



Hungary-Slovakia-Romania-Ukraine

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PARTNERSHIP
WITHOUT BORDERS

OPEN BORDERS FOR WILDLIFE IN THE CARPATHIANS

The bear

A guide for...



www.openbordersforbears.com



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Photo
Lukas Holasek

FOREWORD

“

Many of us consider that there is nothing **more beautiful** than Life in all its animal and plant forms. So far, this seems to be the main stimulus that drive humans to protect nature and leave a legacy for next generations. But thinking further we have to understand that nothing is **more important** than Life with all its forms. The aesthetics of life should be exceeded. Life resilience and its own capacity of adaptation is grounded on integrality and functionality of life systems. And yes, humans are part of Life systems as well as a bacteria or large carnivores. No one is excluded but **integrated** as a functional part of this planetary life mechanism which aims nothing but **conservation of survival capacity**. In every second all organisms are in a constant dialogue with temperature, humidity, pressure, chemical gradients and all other abiotic factors as well to surrounding organisms. They sense and respond to environmental changes as they have constantly to keep pace with such changes. Every species is a mirror and also a receptor of environmental changes and so, **every species is a solution** for resilience and adaptation.

*Călin Ardelean,
wildlife expert at WWF-Romania*



The brown bear is a widespread mammal and the largest predator of Europe. The history of his relationship with men is long and very diverse. He was an important totem animal in most pre-Christian cults.

In the Carpathians, the bear's name was taboo, meaning it could not be called aloud. Therefore, he was called "uncle", "big", "shaggy", "clubfoot", "master", etc.; he was considered the king of beasts (as in the southern areas such as the lion). The bear and man were considered relatives, because the bear can walk on its hind legs, climb trees, eat the same food as a man (for example, honey), his feet and toes are similar to humans. Even today, in mountain villages, people usually treat him with great respect. It is not considered a pest, like a wolf, but a very useful and intelligent animal. As the mountaineers say: "a bear in the forest is much smarter than an ordinary man." Hunters say that dogs bark at a bear in the same way as at a human, not at other animals.

Andriy-Taras Bashta,
wildlife expert at Rakhiv EcoTour



Lukas Holasek

ABOUT THE PROJECT

The Carpathian region is home to more than a third of the approximately 12,000 wolves, 17,000 bears and 9,500 lynxes that live in Europe, excluding Russia. It is estimated that around 8,000 brown bears live in Central and South-Eastern Europe. These ecologically critical, strictly protected and culturally significant mammals are threatened, not only by poaching, but also by habitat fragmentation and shrinkage caused by chaotic infrastructure planning and development. As large carnivores frequently move across national borders in search of food and mates, it is essential to conserve these large and complex ecosystems in the region across administrative boundaries.

Protecting nature is essential, not only for wildlife but also for local communities, who much depend on the many resources it provides: from clean air and water to fertile soil and stable climate. These environmental services depend on a well-connected ecological web of high biodiversity. Maintaining and improving ecological connectivity protects not only wildlife but also the entire ecosystem humans depend upon.

Project partners from four countries (*WWF Romania – Maramureș Branch, Romania, Slovak Ornithological Society/BirdLife Slovakia, NGO RachivEcoTur Ukraine, Aggtelek National Park Directorate Hungary*) embarked in a dynamic journey called **“Open borders for wildlife in the Carpathians”** www.openbordersforbears.com to design and source transboundary ecological connectivity between habitats. The project, funded under Hungary-Slovakia-Romania-Ukraine, ENI Cross border Cooperation Programme 2014-2020 (<http://huskroua-cbc.eu/>) aims to improve connectivity in four countries and support integrated habitat management for wolves, brown bears and the Eurasian lynx.





