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# Transboundary Cooperation: The Best Way to Share Common Responsibility for Future

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Additional information is available at the end of the chapter

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## Abstract

The Bavarian Forest National Park (BFNP) and Šumava National Park (ŠNP), established in 1969 and 1991, respectively, are located between Prague and Munich. Their long common border accents the transboundary issue regarding nature conservation, ecological corridors and connectivity. Plans to protect this large forest landscape, dating back to the early twentieth century, were never implemented due to the two World Wars and Iron Curtain. Initially, there were many joint activities. Many common projects (e.g., joint information centre, transboundary public transport system, GPS lynx and deer telemetry) were conducted. Both sides have learned a lot during these 25 years of cooperation. The main obstacles in cooperation are economic differences between the regions, language barriers and different policies and laws. There is only one common ecosystem of mountain forests, common populations of lynx, capercaillie or bark beetle, and the partners have to learn how to share their common responsibility for the future. Step by step, the transboundary cooperation is improving, which is very important in good years, but maybe even more important in bad years. The principle stance of the transboundary partner can buffer threatening in the neighbouring national park and support recovery when the crisis is over.

**Keywords:** transboundary cooperation, non-intervention management, wilderness, Natura 2000, conservation targets and police, governance

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## 1. Introduction

The Bavarian Forest and Šumava National Parks (BFNP & ŠNP) are located between Prague (Czech Republic) and Munich (Bavaria, Germany), approximately 180 km from each of these two capitals (**Figure 1**). The parks have a fairly long common border, which accents the transboundary issue regarding nature conservation, ecological corridors and connectivity. Plans to protect this large forest landscape date back to the early twentieth century, though

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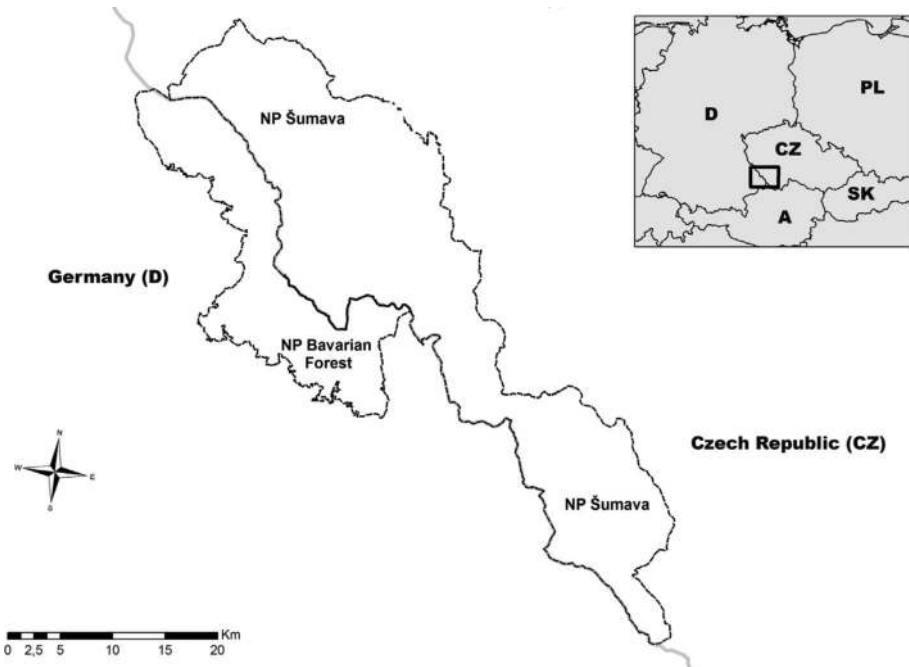


Figure 1. Map showing locations of the Bavarian Forest NP, Germany, and the Šumava NP, the Czech Republic.

they were never implemented, due to the two World Wars and then due to the Iron Curtain, which separated the political power blocs and the human and natural environment of Europe for half a century, from 1945 to 1990.

The management aims for the national parks have not yet been clarified in all aspects. When the Bavarian Parliament voted unanimously to establish the Bavarian Forest National Park (BFNP) in 1969, the first one in Germany, it was thought that this project would probably generate an urgently needed income for the local population through creation of new jobs and support of tourism in this poor region lining the Iron Curtain. Similar reasoning also stimulated the establishment of the Šumava NP (ŠNP) in 1991, immediately after the fall of the Iron Curtain. There is a proverb, however, saying that when the two are planning the same thing, it does not have to be the same.

In this chapter, we are summarising several decades' experiences of management of these two national parks with very similar natural conditions and some social differences. We stress the importance and benefits of transboundary cooperation, which can bring people together and—in addition—improve people's relationship to nature.

