

1

Wolf (*Canis lupus*)

ZOOLOGICAL CLASSIFICATION

Kingdom: Animals (*Animalia*)
 Phylum: Chordates (*Chordata*)
 Sub-phylum: Vertebrates (*Vertebrata*)
 Class: Mammals (*Mammalia*)
 Sub-class: *Theria*
 Infraclass: Placentals (*Placentalia*)
 Order: Carnivores (*Carnivora*)
 Family: Canids (*Canidae*)
 Genus: Wolf (*Canis*)
 Species: Wolf (*Canis lupus*)

WOLVES - THE GREATEST CANINES



COLOURING

- Rusty-brown tints prevail in the summer.
- Winter coat is grey to black in colour.
- The belly and the inner parts of the limbs are yellowish to whitish in shade.
- The edges of the ears are black.
- Some wolves have a darker stripe of hair on the dorsum.



LIFE SPAN

The normal life span of wolves in the wild is only 8-9 years, but 12 to 16 years is possible; wolves in captivity may reach up to 20 years.

ENDURANCE RUNNERS

Wolves can run at a maximum speed of 48-65 km per hour. While they are capable of keeping up such a pace for one hour when running or hunting, moving at 6-10 km per hour is more usual. In search of food they are known to cover as much as 160 km per day.



DISTRIBUTION OF WOLVES IN THE WORLD

The map shows the original range of wolves.



In the past, wolves inhabited almost all of Eurasia and North America. However, their range today is now drastically reduced and rather patchy. In Europe, any coherent area merely extends from the north of Scandinavia through Finland and Russia to the Balkans, or takes in the Iberian Peninsula and Italy.

WHERE WOLVES ARE FOUND IN THE CZECH REPUBLIC

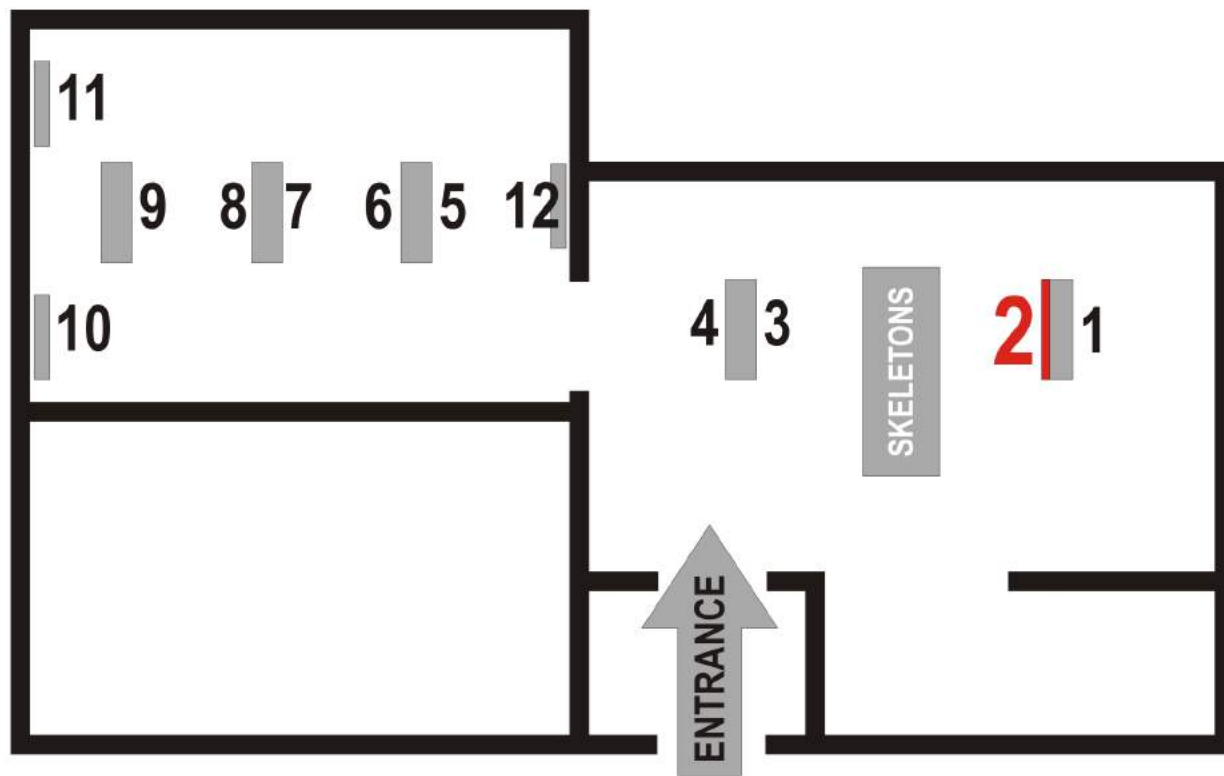


In the Czech Republic, wolves regularly inhabit the Beskydy mountains. Wolves from Slovakia and Poland can wander as far as the Javorníky mountains, Vsetín hills, Jeseníky mountains and even further. Although Šumava has no permanent population, occasional sightings have been made.

For European wolves, environments with dense forest cover comprise their habitats; under local circumstances, this generally concerns mountainous areas. (Pictured: the Beskydy mountains.)

Difficult to access, deep-cut mountain valleys provide the creature with good hiding places, as well as forming ideal hunting grounds.





2

Wolves are members of the canid family (*Canidae*)

The Arctic is inhabited by large, white wolves.

A black Canadian wolf.

Young European wolves.

The map shows the distribution of canids in the world

The species of Canids

(Macdonald D. W., Sillero-Zubiri C.: *Biology and Conservation of Wild Canids*, Oxford University Press, 2004, reprinted 2010, New York)

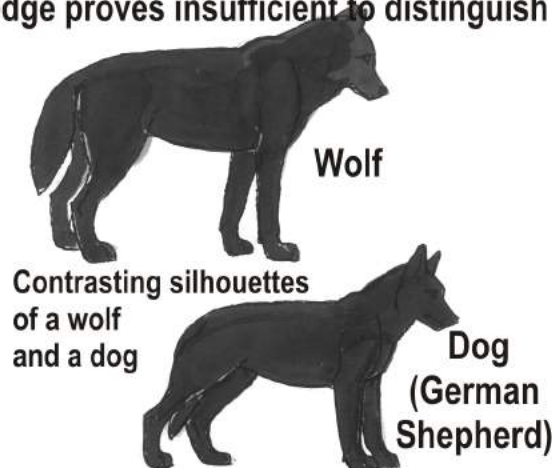
Druh	Latinský název	Anglický název	Místo výskytu
Liska polární	<i>Alopex lagopus</i>	Arctic fox	Severní Amerika, sever Evropy, sever Ázie
Pes krátkouchý	<i>Atelocynus microlis</i>	Short-eared dog	Jižní Amerika
Šakal pruhovaný	<i>Canis adustus</i>	Striped jackal	Afrika
Šakal obecný	<i>Canis aureus</i>	Golden jackal	Afrika, Ázie, Evropa
Kojot přelítný	<i>Canis latrans</i>	Coyote	Severní Amerika
Vlk	<i>Canis lupus</i>	Gray wolf	Severní Amerika, Evropa, Ázie
Dingo	<i>Canis lupus dingo</i>	Dingo	Austrálie, Ázie
Šakal labradorský	<i>Canis mesomelas</i>	Black-backed jackal	Jižní a střední Afrika
Vlk rudohrdý	<i>Canis rufus</i>	Red wolf	Severní Amerika
Vlček etiopejský	<i>Canis aethiopicus</i>	Ethiopian wolf	Afrika
Maikong	<i>Cerdocyon thous</i>	Crab-eating fox	Jižní Amerika
Vlk hrivnatý	<i>Chrysocyon brachyurus</i>	Maned wolf	Jižní Amerika
Ohrovi	<i>Cuon alpinus</i>	Dhole	Ázie, Indonésie
Pes hyenový	<i>Lycyon pictus</i>	African wild dog	Afrika
Psík myvalovitý	<i>Nyctereutes procyonoides</i>	Raccoon dog	Ázie (pův.), Evropa, Severní Amerika
Pes ukátný	<i>Otocyon megalotis</i>	Bat-eared fox	Afrika (jižní a střední)
Pes horský (liska patagonská)	<i>Pseudalopex culpaeus</i>	Culpeo	Jižní Amerika
Pes Darwinův	<i>Pseudalopex fulvipes</i>	Darwin's fox	Jižní Amerika
Pes argentinský	<i>Pseudalopex griseus</i>	Chilla	Jižní Amerika
Pes pampejský	<i>Pseudalopex gymnocercus</i>	Pampas fox	Jižní Amerika
Pes pouštní	<i>Pseudalopex sechurae</i>	Sechuran fox	Jižní Amerika
Pes šedý (Azarův)	<i>Pseudalopex velatus</i>	Hoary fox	Jižní Amerika
Pes pralesní	<i>Spaethos venaticus</i>	Bush dog	Jižní Amerika
Liska lední	<i>Urocyon cinereoargenteus</i>	Gray fox	Severní Amerika
Liska ostrovní	<i>Urocyon littoralis</i>	Island fox	Ostrovy v Severní Americe
Liska džunglová	<i>Vulpes bengalensis</i>	Indian fox	Ázie
Liska kana (Blandfordova)	<i>Vulpes cana</i>	Blandford's fox	Ázie
Liska chamská	<i>Vulpes chama</i>	Cape fox	Jižní Afrika
Liska korská	<i>Vulpes corsac</i>	Corsac fox	Ázie
Liska horská (tibetská)	<i>Vulpes ferriata</i>	Tibetan fox	Ázie
Liska velkouchá	<i>Vulpes macrotis</i>	Ki fox	Severní Amerika
Liska písečná	<i>Vulpes pallida</i>	Pallid fox (Pale fox)	Afrika
Liska pouštní	<i>Vulpes ruggensii</i>	Swift fox	Afrika, Ázie
Liska sedohrdá	<i>Vulpes velox</i>	Swift fox	Severní Amerika
Liska obecná	<i>Vulpes vulpes</i>	Red fox	Severní Amerika, Evropa, Ázie, Austrálie
Fenek	<i>Vulpes zerda</i> (Fennecus zerda)	Fennec	Afrika

ARE ALL WOLVES THE SAME?

Some resources suggest a range of wolf subspecies, differing by factors such as sites of occurrence, physique, colour, etc. However, from a scientific perspective, such deviations have not yet been fully explored (especially in terms of genetics), and current knowledge proves insufficient to distinguish any separate subspecies.

A WOLF IN BED!!

There are hundreds of dog breeds in the world. Although it may not seem so due to such diversity, the wolf is actually the ancestor they all share. The tiny and frail Chihuahua, the elegant hound, the Saint Bernard - a gentle giant, or the lively terrier: the origin common to all domestic dogs - whether pets, watchdogs or hunters - was confirmed through DNA analysis as recently as the 1990s. The ancestors of domestic dogs originated from separate wolf populations from different parts of the world and time periods.