This project is a continuation of the previous project implemented by WWF-România in 2012-2014, "Open borders for bears in the Carpathians of România and Ukraine", which has mapped the first network of ecological corridors in Maramureș, in the România-Ukraine border area. Unlike the first project, where the umbrella species was the brown bear, now systematic monitoring (using photo-video cameras, drone and genetic tests) will be carried out for three large carnivore species - bear, wolf, lynx, and work will continue on identifying ecological corridors in Slovakia and Hungary. Large carnivores are at the top of the trophic pyramid, and if their populations are maintained at optimal numbers, it means that other animal species are also in good conservation status in their habitats.

THE IMPORTANCE OF ECOLOGICAL CORRIDORS IN A HEALTHY ECOSYSTEM

The network of ecological corridors in the Carpathian Mountains is meant to be a coherent system of natural or semi-natural elements of the landscape, designated for administration in order to maintain or restore ecological functions as a means of conservation of wildlife species, offering in the same time adequate opportunities for the sustainable use of natural resources.

The design process of the network of ecological corridors in the Carpathian Mountains area was based on the ecological requirements of large carnivores and the favorable habitats in the area. Large carnivores, as an umbrella species, due to its position at the top of the trophic pyramid and the vast habitats they need, are a target species in the design of regional ecological networks, because protecting viable large carnivore populations will ensure the conservation of other species as well.



Lukas Holasek

Categories of ecological corridors:

-  **Core area of distribution:** large areas of natural or semi-natural habitat that fulfill requirements for permanent residence of umbrella species. For large carnivores it consists mainly of forests. The size of a core area should not be less than 300 km².
-  **Stepping stone:** an array of small patches of favorable habitat that individuals use during movement for shelter, feeding and resting.
-  **Wildlife corridor:** landscape structures of various sizes, shapes and vegetation that mutually interconnect core areas and allow movement and migration of species between them. The width of the corridor should not be less than 500 m.
-  **Critical zones (bottle-necks):** fragments of corridors with significant limitations of the land permeability for the target species due to the concentration of different types of barriers (e.g. fences, arable land, motorway etc.).

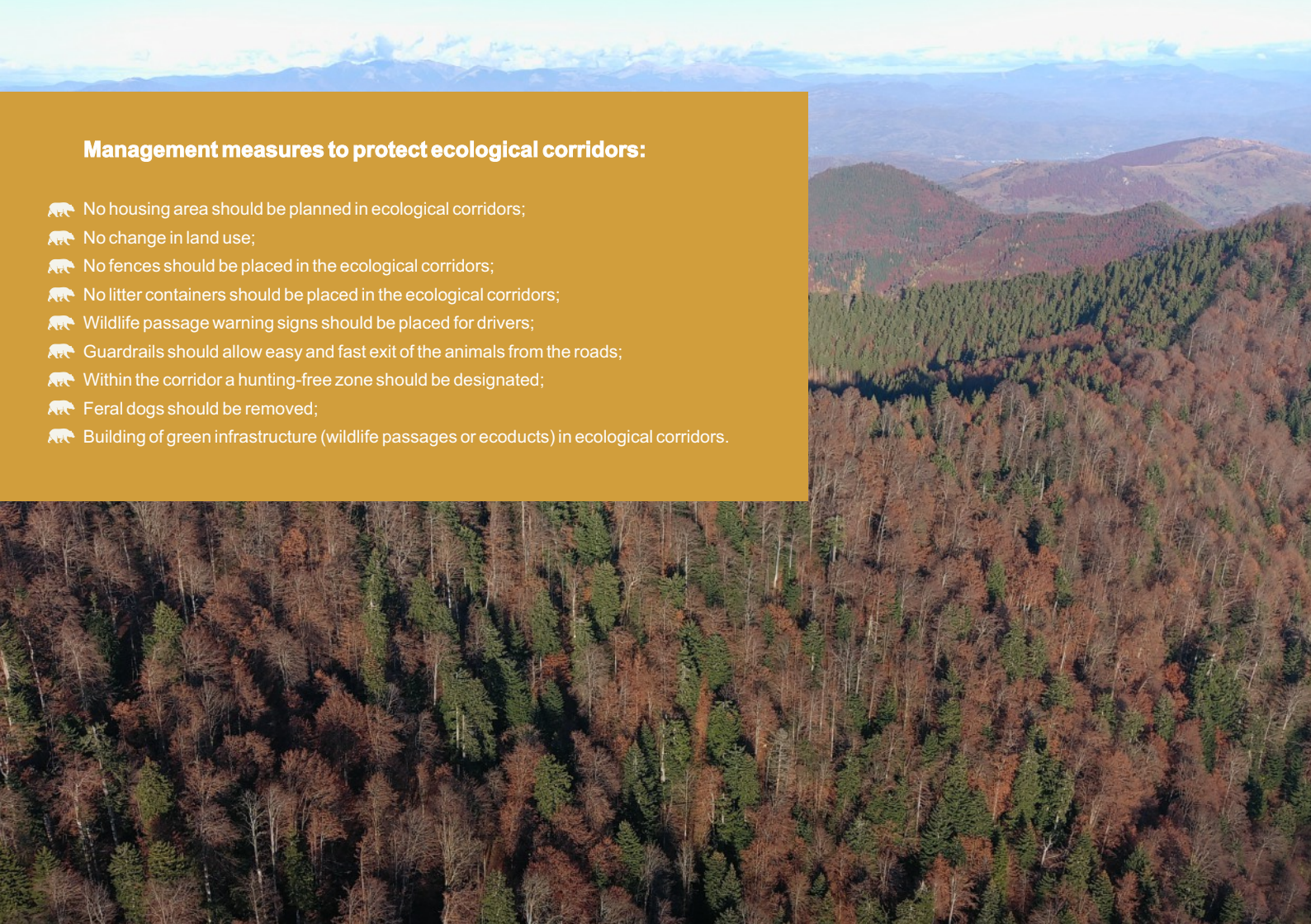
Types of barriers that disrupt ecological corridors:

