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PROTECTING EUROPE'S WILDERNESS

last of the wild

OVERVIEW OF STATUS AND MONITORING OF SOME WILDERNESS RELATED SPECIES IN THE NATURA 2000 NETWORK

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contents

There are many reasons why Europe should pay more attention to its wilderness areas. Most importantly, these territories are an invaluable refuge for many species such as large mammals like the brown bear, wolf or lynx - Photo: Tamas Gereczi/gt-photo.hu

foreword

by Hans Kampf
Executive Director
Large Herbivore Foundation

It is more than 40 years since I realised that I wanted to work in the field of nature conservation, preservation and development. At that time I was educated to consider the management of the habitats; often fenced in, relatively small parcels of nature which had to be carefully tended, like gardens. In past centuries that kind of nature would have been found in agricultural areas; indeed, our present nature management seeks to copy traditional agricultural methods. But we must now ask ourselves whether this approach has a future; will we able to maintain it over the coming centuries either organisationally, financially or even ecologically?

For instance we have to prepare for the effects of climate change. As nature managers we have a responsibility to develop tools to mitigate these effects. Thinking in an ecological way, this means that we have to manage and design our nature so that it is resilient in the longer term and suitable for all kinds of change. We can learn from the past, when the words and the notions nature area and nature management did not exist. At that time wilderness areas were vast and unfragmented with room for all kinds of natural processes such as fire, water, rivers and storms. Their vast scale made these areas climate proof.

In this wilderness large herbivores played a double role. Firstly as food: forming the basic prey for large carnivores; and as carrion for a myriad of invertebrates (themselves important prey for birds, bats, badgers etc.), for a range of mammals like the wild boar in its role as the European hyena, fox and pine marten, but also for birds including vulture, raven, kite and buzzard.

Secondly, at a time when they wandered and migrated in enormous numbers across our regions, they influenced and even created ecosystems and the landscape through continuous browsing, grazing, trampling and even digging. Both aspects provide an often forgotten part of our nature management.

The task of the Large Herbivore Foundation is to protect the large herbivore species in Eurasia and turn the threat of extinction into their rehabilitation and preservation. Only a few of the Eurasian large herbivores are safe and many of them are seriously threatened. However, we will not succeed in allowing any of them to survive in healthy and sustainable populations if we cannot restore large and unfragmented nature areas. We will not be able to manage such areas through traditional agriculture; instead we will have to return them to natural processes and wilderness nature.

I have learned a lot from foresters. Not from the way that they manage trees, but because they are able to think ahead in long periods, even in centuries; indeed, in the lifespan of the oak. It is rather easy for people to look back into history; now I wonder how we can reach forward in time to create a vision of the future that reflects what many creative talents have done in our past. I am certain that, if the process of creating a beautiful and wild Europe is managed properly, we will enjoy future landscapes which deliver significant social and economic benefits including providing long-term protection and enhancement of a range of ecosystem goods and services; and surely that is what we all want.

by Vlado Vancura
Conservation Manager
PAN Parks Foundation

I grew up in a ranger house at the edge of Tatra National Park in Slovakia. During my childhood I was in daily contact with what is still the wildest area of the park to this day. Large-spanning, dark forests giving home to countless species; red deer, wild boar, chamois and brown bear, with lynx and wolves just a few meters beyond my backyard. This experience was deeply inscribed in my soul and wilderness became my life-long passion.

But soon I had to face the intensification of agriculture, which led to the extinction of numerous species alongside the modernisation of forestry operations. This, as we all know, has resulted in a network of roads penetrating protected areas, disturbing wilderness species and destroying their natural habitats. Later on I realized that the deterioration I was experiencing had already happened in many parts of Europe, with the kind of wilderness I witnessed as a child long gone.

In my professional life I keep being reminded of the challenges we face in trying to properly conserve the remaining wilderness areas of Europe. Growing ecological threats such as the loss of biodiversity or the effects of climate change trigger an increasingly ecological-conscious thinking throughout Europe, resulting in a paradigm shift towards the re-instalment of natural processes in large protected areas.
The stubborn implementation of command-and-control resource management, however, is still a threat on wilderness species and their favoured habitats. For these reasons, following the identification and analysis of natural resource management, our major task today is to find effective ways of protecting remaining wilderness areas of Europe that are more resilient as the nature that once existed on our continent.

PAN Parks Foundation aims at protecting Europe's wilderness in a way that may support the widest spectrum of life forms in their natural environment, and at the same time serve as attractive grounds for people to visit, both for pleasure and education. Our main ambition with this publication is to present that there are numerous species in Europe that require wilderness areas as a safe homeland for their healthy survival. The descriptions of brown bear, lynx, wolf, chamois, ibex and white-tailed eagle will show that proper wilderness management, employing non-intervention techniques and regular monitoring can greatly contribute to the long-term survival of these wilderness-dependent species, and in turn help maintain diverse ecosystems on our highly developed continent.

Wilderness has been an illuminating master for me all through my life. It has shown me how everything is linked to the fragile web of life, sometimes quite evidently but many times in a less visible way. The intricate connections within all life forms of any given ecosystem work in a naturally healthy way if left undisturbed – hence it is our major responsibility to use our skills, knowledge, capacity and resources for the development of protected wilderness areas where wildlife can thrive in the most natural form possible.

BACKGROUND

Biodiversity – the variation of life forms in a given ecosystem, biome, or the entire Earth – is of crucial importance not just from an ecological perspective but ethically, emotionally, environmentally and economically as well. As the European Union's Biodiversity Action Plan of 2008 concludes, diverse ecosystems "form the foundation on which we build our societies."

The countless living organisms of varying population density and population dynamics require very different circumstances to live and thrive in. Some species have adapted to living in cities, some others require vast open countryside landscapes that are actively managed, and there are numerous important species that depend on wilderness and are simply unable to survive in areas where human impact alters their natural living conditions. It is our responsibility to look after the habitats of all the different species and create and maintain the most appropriate circumstances possible.

Nature in Europe – with relatively low ecological biodiversity – is subject to the highest degree of human influence resulting in a highly modified natural environment. At the same time, we have advanced nature protection tools implemented in accordance with an elaborate legislation system in the field. Eurobarometer polls reveal that nature protection is considered by the public as a high priority and there is a growing interest in wilderness protection as well, which may provide a supportive environment for the identification and proper conservation of wilderness areas in Europe. Yet it is also evident that legislation is often considered too restrictive and inflexible, at times creating a barrier to development and competitiveness.

As a result of traditional management measures, applied extensively for centuries, there is a very low percentage of preserved wilderness areas left in Europe: and those areas, as well as wilderness-dependent species are under immense pressure. According to the Millennium Ecosystems Assessment, almost half of our wildlife is in serious decline and valuable ecosystems have become degraded and fragmented. In 2001, the European Union set the ambitious goal of halting the decline of biodiversity by 2010, but despite enormous efforts and the investment of millions of Euros, it is unlikely that this ambitious goal will be achieved, due primarily to the lack of a complex and comprehensive approach focusing on the protection of biodiversity in actively managed landscapes as well as in wild ecosystems.

WILDERNESS AND WILDLIFE

Wilderness is best understood as a multidimensional concept, consisting of biological and social elements. Wilderness areas can be described as large territories without major human interference, the lack of which allows for natural processes to occur and wildlife to thrive in their natural ecological state. Using more specific terms, PAN Parks Foundation interprets wilderness along the lines of three major criteria. "The protected area has an ecologically unfragmented[1] wilderness area of at least 10,000 hectares[2] where no extractive uses[3] are permitted and where the only management interventions are those aimed at maintaining or restoring natural ecological processes and ecological integrity." These wilderness areas constitute core areas for nature, present not only in virgin forests, but also along rivers and marshlands, in high mountains or caves, and under the sea.

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1. This criterion allows for the wilderness area to be divided into more than one area as long as it is not fragmented ecologically. If the wilderness is in one area, but is ecologically fragmented by a fence, road or other infrastructure, the area does not meet this criterion. Verifiers will use their professional judgement during evaluation. The PAN Parks Foundation prefers to identify road-less wilderness areas; however an old, existing road is allowed within the wilderness area as long as clear rules and strict limits of use are applied, e.g. emergency use only, restoration, low key maintenance without vehicles etc.
2. The wilderness area can meet the size criterion even if part of it is under an ecosystem rehabilitation process which requires long-term active restoration management due to the lack of critical segments of ecosystems dynamics, resulting, for instance, from extinction and/or replacement by semi-natural components . To fully meet this criterion, the management must have a clear goal with a defined rehabilitation/restoration schedule including deadlines. Verifiers will use their professional judgement during evaluation.
3. The following human activities are not accepted in the wilderness area,even if they have been traditionally pursued there: hunting/culling, fishing, collection of animals and (parts of) plants, of rocks and minerals, mining, logging, lifestock grazing, grass cutting.Fencing, road maintenance, road and building construction, motorised transportation, large-scale cultural and sporting events, etc, are also prohibited. Immediate consumption is not considered as extractive use. Obsolete infrastructure should be removed. Verifiers will use their professional judgement during evaluation.

There are many reasons why Europe should pay more attention to its wilderness areas. Most importantly, these territories are an invaluable refuge for many species that would be unable to survive even under slightly altered conditions. These include large mammals like the brown bear, wolf and lynx especially, but there are many other species waiting to be discovered, from birds and insects to various tree species and other forms of vegetation. Through providing a safe habitat, wilderness areas also act as a genetic reserve for countless endangered species of both flora and fauna and thus play a crucial part in preserving and enhancing ecological biodiversity.

Conservation efforts traditionally focus more on the concrete and pragmatic task of protecting individual species rather than on preserving complete ecosystem dynamics and their associated functions. The latter may be a more complex task due to the ever-changing nature of ecosystems, but it is just as important in that the survival of individual species is dependent on the particular ecosystem they are a part of, and the various succession stages their ecosystems go through. When taking the more abstract and long-term perspective of protecting complete ecosystems, with a focus on the full spectrum of species in an individual habitat, wilderness protection methods will prove highly effective because they ensure that natural processes prevail and provide individual species with the necessary surroundings to survive and thrive in.

LARGE SPACES – LARGE SPECIES

Considering the generally accepted ecological principle that larger areas are able to support more species and thus lead to greater biodiversity, one of the main objectives is the creation of extensive protected areas by linking remote wild landscapes together through ecological corridors. Large undisturbed areas can support the conservation and/or recovery of populations of large mammals and at the same time become an effective tool to mitigate the dangers of climate change by enabling animals whose climate space has shifted to migrate easily.

Having realised these benefits, the word 'connectivity' has lately become a catchword in Europe, with major landscape-level efforts made towards the creation of large wilderness areas. One such initiative is the ecological network of the European Green Belt running from the Barents to the Black Sea, with plans to eventually extend it into the Carpathian Mountains of Eastern Europe. Drawing from the North American examples of large connected spaces presented at the 9th World Wilderness Congress of October 2009, such mega-corridors may also play an important role in Europe for large animal species.

There are numerous important species that depend on wilderness and are simply unable to survive in areas where human impact alters their natural living conditions – Photo: iStock/Graeme Purdy

WILDERNESS CONSERVATION IN THE EU

The Habitat and Bird Directives, forming the basis for the Natura 2000 network, provide the legal framework for nature conservation in general, and could well be applied to wilderness management as well. These directives are focused on the conservation status of certain crucial species. As the wilderness management regime (i. e. the application of non-intervention approach) may seem to make it difficult to meet such legally binding targets, in some instances PA managers are reluctant to embrace the wilderness concept. However, as presented in another publication produced by the PAN Parks Foundation *(as nature intended)* containing best practice examples from various European

sites belonging to the Natura 2000 network, it is now evident that the non-intervention approach is not a hindrance to nature conservation. Quite the contrary: its major aim of protecting natural ecological processes clearly corresponds to the conservation objective of achieving a "favourable status" of certain species. Moreover, the non-intervention method greatly contributes to the protection of ecological dynamism and of species dependent on this dynamism. Thus, wilderness conservation, as one tool in protecting natural habitat types and species of Community interest, is in certain cases the best method to support nature conservation objectives.