## 2. Nature

A chain of mountains rises along the Czech-Bavarian border in the heart of Europe. More than 2 million hectares of Bavarian and Bohemian forests have remained almost entirely unfragmented

by roads and free of larger settlements. The Bavarian Forest National Park (Germany) and the Šumava National Park (Czech Republic), located in the centre of this area, with their highest peaks Mt. Rachel (1453 m) and Plechý (1379 m), respectively, represent a densely wooded landscape of great beauty, comprising crystal clear mountain streams, unspoiled marshlands, mires and bog woodlands, and abandoned mountain pastures at higher elevations.

This forest, called *Silva Gabreta*, is unique because of its almost natural condition and size. It is the last remnant of the 'Hercynian Forest of the Romans' and, looking back, the territory has always been associated with deep forest. The historical presence of the Celtic Boii tribe in the Czech Basin is hinted in the original Germanic name for the mountain range—*Böhmerwald* (probably 'the forest of Boii'), as well as in the medieval Latin name *Silva Bohemica* (from *Chronica Boëmorum/The Chronicle of Bohemians* by Cosmas of Prague, etc.). Any written Czech reference to 'Šumava', which is based on the ancient Slavic 'šuma' [shuma], also indicating forest or dense woodland and still in use (in Croatian, for example), can only be found from as late as the seventeenth century.

In summary, 'Böhmerwald' (Bohemian Forest in English) is used as the name of this transboundary region. Designations 'Bayerischer Wald' (Bavarian Forest in English) and 'Šumava' named the national parks, founded on the Bavarian and Czech sides of the border. Because of the partly nationally sensitive issue, only the country-specific names have been used.

The Bohemian Forest is home and refuge for many endangered species of plants and animals. A stable population of lynx (*Lynx lynx*) is living in the region and observations of wolves (*Canis lupus*) became more and more frequent recently. There are many elements of the northern boreal forest, and capercaillie (*Tetrao urogallus*), Ural owl (*Strix uralensis*), three-toed woodpecker (*Picoides tridactylus*) and other species have an important south-western outpost in the middle of the broad-leaved forest that dominates this part of the continent. In an area of more than 90,000 ha, BFN & ŠNP today protect a representative example of the Central European highlands and an important part of Europe's natural and cultural heritage.

## 2.1. Natura 2000

Both national parks form the largest terrestrial Natura 2000 sites in both countries. They are a significant part of the Natura 2000 network, which was established to protect the most endangered habitats and species in Europe, as defined in the 1992 Habitats Directive 92/43/EEC and 1979 Birds Directive 79/409/EEC and 2009/147/EC. More than 25 Natura 2000 habitats have been recorded in this area [1], the following ones being most important: 9410 mountain spruce forests (ass. *Piceion excelsae*); 7110 peat bogs (ass. *Leiko-Scheuchzerion palustris*); 91D0 bog woodlands (ass. *Dicrano-Pinion*); 6230 mountain *Nardus* meadows (ass. *Nardo-Agrostis tenuis*).

## 2.2. Bark beetle: spruce forests story

Bark beetle (*Ips typographus*) is the main pest species in any spruce forest. Bark beetles attack mature trees and infestation results in death of the tree [2]. Bark beetle outbreaks are therefore a natural feature of spruce forests in BFN & ŠNP. Based on historical evidence, large-bark beetle outbreaks occurred many times in the past in this area [3]. The spruce trees we see here now originated partly after a wind disturbance, which was followed by a bark beetle outbreak

[4] and subsequent salvage logging at the end of the nineteenth century. However, now these forests have a natural character [5]. Recently, an extensive bark beetle outbreak occurred in the 1990s and then especially following the windstorm Kyrill during 2007–2012. About 700 thousands of trees were uprooted by Kyrill in 2007 [6].

Bark beetle outbreaks are a key issue in the management of the area, leading to a debate about the appropriate management of bark beetle. Spruce trees are an important habitat in the BFNP & ŠNP, supporting red list species. Broadly, two management approaches are suggested in the management of bark beetle: (1) *intervention*—includes trap trees, insecticides and salvage cutting [7]; this is practiced in the majority of BFNP & ŠNP, with appropriate intervention in perimeter areas. (2) *Non-intervention*—no management intervention in forests affected by bark beetle; practiced in non-intervention areas of BFNP & ŠNP (also with appropriate intervention in perimeter areas).

Management '*intervention*' does not always appear to be effective—Grodzki et al. [7] found no significant differences between tree mortality in intervention and non-intervention management areas and the outbreaks in both intervention and non-intervention areas ceased approximately at the same time. Bark beetle outbreaks are a natural phenomenon, but they have been exacerbated by the non-native spruce monocultures that currently exist in BFNP & ŠNP (see Section 3). Non-intervention management results in a more varied vegetation structure and therefore has significant benefits for biodiversity and greater resilience in the longer term [6, 8, 9]. Proponents of intervention may argue for 'one-off' felling to achieve bark beetle management, but in practice this would be a regular sequence of interventions equating to a managed forest environment [2].