The separation of domestic dogs from wolves occurred more than 14 thousand years ago. Although wolf and dog blood has mixed repeatedly since then.

Chihuahua

Borzoi (a puppy)

Welsh Terrier

German Shepherd

Saint Bernard's puppy

Globally, about 36 species of canids exist and their diversity is truly enormous:

- From the tiny fennec fox weighing 1 kg to the seventy-kilo wolf.
- Darwin's dog is only found on a single island in the world, whereas the red fox inhabits several continents encompassing an area of around 70 million square km.
- While a territory of merely 0.5 square kilometres is enough territory for the island grey fox, African wild dogs need up to 2,000 square kilometres.

Canids have adapted to life in a variety of conditions - from deserts to glaciation territories and from mountains to savannah through to wetlands; they range in both rainforests and towns. The origin of today's canids dates back to the era about 10 to 12 million years ago. About 6 million years ago, canids resembling wolves and others looking like foxes began to diverge as separate lines.



Fennec fox



Bat-eared fox



Black-backed jackal



Maned wolf



Arctic fox



Swift fox

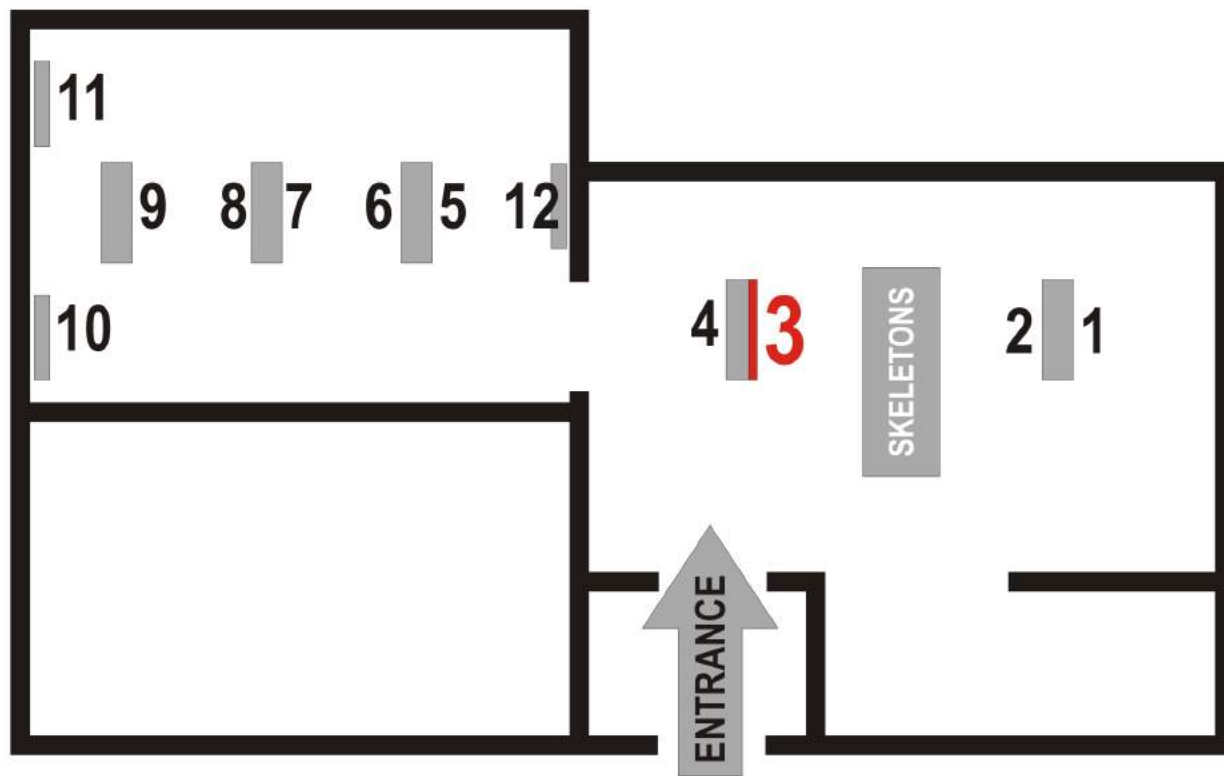


Coyote



African wild dog

Dingo



3

A YEAR IN THE LIFE OF A WOLF PACK



In the deep snow, wolves run after one another along a single track, thereby saving energy.



A female wolf performs an act of provocation by jumping on a male's back.

Shelters for cubs: natural dens, caves and rock cavities, uprooted trees. When choosing a shelter, the proximity of water is important and needed for the nursing mother.



If a female wolf becomes distracted while with its young cubs, it transfers them to a different, safer place.

The mother holds the cubs gently by the scruff of the neck when carrying them.



A male wolf exploring the smell of a female.

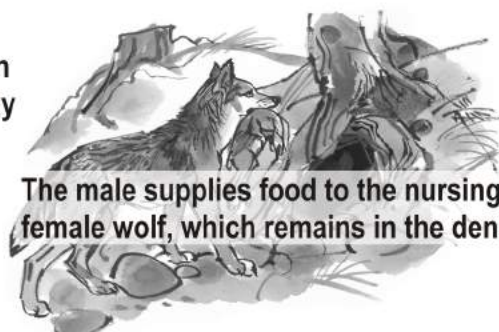


Wolves mating.

Gestation lasts 62 to 75 days. Usually, there are 3-7 cubs born (although rarely as many as 14).

Births take place from March to mid-May.

Cubs initially open their eyes after day 10 to 13.



The male supplies food to the nursing female wolf, which remains in the den.



Playful behaviour by the couple.

Part of the wolf's courtship involves various rituals: the couple play together, mutually provoking and shadowing each other. Normally, only the leading couple actually mate and have offspring.

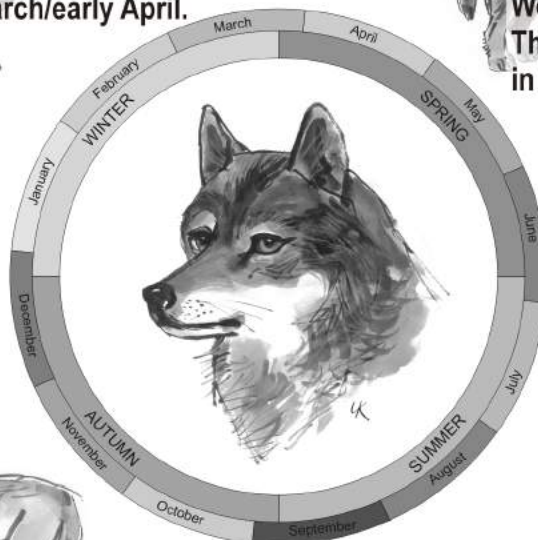
After mating, there is a phenomenon called tying or knotting.

Placing the nose on the back of a partner – a sign of sexual interest.



An invitation to play.

Mating period: January to late March/early April.



Wolves have massive paws. This trait is already evident in juveniles.

On week 3 to 5, the female first leads the cubs out from the den and acquaints them with the other members of the pack.

From around week 6, the cubs gradually are weaned towards a meat-based diet. Firstly, they are fed by ejected, digested food from adult wolves, begging for it by licking the nose and mouth of the adult.

During the mating season, there is great tension between wolves and struggles for positions in the pack take place. Even the pack leader has to fight to hang on to its role. Some wolves may even be killed.



Two wolves displaying their subordination towards the pack leader.

As wolves approach the season of courtship, tension mounts between the animals in the pack, and conflicts occur more often.

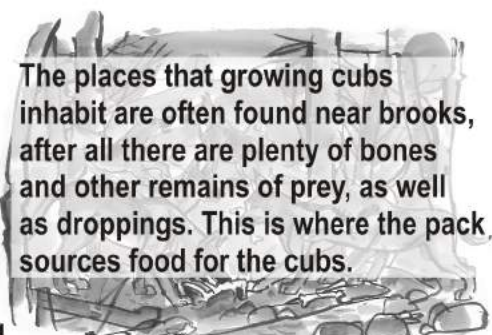


At month 6 to 7, young wolves begin to participate in hunting.

Rearing the offspring is supported by other members of the pack too, especially by those that are more experienced and can pass on the rules of the pack to the cubs. All of the wolves are also involved in feeding the young and taking care of them. Young wolves learn most of their skills through play.

The period of rearing cubs brings a relaxed and happy atmosphere to the pack.

Cubs playing near the den.



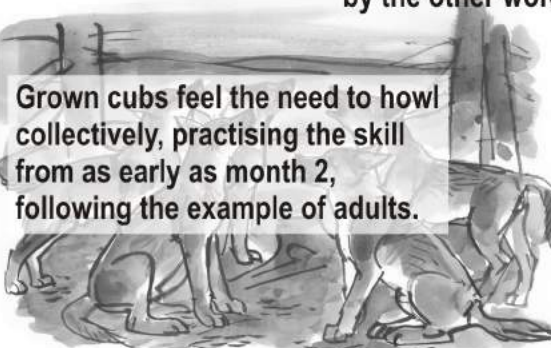
The places that growing cubs inhabit are often found near brooks, after all there are plenty of bones and other remains of prey, as well as droppings. This is where the pack sources food for the cubs.

Cubs can enjoy all the privileges of the pack once they are around six months old, then they are allowed to do almost anything by the other wolves.

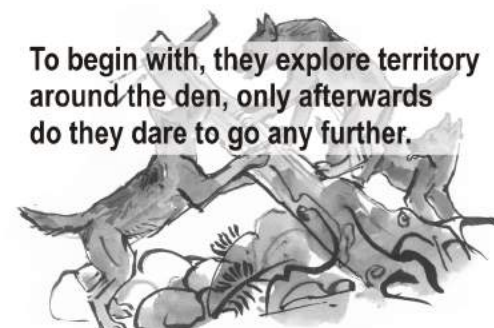


Young wolves learning to hunt under adult supervision.