IMPETUS BEHIND FURTHER RE-WILDING

In spite of the long-standing history of land exploitation and the traditional fear of wilderness in certain European countries, there is considerable enthusiasm for wildlands on the continent. Even though natural rewilding is sometimes considered as a threat to the protection of a particular succession stage, nature conservation professionals are now beginning to realise what a huge opportunity it is to live and learn from the cycle of natural processes running the ecosystem. As a consequence, re-wilding is becoming a welcome process all around Europe, with more and more areas once

Wilderness-dependent species include birds in need of large spaces and a variety of food supply such as capercaillie
Photo: Orsolya Haarberg

devoted to agriculture now being abandoned and given back to nature. In order to coordinate disparate national biodiversity conservation efforts, a Europe-wide monitoring system for biodiversity would be very much in need. The Natura 2000 network provides a great basis upon which to build a connected network of wilderness areas throughout the continent which should be part of the 2020 biodiversity strategy.

The re-introduction of extinct species to their original habitats is a crucial element, sometimes required as the initial step, in the process of restoring wilderness areas. Due to extreme human pressure in the form of encroaching development, hunting and grazing, etc., a large number of wilderness-dependent species are partially or completely extinct in many European countries. Certain animals such as the wolf or brown bear are able to re-occupy areas if living conditions required for them improve. This will typically happen with viable populations surviving in a fragment of wilderness – their populations will grow on the condition that they find suitable large areas with appropriate food resources nearby. Other species, however, with rather specific habitat requirements, that are scarce and scattered in an island-like manner around Europe, need to be re-introduced to their original homelands with the help of humans. There are successful re-introduction and restoration programmes all around Europe, considerably contributing to the biodiversity of various habitats ranging from plains and wetlands to high mountains.

SPECIES DEPENDING ON WILDERNESS

The majority of organisms follow the opportunistic strategy of finding habitats with the richest resources and most preferable conditions to survive, irrespective of whether those habitats are man-made, having lately been "turned" into wilderness, or have always been untouched. However, there are certain important species which require wild, untamed and expansive land for their long-term survival. True wilderness areas are highly preferable or outright necessary for such species to avoid extinction. Important indicators of the well-being of wilderness-dependent species are the behaviour and health of individual animals as well as the existence of a balanced population dynamic (characterised by the number of births, deaths, etc.).

Wilderness-dependent species may be divided into two groups: some strictly depend on certain specific wilderness phenomena, while others are only able to survive in wilderness areas with ample space and a full healthy ecosystem to rely on.

Examples of the first type of wilderness-dependency, where certain special habitats are required for species to appear, include over-mature trees and decaying wood, which make for a perfect home to different types of lichens, fungi and many insects; or the closed canopy of primary forests, which harbour rare species of owls and woodpeckers. Furthermore, some rare micro-habitats created by the natural dynamics of a landscape attract certain other species: the kingfisher, for example, depends on eroded river banks; some freshwater fish, dragonflies and amphibians on flooded lowlands; and certain insects, birds and lizards on uprooted trees found in small ponds or pits.

The other type of wilderness-dependent species include herbivores and carnivores in need of areas where there is enough large space for them, as well as the full pyramid of complete ecosystems with all levels of healthy species present, providing a variety of food for each member of the food chain. These large, non-fragmented and undisturbed landscapes are inhabited by the wolf, lynx, brown bear, white-tailed eagle or capercaillie.
The objective of this publication is to give an overview of some of the wilderness-related species' situation in Europe focusing on chamois, ibex, wolf, lynx, brown bear and white-tailed eagle and to draw attention to the importance of wilderness protection which is essential for the survival of these species.

REFERENCE

- *Conference on Wilderness and Large Natural Habitat Areas, Prague, Czech Republic, DOCUMENTARY MATERIAL, The role of wildlands in halting biodiversity loss, Email from Wolfgang Scherzinger, AUG 3 2009*
- *Ladislav Miko, European Commission, A vision for European nature beyond 2010: towards a public debate*
- *http://ec.europa.eu/environment/nature/biodiversity/intro/index_en.htm.*
- *PAN Parks Principles and Criteria 2007*
- *Policy makers ponder pristine areas, Environment for Europeans, magazine of the Directorate-General for the Environment, 2009/35*
- *European Parliament Wilderness in Europe report, www.europarl.europa.eu*
- *The message from Prague, An action agenda for Europe's remaining wild areas www.wildeurope.org*
- *Beyond Conservation, Peter Taylor, A Wildland Strategy, 2005*

The chamois, the symbol of high mountain wilderness, inhabit steep, rocky mountainsides, alpine forests and grassy slopes above the tree-line of high European mountains. They are brave animals with special skills developed to ensure their survival in very remote wilderness areas and in highly challenging mountain weather conditions such as snow blizzards, low temperatures or limited food resources.

Native populations occur in an island-like fashion in the Carpathian Mountains, the Alps, the Central Italian Apennines, the Pyrenees, the Balkan Mountains, certain parts of Turkey, and the Caucasus. Due to the isolation of these areas, most of these mountains are occupied by 2 species and several subspecies specific to each mountain range. In the EU the chamois species are strictly protected under the European Habitats Directive.

ITS HISTORY IN EUROPE

The chamois was traditionally an important game animal for people living in the mountains: they were hunted for food, for their skin, and their horns, which could be used to prepare certain medication from. On the other hand, since human pressure on mountainous areas started to increase in the 17-18th centuries, logging and grazing resulted in the continuous expansion of suitable habitats for chamois. Deforestation not only created more favourable food conditions for them, but also led to the extinction of big carnivores, which had greatly affected their numbers. These artificially created conditions significantly increased population density, which in turn caused a gradual worsening in the health condition of the Alpine chamois, for example. Virus infections and other diseases typical of the chamois in the Alps made this subspecies subject to a dramatic change of population dynamics. In contrast, subspecies in other regions such as the Carpathians, the Balkan or the Dinaric Mountains, where native populations of carnivores survived, are much healthier and less vulnerable to infections, allowing for a more balanced population dynamics in those areas.

CHAMOIS: A WILDERNESS SPECIES

In a heavily exploited continent like Europe, large and properly managed high mountain wilderness areas are a critical condition for chamois to survive. Keeping chamois in enclosure or captivity, in a zoo, for example, has proved rather difficult and such attempts often end with the death of those individuals. It is thus inevitable that the key to the future of chamois lies in in-situ management, in their natural environment. According to data from the Large Herbivore Foundation (LHF), the largest unfragmented area for chamois is to be found in the Alps, with a population of over 80,000 animals in Swiss territories, and about 20,000 in Germany.

Even though there are ample open spaces in these areas for the chamois to thrive in, no other natural conditions are given. Intensive grazing of domestic animals causes a dramatic change in chamois' natural habitats, and the lack of carnivores means that the only natural cause of population decline left are harsh weather conditions such as severe winters or avalanches. However, population size is decreased by such natural phenomena only temporarily, so in order to avoid the detrimental effects such as diseases common in over-population, hunting is still used as an artificial management tool.

In order to create more suitable, natural habitats for chamois in the Alps, there is a need for a decrease in human activity in the already existing large open spaces. Examples of such initiatives can be found in the mountainous wilderness of Hohe Tauern NP and Kalkalpen NP in Austria and Gran Paradiso NP in Italy among others. These areas create a very good base for future

Chamois have special skills developed to ensure their survival in very remote wilderness areas
Photo: MNP Archives

protection of natural populations of the Alpine chamois, mainly through examples of measures taken to reduce human activity. Moreover, their repeated attempts to bring back native carnivores can significantly contribute to a more natural dynamic of the chamois population in the Alps.

In contrast to the above, the chamois population in the Tatra Mountains NP in Slovakia is very small, isolated and threatened. At the same time it is much healthier because it does not face dramatic changes in population dynamics due to diseases. This is owed partly to the presence of large carnivores and also to the fact that human interference, in the form of hunting or grazing, has been non-existent in the area for decades. However, being a very small population also creates a lot of concern. For example, during the Second World War the number of individuals remaining in the High-Tatra dropped dramatically to 200, and following an increase of about 700 individuals until the 1960s, their population again showed a gradual decline until 2000. This considerable fluctuation was caused by poaching, low population densities, hybridisation with the alpine chamois, tourism, or a combination of the above. Even though there has been an increase in their population since 2005, the expansion of suitable habitats is further in need for the formation of a more stable population in the area.

The above cases underline that providing an ideal natural habitat of expansive wilderness areas with healthy carnivore populations and no human interference is a crucial condition for the survival and healthy development of the chamois in Europe.

CHAMOIS IN PAN PARKS

PAN Parks Foundation's primary objective is the protection of natural dynamics. Its network of wilderness areas contains numerous critically important chamois habitats, where basically no human intervention is allowed. Through the prohibition of hunting and the avoidance of the so-called "command and control" system, PAN Parks encourages protection of existing and restoration of extinct populations of native carnivores. The existence of a healthy and stable population of chamois predators and other wilderness indicative species is an important element of natural dynamics. The following certified PAN Parks offer favourable natural habitats for chamois: Retezat NP in Romania, Central Balkan NP and Rila NP in Bulgaria and Majella NP in Italy.

Other, potential PAN Parks such as Rodna NP in Romania, Tatra NP in Slovakia, Hohe Tauern NP and Kalkalpen NP in Austria, Gran Sasso NP in Italy, and Durmitor NP in Montenegro also contain large, protected wilderness areas that constitute an ideal habitat for this wilderness species.

CHAMOIS IN CENTRAL BALKAN AND RILA NP, BULGARIA AND MAJELLA NP, ITALY

CENTRAL BALKAN AND RILA NATIONAL PARKS, BULGARIA

PAN Parks Central Balkan National Park (CBNP) and Rila National Park, both situated in Bulgaria, give home to an especially rare subspecies of chamois: Rupicapra rupicapra balcanica. While the Balkan chamois living in the mountainous regions of nearby countries like Albania, Croatia, Macedonia, Greece, Serbia and Montenegro is under major threat from hunting and poaching, in Bulgaria their status is favourable. The firm legal framework there serves as an excellent base for the future well-being of the chamois as it allows for this subspecies to be handled as strictly protected in a network of protected areas, and particularly in the wilderness areas of Central Balkan and Rila NPs.

Legal base for protection

On an international level, the chamois is protected by various forums such as the Bern convention (Annex III); CITES (Annex II); and the Red List of IUCN. The chamois is also included in the EC Directive List, in Annex II and Annex IV of Directive 92/43/EEC.

On a national level, it is listed as protected under the Bulgarian Biodiversity Law (Annex III), as well as by the management plans of CBNP and Rila NP. Action Plan for Balkan chamois in Bulgaria, 2007-2016 was adopted in 2007. Furthermore, Balkan chamois are included in the Red data book of Bulgaria in the category of endangered species.

Size of PA and size of habitat suitable for chamois

The size of habitat suitable for Balkan chamois in Central Balkan NP represents almost 38 % of the total park size of 72,021 hectares. In Rila NP, the 34,110 hectare-large territory offering favourable living conditions for the species constitutes 42 % of the total protected area.

Importance of chamois for the ecosystem

The Balkan chamois is a representative species of high-mountain ecosystems. By acting as a 'grazing machine' of Alpine meadows, it highly contributes to the maintenance of biodiversity in alpine and sub-alpine habitats in both Central Balkan and Rila NP. In addition, it is an attractive object of interest for visitors; specialised eco-trails and educational programs are established around them, such as the chamois nature trail in Rila NP.