It is worth noting recent developments on bark beetle management in Austria, where a recent paper provides guidance on how to deal with bark beetles outbreaks in Austrian national parks and wilderness areas [2]. The proposed management approach will not compromise the non-intervention philosophy in the core zone of these areas, while at the same time providing sufficient protection to surrounding landowners and their managed forests. It is based on a zonation model, which foresees a bark beetle control zone of varying width around the non-intervention zones of the protected areas [2]. It now enjoys a broad support of Austrian conservationists and forest management authorities alike [10].

Similarly, in BFNP & ŠNP, parts of forests were left without interventions, while salvage logging was applied in other areas. It turns out that the effect of salvage logging on vegetation was greater than that of the bark beetle outbreak itself [4, 11]. Bark beetles, together with wind disturbances, were recognised as the main biodiversity drivers in the forests of this region [8].

### 3. People

Prehistoric humans were active in the Bohemian Forest foothills as far back as 12,000 years ago. Celtic practise of gold panning in the basin of the Otava River in the period 300–50 BC must also be linked with the necessity to cut down the surrounding forests. However, neither of these activities significantly affected the uppermost areas of the Bohemian Forest, i.e., areas

hosting the mountain spruce forests [12]. The earliest signs of settlement in the vast forest along the Czech-Bavarian border can be found in the eighth to ninth centuries, when Benedictine monks from Nieder Altaich Abbey (founded in 741) were assigned administration of the so-called Northern Forest. Czech rulers soon realised that the extensive and difficult-to-traverse boundary forests were useful as a natural defence of the kingdom. Therefore, for strategic reasons, a significant part of the Bohemian Forest was retained in the possession of the Crown (part of the territory is still called 'Královský hvozd' [The Royal Forest]), as the king wished to have a direct control of the colonisation process by creating settlements for defending gateways to the country [13]. Mass real settlement expanded in the lower parts of the Bohemian Forest only during the High Middle Ages, i.e., from the fourteenth century, with the development of gold and iron ore mining. It can be assumed that during this period there appeared places surrounded by concentrated deforestation activities. However, the forests in higher elevations survived without serious human impact for centuries. In addition to surface settlement, the Bohemian Forest has been, since prehistoric times, affected by historical routes – pathways along which settlements emerged, trails leading along the river valleys via mountain passes and along hillsides. Settlements were founded around inns and comprised all necessary requirements. Any significant impact as regards the highest part of the Bohemian Forest thus only occurred in modern times, with the boom in glass, iron and timber industries dating from the sixteenth to seventeenth century, when the main settlements in the upper part of the Bohemian Forest (Kvilda, Prášíly, Walhäuser, etc.) were founded. The development of glassworks was the actual factor stimulating the settlement of difficult-to-access areas, then unsuitable for any other economic use. In particular, glass production in the Bohemian Forest heavily decimated beech forests. Beech ash was used to create pearl ash (potassium carbonate), necessary for the manufacture of glass, while beech wood was also good for making charcoal. Both of these were possible to obtain even in places that were relatively remote and difficult to access for timber transportation. Sites, where remains of local wood-burning fireplaces were found, include the cirque of Plešné Lake, in the altitude of about 1250 m. At that time, the mountain spruce forests at the highest altitudes were affected only by selective logging and some forest cattle grazing [12]. The most intensive use of forests in the highest parts of the Bohemian Forest began in the early nineteenth century, with adapting certain mountain rivers for shipping timber and construction of two navigation canals that enabled timber to be transported from the mixed mountain forests, or some spruce stands, to lower altitudes for sale. Economic exploitation further altered the natural structure of mountain forests in the Bohemian Forest and accelerated the development of spruce plantations, especially at lower altitudes, where these replaced the native mixed deciduous forests. To speed up the growth of spruce in waterlogged areas, people built networks of drainage channels. Many peat bogs and wetlands were drained up to cultivate the landscape. Local people often dug the peat and used it as a litter for cattle or for home isolation. However, one should not imagine that humans logged just any forest in the area. In the middle of the nineteenth century, approximately 25% of forests in what is now the Šumava National Park were still classified as primeval forest [3].