-  terrestrial (e.g. road and railway infrastructure, tourist complex, ski resort, etc.)
-  aquatic (e.g. micro hydropower plants, sills, dams, catchments, etc.)
-  aerial: some of the most common barriers for bird species are wind farms, overhead power lines and tall buildings.



Management measures to protect ecological corridors:

- 🐾 No housing area should be planned in ecological corridors;
- 🐾 No change in land use;
- 🐾 No fences should be placed in the ecological corridors;
- 🐾 No litter containers should be placed in the ecological corridors;
- 🐾 Wildlife passage warning signs should be placed for drivers;
- 🐾 Guardrails should allow easy and fast exit of the animals from the roads;
- 🐾 Within the corridor a hunting-free zone should be designated;
- 🐾 Feral dogs should be removed;
- 🐾 Building of green infrastructure (wildlife passages or ecoducts) in ecological corridors.



ABOUT LARGE CARNIVORES

A carnivore is an organism, in most cases an animal, that eats meat. A carnivorous animal that hunts other animals is called a predator; an animal that is hunted is called prey.

An animal's diet determines where it falls on the food chain. Each food chain consists of several trophic levels, which describe an organism's role in an ecosystem. Carnivores and omnivores occupy the third trophic level. An omnivore, such as a human, is an organism that eats plants and animals.

Many carnivores get their energy and nutrients by eating herbivores, omnivores, and other carnivores. Carnivores that have no natural predators are known as apex predators; they occupy the top of the food chain. Here are large carnivores, the bear, the wolf and the lynx. But not all carnivores are predators. Some carnivores, known as scavengers, feed on the carcasses of already-dead animals.

Carnivores vary in shape and size, but they often share similar traits. For example, most carnivores have sharp teeth adapted for capturing prey and tearing flesh. Additionally, many carnivores have relatively large brains. Carnivores also have a single stomach chamber and a simple digestive system, unlike herbivores, who often have a stomach with multiple chambers and a specialized digestive system.