Status and monitoring

Since 1999, the Park Directorate of the Central Balkan NP has been performing regular monitoring of the chamois within the park. Park rangers collect data annually, during their regular patrols. In addition, the Directorate organises 3-4 days of monitoring every spring and autumn, acquiring a comprehensive set of data containing the current number of chamois, the structure of stocks with regards to sex distribution, and their relative density in different habitats. Systematic monitoring is done through:

- Direct observation of feeding sites and their wider surroundings
- Observations on permanent routes

In 2007, the chamois was also included in the Bulgarian Biodiversity Monitoring System.

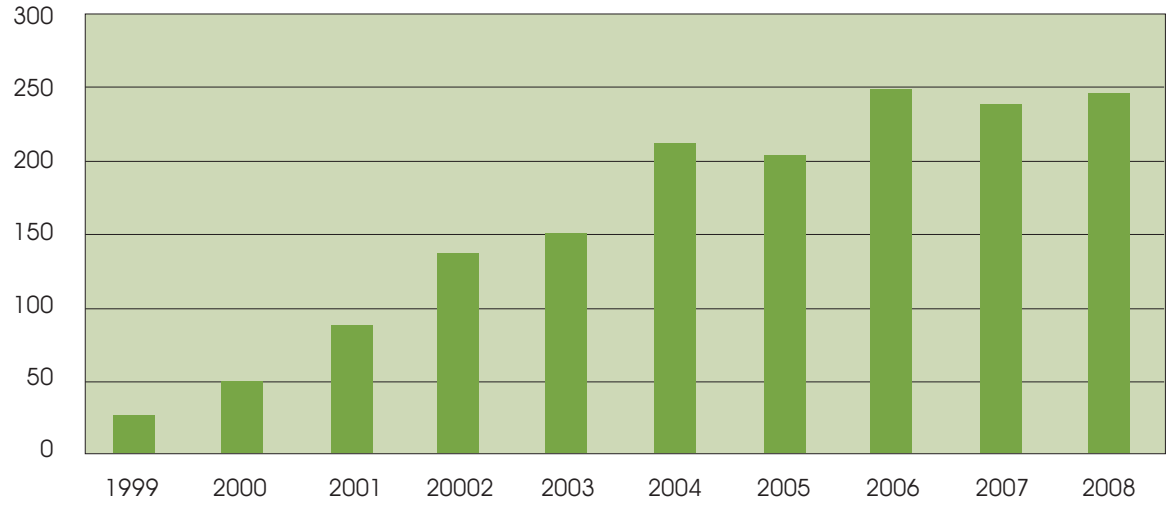
Rila NP Park Directorate first implemented a complex ecological monitoring system in 2003, with the main aim of gaining insight into the population dynamics of the park by means of daily and seasonal observations. As part of this system, they regularly monitor and document chamois activities, their trails within the park, as well as the general condition of the required habitat. To reflect the results, a database of the estimated number of individuals – currently between 350-450 animals, – tendencies in the population development and a description of their natural habitats, is prepared and updated on a regular basis.

MAJELLA NATIONAL PARK, ITALY

As a result of an exemplary reintroduction program following the complete disappearance of the Appennine chamois in the 1980s, Majella National Park (Italy) now boasts large and healthy populations of Apennine chamois.

Legal base for protection

The Apennine chamois at present enjoys strictly protected status under the National Law No. 157/92:



Number of chamois in Central Balkan NP (1999-2008)

"Rules for the Protection of Homeothermic Wildlife". Their comprehensive protection in Majella NP is also guaranteed under the National Law No. 394/91, which prohibits hunting in national parks and forbids or regulates all activity that can potentially disturb wildlife or constitute danger to their natural habitats.

Furthermore, the chamois is listed in the Habitat Directive 92/43/CEE as a priority species needing special conservation areas (Annex II) and strict protection (Annex IV).

Size of PA and size of habitat suitable for chamois

Majella National Park occupies an area of about 750 square kilometers, approximately 15 % of which provides suitable habitats for the chamois comprising of rocky mountainsides, steep grassland and shrub areas.

Importance of chamois for the ecosystem

The large and healthy population of Appennine chamois in the steep and rocky areas, alpine meadows and – during winter – secondary pasture grasslands of Majella NP plays an essential role in the conservation of a balanced ecosystem and the preservation of the entire food chain in the area. As domestic grazing is by law reduced in the park, without the grazing activities of the chamois the consequent recovery of certain shrubs and woods would lead to the partial or total extinction of various important species such as the rock partridge or the red-billed chough.

Status and monitoring

Between 1999-2002, the chamois populations of Majella NP were monitored by two annual block censuses, one conducted during summer to count newborn individuals and another in October during their reproductive season, with the purpose of gaining information on the number of individuals across the total dimension of the chamois population. Further research plans, initiated in 2003, set forth three monitoring days per week, with the aim of collecting data on the size and locale of the different chamois herds, as well as an analysis of seasonal distribution and use of their habitats (winter vs. summer ranges, breeding and birth areas). As a part of this monitoring project, the movement of several chamois was monitored with the help of VHF radio collars. Based on the pool of data collected, annual distribution maps were drawn separately for the various herds as well as for the whole population.

As for the number of individuals inhabiting the national park, the chamois population at the beginning of the millennium amounted to ca. 100-120 individuals including 20-25 kids, whereas the two annual block censuses of 2009 verified the presence of a minimum of 450 individuals; including 145 kids. The estimated number of Apennine chamois in the park is currently 500, which indicates an average increase of about 25 % per year for the past 9 years.

As a result of an exemplary reintroduction program Majella now boasts large and healthy populations of Apennine chamois
Photo: MNP Archives

REFERENCE

- *http://ec.europa.eu/environment/nature/conservation/species/*
- *LARGE HERBIVORE FOUNDATION, STATUS REPORT 2007 OF THE LARGE HERBIVORES OF THE PALAEARCTIC, JUNE 2007, http://www.largeherbivore.org/assets/pdf/status-report-2007-student-version.pdf*
- *Data provided by the national parks of Central Balkan, Majella and Rila*

Ibex are noble, attractive animals with highly spectacular and distinctive horns. Various species of this genus of wild goat exist around Europe, differentiated by the geographic location they are native to. Similar to chamois, ibex are a symbol of high mountain wilderness, able to survive on remote mountainsides and under harsh conditions. Species of ibex typically inhabit slightly higher elevations than chamois. The home range of the Alpine ibex (Capra ibex), a close relative of the Spanish ibex (Capra pyrenaica), stretches from alpine meadows to steep, rocky slopes and barren mountain pastures high above the green valleys, at an altitude of 1,600-2,300 metres. Native populations occur from the western corner of the Alps in France to the easternmost edge of the Alpine range in Slovenia.

The ibex is a strictly protected species under the European Habitats Directive, and as various studies have proven, it is not critically endangered at the moment. However, there are several risk factors threatening ibex populations in Europe, such as hybridization, a lack of genetic diversity (resulting from the relatively small number of the survivors which current populations were recovered from), and the small and fragmented nature of certain populations.

ITS HISTORY IN EUROPE

The history of ibex, ruler of the high Alps, constitutes one of the most demanding struggles of European conservationists to protect an important iconic species. Originally native to all Alps, the number of ibex decreased sharply throughout the Alps during the 16th-19th century period. According to available data, this decline was in a great part caused by overhunting boosted by the 16th-century introduction of firearms in hunting. The ibex was hunted for its meat, its horns, and also for its blood and certain body parts to which pharmaceutical properties were attributed. Intensive deforestation and grazing activities in the Alpine area also contributed to ibex population loss.
By the 18th century, ibex disappeared from the majority of the Alps, and by the beginning of the 19th century, the Alpine ibex was on the verge of extinction, with extremely small populations (estimated at about 100 individuals altogether) surviving in the wilderness areas

Ibex are also a symbol of high mountain wilderness, able to survive on remote mountainsides and under harsh conditions
Photo: Dan Briski

hidden in the Grivola massif, situated in today's Gran Paradiso National Park, in north-western Italy.

The first call for awareness in the 'ibex conservation action plan' was an 1820 proposal for the banning of hunting of ibex. A major milestone in the process of saving them from total extinction was that in 1856, King Vittorio Emanuele II reserved exclusive hunting rights of Alpine ibex for himself. At the same time, in order to prevent poaching from happening, a unit of royal gamekeepers was created from local villagers, including the "very best of the poachers."

Owing to the strict control of poaching from that time on, the population of Alpine ibex in the Gran Paradiso area recovered rapidly even with royal hunting continuing. Yearly censuses, started in 1877 by the royal gamekeepers, record a constant increase in ibex numbers, rising from 790 individuals in 1879 to 2673 in 1905.

Restoration of the Alpine ibex may be considered an exemplary story of success, which required major efforts and long years of hard work, but the results testify to the fact that it is possible to reverse negative processes and recover a species from near-extinction. According to recent data from the Large Herbivore Foundation (LHF), the Alpine ibex once again inhabits the majority of the Alps, including Natura 2000 network sites as well as existing and potential wilderness areas. Their population has reached 13,785 in Switzerland only, while France, for example, gives home to some 3,300 individuals.

IBEX: A WILDERNESS SPECIES

The key to the survival of ibex in the past was the reduction of hunting and poaching pressure and the existence of large, favourable ibex habitats throughout the Alps–wilderness where recovering ibex population found refuge. This, coupled with enormous efforts of nature conservationists, resulted in the gradual recovery of this important species once on the brink of extinction. For the continuing well-being of the numerous viable populations inhabiting most of the Alps today, special attention needs to be paid to the reduction of growing human pressure in and around their natural habitats.

For the continuing well-being of the numerous viable ibex populations inhabiting most of the Alps today, special attention needs to be paid to the reduction of growing human pressure in and around their natural habitats – Photo: Dan Briski

As the building of transport corridors and other construction developments, as well as activities of the recreation and ski industry can cause a fragmentation of suitable ibex habitats, the establishment and proper management of unfragmented wilderness areas is of crucial importance in maintaining healthy ibex populations. Without the safe and quiet of wilderness refuges to survive the harsh mountain climate and sensitive periods such as mating or breeding, this iconic species may once again become endangered.

IBEX IN PAN PARKS

As a basic objective, through creating a network of well-managed wilderness areas, PAN Parks focuses on the protection of viable and healthy animal populations functioning in large, dynamic and healthy mountain ecosystems. Currently there are ibex populations in a number of protected areas with the potential to become parts of the PAN Parks network. Examples of areas offering favourable habitats for ibex populations, all with considerable wilderness, include Triglav NP in Slovenia, Hohe Tauern NP in Austria and Gran Paradiso NP in Italy.

IBEX IN TRIGLAV NATIONAL PARK, SLOVENIA

There is no firm evidence that the Alpine ibex was present in Slovenia after the ice age. What is known, however, is that they were on the verge of extinction in the Alps region by the end of the 19th century, followed by major conservation efforts to save the species, with the help of its last stronghold, surviving in the Gran Paradiso area in Italy. It was from there that the ibex spread and formed colonies in other parts of the Alps in the 20th century.

The first ibex were introduced into Slovenia at the beginning of the last century, in the Kamnik Alps. Unfortunately that population was almost entirely killed by an outbreak of scabies in the 1970s. The Triglav area received its first ibex in 1964, which marked the beginning of a longer and quite successful introduction project.

Legal base for protection

Even though ibex, along with other wilderness species like lynx or wolves, do not enjoy special protection status within Triglav NP, the park's management objectives clearly indicate that ibex is subject to non-intervention management. Hunting for ibex is prohibited in the entire territory of the park, even where hunting is otherwise permitted, and no other human intervention is allowed. In other words, they are to be regulated by the laws of nature only, both inside and outside the IUCN category II wilderness zone. Owing to such consistent management measures, currently there are three large colonies of ibex inhabiting the park, with several animals moving between colonies.