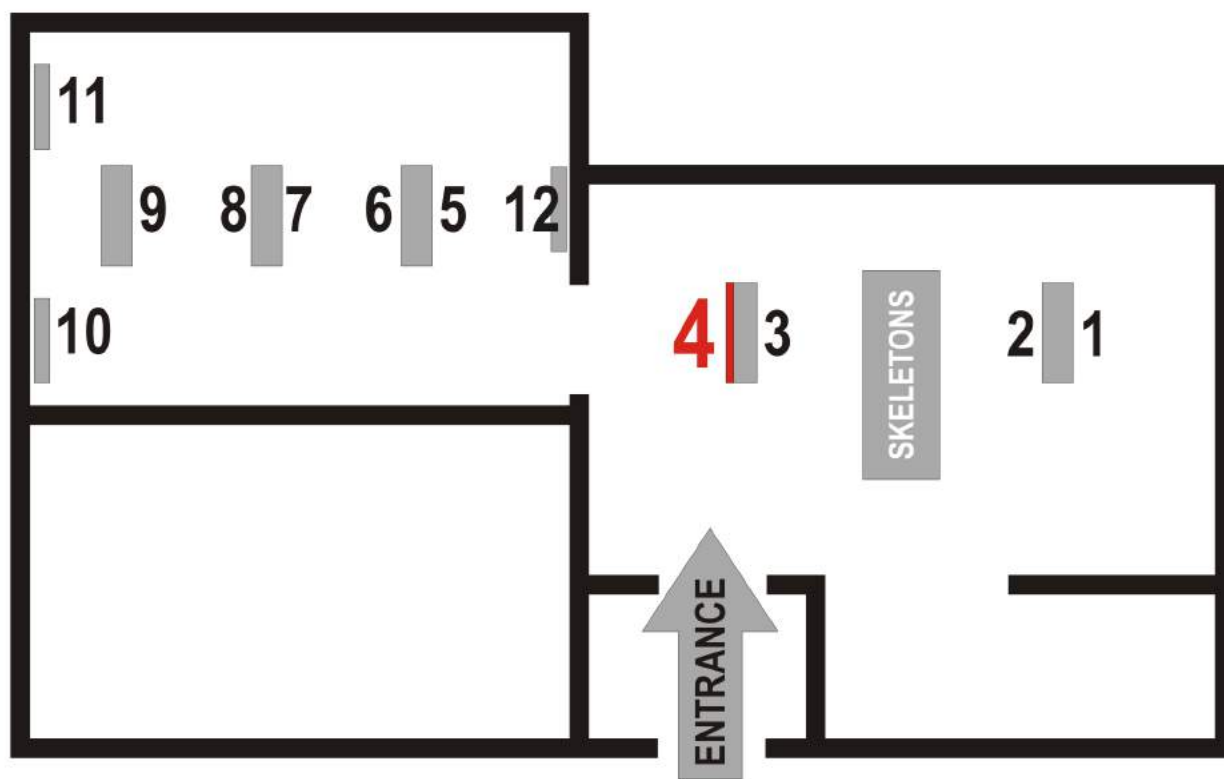
A young wolf has caught a small prey, which it is unhappy to share with others.



Grown cubs feel the need to howl collectively, practising the skill from as early as month 2, following the example of adults.



To begin with, they explore territory around the den, only afterwards do they dare to go any further.



4

THE PACK: The wild world of wolves

Wolves normally live in groups called packs.

A PACK may comprise 3-20 animals, its size depending on how much space the pack can inhabit and also how many wolves may be sustained within the territory. A pack usually consists of an adult pair and their cubs. Larger packs include older offspring and unrelated wolves.

HIERARCHY IN THE PACK: Alpha to Omega

ALPHA - The dominant alpha-pair stand at the head of the pack. These may not always constitute the strongest wolves – instead stress is placed on determination, self-confidence and experience. The leading couple are the only ones to produce cubs.

BETA - Wolves attempting to achieve the alpha role.

MID-POSITION WOLVES

The number of levels in the hierarchy depends on the size of the pack.

OMEGA - Once, omega wolves were only considered to be marginal outsiders. However, they actually possess an irreplaceable role in the pack by reducing tension and aggression. They ensure that unnecessary injuries are avoided that could weaken the pack. Often, for example, they initiate play. Hence, they maintain and restore peace in the pack.

Dominance and submission: lying down on the back and bending the front limbs reduces the aggression of the alpha wolf.



The pack welcomes the alpha wolf.

RITUALS

Every wolf in the pack knows its exact position, but these do not have to be permanent. To review and consolidate the social structure, members of the pack perform various rituals. The most important means of communication not only include body posture and facial expression, but also howling.

FAITHFULNESS

Wolves form steady couples that remain together until one of them perishes. The pair is formed at around the age of 2 years. Young wolves sometimes leave their pack so that they can find a partner. Occasionally a couple leave to set up their own pack.

From time to time fights take place for positions in the pack.



PLAY

Cubs learn most of their skills through the act of playing. Playfulness even remains once they become adults. Wolves are very social animals; they need constant contact with their playmates and friendship between them is very strong. Play reinforces ties between the members of the pack and relieves tension, both of which enabling wolves to examine their strength and position in the pack.

SURVIVAL is the main aim of the pack and its individual members.

What does the **POWER** of the **PACK** consists of?

1. Its strict hierarchical structure, in which each wolf - even the inferior examples - have an important **ROLE**.
2. The **HEALTH** of all the members of the pack.

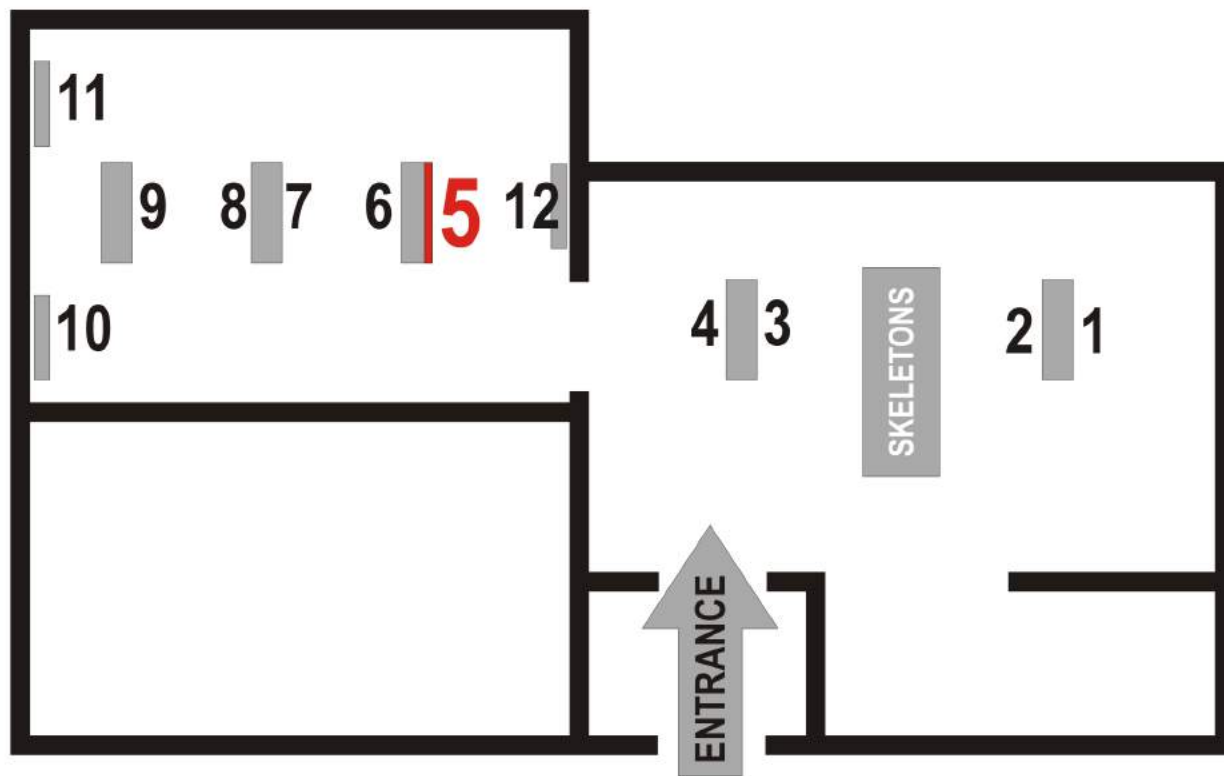
That is why wolves instinctively avoid risk of injury, whether when hunting or if there is dissent within the pack. Serious fights are quite rare for wild wolves. Indeed, greater aggression is manifest in wolves bred in captivity. The main cause is the loss of natural activities associated with hunting and anxiety about survival in general. At the same time, captive wolves cannot remove themselves from the pack and are simply unable to avoid conflicts.

A LONE WOLF?

Circumstances of life are difficult for lone wolves; there are fewer chances to hunt larger prey. Wolves are also highly social animals, constantly communicating with each other, and lone wolves suffer in this regard as well.

There is some sort of solidarity among wolves, but since survival of the pack is more important than survival of an individual, weaker wolves can drop behind, for example, during several days of stalking prey. There is some sort of solidarity among wolves, but since survival of the pack is more important than survival of an individual, weaker wolves can drop behind, for example, during several days of stalking prey.





5

Wolves' home range

A home range is defined as the territory where the wolf pack lives and hunts. Size varies according to the numbers in the pack and quantity of available prey. While a single pair can thrive within a radius of 15 km or so (i.e. 50 km²), a large pack can range over a radius of 100 km (about 300 km²).

CAUTION! BORDER AHEAD!

Wolves mark the boundaries of their territories with urine and faeces. They choose notable and elevated sites for this purpose. They also dig on these marked places, so as to highlight the odour of their tracks using scent glands on the paws (similar behaviour can be seen in dogs).

A wolf has chosen an obvious „boundary stone" and marks the border of its home range and hunting grounds. It has also left its dung nearby. This takes the form of cylinder-shaped droppings of diameter 4-5 cm, containing a mass of hair and fragments of bones.

Between the home ranges of two packs stands a "border zone", which both packs tend to bypass to avoid conflict. Any crossing of borders is primarily conducted by individual wolves looking for a partner, which have to be very cautious to avoid combat. Sometimes the pack will accept the interloper. Occasionally, another pack attempts to take over the territory of the "home" pack.

Rarely does a brawl break out between packs, this being a matter of life or death.

The wolf pack also uses the sound of howling to mark the boundaries of its home range, which may be heard from a great distance.

Wolves on the prowl

Wolves use a variety of tricks and hunting strategies. The chosen method of hunting variously depends on the number making up the pack, the type of prey being hunted, or the kind of terrain where hunting takes place.

Hunting a roe deer hunt in deep snow is easy for two wolves.

Deep mountain valleys with steep slopes form an ideal hunting ground. When the terrain is difficult to pass through, the prey tires quickly and is easily taken down by the wolves.

Morsels from a wolf's menu

Wolves are predominately hunters. Wild species of prey prevail in their diet, generally ungulates - red deer, boar, or roe deer. Wolves also hunt rodents, hares and rabbits, as well as birds or fish. Occasionally, they catch sheep and other domestic animals. They also eat carcasses and ingest insects and love fresh fruit (raspberries, blueberries, strawberries, etc.). Grass and other plants aid the wolf's digestion.

When chasing down prey, wolves estimate their chances of catching it. From herding creatures, they seek out the easiest prey - weak and sickly individuals or careless youngsters. They then attempt to separate them from the herd and drive them away. This is to reduce the risk of injury by hooves or antlers, as the animal on the run cannot turn to defend itself. The prey becomes tired due to the pursuit, making it easier for the wolves to bring it down and kill it.