Carnivores play an important role in keeping ecosystems balanced. They keep populations of prey species from becoming too large. Scavengers like vultures help prevent diseases from spreading by eating the remains of dead animals.



Large carnivores play an important role in the environment.

We are just beginning to learn how they positively impact the environment. For example, bears play a role in fertilizing forests by dragging carcasses throughout forests and depositing scat on the forest floor. In eating fruit and nuts, they disperse seeds. Each seed is deposited on the forest floor with a little 'fertilizer' to get it started. Bears also help to clean up carcasses and, as predators, they help keep populations such as deer in balance.

Large carnivores are also a good indicator species. Bears, wolves and lynxes need a variety of habitats to survive and thus managing habitat for these species benefits many others including humans. If the land is healthy enough to support a population of fit, large carnivores then it is also healthy enough to support people.

People have been fascinated with bears and wolves throughout time and around the world. They have captivated the human imagination and have become woven into the fabric of myths, legends and anecdotes. Large carnivores are a part of human culture in countless ways — from ancient ceremonies to myths to teddy bears and plush toys. In the next chapters you can read more about the bear.





THE BEAR

(URSUS ARCTOS)

IMPORTANCE

Brownish like the forest floor and as big as a “moving rock” – the bear is a natural element of the forest as much as any tree or mushroom or bird. Not only is this our perception – that a forest is “complete” when it has bears roaming through it – but science shows the same: the presence of the bear in the forest proves that it (the forest) is in good health. Bears are predators, at the top of the food chain (trophic pyramid), they need a variety of sources of food from nature. Bears also need wide spaces to move. When there are many bears in the forest, this means that there is plenty of food – so the forest is rich and thriving.

DESCRIPTION

The brown bear has been a widespread species in Europe, a situation that has changed dramatically over the past centuries, and the species disappeared completely from many countries on the continent.

According to an IUCN report, there are currently almost 14,000 brown bears living in Europe (excluding Russia) (Brown Bear Conservation Action Plan for Europe, 1999). Of these, about 6,000 live in forests in România, the average density being about 8 bears / 100 km².

The bear has excellent **hearing**, it can detect a conversation between people from about 300 m and can hear the camera shutter from about 50 m. But **smell** is the bear's most important weapon. Smell is fundamental for defense and attack, being the window of communication with the world around him,

more than sight or hearing. It seems that the bear has the most developed smell among carnivores, serving to detect the pair, the presence of man, other bears, cubs, and food sources. The bear is able to detect traces of human presence more than 40 hours after crossing.

Herbs and buds are eaten mainly in spring or early summer. In summer and early autumn, it eats mushrooms and fruits (raspberries, blackberries, blueberries, apples, plums and pears). In late autumn, but also in winter, bears consume acorns and beechnuts. Insects, especially Hymenoptera (ants, bees, wasps) can be an important food source seasonally, especially due to the proteins they contain.



Bears, like all mammals, need to maintain a constant body **temperature**. Fur is a very good **insulator** in winter, fulfilling this function. The low solar reflection capacity of the fur facilitates the accumulation of heat from the sun.