Size of PA and size of habitat suitable for ibex

The total area of Triglav NP is 83,807 ha, with a core area of 55,332 ha. Approximately 20% of park territory constitutes suitable habitat for the ibex, primarily in the highest regions of the park.

Importance of ibex for the ecosystem

Ibex, just like chamois, are an irreplaceable element of high mountain/alpine ecosystems. By acting as effective "grazing machines" they assure the existence of open landscapes above the tree line and thus maintain favourable conditions for a good number of species, both flora and fauna, dependent on large open landscape and regularly grazed ecosystems.

Status and monitoring

As an initial step in a long-term introduction program, 15 ibex were settled in Triglav NP's Zadnjica Valley in 1964. Over the following 11 years, a total of 54 animals were brought into the area, with the welcome result being an increase in their numbers to 160 by 1976. The population size reached its peak in 1998 with about 400 individuals within the park. Monitoring activities are done on a regular basis, in order to keep a record of population size as well as to gain information on population dynamics. Recent years have seen several outbreaks of chamois scabies, which has caused some decrease in the number of ibex. At the same time, their number has been fairly stable lately, with ca. 160 animals.

REFERENCE

- *Data provided by Triglav National Park*
- *http://www.largeherbivore.org/assets/pdf/status-report-2007-student-version.pdf*
  •IUCN/SSC – Caprinae Specialist Group, http://pages.usherbrooke.ca/mfesta/iucnwork.htm
- *Alpine Ibex Conservation Strategy, http://biocenosi.dipbsf.uninsubria.it/LHI/*

The brown bear, once an iconic animal of mountain forests while capturing the human imagination to a great extent, is one of the most obviously wilderness-dependent species in Europe. For their healthy survival, brown bears require large spaces to roam and find food in, safe shelters for hibernation, quiet dens for mating and well-protected areas to raise cubs in. On our highly developed and densely populated continent where true wilderness is scarce, there are few areas that meet these requirements and can offer a suitable habitat for these large mammals. As a consequence, relict brown bear populations are dangerously small and highly fragmented in Southern, Central and Western Europe, and any restoration attempt is bound to fail without the allocation of ample wilderness areas.

Systematic monitoring of brown bears is highly challenging as they are especially difficult to census. Estimations based on public observation are usually exaggerated. Nevertheless, the total population of brown bears in Europe, excluding Russia, is considered to be around 14,000, with great geographic variation: in some countries they are on the verge of extinction, while in others there are still viable bear populations to be found.

ITS HISTORY IN EUROPE

Historically, brown bears have inhabited most of Europe, but intensive deforestation, agricultural activities and hunting, among others, has gradually deprived them of their natural habitats, which has inevitably led to their disappearance in a great number of countries.
The current distribution of brown bear populations is limited to three main areas of the continent. The biggest continuous population is to be found in the northern parts of Scandinavia and Russia, with a total number of about 37,500 individuals; the Carpathian population consist of about 8,100, while the Alps-Dinaric-Pindos populations, inhabiting the forested areas extending from the Eastern Alps in Austria to the Pindos Mountains in Greece, amount to a total of ca. 2,800 brown bears. Observations indicate a slowly rising trend in the number of individuals in these territories.

Little research has been done regarding the public attitude towards this wilderness species on a European level, but certain national surveys show that people living in the countryside tend to have a more negative attitude towards brown bears than city dwellers, while

Relict brown bear populations are dangerously small and highly fragmented in Southern, Central and Western Europe, and any restoration attempt is bound to fail without the allocation of ample wilderness areas – Photo: Orsolya Haarberg

the young and higher educated often have a more positive attitude. However, as bears are opportunistic predators, news of them attacking livestock or a case of the occasional fatal bear mauling may cause a rapid shift from positive to negative judgement on the part of humans.

BROWN BEAR: A WILDERNESS SPECIES

An examination of the current distribution of brown bear populations in Europe testifies to the fact that they are a highly wilderness-dependent species requiring vast, remote and undisturbed lands to survive in. However, due to extensive logging and commercial forestry around the continent, there are less and less territories offering suitable habitats for brown bears. In addition to outright habitat loss, the fragmentation of remaining suitable habitats is a major threat to the survival of this valuable species as well. Road construction and other forms of human impact decrease the size of those habitats to such an extent that they become unable to support viable populations. Free movement of bears is thus seriously hindered, and a large number of individuals are killed on roads and railway tracks. In addition to the negative effects of continuing land exploitation of their natural habitats, the number of brown bears has decreased also as a result of former extermination policies in several countries, as well as ongoing hunting and poaching.

The re-introduction of brown bears into their original habitats is greatly hindered for several reasons. Firstly, there are hardly any areas that would be large enough for them to find ample amount of food in. Secondly, as bears have a very low reproductive rate, and are at the same time highly vulnerable to deaths caused by humans, they require truly undisturbed territories with as little human interference as possible. Consequently, conservation of remaining populations and efforts to increase their numbers require, as an initial step, the enlargement of wilderness areas in Europe, with proper management techniques employed. If the size of well-managed wilderness areas could be increased, taking into account the special characteristics of brown bears' behaviour and special needs, then their conservation may become much more efficient.

BROWN BEAR IN PAN PARKS

PAN Parks Foundation aims to protect Europe's wilderness by developing a network of protected areas in Europe where the conservation of natural dynamics is to be attained without major human interference.

Through the protection and maintenance of large, undisturbed wilderness areas, our parks work towards the creation of stable and healthy populations of the brown bear. The current network of existing PAN Parks contains favourable habitats for brown bears in Fulufjället NP, Sweden, Oulanka NP, Finland, Retezat NP, Romania, Central Balkan and Rila NP, Bulgaria, Majella NP, Italy, and Soomaa NP, Estonia. In addition, large areas of favourable habitats for bears can also be found in several other protected areas within prospective PAN Parks such as Rodna NP, Romania, Tatra NP, Slovakia, Bieszczady NP, Poland, and Durmitor NP, Montenegro.

BROWN BEAR IN FULUFJäLLET NP, SWEDEN, RILA NP, BULGARIA AND MAJELLA NP, ITALY

FULUFJÄLLET NATIONAL PARK, SWEDEN

Legal base for protection in Sweden

Sweden's large and stable bear populations are formally protected by law. However, with reference to the derogation made possible by Article 16 of the Habitats Directive, a limited number of bears are shot each year by hunters. In order to maintain population growth, the Environmental Agency sets a quota of bears which can be culled for each Swedish county. The number of bears that can be hunted during the autumn season was 143 in 2006, excluding females with cubs. In addition, county management boards may order the killing of individual bears that demonstrate problematic behaviour. As seen from the above, the major threat for bear populations of Sweden comes from legal hunting and shooting.

Size of PA and size of habitat suitable for brown bear

Except for the highest parts of Fulufjället Mountain, constituting about 10 % of the total park area (total park area: 38,483 ha), the park constitutes highly suitable habitats for the brown bear. Further suitable habitats are found in the forested regions outside the boundaries of the national park, but the wilderness area of ca. 22,140 ha, where non-intervention management is strictly applied, offers the safest homeland to this particularly wilderness-dependent species.

Importance of brown bears for the ecosystem

Brown bears, along with other native European carnivores, are at the top of the food chain and as such,

An examination of the current distribution of brown bear populations in Europe testifies to the fact that they are a highly wilderness-dependent species requiring vast, remote and undisturbed lands to survive in – Photo: iStock/Graeme Purdy

they highly contribute to the maintenance of natural ecosystem dynamics. Through assuring natural processes of predation, they play an important role in controlling the number, health conditions and behaviour of prey animals in a given habitat and indirectly any other species. Brown bears are central to the whole ethos of wilderness, and the presence of healthy brown bear populations in an area is the best indicator of a well-functioning ecosystem.

Status and monitoring

Bear populations in Sweden are monitored through a range of methods including faecal DNA census, samples taken from bears killed by hunters or in car accidents, observations by moose hunters and by the public during cases of depredation. Brown bear occurrence in Sweden is very much associated with large, sparsely populated forested areas in the central and northern parts of the country. Due to the growing pressure from various extractive uses, protected areas, particularly those with a clear wilderness management concept, such as Fulufjället National Park, are of critical importance (although the wilderness area in Fulufjället is mostly above the tree limit). The bear population in Dalarna county, where Fulufjället NP is situated, was estimated at about 330 animals in 2001 and has since been stable. Due to the fact that bears, like other large carnivores, have overlapping home ranges and they move over large distances, the precise number of individuals regularly appearing in Fulufjället NP is unknown, but a rough estimation is that there are more than 10.

RILA NATIONAL PARK, BULGARIA

Legal base for protection in Bulgaria

The brown bear is protected under the Biodiversity Act (Annex 2 & 3); the Protected Areas Act; Rila National Park management plan; the Bern convention (Annex II); the CITES (Annex II); and the Red List of IUCN. The brown bear is included in the Red Data Book of Bulgaria under the category 'rare'.

Size of PA and size of habitat suitable for brown bear

The total size of the protected area within Rila NP is 81,046 ha, 53,500 ha of which constitutes a suitable habitat for brown bears.

Importance of brown bear for the ecosystem

Brown bears are an excellent indicator of well-preserved forest ecosystems. Areas with healthy populations of brown bears are bound to have balanced ecological communities. In addition, the brown bear is an intriguing species attracting a great number of park visitors and people with various special interests. Specialised

Brown bear is an excellent indicator of well-preserved forest ecosystems. Areas with healthy populations of brown bears are bound to have balanced ecological communities – Photo: Bruno D'Amicis/brunodamicis.com

eco-trails may be built and useful educational programs may be implemented in connection with this fascinating species.

Status and monitoring

The 2003 introduction of various complex ecological monitoring methods included the monitoring of brown bears inhabiting Rila NP. Actual data collection is done primarily by park rangers during their daily patrol activities. They regularly check trails as well as the condition of brown bear habitats in the protected area, and note every instance of bear sightings or footprints. The monthly monitoring reports are then analysed by the fauna expert of Rila NP Directorate, who also carries out periodical verification of the collected data in selected districts of the park. Apart from the estimated number of individuals present in the park, the document compiled on the basis of these observations also offers a reliable picture of the tendencies in bear population dynamics.

In spite of the park management's continuing efforts to protect this important species and to possibly contribute to the enlargement of its population, poaching and the risk of habitat loss through human activities (such as building a new ski trail) causing fragmentation still constitute major threats to the brown bears inhabiting the area. Regular and thorough monitoring of the past six years has confirmed that brown bear is constantly present with 62-74 individuals inside the territory of Rila National Park.

MAJELLA NATIONAL PARK, ITALY

Legal base for protection

The brown bear in Italy has been protected by law since 1934 and it is currently a strictly protected species under the National Law (No. 157/92) on "Rules for Protection of Homoeothermic Wildlife." In addition, the total protection of the brown bear in Majella National Park is guaranteed under the National Law (No 394/91) on protected areas, which prohibits hunting in national parks and forbids or strictly regulates every activity that can potentially disturb or pose a danger to the wildlife and the natural habitats. Furthermore, the brown bear is listed in the Habitat Directive 92/43/CEE as a priority species needing special conservation areas (Annex II) and strict protection (Annex IV).

Size of PA and size of habitat suitable for brown bear

Majella National Park is spread over an area of about 74,095 ha, of which 44,000 ha offers suitable habitats for brown bears in the form of broad-leaved woods and alpine grasslands and shrubs.