Human needs and technical capabilities were on the rise and the stretch of virgin forest in the Bohemian Forest dwindled century after century. Once again, it was strategic purposes, although largely for reasons of power, which eventually saved a part of Bohemian Forest's

natural beauty. The Iron Curtain, which in the second half of the twentieth century divided Europe for many decades, proved tragic for thousands of human lives, but the natural heritage of the Bohemian Forest benefitted from it. After 1945, most of the original residents were displaced from the Czech part of the Bohemian Forest and many villages in the frontier area were abandoned, often even intentionally destroyed. Some other villages were resettled with newcomers that had no experience of living in a mountainous region, were vetted and subsidised to live in this frontier zone during the socialist era [14]. The number of residents more or less remained the same between 1950 and 1990. The displacement of residents, strictly regulated access and very limited management in the landscape of the boundary zone created excellent conditions for the unhindered development of the area. Before the establishment of the Šumava NP, the local economy was based mainly on extensive forestry and agriculture, whereas tourism suffered, because the area consisted of both a frontier zone and closed military training areas. Also the situation on the Bavarian side of the border was hard during the Iron Curtain years. The young generation escaped to the cities, the region suffered economically and was gradually depopulated.

#### **4. The Bavarian Forest NP**

Back in the 1960s, there was a fierce argument between nature conservationists and the tourism industry concerning the future use of the Rachel-Lusen area in the Bavarian Forest. Some argued that new ski runs and lifts in the hitherto unspoilt forested region would bring more visitors and secure incomes. The alternative was creation of a national park, a very old idea dating back to the beginning of the twentieth century. At the end of the 1930s, plans for a Bohemian Forest National Park first began to take shape, whereby the bigger part of the valuable area is on the Czech side of the border. The effort to put the area under protection by the Reich Office for Nature Conservation was stopped abruptly in 1943 in the chaos of the Second World War. On June 11, 1969, the Parliament of the Bavarian state decided unanimously to establish a national park in the Bavarian Forest. Further design and organisation of this first German national park, which was officially opened on 7th October 1970, found its scientific basis in the so-called 'Haber Analysis' of 1968 [15], which described the ecosystem conditions in the new national park [16].

The BFNP was the first protected forest in Central Europe, affected on a large scale by the bark beetle outbreak following several wind throws [17]. Since the 1980s, the park has served as a pilot study area for Central Europe, from which management guidelines have been developed for commercial forests and strictly protected areas with a 'benign neglect strategy' [18]. Periodic windstorms and bark beetle outbreaks have been recognised as a natural phenomenon affecting this forest region for centuries. Scientists reported strong natural regeneration of mountain spruce forests affected by bark beetle over the past several decades [19]. As a result of its consistent implementation of the principle 'Let nature be nature', the Bavarian Forest NP has been recognised internationally by the Council of Europe (with the European Diploma) and the IUCN (World Conservation Union) as a Category II National Park. In accordance with International Nature Conservation Quality Standards, the park has to guarantee that those priority management aims, which target an undisturbed development of nature, are implemented on at least 75% of the park's territory.



The Bavarian Forest NP was established as the first national park in Germany in area between the Lusen Mt. and Grosse Rachel Mt., Lower Bavaria, on 7 October 1970, then measuring 13,300 ha. Since its expansion on 1 August 1997, it has covered an area of 24,250 hectares. Villages are not part of the BFNP. Zonation is used as a useful tool for management of the BFNP. In accordance with the IUCN rules after appropriate transitional periods, at least three quarters of the surface should be managed in accordance with the primary purpose of protection. In view of this, the following zones with different management purposes are distinguished in the BFNP (**Figure 2**) [16]:

1. **Natural zone:** where natural processes have priority and no human interventions are planned—it covers 58.64% of the BFNP total area;
2. **Development zone:** subdivided into three sub-areas (2a, 2b, 2c)—this zone covers 17.61% of the total area of the BFNP and—step by step—more and more forests are being left to develop naturally here;
3. **Marginal/buffer areas:** covering 22.07% of the total surface area, which allow long-term effective forest protection measures in order to protect neighbouring forests;
4. **Recreation zone** (only 1.68% of the total surface area): this zone secures the function of visitor facilities.