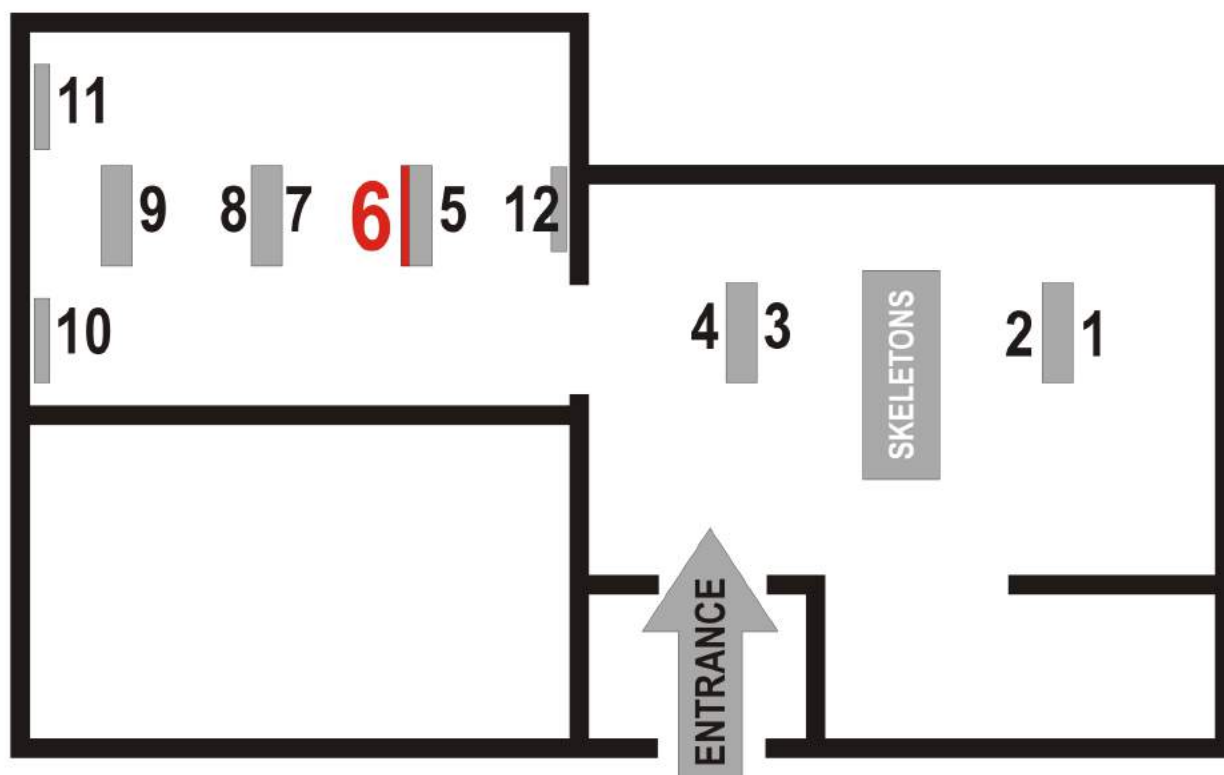
When hunting large prey, only one attempt out of from ten is successful.

Wolves have a significant impact on reducing numbers of wild boar. In areas where wolves live and hunt, there is also a significant decline in diseases exhibited in wild boar, such as swine fever.

When prey is consumed, there are constant threats and fights in the pack, particularly among wolves in captivity. Priority in feeding goes to the yearling cubs as well as the dominant wolves. Under natural circumstances, i.e. in the wild, it is easier to defend an individual's status, even for inferior wolves, as mostly snarling and baring teeth will suffice, a sign which is respected by the others. Should there be enough food, the whole pack can even feed together.

Since deer antlers and hooves represent a great danger for the wolves, they first attack the hips and abdomen.

Under the snow a wolf has smelt a rodent. The method used for hunting resembles an attempt to dive into the snow. The animal's sense of hearing and smell determine the hiding place of the rodent. Then the wolf jumps into the air to land on its forelimbs directly onto the prey, which is in turn caught by the teeth. Sometimes, the wolf plays with its catch before eating it.



6

Wolves under threat

What threatens wolves?

Fear and competition for food, in addition to which the expansion of farms with domestic animals and hunting for trophies have always caused mankind to eternally pursue wolves.

With the emergence of modern weapons, this struggle became very one-sided, meaning wolves were completely wiped out in many places. Illegal hunting is still the main threat to wolves.

Mankind also bears responsibility for transforming and destroying habitats and the associated loss of places for wolves to dwell in.

The rising phenomenon of division of landscapes through development and road networks reduces the potential for interconnecting wolf populations. The ever greater use of automobiles especially puts young, inexperienced wolves at risk that are looking for new territory.

Environmental pollution threatens carnivores, either directly or through consuming prey that contains pollutants.

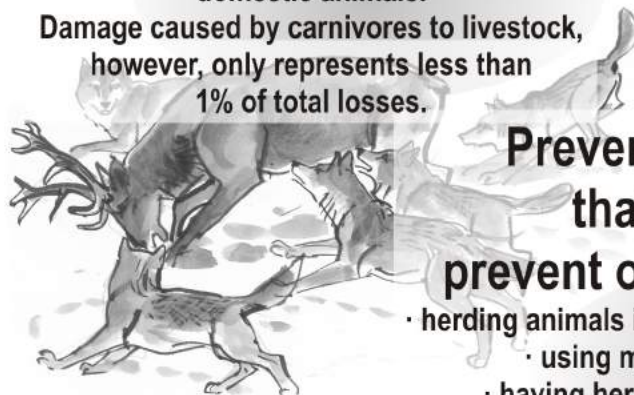
Other threats

To a lesser extent, wolves are at risk of illnesses, such as rabies or distemper. Bears can be dangerous, especially for juveniles. Nevertheless, adults tend to avoid such encounters, so conflicts are very rare.



Wolves hunt the same prey that humans claim as theirs. Sometimes they also catch domestic animals.

Damage caused by carnivores to livestock, however, only represents less than 1% of total losses.



Preventive measures that effectively prevent or reduce damage:

- herding animals into closed buildings (e.g. barns)
- using multi-line electric fences
- having herders and well-trained dogs watching over the stock
- sometimes an attack can be discouraged by grazing sheep and goats alongside cattle
- carnivores also become discouraged by the sound of ringing bells

Compensation for damage

Since 2000, an act has been in place on compensation for damage caused by selected, especially protected animals (Act No. 115/2000 Coll.). Among other things, it allows, under certain conditions, compensation for damage caused by wolves, lynx, bears or otters.

Why protect wolves?

Carnivores form a natural part of the countryside. They are indispensable for ensuring balance and form an important part of the food chain. They essentially control numbers of most of their prey simply through their hunting activities. Wolves significantly reduce the spread of disease and parasites because they mostly go after weak and sickly animals. They primarily affect the abundance and health of the population of red deer, roe deer and wild boar.

By regulating the numbers of hoofed mammals, wolves have an indirect influence on the condition of forests, protecting them from excessive damage and improving conditions for natural forest regeneration.

In the Czech Republic, the wolf is a critically endangered species and hunting it is prohibited. It is also protected under EU legislation as well as international conventions (CITES, Bern Convention, Regulation of the Council of the European Union, etc.).

A scheme is under development in the Czech Republic to save endangered carnivores, based inter alia on methodology and recommendations from the International Union for Conservation of Nature (IUCN). The main instruments for conservation involve education, research and monitoring carnivores, plus there are legislative measures.

Should we be afraid of wolves?

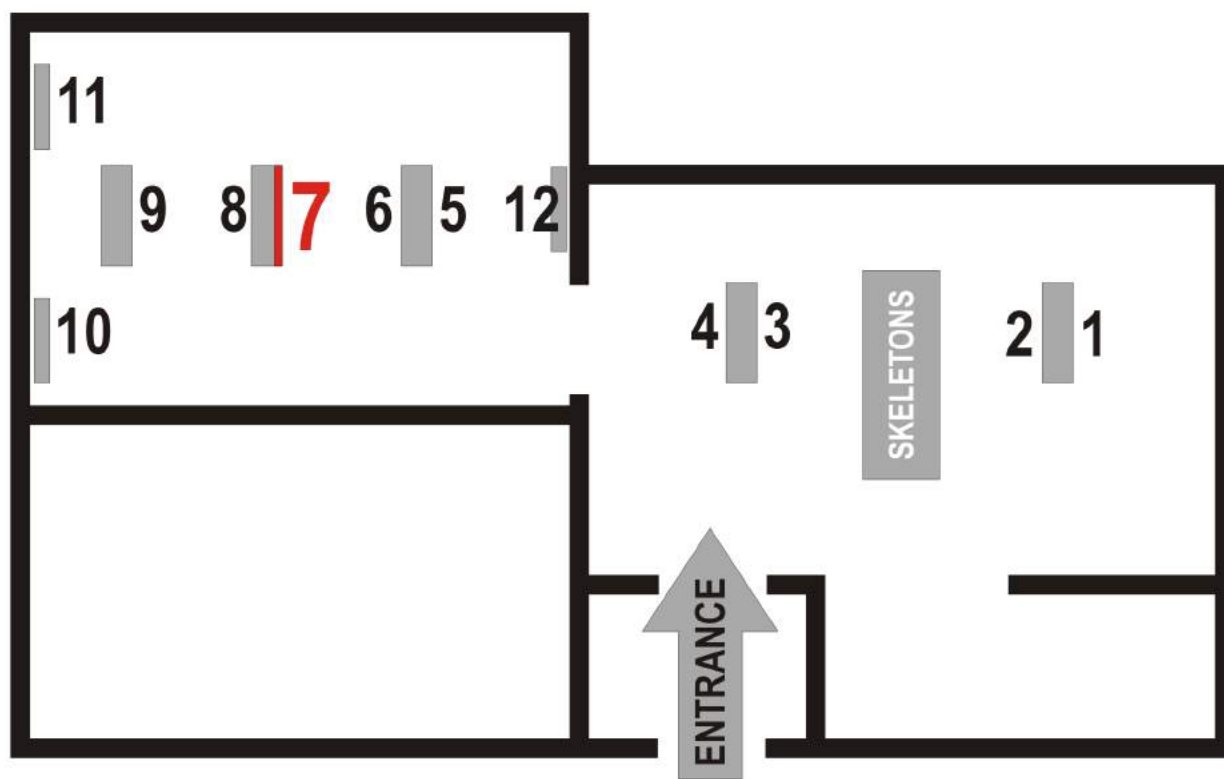
Wolves are very shy animals, and avoid contact with humans if they are in good health. Cross-breeds of wolves with domestic or wild dogs can be quite dangerous. Such cross-breeding of wolves with dogs is often seen where a wolf pack has been decimated by shooting, thereby breaking up their natural social structure. Paradoxically, humanity is at fault again.

Wolves need a sufficiently large area to live in as well as solitude, otherwise their chances to catch any prey are reduced. For this very reason, large protected territories are especially crucial, such as national parks and protected landscape areas. Of pan-European importance is also the network of protected areas within the Natura 2000 system. Moreover, essential for the animals is the possibility to move between those territories, thereby interconnecting populations to prevent genetic degeneration.