Importance of brown bear for the ecosystem

Ursus arctos marsicanus, the subspecies of brown bear living in Majella National Park, is one of the rarest, most vulnerable and endangered mammals of Italian fauna. This umbrella species is at the top of the food chain in the mountain ecosystem of the central Apennine region. Therefore, its proper protection is the key to guaranteeing the conservation of various habitats and food webs necessary for the survival of countless others species. At the same time, the presence of brown bears within Majella National Park is a clear indication of a healthy ecosystem containing all the main biological components.

Status and monitoring

Since the first snow-tracking sessions in 1999, the brown bear population has constantly been monitored in Majella NP. In the beginning, monitoring activities, conducted both before and after the bear hibernation season, were aimed at verifying the presence of the species in different areas of the park, as well as gaining a first estimation of population size. In 2003, a more intensive and systematic approach was adopted, which included a genetic monitoring of the brown bear population. Hair traps with a scent lure were introduced to identify individual bears living in Majella NP. Regular and thorough monitoring of the past ten years have confirmed that brown bears are constantly present with 5-10 individuals inside the park's territory particularly in the southern areas, with some of them regularly wintering within its boundaries.

REFERENCE

- *http://ec.europa.eu/environment/nature/conservation/species/carnivores/index_en.htm*
- *Data provided by the national parks of Fulufjället, Majella and Rila*
- *Action Plan for the conservation of the Brown Bear (Ursus arctos) in Europe by Jon E. Swenson, Norbert Gerstl, Bj rn Dahle, Andreas Zedrosser Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), Nature and environment, No. 114, © Council of Europe Publishing, 2000, http://medvede.sk/pdf/European%20bear%20action%20plan.pdf*

Canis lupus, belonging to the Canidae family, is a dominant predator that plays a crucial role in the maintenance of the natural equilibrium between a given ecosystem's various components. Due to their basic need for vast areas to roam in, they disperse over much larger territories than any protected area in Europe can currently offer. In addition, human attitudes to wolves as being a dangerous species threatening livestock, pets and even humans, still persists. In order to eliminate the negative effects of these two factors on wolf populations, implementation and update large-scale conservation strategies is needed on a European level, assuring larger intact wilderness areas (with ecological corridors spanning across country borders) as home to wolf populations. Creating suitable habitats could also contribute to altering people's mindset with regards to this important wilderness species.
Today, wolves are fully protected in most European countries under Annex IV of the Habitats Directive.

ITS HISTORY IN EUROPE

Europe once offered a wide range of natural habitats for many large carnivore species including the wolf; sizable populations of which inhabited most of our continent from Portugal to the Ural Mountains and from the Mediterranean to the Arctic Circle. However, by the middle of the 20th century, the number of wolves on the continent decreased considerably due to the extensive hunting activity of the previous 200 years. Small but healthy populations survived in Scandinavia, the Appenines, and the Iberian peninsula, and some larger but isolated packs inhabited the Balkan peninsula and certain Eastern European countries.

Between 1982-1994, the wolf was listed as a species vulnerable to extinction by the International Union for Conservation of Nature (IUCN). Owing to changes in legal protection and land-use practices, as well as

Encroaching development, fragmentation and lack of effective management techniques all over Europe pose serious threats to suitable wolf habitats even within existing protected areas. Unfragmented wilderness areas can provide safe habitats and thus support the development and maintenance of stable and healthy populations – Photo: Tamas Gereczi/gt-photo.hu

population shifts to urban areas, the decline of their population has stopped. Today there is an increasing trend in the number of wolves around Europe. As they can survive under a variety of conditions provided they find enough food, ranging from wild prey animals to human garbage, wolf populations have been expanding into several European countries, with an estimated 3,800 individuals living in Romania, about 600 in Slovakia, and some 290 in Poland. More and more are being observed in the Czech Republic, Slovenia and Austria, and they are beginning to spread towards Western Europe as well.

WOLF: A WILDERNESS SPECIES

The wolf, a flagship of wilderness, is often used as a symbol of untrammelled landscapes. Their wilderness-indicative nature stems from the fact that they tend to have difficulty in adapting to changes in the quality of their habitats. They are only able to adapt to living in close proximity to human activity if they are left undisturbed. On the other hand, wolves' strong ability to adapt to changing circumstances with regards to food resources leads to unfavourable changes in their behaviour, which in turn causes major conflicts with human interests. For this reason, as indicated by the results of ongoing rewilding efforts around Europe, the key to the survival of large, healthy wolf populations lies in the expansion of suitable habitats for them. In Triglav NP, Slovenia, for instance, where different management measures were taken to create suitable, undisturbed areas for them, specimens of this once completely exterminated species are now seen more and more often. The current distribution of wolves as well as positive management experiences with re-introduction projects all around Europe also indicate that large and well-managed protected wilderness areas are crucial for the well-being of this wilderness species. If they are provided with ample unfragmented land to roam and hunt for prey in, the negative side-effects of their special adaptability – such as changing behaviour and genetic bottlenecking, arising from population fragmentation – could be effectively reduced, leading to a larger and healthier wolf population in Europe. Examples of the largest unfragmented habitats for wolves can be found in wilderness areas of Scandinavia, the Carpathian, Balkan and Dinnaric Mountains, the Apennines and the northwestern corner of the Iberian peninsula, where fragments of European wilderness create a very good base for the future protection of a healthy wolf population.

WOLF IN PAN PARKS

Encroaching development, fragmentation and lack of effective management techniques all over Europe pose serious threats to suitable wolf habitats even within existing protected areas. Certified PAN Parks' expressed ambition is to guarantee the protection of large, unfragmented wilderness areas, which can provide safe habitats for large carnivores such as wolves and thus support the development and maintenance of stable and healthy populations.

The current network of PAN Parks offers favourable habitats in Fulufjället NP in Sweden, Oulanka NP in Finland, Retezat NP in Romania, Central Balkan NP and Rila NP in Bulgaria, Majella NP in Italy, Soomaa NP in Estonia and Peneda Geres NP in Portugal.
In addition, large areas of favourable wolf habitats exist in several other protected areas of wilderness character, all with the potential of becoming a member of the PAN Parks network. These national parks include Rodna NP in Romania, Tatra NP in Slovakia, Bieszczady NP in Poland, and Durmitor NP in Montenegro.

WOLF IN MAJELLA NP, ITALY, FULUFJÄLLET NP, SWEDEN AND SOOMAA NP, ESTONIA

MAJELLA NATIONAL PARK, ITALY

Legal base for protection

The wolf in Italy has been legally protected since 1974, currently enjoying a strictly protected status under National Law. Their full-scale protection in Majella NP is guaranteed under National Law No. 394/91 on protected areas, which does not allow hunting activity in national parks and forbids or regulates every activity that can potentially disturb wildlife or be dangerous for their habitats. The wolf, indicated as a priority species in the Habitat Directive 92/43/CEE, is listed in Annex II of the same directive as a species requiring special conservation areas and in Annex IV as a species requiring strict protection.

Size of PA and size of habitat suitable for wolf

Majella National Park spreads over an area of about 75,000 ha, 56,000 ha of which constitutes suitable habitat for the wolf, primarily in broad-leaved woods, alpine grasslands and shrubland.

Importance of wolf for ecosystem

Majella NP boasts a large and healthy population of wolves, which are also significant on a national level. Being the main predator of the park, wolves play a key role in maintaining ecosystem dynamics. With 70% of their total diet constituted of wild boar, and another 20% of other wild ungulates, wolves contribute greatly to the maintenance of a naturally balanced ecosystem: their hunting activity prevents wild ungulates from overpopulation and assures the long-term maintenance of healthy populations via natural selection.

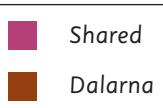
Status and monitoring

Monitoring of the wolf in Majella NP started by the first simultaneous snow-tracking sessions in 1998. Based on the findings of the initial data-collection, the subsequent monitoring plan involved a systematic collection of signs of the presence of them in the park, as well as the preparation of a study on wolf predation upon livestock. In addition, the dimensions of the various packs living in the park territory have been observed via camera-traps since 2003. A year later intensive snow-tracking activities were introduced in order to gain insight into the size of each pack, as well as the shape and dimensions of their winter home ranges. Furthermore, summer wolf-howling activity was monitored, providing an estimated number of reproductive wolf packs within the park.

In 2009 a major research programme was started to examine the relationship between wolf and wild boar populations, as well as their relationship to rural agricultural activities. Using VHF and GPS telemetry on specimens of the two species living in the same area, movements and land use of different wild boar groups and wolf packs are examined thoroughly. The scope of ongoing research involves the collection of data on their diet, the population status of other wild ungulates living inside the study area and the impact of wolf predation upon grazing livestock.

Quantitative data on the presence of wolves in Majella NP has been available since 2005, when seven different reproductive wolf packs were identified and a total of 35-40 wolves were estimated to live in the area. In 2009, twelve different reproductive wolf packs have been identified, and it is now estimated that the total wolf population consists of 75-80 individuals.

The number of wolf territories in Dalarna County with reproducing pairs (indicated by litters born). Shared territories are situated on the borders to adjacent counties.



FULUFJÄLLET NATIONAL PARK, SWEDEN

Size of PA and size of habitat suitable for wolf

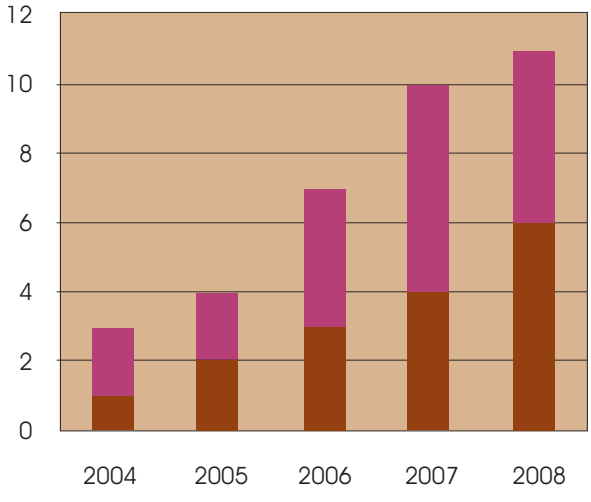
The ca. 38,483-hectare-large Fulufjället NP, with about 22,140 ha of wilderness, offers suitable and safe habitat to wolves on approximately 50 % of the total area, mainly in the form of forested areas below the tree-line for wolves. Forested areas in the vicinity of the park, used for timber production, constitute further suitable habitats, and the combination of these and the non-intervention areas of the national park create highly favourable conditions for their reproduction.

Status and monitoring

In Sweden, the monitoring of wolves is done yearly by regional authorities. Primary focus is on the number of successful reproductions, but it is the surveying authorities' ambition to count individuals within a given territory as well. The major technique employed is snow-tracking, and a special set of criteria is developed to determine the number of individuals and the possible occurrence of reproduction.

Data representing Dalarna County (the county of Fulufjället NP)

The following diagram illustrates the growing trend in size and stability of wolf populations in Dalarna County. According to local conservationists, the reason behind this positive tendency is, on the one hand, the existence of large and well-managed wilderness protected areas, particularly in the northern part of the county (in certified PAN Park Fulufjället NP and other large protected areas in the neighbourhood) and, on the other hand, the careful control of hunting activities in the territory outside the protected areas.



Fulufjället NP is located in an area where stray wolves have been passing through regularly for years. The 2002 establishment of the park and its implementation of efficient management methods is believed to have contributed greatly to the eventual settling of wolf packs in this area. During winter 2007/2008 a territorial marking pair was traced, and the first litter born in the summer of 2008, followed by a second in 2009. The major part of wolf territory expands over a much larger area outside the national park, but territorial wolves do pass through the protected area, which – as regular snow-tracking reveals – presently offers a safe refuge to about 9-10 wolves.

