these animals which should be balanced and careful.

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