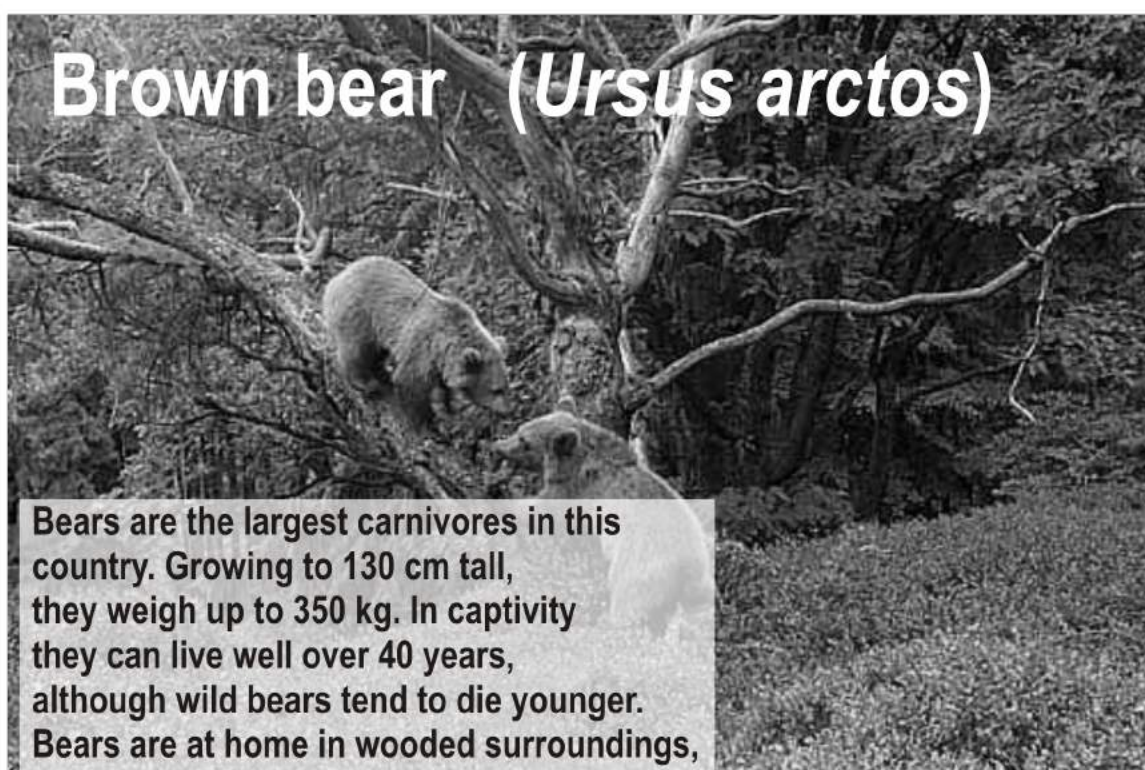
There is no overpopulation of wolves. Infant mortality accounts for up to 60% in the first year of life.





7

Brown bear (*Ursus arctos*)

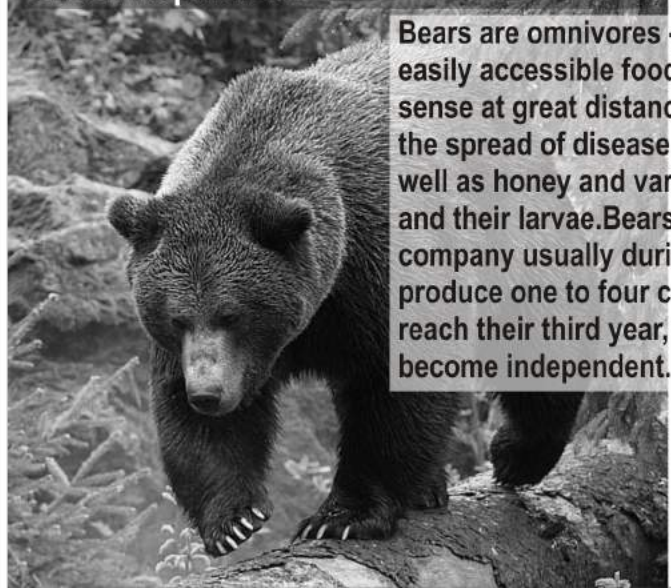


Bears are the largest carnivores in this country. Growing to 130 cm tall, they weigh up to 350 kg. In captivity they can live well over 40 years, although wild bears tend to die younger. Bears are at home in wooded surroundings, and a single animal may occupy a territory of up to 30 square kilometres. They seek out shelter in rocks, beneath uprooted trees and in underground dens they occasionally dig out.

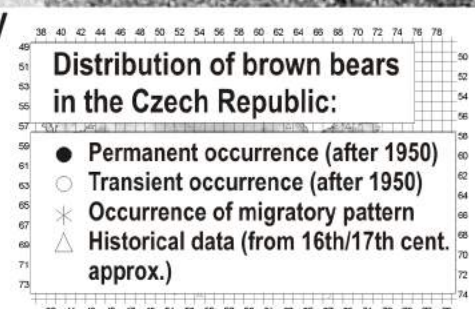


In autumn, bears enter their dens and fall into false hibernation, i.e. body temperature, pulse and breathing are not significantly reduced. They usually awaken in March, but may briefly do so during the winter.

Bears are ranked as specially protected, critically endangered species in the Czech Republic.

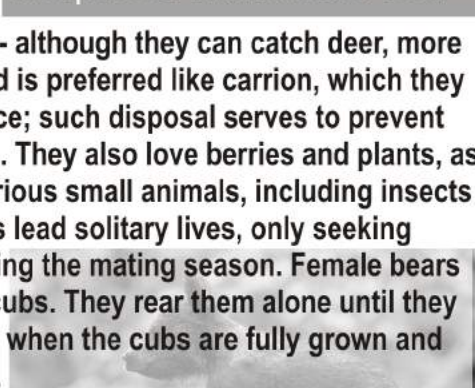


Bears are omnivores - although they can catch deer, more easily accessible food is preferred like carrion, which they sense at great distance; such disposal serves to prevent the spread of disease. They also love berries and plants, as well as honey and various small animals, including insects and their larvae. Bears lead solitary lives, only seeking company usually during the mating season. Female bears produce one to four cubs. They rear them alone until they reach their third year, when the cubs are fully grown and become independent.



In the Czech Republic, the longest occurrence recorded for bears pertains to Šumava; various reports of their presence were made even until the late 19th century. Moravia has records of bears originating from the end of the same century. Since the 1960s, bears from Slovakia and Poland have appeared in the Beskydy and Jeseníky mountains.

This 'Bear Stone' stands near the settlement of Jelení Vrchy, commemorating the shooting of one of the last remaining bears in Šumava - the 'She-bear of Želnavá', which took place on 14th November 1856.

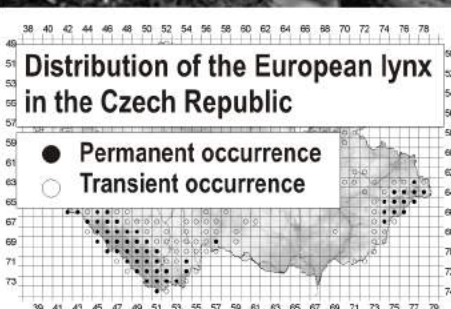


Most cubs are born in January.

European lynx (*Lynx lynx*)

The lynx is Europe's largest feline, standing at 50-70 cm; examples in the Czech Republic weigh 14-36 kilograms. Their life span in the wild can extend to 14-17 years, although most live to about six years. A shy creature, the feline prefers extensive woodlands in rugged terrain with numerous rock formations and other forms of shelter.

In Bohemia, lynxes were exterminated in the first half of the 19th century; they disappeared from the mountains of Moravia in the early 20th century. However, in the mountains of Moravskoslezské Beskydy and Jeseníky, they reappeared after 1945. Since the mid-20th century, the carnivore has again inhabited Šumava, which was promoted by releasing several animals in both Bavaria (1970-1972) and the Czech part of Šumava (1982-1989).



Adults encounter one another most frequently during mating season. Cubs stay with their mother for the first year of their lives.

This engraving is over 300 years old, and depicts what was believed to be the animal's hunting technique.



A lynx with a downed roe deer.



This animal is observing its prey and slowly creeping towards it.



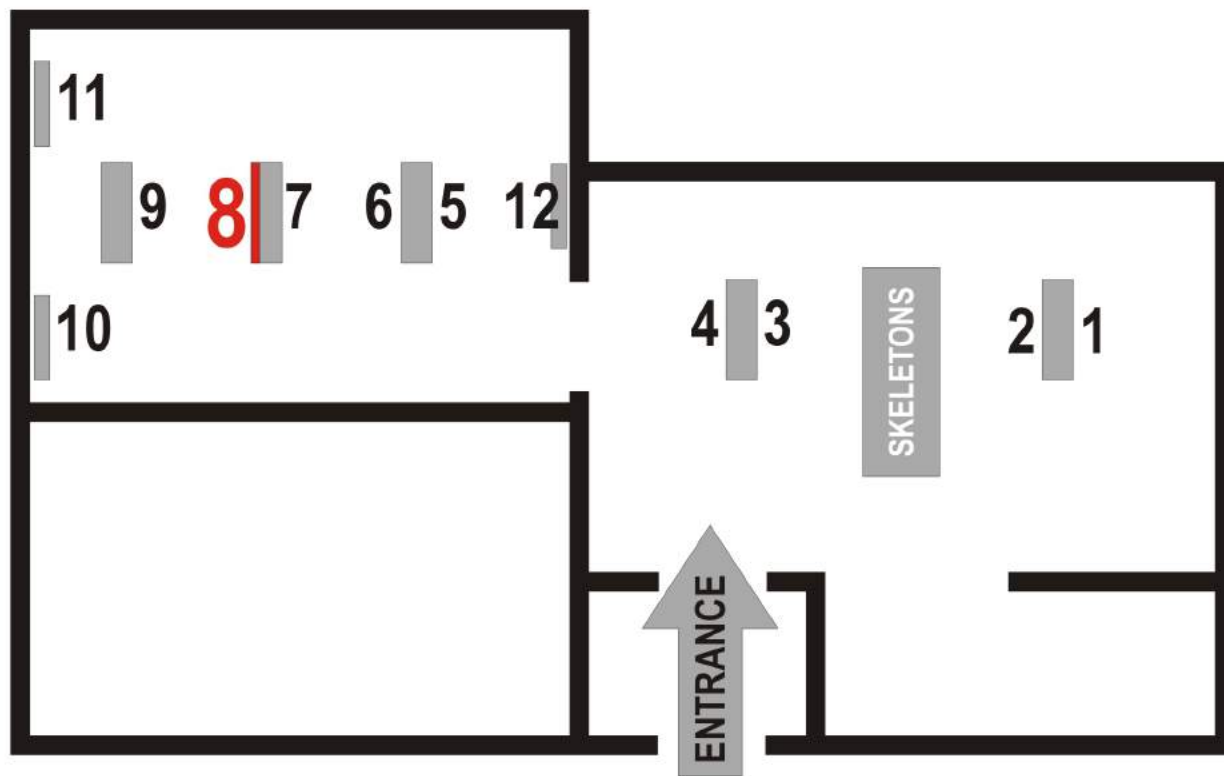
Attack!