SOOMAA NATIONAL PARK, ESTONIA

Soomaa NP incorporates one of the three best-preserved and most presentable raised bog floodplain forests of Estonia. This remote and large unfragmented wilderness offers an excellent habitat for the wolf population. Many of them use this area as a breeding site, making the bogs an important wolf hotspot in the country, which greatly contributes to the conservation of a stable and healthy wolf population.

Size of PA and size of habitat suitable for wolf

Large, unfragmented Soomaa NP, with a total size of ca. 38,000 ha, and a wilderness area of ca. 11,000 ha, provides a suitable habitat for wolves on about 60 % of its area, primarily in its forested regions. With a non-intervention management approach applied within the park, these forests offer a safe refuge to wolves, while the large forested areas outside the park ensure further roaming territories. The wolf population spreads over the majority of Estonia, but the combination of safety in the park's non-intervention zones and ample space to roam in the park's surroundings makes this area especially favourable for them to live and reproduce in.

Status and monitoring

Tipu Game Research Area adjoins Soomaa NP in the south and the two areas form a complex study area of about 83,000 ha in total, where intensive monitoring of wolves first started in 2004. Wolf monitoring is based primarily on winter snow-tracking and summer howling simulations with the aim of locating reproductions. Monitoring results of the past 5 years are indicated in the table below the photo:

Forests with non-intervention management approach applied offer a safe refuge to wolves, while the large forested areas outside the park ensure further roaming territories – Photo: MNP Archives

Year	2004	2005	2006	2007	2008
Number of reproductions	1	1	2	2	1
Number of individuals	6+1	7+2	9+4	9+7	9+2

REFERENCE

- *http://ec.europa.eu/environment/nature/conservation/species/carnivores/index_en.htm*
- *Wolf Online Information System for Europe http://www.kora.ch/sp-ois/*
- *Guidelines for Population Level Management Plans for Large Carnivores FINAL Version 1st July 2008 Prepared by Large Carnivore Initiative for Europe c/o Istituto di Ecologia Applicata, July 2008 Via Arezzo 29 – IT 00161 Rome*
- *Data provided by the national parks of Fulufjället, Soomaa, Rila*
- *WOLVES IN EUROPE, The Action Plan for Wolf Conservation in Europe by Jay Hutchinson,*
- *Action Plan for the Conservation of Wolves (Canis lupus) in Europe, April 2000, compiled by Luigi Boitani,*

The lynx, along with wolves, brown bears and wolverines, is an iconic species closely linked to European wilderness. Their long-term survival is highly dependent on large protected wilderness areas, which offer a suitable homeland with ample prey to feed on and a safe shelter for breeding and raising kittens. Eurasian lynx (Lynx lynx) is one of the most widespread feline species in the world, with the biggest populations to be found in Russia and Central Asia (primarily in Siberia). A native species all around Europe, its population saw a steep decline bordering on extinction in many parts by the mid-20th century, but following major legislative measures and several reintroduction programs, today a large and stable population is present in Northern Europe, and is also found in smaller numbers in other parts as well.

Unlike other large carnivores of Europe, little is known about the lynx by the majority of the public, with fewer tales, myths and prejudices surrounding it, as well as less data available concerning its history. The Eurasian lynx, the larger of the two species present in Europe, preys upon small ungulate species such as roe deer, chamois, reindeer, as well as domestic sheep. Its attacks on the latter do make them unpopular among people in certain areas, but to a much lesser extent than wolves or brown bears.

ITS HISTORY IN EUROPE

Historically, large colonies of lynx populated most of Europe, except the north-western part of Northern Europe, islands and unforested coastal regions. As a consequence of human activities, however, the lynx gradually disappeared from most of its European ranges. The southern population became completely extinct, and the Nordic communities reached their lowest number in history by the 1950s. In order to save the remnants of their population in northern Europe, comprehensive and effective legal measures were taken in the second half of the 20th century. As a result, the Nordic lynx population is once again stable or slightly expanding, with ca. 2,500 individuals (the highest number since 1850) inhabiting a total area of 873,000 km^2; spreading from the Scandinavian countries into Russia, with a connection to the Baltic population of 2,000 individuals on 60,000 km^2.

In other parts of Europe, several reintroduction programmes were implemented in the past half century, leading to today's rather small and scattered population. The Carpathian population, for instance, includes ca. 2,200 lynx inhabiting a 104,000-km^2 area, while the Alpine region of 40,000 km^2 gives home to approximately 150 individuals. Furthermore, owing to the success of the 1980 reintroduction program in the

The lynx's prime habitats are quiet, wild and remote areas with minimal human disturbance. Wilderness territories ensure ideal space for their successful reproduction and the raising of kittens – Photo: iStock/BostjanT

Bohemian-Bavarian Forest, there are ca. 100 animals living on this territory of about 6,000 km². In addition to these colonies, several isolated occurrences of unclear origins exist in other western, central and southern parts of Europe.
The lynx is listed in Appendix II of the EU Habitat Directives (92/43 EEC) as a species of community interest, whose conservation requires the designation of special conservation areas.

LYNX: A WILDERNESS SPECIES

Primeval forests and large spaces without active human intervention are critical conditions for the development and maintenance of a healthy and stable lynx population. Being fairly shy animals, and even though some individuals venture into areas actively managed by people via commercial forestry or agriculture, the lynx's prime habitats are quiet, wild and remote areas with minimal human disturbance. Wilderness territories ensure ideal space for their successful reproduction and the raising of kittens.

The lynx is a solitary animal – only young mothers travel with their current offspring. They mostly inhabit forested areas, where they play a major role in the maintenance of a balanced ecosystem. Their diet is varied, but with a clear preference for smaller ungulates such as roe deer or chamois, and the semi-domestic reindeer in certain parts of northern Scandinavia. Larger ungulates like red deer, moose or wild boars only rarely fall prey to lynx. As an important predator of the above species, the lynx help control population dynamics and health conditions of ungulates as well as of the ecosystem they are a part of. Through a lack of lynx hunting and killing a certain percentage of ungulates, their population may become so dense that grazing pressure on vegetation may prevent forests from properly regenerating. As a consequence, flowering and berry-bearing shrubs and tall herbs may be replaced by less palatable species like grass and mosses, which in turn may have a secondary effect on other life forms such as birds and insects within the forest ecosystem.

LYNX IN PAN PARKS

Even though many protected areas around Europe bear the characteristics necessary for the lynx to live, mate and survive in, their habitats today are greatly endangered by encroaching development, fragmentation, and lack of management effectiveness all over Europe. For this reason, certified PAN Parks's guaranteed protection of large unfragmented wilderness areas contributes greatly to the management of stable and healthy population of lynx around Europe.
The current network of PAN Parks includes favourable habitat for them in Fulufjället NP in Sweden, Oulanka NP in Finland, Retezat NP in Romania, Central Balkan NP and Rila NP in Bulgaria, Majella NP in Italy, and Soomaa NP in Estonia. Potential PAN Parks such as Rodna NP in Romania, Tatra NP in Slovakia, or Bieszczady NP in Poland also contain large protected areas of wilderness character, which offer favourable habitat for the lynx.

LYNX IN FULUFJÄLLET NP, SWEDEN, SOOMAA NP, ESTONIA, AND TRIGLAV NP, SLOVENIA

FULUFJÄLLET NATIONAL PARK, SWEDEN

Legal base for protection

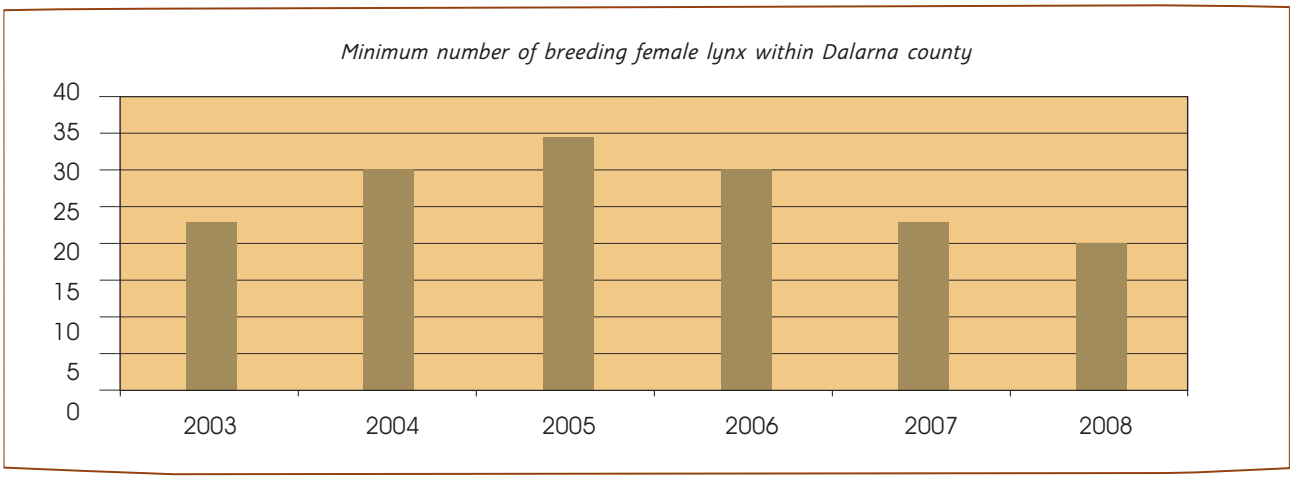
The lynx, being listed in the EU Habitat Directives, is legally protected in the whole of Sweden, and enjoys a strictly protected status in Fulufjället NP, offering large, unfragmented areas with non-intervention management, secure, safe and quiet habitats for lynx. In return, the presence of lynx greatly contributes to the park's objective of protecting the ecosystem's dynamics and provides an opportunity for the monitoring and scientific study of natural lynx population dynamics.

Size of PA and size of habitat suitable for lynx

Lynx's basic home ranges are in forested areas, covering approximately 50 % of the total park size (38,483 ha), but they are occasionally seen on bare mountainsides of higher elevation. Additional suitable lynx habitats are to be found in large protected areas north of the national park, with extended forested areas acting as important ecological corridors between protected areas in the northern part of Dalarna county.
Such vast territories offer ample space for these animals to wander about. Vast unfragmented lands, coupled with the safety of the national park's wilderness zone for sensitive periods like winter, breeding and mating season, make this part of Scandinavia a great example of an ideal habitat for lynx population.

Importance of lynx for the ecosystem

As a top predator, lynx are critically important in the control and maintenance of healthy population dynamics in Fulufjället NP in regard to ungulates and rodents directly, and other elements of the ecosystem indirectly.



Furthermore, the park management's non-intervention approach leaves space for a completely natural evolvement of a healthy lynx population even if the area outside the park frequented by lynx is heavily managed by man.

Status and monitoring

In Sweden lynx are systematically surveyed every year with the primary focus on the number of successful reproductions. Snow tracking is the main method and the number of individual animals and of reproductions is determined along specifically developed criteria.

Results from Dalarna County (the county of Fulufjallet NP)

The lynx population in Fulufjället NP is part of a larger, stable population in central and northern Sweden. The above diagram illustrates recent trends in the number of breeding females within Dalarna county.

The ability of lynx to successfully breed in Fulufjället NP and the neighbouring large protected areas is an inevitable sign that the combination of well-managed wilderness and large unfragmented areas are suitable to provide favourable habitat for the survival of this important wilderness species.

SOOMAA NATIONAL PARK, ESTONIA

Estonia's population of lynx belongs to the larger Baltic lynx population, which is ecologically linked to the population inhabiting Scandinavian territories. Favourable food and habitat conditions offered by this particularly large, connected area result in a highly stable population of an increasing number of lynx.

Legal base for protection

Lynx are protected by law in Estonia, and as a strictly protected species of Soomaa NP, they are subject to non-intervention management within the park. It is the park management's expressed objective to create a quiet and safe refuge of large, unfragmented territories where systematic monitoring of natural population dynamics may be carried out.