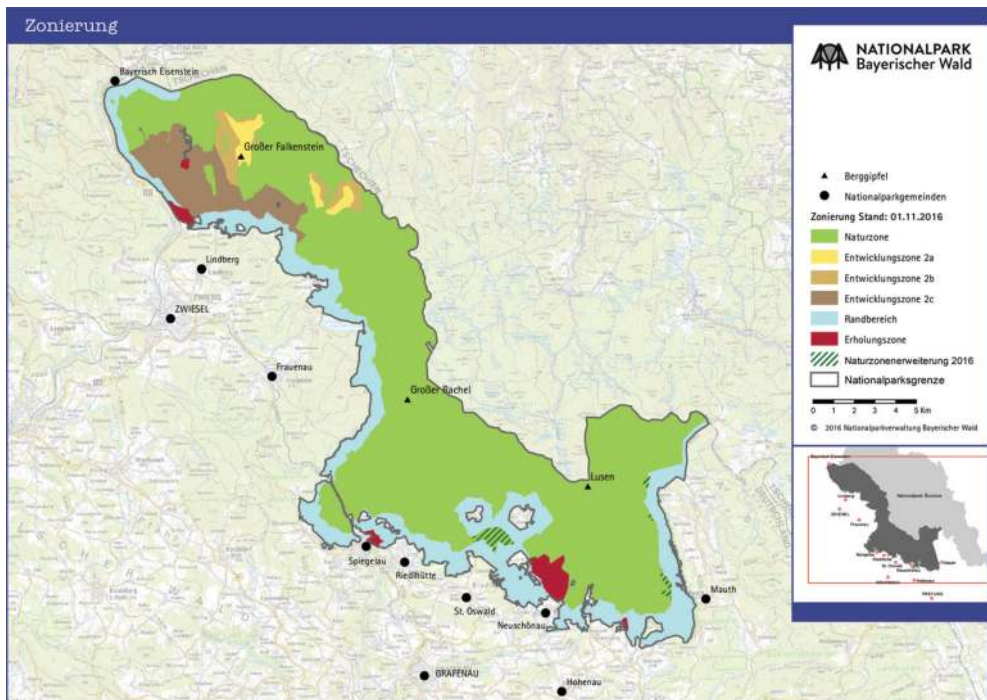


Figure 2. Zonation of the Bavarian Forest National Park.

Since the establishment of the national parks, tourism in the adjoining rural communities has developed from its modest beginnings to a supporting pillar of employment and income. According to the study by Job et al. [20], the BFNP is an important component of the regional economy. With 760,000 visitors per year, the BFNP is the region's most frequented attraction. As much as 67% of guests to the BFNP stay here overnight, the remaining 33% are day guests, local people and day trippers who come from their homes. The seasonal changes of these visitor numbers confirm the seasonal pattern of tourists in the region: most come in the summer and winter seasons and there are lower numbers in the off-peak months [21]. The highest numbers of visitors in the summer season are during July. The majority of the visitors come from Germany. Only 3.9% were foreigners, mainly from neighbouring countries, such as the Czech Republic, Austria or the Netherlands. The share of the tourism held in the BFNP provides the region with an occupation equivalent to 940 people and an additional 200 full-time jobs in the national park authority [20]. A comparison of the costs and benefits of the national park shows that the benefits definitely compensate for the costs that occur. The government spends 12 million Euro per year in the national park. This sum should, however, be seen alongside with the total number of jobs the park creates: 200 employees in the national park administration and 939 full time equivalents indirectly related to the national park—a total of 1139 jobs. Every Euro that the government invests in the national park is more than doubled by the amount spent in the park by its visitors [21].

## 5. The Šumava NP

Although Czech scholars had a limited access to the Bohemian Forest, which remained largely unexplored until the 1990s, they were aware that it contained many rare organisms and suggested the establishment of the Šumava Protected Landscape Area (Šumava PLA) already in 1963. At that time, there was no political desire for establishing the Šumava NP. However, the idea was not forgotten and preparation of the new national park started very soon after the Velvet Revolution in November 1989. The establishment of the Šumava NP in 1991 was recognised to be a good solution for this marginal region of great natural value. At the same time, in 1990, the former Šumava PLA was included in the list of UNESCO Biosphere Reserves (BR) and the Šumava peatlands became an important Ramsar site [14].

The Šumava NP (68,500 ha) was established in the most valuable parts of the Šumava PLA: in its central parts and along the national border. The remaining area (99,624 ha) of the Šumava PLA became a buffer zone of the NP (**Figure 1**). Unlike many other national parks, including the Bavarian Forest NP, some municipalities and their properties are parts of the Šumava NP. There is currently less than 1000 permanent residents living in six villages located inside the Šumava NP and land administered by 16 other municipalities partly overlaps with the area of the Šumava NP. The original concept assumed that the large area of the highest conservation value and least affected by humans, partly adjacent to the Bavarian Forest NP, would be strictly protected in the newly established NP. Development was to be more strictly regulated in this core zone than in the buffer area of the Šumava PLA, where a mixture of development



and conservation was welcomed, particularly in the villages neglected for decades. However, this concept was implemented only in the initial years of the Šumava NP [14].