How do lynxes hunt? Previously, people thought that lynxes attacked prey by jumping from trees. However, their technique is different: they creep up on the prey, then attack from about 5-6 metres, finally chasing it over a short distance (20-50 m). Their rate of success is estimated at about 60%. If the prey is swift and of good health, it has a good chance to escape.



Lynxes natively belong to this country's wildlife, and are officially protected as a highly endangered species.



8

The return of the lynx to Šumava

THE LYNX PROJECT

The notion of returning lynxes to Šumava arose sometime around the 1960s and even earlier. This gradually led to initiation of a project entitled Stabilising the population of the Eurasian lynx (*Lynx lynx*) in Šumava PLA (abbreviated The Lynx Project), implemented in Šumava in the 1970s-80s. It turned out to be successful, thereby becoming the model for similar operations abroad. A panel was appointed for developing and executing the project. Called the Working group for endangered fauna of Šumava, it consisted of Ladislav Vodák, Eliška Nováková and Pavel Trpák.

The preparatory stage:

- Collecting data on the existing presence of the lynx in Šumava
- Broadly educating the expert and lay public to a high standard
- Assessing the natural conditions of Šumava and choosing suitable sites
- Selecting similar sites for trapping lynxes in Slovakia
- Developing a plan to release and subsequently monitor lynxes

Zoos also contributed to the methodology and technology of capturing lynxes in the wild, as well to quarantining and releasing them, including such establishments in Ostrava (Ludvík Kunc) and, later on, Dvůr Králové nad Labem.

The first pair of animals was successfully reintroduced in January 1982 near Stožec.

Eighteen* lynxes were released as part of the project, enabling gradual stabilisation of the current Czech-Bavarian-Austrian population in Šumava (* due to failure to maintain complete documentation, only 17 or even 16 animals were actually reported).

The project proved success primarily as a result of releasing animals caught in the wild in settings similar to the site of release, i.e. no inexperienced zoo-bred animals were involved.

Rocky, rugged and difficult-to-access terrain is ideal for the lynx.

The first-ever lynx release operation in Šumava: Stožec, 21st January 1982. A missing tail was the notable feature of the female released.

Lynxes reintroduced in Šumava PLA

date	place of capture	gender	age	weight (kg)	status
21. 1. 1982	Stožec	male	adult	23.0	Slovenské Rudohory, Slovenské Rudohory
21. 1. 1982	Stožec	female	adult	20.0	Slovenské Rudohory, Slovenské Rudohory
7. 3. 1983	Křemná	male	adult	24.4	Slovenský Kras, Dobšinská
7. 3. 1983	Křemná	female	adult	16.5	Slovenské Rudohory, Slovenské Rudohory
7. 3. 1983	Křemná	female	adult	12.0	Slovenský Kras, Dobšinská
9. 4. 1984	Strážný	male	adult	21.0	Slovenský Kras, Dobšinská
9. 4. 1984	Výhled Mlý	female	adult	19.0	Slovenský Kras, Dobšinská
7. 11. 1985	Horská Kvilda (Bílý potok)	male	adult	20.0	Slovensko
7. 11. 1985	Horská Kvilda (Bílý potok)	female	adult	19.0	Slovensko
7. 11. 1985	Horská Kvilda (Bílý potok)	female	adult	16.0	Slovensko
24. 4. 1987	Stožec	male	adult	16.5	Belár
24. 4. 1987	Stožec	female	adult	20.0	Ružava
24. 4. 1987	Stožec	female	adult	17.5	Bohka
24. 4. 1987	Červená Hůrka	male	adult	20.0	Ružava
24. 4. 1987	Červená Hůrka	female	adult	15.0	Belár pri Ružave
31. 5. 1989	Horní Kochánov	male	?	?	?
31. 5. 1989	Horní Kochánov	female	?	?	?
31. 5. 1989	Horní Kochánov	female	?	?	?

An image of a lynx cub became the symbol for the project.

A publication for children was printed repeatedly; entitled "The lynx cubs of Šumava", it was written by Ladislav Vodák and illustrated by Ludvík Kunc.



LYNX RESEARCH IN ŠUMAVA

Lynxes have been monitored for many years in Šumava. Initially, the main source of data involved signs of their presence, e.g. tracks and remnants of prey, or direct observation. Repeated winter censuses were carried out to follow up on the Lynx Project, making use of tracks in snow.

Telemetry Referred to as conventional VHF telemetry, the method requires tracing and locating an animal in the field using an antenna that receives a signal transmitted from a collar. The animal has to be traced closely to its location or proximity, which is determined by positioning calculations from at least three different directions; it proves to be quite a time-consuming method. More recent collars allow for localisation using a GPS satellite system. The first lynx of Šumava marked with a telemetry collar was a female released in 1989 in Horní Kochánov.

Camera traps automatically take pictures of animals that enter their area, as picked up by a motion sensor. In addition to lynxes, these provide knowledge on other species while also recording the date and time of the photograph, as well as other data, such as air temperature and pressure.

Ongoing research focuses, for example, on genetically analysing hair samples, looking at faeces, and investigating and monitoring prey. Many studies and projects are underway in cooperation with the Bavarian Forest National Park and other institutions (e.g. Academy of Sciences; Czech University of Life Sciences; Alka Wildlife - the Trans-Lynx project).



A lynx fitted with a telemetry collar.

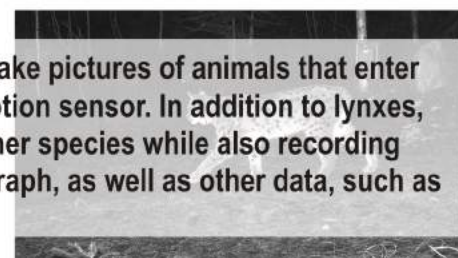
What findings have been revealed through research?

Both the camera-trap images and the telemetry have confirmed that the lynx needs a lot of space. Indeed, an adult ranges across a vast territory of hundreds of square kilometres. This had not been anticipated earlier, so it would be possible to imagine that the number of lynxes was far greater than in reality. Knowledge on communication and behaviour by the lynx has also gradually extended. A positive effect has been confirmed on species making up the populations of prey - especially the roe deer.

CHANCES OF SURVIVAL

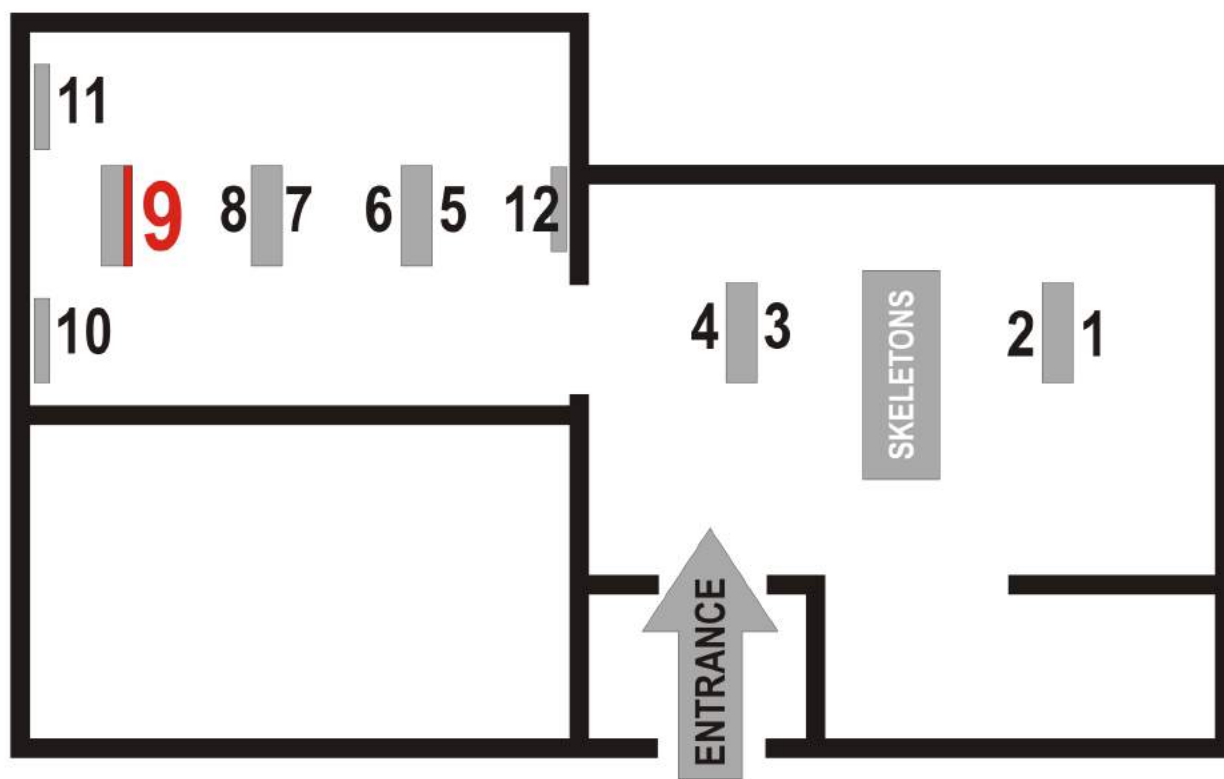
The territory that an adult lynx utilises can comprise several hundred square kilometres. Therefore, to conserve effectively animals requiring so much space, it is necessary to ensure efficient protection across a much larger territory than a national park and protected landscape area. It is also important that the sites of occurrence are not isolated, so animals may move between them. In recent years, the numbers of lynxes have tended to decline or stagnate. Unfortunately, since illegal hunting - poaching - is one of the main causes, preconditions for endangered carnivores to survive include good legislation and intolerance of poaching.

Poached lynxes are evidence of persistent ignorance, intolerance and prejudice against carnivores. The pictures show a male lynx "Bert" (left) and female "Milka", confirmed as shot dead.



The images enable identification of individual animals through typical spots on the fur.





9

More carnivores of Šumava

MUSTELIDS

EUROPEAN BADGER (*Meles meles*)

A mostly nocturnal animal, it digs complex systems of burrows that can serve many generations of badgers for decades, or even centuries. Badgers are omnivores; a large portion of its diet consists of earthworms, insects and other invertebrates. They can catch small mammals, birds and amphibians as well.

They enjoy eating carcasses and roots and fruits of plants as well as birds' eggs. In winter, badgers enter false hibernation (it is intermittent and not accompanied by a significant drop in body temperature).

EUROPEAN OTTER (*Lutra lutra*)

A carnivore adapted to life in water, where it hunts mostly small fish, although voles, amphibians, insects and small birds can form its catch as well. It resides on the banks of flowing or stagnant water, which it is where it digs a burrow with the entrance hidden beneath the surface. In the past, it was nearly wiped out due to deliberate hunting and as a result of artificial control and pollution of rivers. Today, the otter is a specially protected, heavily endangered species.