Size of PA and size of habitat suitable for lynx

Soomaa NP, a certified PAN Park, has a ca. 11,000-ha-large wilderness territory within its total size of ca. 38,000 ha, 60 % of which provides suitable habitat for lynx. Non-intervention management has evidently contributed to the emergence of a stable population of lynx within the park, a process aided by the large forested areas outside park boundaries as well.

Importance of lynx for ecosystem

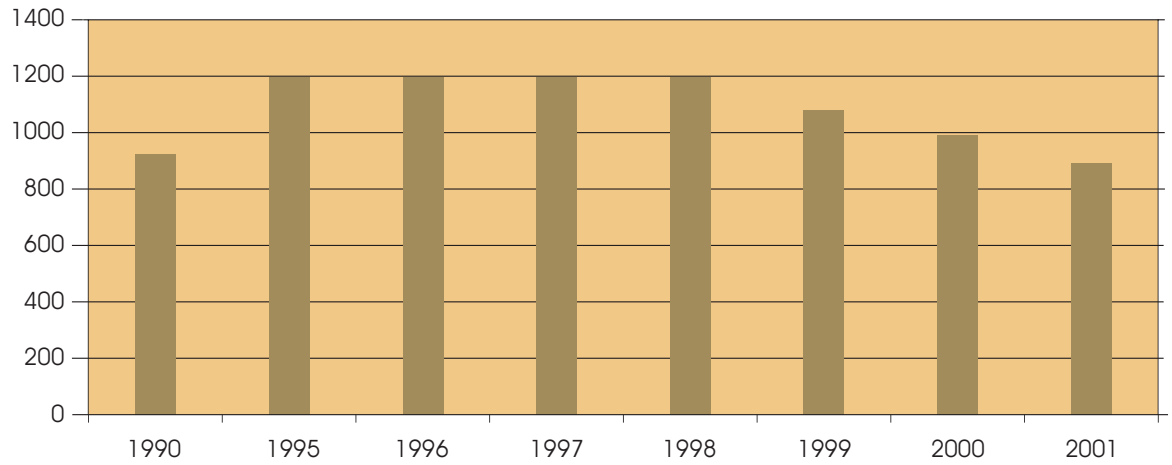
Lynx, being at the top of the food chain, play a crucial role in assuring natural ecosystem dynamics. In order to properly conserve lynx population, special attention must be paid to the protection and hunting management of their main prey species both inside and outside the national park.

Status and monitoring

The combined population of the lynx in Estonia and the Scandinavian territories is one of the strongest and most stable in Europe. Trends in the Estonian population at the end of the 20th century are reflected in the diagram on the next page.

Successful breeding clearly indicates that the lynx find favourable living and mating conditions within Soomaa NP. Recent intensive monitoring of them in the complex study area of about 83,000 ha, incorporating Soomaa

Estimated number of lynx of the Baltic population in Estonia in 1990 and between 1995-2001



NP and the connected Tipu Game Research Area south of the park, revealed that there were at least two reproductions during the 2007/2008 winter and a minimum of three during the next winter, which points to the fact that there are about 12-18 individuals living in the area.

TRIGLAV NATIONAL PARK, SLOVENIA

Lynx in Slovenia are part of the Dinaric and Alpine populations. Having been doomed to extinction by the end of the 19th century, this native species of the area was reintroduced in 1973 during what has now become the most successful such project in Europe: starting with just 3 pairs, brought in from Slovakia, they have constantly been present in Triglav NP for the last three decades.

Legal base for protection

The lynx in Slovenia is legally protected, and park management in Triglav avoids any intervention in managing the area's lynx population. Even though no special protection status is prescribed for lynx appearing in the park, the management's clear philosophy is that the only law applicable to the lynx population is that of nature. Accordingly, lynx hunting is prohibited over the entire territory of the national park, even where hunting is otherwise allowed.

Size of PA and size of habitat suitable for lynx

Triglav National Park is a large unfragmented piece of Alpine wilderness. The success of the reintroduction project and the continuous presence of lynx ever since both testify to the fact that the natural rewilding process and the gradual implementation of non-intervention management approach create increasingly favourable conditions for rare species like lynx. The large, unfragmented area of Triglav NP (with a total size of ca. 88,000 ha) contains a central area of 55,332 ha. About 60 % of the total park area is covered in forest, constituting a suitable habitat for lynx. While the core area provides for a safe refuge, the forested areas outside the national park, spreading across the border into Austria as well, ensure ample roaming territories for them.

Importance of lynx for the ecosystem

Recent research and monitoring has revealed that the lynx has an impact on domestic animals as well as ungulates with regards to behaviour, health conditions, population size, etc. The lynx has even exterminated entire colonies of mouflon, a non-native species to the area. They enjoy full protection within Triglav NP, but for their proper conservation it is crucial to gain support from locals as well as the public, by creating an effective compensation system to satisfy the rightful needs of stakeholders.

Status and monitoring

Since the reintroduction of lynx into the area in the 1970s, several individual animals have been reported in Croatian territories as well as at the foot of the Alps. Moreover, lynx tracking in Triglav NP also indicates that they have been present in the area for more than three

decades now – ever since the Slovenian side of the Julian Alps was designated as a national park. Monitoring methods, including sightings, snow-tracking, inquiry and radio telemetry, indicate the formation of various areas of consistent lynx presence, limited to individual male animals. Certain tracking has pointed to the possible presence of a female, but to date there has been no confirmed evidence of a female lynx with her young residing in Triglav National Park. Over the last decade, lynx have disappeared from certain areas and failed to return, whereas in other areas its presence has been constant, there are 8-10 individuals in the national park.

REFERENCE

- *http://ec.europa.eu/environment/nature/conservation/species/carnivores/index_en.htm*
- *Lynx Online Information System for Europe http://www.kora.ch/sp-ois/*
- *Guidelines for Population Level Management Plans for Large Carnivores FINAL Version 1st July 2008 Prepared by Large Carnivore Initiative for Europe c/o Istituto di Ecologia Applicata, July 2008 Via Arezzo 29 – IT 00161 Rome*
- *Data provided by the national parks of Fulufjället, Sooma, Triglav*
- *Action Plan for the conservation of the Eurasian Lynx (Lynx lynx) in Europe by Urs Breitenmoser, Christine Breitenmoser-Würsten, Henryk Okarma, Thomas Kaphegyi, Ursula Kaphygyi,Wallmann, Ulrich M. Müller Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Nature and environment, No. 112 © Council and Europe Publishing, 2000*

For the proper conservation of lynx it is crucial to gain support from locals as well as the public, for example by creating an effective compensation system to satisfy the rightful needs of stakeholders - Photo: iStock/Dirk Freder

The white-tailed eagle (Haliaeetus albicilla), also known as the sea eagle, or white-tailed sea eagle, is a large and majestic bird of prey with a wingspan of about 182-244 cm. Females grow larger, some reaching 7 kg and 90 cm in height. Their diet is varied, and includes fish, birds, carrion, and occasionally small mammals as well. Their territory size ranges between 30 and 70 km^2, most characteristically in sheltered coastal locations, but they also appear inland, by lakes and along rivers. If a pair finds a suitable and safe habitat in an area, they tend to be faithful to their territories. As a result, their sizeable and intricate nests of sticks, usually built in trees or on coastal cliffs, are often reused by successive generations of birds. Mating pairs produce one to three eggs per year.

ITS HISTORY IN EUROPE

Between 1800-1970, the number of white-tailed eagles underwent a dramatic decline in most of Europe, leading to their total extinction in many regions of western, central, and southern Europe. The largest surviving populations were found in Norway, Germany, Poland, and Iceland, and small pockets of reproducing pairs remained in certain other countries also. Subsequent intense conservation activities, including legal measures to decrease hunting, protection of breeding sites and winter feeding, led to the recovery of many local populations throughout much of the remaining European distribution range. Furthermore, natural and human-assisted reappearance of white tailed eagles has contributed to the recovery of this important wilderness species, the worldwide population of which amounted to 9,000 - 11,000 pairs in 2008.

Since the 1980s, the white-tailed eagle has recolonised several traditional breeding areas in Europe and the recovery is still on-going, showing clear signs of the species spreading westward on the continent. The largest number of breeding birds is still to be found in northern Europe, especially in Norway, but there are now more and more individuals in other countries as well. One of the most successful re-introduction projects has taken place in south-western Ireland. After careful examination of possible sites for the re-establishment of long-term population, Killarney National Park was selected as one of the most suitable habitats for these birds. Within the scope of the Irish Sea Eagle Reintroduction Project, fifteen chicks raised in Norway were released in the park in August 2008. In addition, 36 pairs were reintroduced in 2006 and 40 pairs in 2008 in parts of Britain, both very important steps in the process of helping the recovery of white-tailed eagles in Europe.

In addition to pre-planned reintroduction programs carried out by nature conservation professionals, there has been a quite exceptional but highly welcome natural appearance of white-tailed eagles on territory where they had long disappeared from. On May 22, 2006, a breeding couple was spotted in Oostvaardersplassen nature reserve, about 40 km from Amsterdam, the Netherlands. Having arrived on their own, this couple was the first to breed in the country in modern times, which is a tiny but promising sign of the species building a healthy population throughout our continent.

WHITE-TAILED EAGLE: A WILDERNESS SPECIES

Knowledge and experience of the white-tailed eagle's way of life and behaviour, accumulated during years of re-introduction programs and monitoring activities, indicate that they are just as much an iconic wilderness species as lynx, brown bears or wolves are. Their presence in a given territory clearly indicates the existence of a healthy wilderness ecosystem.
Like many other wilderness indicative species, the white-tailed eagle has a high level of flexibility and is able to survive in areas actively managed by humans. Nevertheless, their preference clearly lies in quiet wild habitats with minimal human disturbance particularly for breeding and nesting, and abandoned territories as sources of healthy food. The long-term survival of a healthy eagle population thus very much depends on large protected wilderness areas, which offer suitable homeland with ample prey to feed on and a safe shelter for breeding and the raising of chicks. Stable populations can most easily develop in large and open expanses of land spotted with lakes, coastal areas or river valleys within the boreal, temperate and tundra zones. In addition, wild and undisturbed cliffs or open stands of large, old-growth trees are needed for nesting.

Major threats affecting this species include the loss and degradation of wetlands, human disturbance and persecution, as well as environmental pollution, collision with wind generators, and indiscriminate use of poisons. Modern forestry methods seriously reduce the availability of suitable nesting habitats. For this reason, it is essential to maintain large, undisturbed spaces for this great bird to breed and thrive in.

WHITE-TAILED EAGLE IN PAN PARKS

Encroaching development, fragmentation and active persecution of bird predators is threatening suitable white-tailed eagle habitats around Europe. PAN Parks Foundation's expressed aim is to act against these risk factors through the effective protection of large unfragmented wilderness areas. With the promotion of non-intervention management, and the protection of large expanses of suitable habitats for this wilderness-dependent species, PAN Parks greatly contributes to the development of a stable and healthy population of white-tailed eagles in Europe. The best example of vast territories offering favourable habitat for them within the current network of PAN Parks is Archipelago NP in Finland.

ARCHIPELAGO NATIONAL PARK, FINLAND

Legal base for protection

The white-tailed eagle, listed in the Bird Directive (Annex 1), is protected by the Nature Conservation Act (1096/1996) and the Nature Conservation Decree (160/1997).

Size of PA and size of habitat suitable for white-tailed eagle

As white-tailed eagles can nest and prey in various habitats ranging from small skerries and wooded islands to shallow and deep sea areas, the whole territory of the 50,219-hectare-large Archipelago National Park offers suitable living conditions for them.