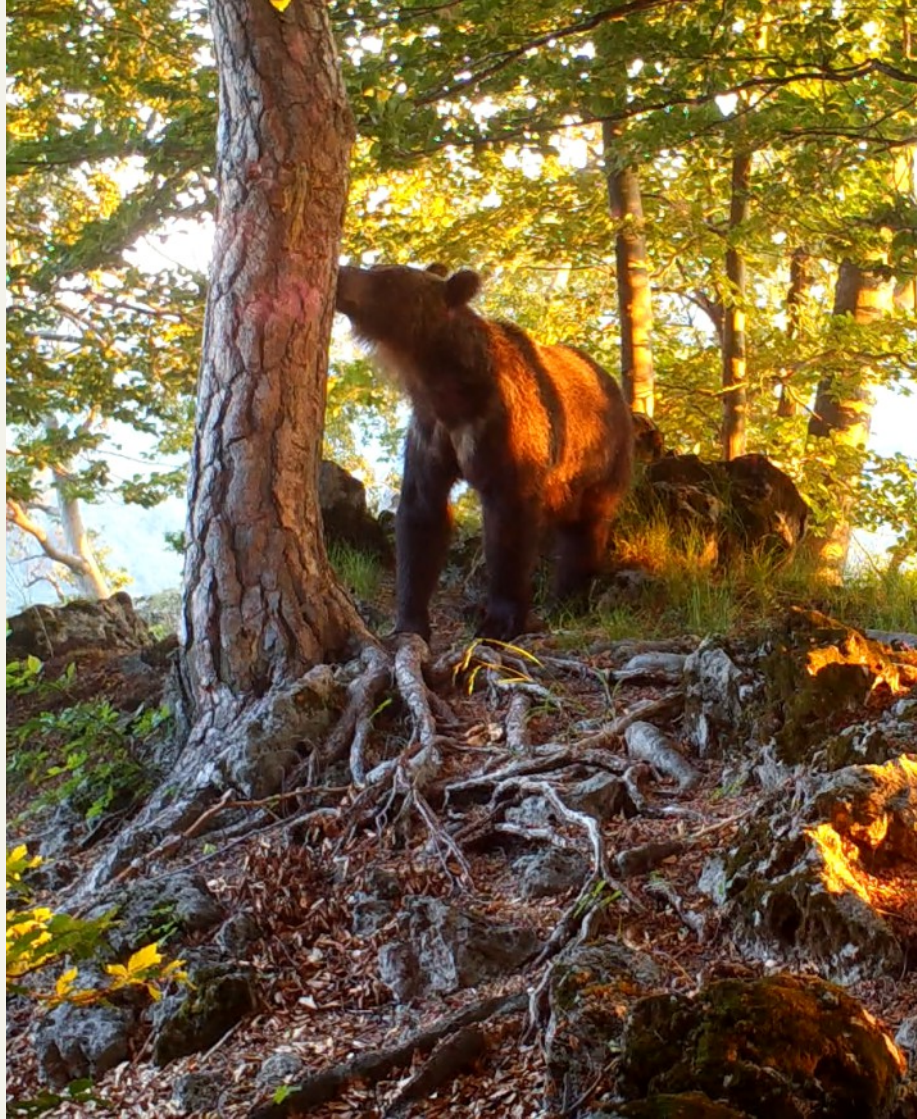
At the end of autumn, after accumulating enough adipose tissue for winter sleep, bears usually enter the den. Winter sleep can last between 3-6 months. The lair is dug into the ground or is arranged in natural cavities, under rocks.

Some bears can stay active all year round if they find enough food. This behavior is also encouraged by luring them to artificial feeders. Sleep duration is directly proportional to the amount of fat accumulated in the fall and inversely proportional to the amount of food available in the winter.

Winter sleep is actually an adaptation to the lack of food in this season, through which the animal uses its accumulated energy in the form of fat. However, this phenomenon can be made possible by staying as still as possible, because excessive movement means additional energy consumption.

It is important to know that if we disturb a bear during the winter, we force it to lose energy, which it can only recover by feeding.

These emblematic species have much to teach us. For example, how can a denning female bear shut down her digestive and excretory systems and still deliver and nurse cubs? Usually the bones in mammals who are inactive for long periods of time lose calcium and become weak – so, how can bears sleep for a couple of months and yet come out of the den with strong bones? People are studying the bear to further human knowledge about everything from osteoporosis to kidney disorders to organ preservation to long-distance space travel.



HOME RANGE

The brown bear lives along the entire Carpathian chain, in large and dense forests, preferring quiet areas, less frequented by humans. The basic requirements for the survival of brown bears are related to the possibilities of feeding, resting, mating and dispersal conditions, and finally, to the existence of favorable habitats and corridors that ensure the connectivity of habitats.