Long-lasting debates on the future of nature conservation in the Bohemian Forest are linked with discussions on zoning of the Šumava NP [22]. Unfortunately, the fact that zoning is just a very important tool of conservation, rather than a goal is currently not included in these discussions. The Article 4 of the Czech Government Regulation No. 163/1991 of March 20, 1991, which established the Šumava NP and set the conditions for its protection, states:

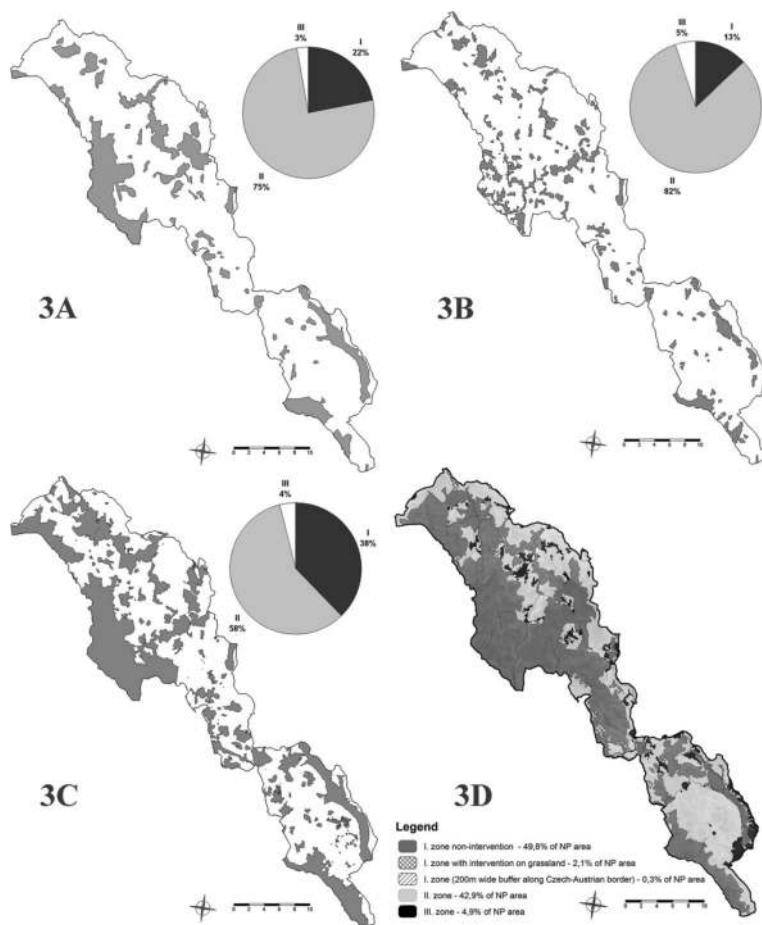
1. Methods and ways of protecting the national park are differentiated according to the division of the national park into three zones, defined according to the natural values.
2. Areas with the most important natural values in the national park are classified as Zone I (strictly natural, particularly natural or slightly amended ecosystems).

The aim was to preserve or restore natural ecosystem processes and limit human intervention into the natural environment to maintain this state. Since the establishment of the Šumava NP, its zonation has undergone significant changes, however (**Figure 3**).

Initially, Šumava NP zonation mostly accepted the international concept of zoning as a basic tool for scaling the value and protection of the NP interior. Fifty-four units of Zone I (**Figure 3a**) included a mosaic of habitats and isolated occurrences of mires, habitats of the highest value, often surrounded by forests, which were partly affected by forestry in the past. Most of the best places, including natural reserves protected long before the establishment of the Šumava NP (e.g., Modravské slatě, Chalupská slat, Jezerní slat, Trojmezna) were included in Zone I. Many of them were maintained without direct human intervention for decades.

In 1995, there was a change in the leadership of the national park, which brought about a change in the concept of NP management [22]. The size of Zone I was reduced and the original 54 units were further fragmented into 135 smaller ones (**Figure 3b**). The main reason was a strong desire for active management, mainly the logging of bark beetle-infested trees. The new definition of Zone I was based primarily on forest typology and this zone included large peat bogs and old forest fragments, which were supposed to be ecologically stable and highly resistant to natural disturbances (primarily bark beetles infestation). However, some units of Zone I were too small for natural processes. Also many valuable habitats, particularly smaller raised bogs and waterlogged spruce forests, were excluded from Zone I and transferred to Zone II, where then standard forestry practices were applied.

Since 1998, cutting of bark-beetle infected trees and cleaning of uprooted ones were allowed in many units of Zone I. This was strongly criticised by experts, representatives from NGOs and international organisations like IUCN and Ramsar Committee. In spring 2004, the Czech Minister of Environment ordered preparation of a new zonation following the international experts' recommendations. The new proposal included extension of Zone I to 39% of the Šumava NP area. Its main goals were respecting natural conditions and minimising negative effects associated with fragmentation of Zone I (**Figure 3c**). Unfortunately, negotiations with local communities and politicians were not successful and this zonation was not officially approved, despite many round-table discussions and public meetings.



**Figure 3.** Zonation of the Šumava National Park. A: 1991-1995, B: 1995-now, C: zonation suggested in 2004, not adopted, D: currently suggested zonation.