Importance of white-tailed eagle for the ecosystem

Owing to the complex effects of abiotic elements such as salinity and nutrients, and biotic parameters like the number of native and foreign species or human activity, it is especially difficult to map out the exact cause-and-effect relationships within marine ecosystems. Yet, it can be safely stated that white-tailed eagles, being a bird of prey at the top of various different food chains, is a crucial element of the marine ecosystem it belongs to. It preys on predatory fish, eiders, and apparently on cormorants and minks as well, and thus contributes to the proper functioning of this ever-changing, elaborate system.

Status and monitoring

The size of the white-tailed eagle population dropped to the smallest ever in the park in the 1960s, mainly as a result of organo-chloric compounds accumulating at the top of the food chain and thus causing major problems with nesting. In order to eliminate the threat of poisoning through DDT and other chemicals, in the 1970s voluntary groups started winter-feeding of remaining white-tailed eagles with carcasses of pigs. As a result of this nearly 30-year activity ending in 2000, the population within the park has been on the rise again. In addition to other types of voluntary activity aimed at the well-being of eagles in the park, the protection today is done mainly by professional organisations such as Metsähallitus, the Finnish Forest and Park Service.

Besides monitoring data, further interesting information is reflected in the table below which depicts the number of hours spent on monitoring work, as well as a reference to the size of territories examined both on land and water (COA - Co-operation Area of the National Park).

	SW Fin	COA
Breeding couples	93	29
Working hours	936	239
Car driving, km	2763	750
Boat driving, km	2665	789

Among other important conservation activities, the number of breeding couples and chickens are monitored on a yearly basis. For the wider area of the national park the table below indicates a clear rising trend in the number of breeding couples during the last 10 years - an increase starting from 2 couples when the national park was established in 1983.

Year	2000	'01	'02	'03	'04	'05	'06	'07	'08	'09
Breeding couples	15	17	21	20	25	23	25	27	26	29

REFERENCE

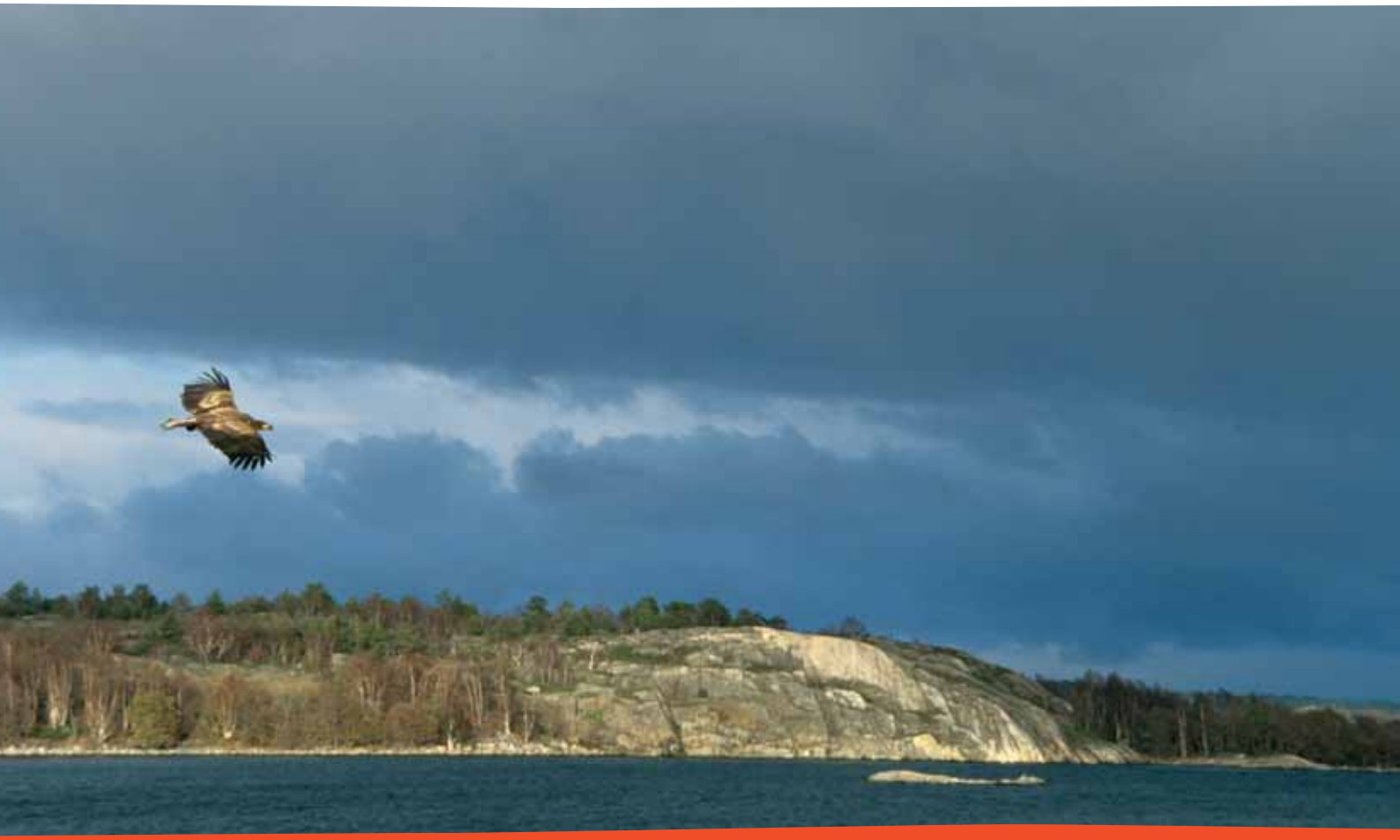
- *http://ec.europa.eu/environment/nature/conservation/species/carnivores/index_en.htm*
- *Data provided by the national park of Archipelago*
- *Irish Sea Eagle Reintroduction Project www.goldeneagle.ie*
- *White-tailed eagle http://www.avianweb.com/whitetailedeagles.html*
- *IUCN Red data list, http://www.iucnredlist.org/apps/redlist/details/144340/0*

The long-term survival of a healthy eagle population very much depends on large protected wilderness areas, which offer suitable homeland with ample prey to feed on and a safe shelter for breeding and nesting – Photo: Seppo Keränen

conclusion

Through the presentation of the current status of a selected group of wilderness-related species in Europe, this publication aims at highlighting the importance of large, undisturbed wilderness areas, found in Natura 2000 sites, and the protection of Europe's remaining wildlife. Natura 2000; this network of protected areas throughout Europe offers protection to over 1000 rare and threatened animal and plant species, as well as 200 habitat types across its 27 Member States. By providing a description of the management and monitoring practices of various different protected areas, with regards to chamois, ibex, brown bears, lynx, wolves and white-tailed eagles, we aim to argue for the need for a non-intervention management approach that will ensure healthy and stable populations of these – and other – important wilderness species. In addition, we hope that the present selection of monitoring experience will serve as inspiration to many nature conservation professionals in their handling of wilderness habitats and species around Europe.

The animals presented in this publication are just a few examples of the species living in Europe related to wilderness – sometimes in a highly obvious way, and other times less visibly. Their reflected status varies greatly around protected areas depending not only on the data available, but also on the personal interest and devotion of park managers, and on general political will and support for this subject. Yet, the data collected on research and monitoring in various sites consistently point to the basic need for a more clearly defined wilderness and non-intervention management approach within the Natura 2000 concept. Even though there have been major steps taken in order to achieve Natura 2000's ambitious goal of halting biodiversity loss by 2010, it is now less and less probable that this goal can be achieved. Nevertheless, in order to realize post-2010 targets it is essential to employ the potentials of Natura 2000. Proper wilderness management, including a non-intervention approach, should become an important factor in complex and elaborate nature conservation strategies.



Proper wilderness management, including a non-intervention approach, should become an important factor in complex and elaborate nature conservation – Photo: Seppo Keränen

As presented by the descriptions included in this document, large, unfragmented territories of wilderness are fundamental tools in maintaining healthy populations of wilderness-dependent species. Even though there are hardly any protected areas in Europe large enough to provide ideal natural circumstances for these large mammals and birds of prey, it is our joint task to work towards the creation and proper management of such territories for a number of reasons. Certain species such as the brown bear or chamois, owing to their adaptability, may successfully survive in actively managed land, but that always has its negative effects. Even though they may avoid extinction via their incredible skills to adapt, wild animals, when deprived of their natural habitats and living conditions, show significant changes in their behaviour. Bears feeding on garbage, or wolves preying on domestic animals does not only lead to direct conflicts with humans but will inevitably result in a hostile attitude of the local human population. Thus it is essential that we take steps towards the creation and maintenance of large, unfragmented territories, where human impact is reduced to a minimum – in order to provide the necessary conditions for wilderness species to mate and breed. It is equally important to link these areas through ecological corridors where human intervention allows animals to move. Wilderness areas and their management via non-intervention methods is the most efficient way to develop large, healthy and balanced populations of wilderness-dependent species.

The results and improvements of the past two years reflect that wilderness and non-intervention management approach, ensuring adequate habitats for wilderness species, are crucial elements of the Natura 2000 project. The *Resolution for Wilderness Protection in Europe* (2008), the European Parliament Resolution calling for increased protection of wilderness areas (2009), the EU *Conference on Wilderness and Large Natural Habitat Areas* (2009) with concrete and addressed action, and the growing PAN Parks network of wilderness areas have all been major milestones in our fight for the development and protection of Europe's wildlife and wilderness areas in general. As a smaller but equally important step in this process, this publication has been compiled in order to provide an insight into the current status of wilderness related species with the hope that the data collected will initiate the establishment of guidelines and methods for the future protection of those species.
At the same time, we hope to have put together a report that will trigger in-depth discussions about the relationship of wilderness species and humans. Via the examples, we would like to emphasise the fact that wilderness is not a human-free concept. Quite the contrary: we believe that wilderness areas, managed along the guidelines of non-intervention approach, should become the main focus of professionals concerned with nature conservation, as well as non-professionals either living in close proximity of such territories or simply being conscious of the highly exploited nature's call for help, currently in vogue. In becoming a topic of general interest, these territories, with large and healthy populations of wild animals, may greatly add to the value of a protected area from a human perspective: they may serve as favourite visiting spots for tourists appreciative of nature in its true form, undisturbed by logging operations, bulldozers or abandoned buildings. The experience of PAN Parks Foundation underlines the fact that properly managed wilderness areas, where wilderness species are left undisturbed, are increasingly attractive destinations for nature-loving tourists.

PAVING THE WAY FOR THE FUTURE

Current EU legislation encourages re-introduction programmes of extinct species related to wilderness habitats. We sincerely hope that this publication will be helpful in designing a feasible framework both for further, successful reintroduction programs and the continuing restoration of wilderness habitats.

In order to be able to protect remaining wilderness areas, PAN Parks Foundation recommends that the European Commission develops clear monitoring guidelines so that special emphasis is placed on the monitoring of wilderness-related species in non-intervention areas, where large undisturbed spaces provide safe homeland for them. Data collected during the monitoring of wilderness-related species living in undisturbed, non-intervention areas will provide evidence that they form incomparably healthier populations in their natural habitats and without major human impact. The improvement of the existing monitoring system via developing comparative research could prove that wilderness areas play an essential role in the survival and well-being of wilderness-related species in the long term – an exciting perspective to build upon.

Improved research and monitoring activities could invariably support proper conservation of the last of the wild in Europe, as well as raise awareness of the need for wilderness protection all over our continent.

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PAN Parks works to protect Europe's wilderness, the continent's most undisturbed areas of nature. In these areas our knowledge and understanding is enhanced for the benefit of nature and humanity alike; people appreciate the pleasures offered by wilderness with the respect it deserves.

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PROTECTING EUROPE'S WILDERNESS