The bear is a territorial species meaning that every bear uses a specific surface of habitat for foraging, breeding or resting – this space represents its home range. The home range of a male can overlap with several female home range. Based on scientific studies performed in Carpathian Mountains with WWF contribution of data, the average home range for a single individual of bear is 630 km². This is a vast territory and bear need it for its survival. Imagine that in Budapest for example (the capital of Hungary), there are living **almost 1.8 millions of people over a land area of about 525 square kilometers. Such space will be enough only for 40 crowded bears.**



TRACKS

Bear tracks - they are distinct from other animals and a clear foot print is unmistakable. The bear steps almost like a human being and steps on the whole paw; the feet account for walking, running, climbing, swimming, hunting, feeding, digging, protection.

The paws are almost flat, with 5 fingers – the ones at the back are wider than the ones in the front. The claws are curved, non-retractable, shorter on the back paws and longer on the front ones. Front tracks consist of an oval and wide pad with five toes. Generally, claws are present in the track varying from one individual to another in the distance from the toe prints. The hind tracks have an additional circular pad (heel) in the posterior edge of the track and can resemble human footprint. The width of the pad of the front track ranges: +/- 8cm of a 1st year cub to +/- 18 cm in an adult individual. The length of the hind track ranges from 12 cm (cub in its first year) to 30 cm (adult individual).



MATING AND REPRODUCTION

The female bear gives birth to their first cubs at 4-6 years. Mating takes place once every 2 years, between May and June. The gestation period is 6-8 weeks, and the female gives birth to 1-4 cubs.

The cubs are born in the den during the winter sleep, in January-February. This is another strategy to adapt the species to the harsh living conditions.

But given that breastfeeding takes place at a time when the female cannot feed, nature has compensated for this with another adaptation strategy: the very small size of the newborns. Newborns weigh about 0.5 kg but grow very fast, accumulating up to 70 g / day due to the nutritious milk of the mother bear.

The cubs are left alone in the second year of life. The female resumes the reproductive cycle after her cubs become independent, so after about 2 years.

After being abandoned by their mother, at the age of 1.5-2, the cubs are forced to fend for themselves. This period is the most delicate, because being very young, their life experience is very little. This makes them venture into dangerous areas, such as man-made areas, sheepfolds, landfills, where they often fall victim to dog attacks or road or rail accidents.

THREATS

Increasing pressures on forests - the main habitat of the brown bear - are a threat to the species. Habitat loss or fragmentation due to the development of transport infrastructure, but also urban or rural infrastructure (such as ski slopes, urban sprawl and construction implicitly, without taking into account the costs of biodiversity loss) are the main threat to the address of the species.

As a result of human activities and socio-economic development in the region, these habitats are increasingly affected, being either destroyed or fragmented.



MEETING THE BEAR

Slovak nature photographer, Lukáš Holásek, has unexpectedly met a female bear and her two cubs at the bottom of one of the Malá Fatra mountains. It happened on a chilly morning in early October, when the red deer mating season was just coming to its end. Black clouds were hovering above the valley and heavy rain took turns with swift rain showers. These were ideal conditions for moving through the forest unseen. His main goal was to take some pictures of red deer, but an encounter with the bear was also welcomed, especially, when their footprints could be occasionally spotted on the muddy forest path.