EUROPEAN POLECAT (*Mustela putorius*)

Often found near human settlements, e.g. around farm buildings, or maybe elsewhere in rugged countryside with pockets of woodland, as well as near water, polecats produce a strong smelling secretion through their anal glands, using it not only to mark their home range, but also ejecting it when threatened. Mostly nocturnal and cryptic animals, the bad smell is what often reveals their presence. They use natural hideouts or dig burrows.

LEAST WEASEL (*Mustela nivalis*)

The smallest and the most plentiful of this country's carnivores, weasels grow to a length of just about 20 cm. In addition to extensive forests and wetlands, it can be encountered virtually anywhere. Places for them to hide in may include hollow trunks and piles of wood or stone, or the burrows of rodents, which weasels mainly hunt.

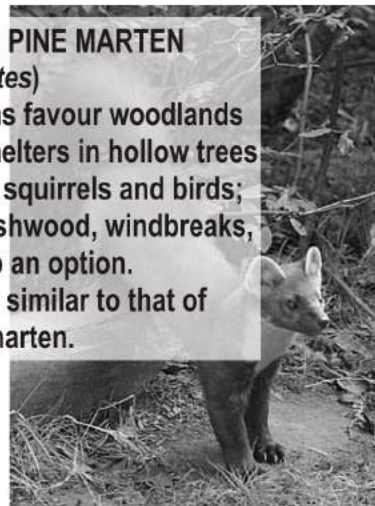
BEECH MARTEN (*Martes foina*)

Stone martens prefer open countryside but they also seek rocky areas with numerous hiding places, and they have even adapted to living alongside us humans in towns and villages. Martens usually hunt rodents, although sometimes birds and hares. They like earthworms and fruit as well as insects,

which can be sought out even by burrowing underground to wasp or bumble bee nests.

EUROPEAN PINE MARTEN (*Martes martes*)

Pine martens favour woodlands featuring shelters in hollow trees or nests for squirrels and birds; piles of brushwood, windbreaks, etc. are also an option. Their diet is similar to that of the beech marten.



AMERICAN MINK (*Mustela vison*)

A species not native to local wildlife, this mink harks from North America and entered natural habitats from fur farms. Dwelling near streams and stagnant water, the creatures dig burrows in the banks with an underwater entrance. They hunt smaller mammals, birds, fish, amphibians, reptiles and invertebrates. Initially, the EUROPEAN MINK (*Mustela lutreola*) ranged this country's landscapes, but the most recent evidence of it dates back to the late 19th century.

ERMINE (*Mustela erminea*)

This tiny carnivore changes the colour of its fur with the season. While its winter fur is white, in the summer, ermines sport a brown coat on the back, although the tip of the tail remains black throughout the year. Ermines modify underground burrows left by rodents that form the main prey of the creature; like other carnivores, however, ermines can catch birds, amphibians and reptiles. They even dare to hunt hares and eat eggs.

CANIDS

RED FOX (*Vulpes vulpes*)

One of the most common European carnivores, the red fox is a highly adaptable creature, so it inhabits all sorts of habitats from woods and farmland to urban areas of cities. They most often hunt rodents and invertebrates (insects, earthworms and molluscs) but any other prey of reasonable size is also welcome. They sometimes take the prey of other carnivores or consume carrion. Over the breeding season they dig burrows or are happy to accept another creature's burrow or any other hiding place that is safe.

RACCOON DOG (*Nyctereutes procyonoides*)

An immigrant with origins from as far afield as East Asia, it spontaneously came to be part this country's wildlife as a result of the former USSR, where it was introduced by man; it also escaped from fur farms. An omnivore that prefers the surroundings of streams, rivers and stagnant water, from lowlands to mountain areas, the raccoon dog either makes use of burrows left by badgers and foxes or builds its own. Sometimes they make pile-shaped nests from grass and reeds, dwelling in the cavity inside.

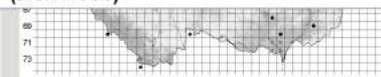
GOLDEN JACKAL (*Canis aureus*)

The original homeland of the jackal is the south-eastern portion of Europe, a part of Asia and North Africa. In this country, jackals began to emerge following 2006, meaning they have naturally extended their range of distribution. In 2012, an individual was captured by a camera trap on the German side of Šumava below the Mount of Rachel.

Like wolves, jackals live in pairs or small packs. They prefer shrubby cover around water in an otherwise open landscape.

Golden jackal (*Canis aureus*)

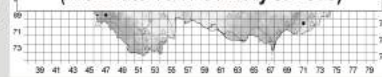
● Documented occurrence (after 1950)
* Inadequately documented occurrence (after 1950)



DISTRIBUTION OF CERTAIN CARNIVORE SPECIES IN THE CZECH REPUBLIC

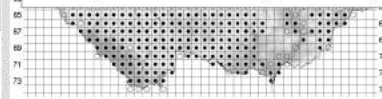
Wildcat (*Felis silvestris*)

● Confirmed occurrence (after 1950)
● Unconfirmed occurrence (after 1950)
△ Documented historical data (From late 16/17 century to 1950)



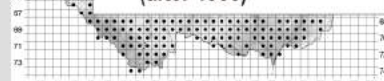
European otter (*Lutra lutra*)

● Regular occurrence (after 1950)
○ Irregular occurrence (after 1950)



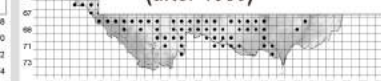
Raccoon dog (*Nyctereutes procyonoides*)

● Documented occurrence (after 1950)



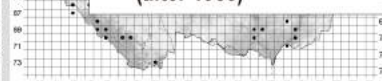
American mink (*Mustela vison*)

● Documented occurrence (after 1950)



Northern raccoon (*Procyon lotor*)

● Documented occurrence (after 1950)



FELIDS

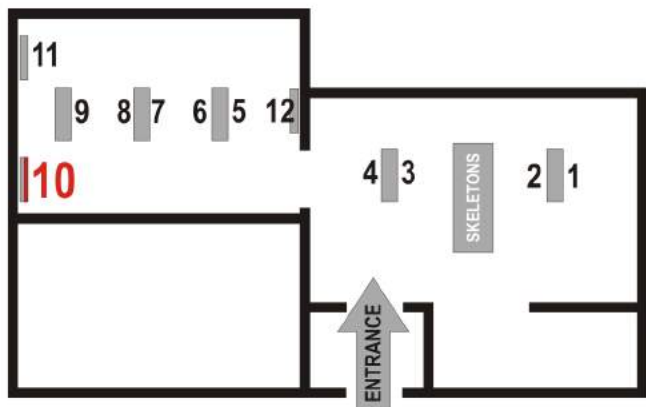
WILDCAT (*Felis silvestris*)

One of the country's rarest mammals, the wildcat is a specially protected, critically endangered species. It is slightly larger and stockier than a domestic cat. Mixed and deciduous forests found in warm lowlands suit the needs of the feline, which prefers hollow trees and nooks and crannies in rocks. Sometimes they move into burrows made by badgers. In Šumava, wildcats seem to have been wiped out during the first half of the 19th century - hunting and loss of mixed primary forests were the main causes. In 1970, attempts to reintroduce them in Šumava, in the territory called Royal Forest, met with no success. A long-term project to restore the wildcat population has been running since 1984 in the foothills of the Bavarian Forest, where 120 animals of this feline species have been released. In 2011, an individual was captured by one of the camera traps installed in Šumava National Park, which was most likely a wildcat.

PROCYONIDS

NORTHERN RACCOON (*Procyon lotor*)

Initially harking from North America, raccoons probably first entered this country's natural systems as animals originally kept in captivity. The first creature to be recorded was observed in 1952 in Šumava. More sightings from Šumava were reported in 2001-2003. Raccoons prefer aquatic systems surrounded by woods. They favour hideouts, for example, in hollow trees and crevices in rocks, but are known to inhabit buildings as well. Omnivorous animals, raccoons hunt reasonably large prey, including fish; they also feed on various fruits.



10

Migration corridors for large mammals in the Czech Republic



AGENTURA OCHRANY PŘÍRODY
A KRAJINY ČESKÉ REPUBLIKY

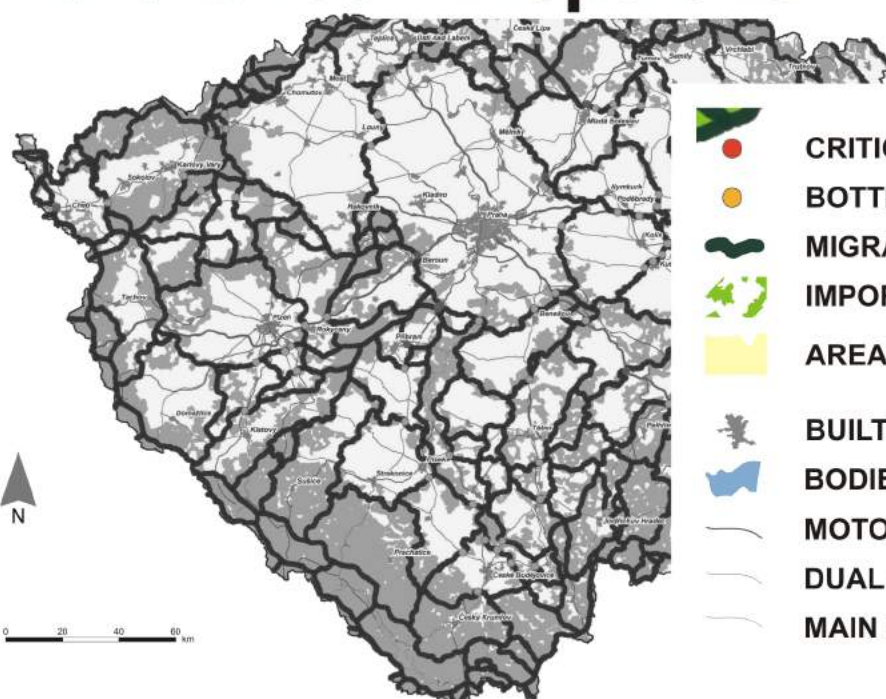


EVERNIA
s.r.o.



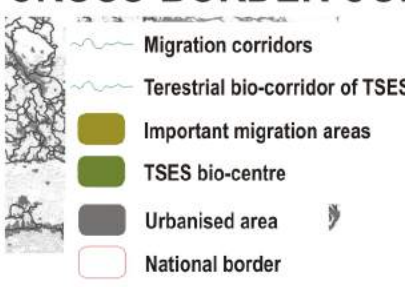
VUKOZ, v.v.i.