The ever-repeating picture is that ecologists prefer non-intervention management in the core zone of this NP and argue that logging in these stands of mountain spruce negatively affects biodiversity, while natural disturbances promote biodiversity [8]. On the other hand, traditional foresters who are opponents of the national park concept and various politicians promote logging of bark beetle-infested trees, which results in a reduction in the area of the non-intervention core zone. This controversy resulted in a lack of a long-term management strategy for the Šumava NP.

The history of the ŠNP that lasts more than 25 years reveals several reasons why international (IUCN) standards were not successfully implemented there. Experience of the endless negotiations concerning the new zonation proposal and several other important documents (e.g.,

new management plan or regulation of visitor numbers and their access to certain places) has shown that local representatives often make obstinate claims, instead of presenting reasoned arguments and objections. They very often alternated their opinion, which caused an increasing lack of mutual trust between them and the NP Authority.

The above-mentioned problems are remarkable examples of the malfunctioning of the council of the Šumava NP, a consultative and initiative body according to the Act 114/1992 (on nature and landscape protection), and the ambiguous attitudes of the Czech Ministry of Environment. The on-going debate intensified after the Kyrill windstorm in January 2007, which uprooted hundreds of thousands of trees in mountain spruce forests. After Kyrill, a non-intervention management approach was finally suggested for some parts of the Šumava NP, but this was not always mandatory and the final decision was often left to local managers and/or owners, as only a part of the park area is owned by state and the remaining part is privately owned.

Ten years after the Kyrill windstorm, at the beginning of 2017, passing the bill on national parks in Czechia [23] is giving a hope that the core zones in the most valuable Czech national park will cover at least 50% of its area in the future (**Figure 3d**). With this new legislation framework, zonation of the national park will recognise four zones:

1. **Natural zone:** covering large areas dominated by natural ecosystems—non-intervention management is planned here;
2. **Close-to-natural zone:** covering part of the national park, where ecosystems were partly affected by human activities;
3. **Zone of concentrated care:** where strongly changed ecosystems exist and long-term active management is planned;
4. **Zone of cultural landscape:** covering built-up areas, designated for their sustainable development.

A new zonation of the ŠNP and new management plan are currently under preparation and successful negotiation with local representatives is a big challenge for the next months.

The Šumava NP is a significant socio-economic factor in the region. Similar results to the BFNP about importance of the national park for the local economy (see Section 4) can be observed also in the Šumava NP, though hard data have not yet been collected. A new transboundary project for monitoring socio-economical aspects is now in progress. Dickie et al. [2] performed a socioeconomic study of the pros and cons of expanding wilderness zones in the Šumava NP. They considered two potential future management scenarios:

1. Adoption of draft Bills that would declassify protected areas and enable developments (e.g., ski lift development) within some of the Park's most valuable habitats for wildlife.
2. Adoption of proposals to expand the wilderness area in the Park's core with associated tourism opportunities and compared their economic impacts for the ŠNP with the scenario of continuation of current management. They arrived at the following conclusions.

### **5.1. Declassification of the protected areas and enabling developments within some of the Park's most valuable habitats for wildlife**

The proposals in the draft Bills have the potential to generate employment through ski lift development, but much of this activity will use imported labour and/or be short-term (e.g., associated with construction work). The financial viability of this development is uncertain for a number of reasons, including: likely requirements to compensate for damage to protected habitats, reduced future snow cover due to climate change, and competition to attract sufficient visitors to use the ski lift. The economic impacts of the adoption of the draft Bills (and, to a lesser extent, of continuing with current management) would also include negative effects on current nature tourism activity and on its long-term potential to expand. Currently, and certainly if the proposed plans in the draft Bill are adopted, the value of the NP as an area of wilderness and high-quality ecosystems would be reduced. This would weaken one of ŠNP's key selling points as a tourism and recreation destination. The opportunity for international branding of the national park based on these ecosystems would be diminished. This damage to ecosystems would go against the views of the 75% of the Czech population who agree that it is important to halt the loss of biodiversity because we have a moral obligation to look after nature.

### **5.2. Adoption of proposals to expand the wilderness area in the Park's core with associated tourism opportunities**

Pro-wilderness development would allow economic opportunities to be pursued to promote nature-based tourism at new locations and activities around an expanded non-intervention zone, while not undermining the ecological integrity of the NP. This tourism offer is in keeping with visitor's preferences, and can exploit global growth in ecotourism activity. The best access points to the Šumava NP's wilderness are currently regarded as being "full" in that further increases in visitors would damage the wilderness experience which draws visitors. Therefore, there is perceived to be demand for a larger number of carefully managed access points to a larger wilderness area.