This encounter was a surprise for both. Lukáš was sitting on a rock, on a steep slope, watching the forest. As soon as he heard the red deer, he moved towards it. He got off the rock and with his side vision he registered some movement on his left hand side. He thought it was the red deer, but after seeing three noses poking out from behind a tree stump, he knew who it was – bear mother with two cubs only 20 meters away. As they had not registered him, he quickly hid behind the nearest tree and prepared the camera to take pictures. Surprised the mother bear has already started to stand on her two hind legs to see what is happening. When she realized there is a human close to her, she hit the fallen tree stump that laid in front of her several times, jumped over it and ran towards Lukáš. He, noticing all this, jumped to the side and pulled out the bear spray, but the bear mother turned away and headed back towards her cubs. For a while, they both stopped and Lukáš managed to aim the camera on her. That was, however, a mistake, as the bear felt threatened by this and decided to turn and run towards Lukáš again. Luckily, this was also just a warning from her side and she just returned back to her cubs and this encounter ended without any physical contact or use of bear spray.

Lukáš was glad he did not have to use the spray as he observed and photographed this bear before. Her name is Repešanka, according to the name of the place where she spends the most time. He is reminded of this several seconds-long adrenalin-filled meeting by the following picture



Encounter with a bear:

Usually, bear avoids meeting a human. Direct meetings are, usually, accidental, as it was in the example described above.

There are various ways by which we can prevent meeting a bear:

- 🐻 do not move in the forest early in the morning and late in the evening;
- 🐻 behave cautiously and watch what is happening around you;
- 🐻 avoid bushes and enclosed areas;
- 🐻 move in larger groups of people, or make a sound from time to time;
- 🐻 use tourist bells that will make bear be aware of you.

If you do happen to meet the bear, observe his behavior. Do not look him in the eye, move slowly backwards and leave an open withdrawal way for him. If the bear attacks, it is always a defensive action, he does not consider humans as food. Such an attack can successfully be diverted by the use of a bear spray. In case of physical contact with the bear, lay down on your belly and protect the top of your head and the neck. Do not fight the bear, wait until it leaves.



If you meet the bear...

The bear would only attack a human being when to attack appears to be the only way out of an unfamiliar situation that causes it to be scared for its life: getting too close to the cubs, a very sudden encounter that neither human being, nor bear, have been able to predict or, quite rarely, situations when the bear is protecting prey hidden underground. If we see a bear that, in turn, has spotted us as well, we just need to get away at once, calmly, in order to show the bear, we do not intend to attack it or its cubs, or take away their prey. Usually, the bear would try to do the same. If, by any reason, the bear appears to be coming our way, it is recommended that, while we steer away, we drop something behind (a jacket, a backpack). The animal would get involved in sniffing the object and that will gain us time to get away.

HUNTING AND POACHING

In Europe, bears are strictly protected, therefore they are not the object of trophy hunting. Nevertheless, some European countries with a stable level of bear populations put in place some extraction schemes to prevent human – bear conflicts and also livestock damages (only when no other option is available). But this management tool is under debates between conservationists and hunters or even a fragment of civil society which consider the bear as a threat for their life. Therefore, some questions remain: can the top predators regulate their population in a natural way, limited by the available space and resources OR humans should actively intervene through extractions to limit the number of bears? For an answer, further studies should be performed in a sustained manner. Sparsely, poaching activities were spotted, but a clear picture of this phenomenon is not defined. The reason for poaching is very diverse, some bears are killed for meat, other for trophies. In some cases, the bear is perceived as a threat for humans or livestock and thus is illegally killed. Sometimes cubs are kept as pets.



CONCLUSIONS

It is clear now that ensuring the connectivity for wildlife is a must. It seems that only establishing natural protected areas is not enough for wild animals in order to thrive since human-made infrastructures like roads, highways or settlements break the habitats in smaller isolated pieces hampering animal movements between their places for feeding, mating or dispersion. Large carnivores are using huge area of habitat ranging for hundreds to thousands square kilometers. Thus, a methodology to identify the ecological corridors with some clear functional parameters that describe such corridors have to be put in place at regional scale. That was the main objective of the project "Open borders for wildlife in the Carpathians".

Connectivity has at least two directions: restoring and preserving it. It is obvious that the second is more desirable in terms of costs and effectiveness. So, for healthy and resilient animal populations we have to think every time one step ahead - to prevent instead of repair.





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