Vydal: © EVERNIA s.r.o., 2010
Mapový podklad: © ČÚZK, 2010

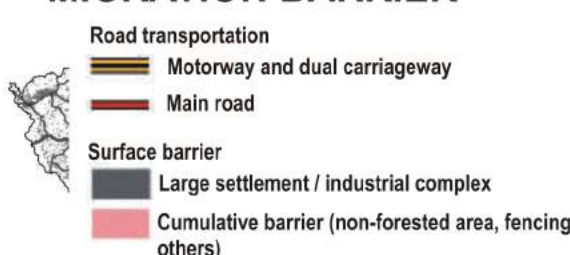


- CRITICAL POINTS
- BOTTLENECKS
- MIGRATION CORRIDORS
- IMPORTANT MIGRATION AREAS
- AREAS OF LIMITED MIGRATION PASSABILITY
- BUILT-UP AREAS
- BODIES OF WATER
- MOTORWAY
- DUAL CARRIAGEWAY
- MAIN ROAD

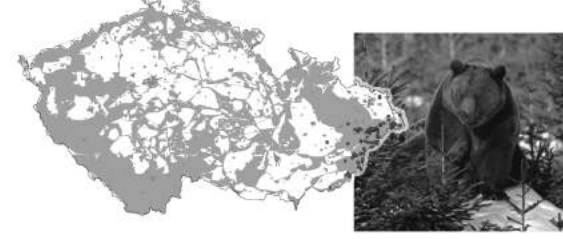
CROSS-BORDER CORRIDOR



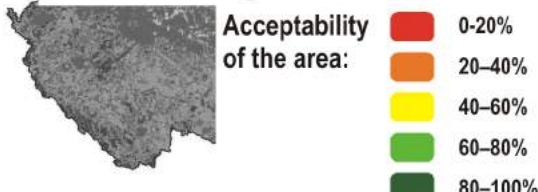
MIGRATION BARRIER



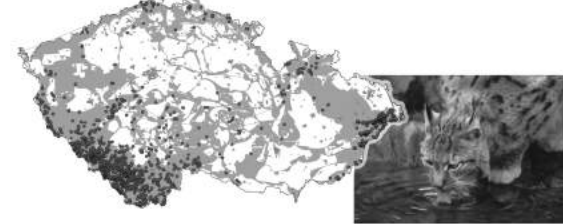
BROWN BEAR (*Ursus arctos*)



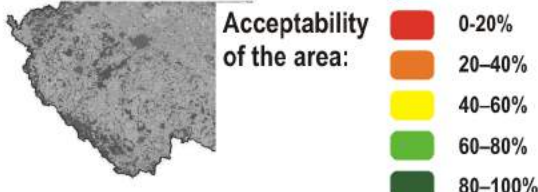
A model of the countryside's potential: lynx - occurrence



EUROPEAN LYNX (*Lynx lynx*)



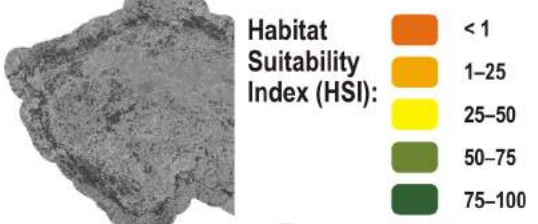
A model of the countryside's potential: lynx - migration



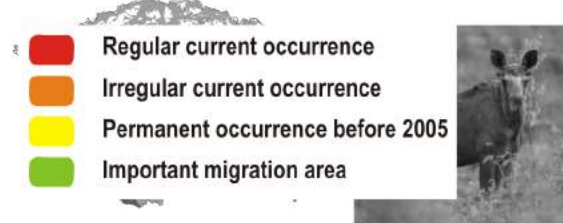
WOLF (*Canis lupus*)



A habitat model - lynx



MOOSE (*Alces alces*)



A habitat model - bear



Z hlediska ochrany přírody je velmi důležité, aby byly zachovány a rozšířeny všechny podmínky, které umožňují existenci a rozvoj velkých savců. To znamená, že je třeba chránit a rozšiřovat jejich přirozené prostředí, které jim umožňuje žít a rozmnožovat se. To zahrnuje ochranu jejich habitatů, které jsou pro ně klíčové, a také ochranu jejich migrčních koridorů, které jim umožňují pohybovat se mezi těmito habitaty.

Číslo 10 v tomto dokumentu označuje specifickou oblast, která je pro velkou savčí faunu velmi důležitá. Tato oblast je součástí sítě ekologických koridorů, které jsou nezbytné pro udržení genetické rozmanitosti a adaptability těchto druhů na změny v prostředí.

1) Místní územní plán (MÚP) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

2) Územní plán obce (ÚPO) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

3) Územní plán státního území (ÚSZ) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

4) Územní plán krajiny (ÚPK) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

5) Územní plán regionu (ÚPR) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

6) Územní plán státu (ÚPS) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

7) Územní plán Evropy (ÚPE) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

8) Územní plán světa (ÚPSV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

9) Územní plán vesmíru (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

10) Územní plán budoucnosti (ÚPB) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

11) Územní plán věčnosti (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

12) Územní plán nekonečna (ÚPN) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

13) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

14) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

15) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

16) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

17) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

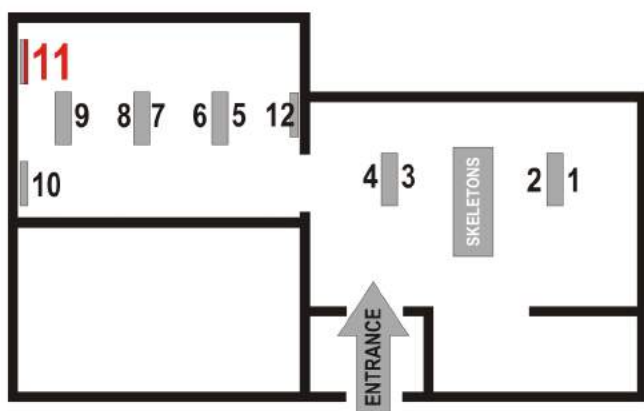
18) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

19) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

20) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

21) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.

22) Územní plán všelozby (ÚPV) - tento plán je klíčový pro ochranu a rozvoj přírody. Je třeba, aby byl schválen a dodržován, aby se zajistila ochrana přírodních hodnot a umožnilo se rozšíření přírodních koridorů.



11

Wolves in Šumava - something from history



According to historical sources, wolves were not commonplace in the Czech Lands back in the Middle Ages, instead populating mainly mountainous and wooded regions, such as Šumava. A temporary rise in wolf numbers occurred in the Thirty Years War (1618-1648), when wolves benefited from plenty of food, especially on battlefields in the form of dead animals and humans.

Wolves that perished by hunting on the estate of Český Krumlov amounted to 694 in 1603-1649 and 354 in 1690-1719; within the Schwarzenberg estates it equalled 233 animals in 1710-1720.

Intense hunting and extermination continued in the years that followed. A new order to hunt was issued in 1780 by Emperor Joseph II, commanding the killing of large carnivores "by everyone, wherever they may meet them". In addition to using firearms, wolves were also trapped and snared; some hunting methods being very cruel. Wolf pits used to be dug at suitable sites in the woods; the pit had to be about 4 m deep and wide enough to prevent the trapped wolf from climbing or jumping out. Such pits used to be covered by branches and bait was placed above, sometimes even a live animal. In addition, some pits had sharp stakes at the bottom. If the wolf did not perish in the pit itself, it would be bludgeoned to death. Since wolf pits proved dangerous to other wildlife or cattle, not to mention people, Prince Schwarzenberg ordered an immediate ban on wolf pits from the Vimperk estate in 1720. According to a report from 1716, there were 19 in the territory.



This intense pressure from hunting led to the gradual extirpation of wolves. Following the first half of the 18th century, reports refer to merely isolated or a few remaining domains in this country. A single wolf was shot on the estate of Vimperk in 1731; another two animals died the same way in 1752. In 1795, the last remaining wolf was hunted on the estate of Český Krumlov.

Reportedly, the last wolf of Šumava was an animal shot on the mountain of Světlá hora near Lipka, in the Vimperk region, on 2 December 1874.

Yet speculation about the continued existence of wolves in Šumava continued in later years. Were these creatures from the native Šumava population or animals straying in from other regions? This question shall forever remain unanswered.

Since the 1970s, new information was gathered on wolves in Šumava. It included details on wolves that had escaped from captivity in the Bavarian Forest National Park in the winter of 1975/76 and their possible descendants. More frequent data from Šumava arose after the year 2000. This primarily centred around findings of tracks and prey, along with direct sightings. The reliability of the data, however, varies; in addition, it would be easy to confuse such things with the activities of a dog, a cross between a dog and a wolf or an animal escaped from captivity. However, interesting information, including more definite evidence in the form of photographs, has been delivered through images from camera traps, although only DNA analysis could facilitate complete certainty.



Well-preserved wolf pits near the municipality of Petrovice u Sušice

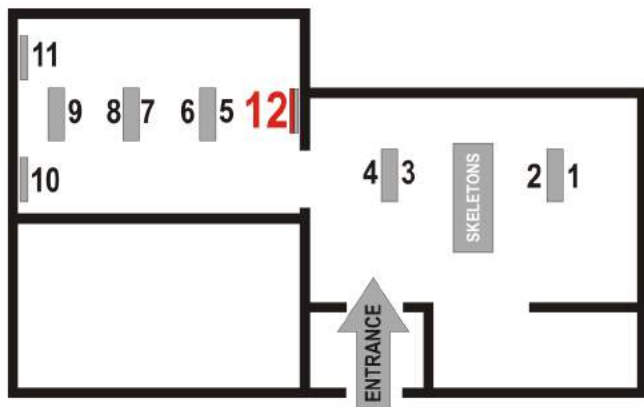


A stone memorial at the site where the "last" (?) wolf of Šumava was shot on the mountain of Světlá hora.

HISTORICAL ILLUSTRATIONS:
Top left: a wolf and its tracks;
a lithograph by H. Menzler following
a drawing by J. E. Ridinger, 1st half
of the 18th century

Top right: - howling wolves;
Tschudi I. I.: Winckells Handbuch für
Jäger, FA Brockhaus, Leipzig, 1878
- wolves with a cub; Liebich Christof:
Compendium für Jagdkunde,
Wilhelm Braumüller, Wien, 1855

IMAGES FROM CAMERA TRAPS:
A wolf recorded by camera traps on
24 February 2015 in Šumava (the right
bank of Lipno Reservoir). This is most
likely an individual migrant animal
looking for new territory and a mate.
The images were taken as part of the
Trans-Lynx Project (a cross-border
project aimed at providing monitoring,
primarily of the lynx so as to ensure
better conditions for its protection;
see more on www.translynx.selmy.cz).



The mystery of the wolf's howl

Wolves communicate by howling over a distance of about 8 km, using a wide range of signals and sounds.

Howling marks the wolves' home range.

It also strengthens the cohesion of the pack. When a wolf howls, the others usually follow, including juveniles that join in howling with adults at about month 2.

Howling helps the pack members locate each other, even when hunting or moving through the countryside.

Howling can mean an invitation to hunt or play; it may be a warning or just a message. It is also used to express feelings and emotions. It is also used to express feelings and emotions.

With every wolf having its own distinctive voice and manner of expression, members of a pack can identify each other at a great distance, or, contrarily, easily register the presence of a foreign wolf.



A lone wolf looking for a life mate, so entering the territory of foreign packs, must be very careful. As a result, it will usually not reply to howling by other wolves; rather, it tries to come closer and determine from a safe distance whether it has a chance to find a mate or join the new pack.