Local benefits could be enhanced through nature-based tourism development that is spread throughout the communities in and around the park. This would not conflict with the park's wild image that attracts visitors, and this visitor market could grow with support from expanded marketing activity. The potential local economic benefits from the pro-wilderness development option include: maintaining and expanding employment in management of the National Park's habitats, visitor facilities and access points; increased nature-based tourism trade in the villages within and surrounding the ŠNP; increased opportunities to attract financing for local economic development, and for the NP's management, both internationally and locally; a greater proportion of value-added in the tourism offer being generated within the local community, meaning more income can be retained locally and support greater indirect economic activity, and maintaining forestry employment.

## 6. Transboundary cooperation

With the legendary summit meeting of Czech, Austrian and German nature conservationists on the Dreisessel peak the discussions about a large forested national park in the heart of the European continent began and have continued until today. Leading nature conservationists such as Hubert Weinzierl, the popular Professor Bernhard Grzimek, and the President of the German League for Nature Conservation (DNR), Wolfgang Engelhardt, supported the idea (<http://www.nationalpark-bayerischer-wald.de>).

Another 30 years were needed to open the Iron Curtain. With great enthusiasm, the two national park authorities established practical, though informal collaboration from the very beginning in 1991, when the Šumava NP was established [17]. Currently, the main partners involved in transboundary cooperation in BFNP & ŠNP are: Ministry of Environment of the Czech Republic, Ministry of Environment and Public Health of the State of Bavaria, Šumava National Park Authority, and Bavarian Forest National Park Authority. Since 1999, cross-border cooperation has been based on the Memorandum on Cooperation between ŠNP and BFNP, which was signed by the State Ministers responsible for the respective national parks. In the meantime, several supplements were signed, e.g., regarding park management and new cross-border trails.

As already mentioned, there is a long tradition of transboundary cooperation [24]. In order to achieve the common objectives for this integrated area, cross-border cooperation has focused primarily on the following:

- **First joint information centre:** The information centre was built at Bučina, one of the main points of entry to the ŠNP from the BFNP. This was the first joint project. Bilingual displays on the national park concept, development of protected areas, landscape succession, national park regulations and, above all, visitor opportunities are presented there.
- **Transboundary public transport system:** In 1996, the two national parks were enriched as a holiday area with the introduction of public transport systems. In the Bavarian section, 'hedgehog buses' are operating since May 1996, linking all the park's important visitor facilities and sites with the surrounding towns and villages. A public transport system was also established in the ŠNP in the same year. The two services use buses that run on low-emission natural gas or bio-gasoline fuels. The timetables of both public transport systems are coordinated and bilingual.
- **Historical border train station to cross-border information office:** Following the ceremonial inauguration of the restored historical border train station in Bayerisch Eisenstein/Alžbětín by the two former State Ministers, a cross-border information office was set up, offering bilingual information on both national parks and also the Šumava Protected Landscape Area and the Bavarian Forest Nature Park.
- **Coordination and training of ranger services:** Ranger services are coordinated on both sides of the frontier in regular meetings. In addition to providing professional training for

individual rangers, joint courses serve to foster personal acquaintances and understanding of the history and culture of the neighbouring country. In addition, a reference manual with the most important facts and information on both national parks was prepared in the form of a joint bilingual ranger handbook.

- **Successful reintroduction of the Ural owl:** 25 years of experience have shown that efforts to re-introduce the Ural owl were boosted considerably, thanks to the decision to initiate similar projects not only in the ŠNP, but also in the adjacent forested areas of Austria. This is a basic prerequisite for guaranteeing the development of a sustainable population of this owl species through an International Management Programme.
- **Restoration of anthropogenically disturbed habitats:** An artificial drainage channel in the area of a valuable peat bog extending across the state border was returned to nature in the core zone of both national parks in summer 2005.
- **Junior ranger programmes, international youth camps and Czech-German youth forum:** Several times young people from the national park region were given the opportunity to explore the BFP & ŠNP as part of a cross-border camping programme.
- **Natura 2000 management planning:** BFP & ŠNP are part of a uniform natural landscape that disregards any political boundaries. Measures to protect endangered and rare habitats and species should ideally be designed on a large-scale basis and in this case, in a cross-border fashion. With this in mind, both national park authorities have been successfully working together on a project promoted by the EU (INTERREG III A) to establish Natura 2000 management plans that include cross-border coordination. Within the frame of this project, a bilingual brochure entitled 'Europas Wildes Herz–Divoké Srdce Evropy' (Europe's Wild Heart) was published in September 2007 [1].
- **Research & LTER & Silva Gabreta journal:** Both NPs are long-term ecological research sites (LTER). There is a long tradition of research and monitoring in the Bohemian Forest. The first forest nature reserve was declared as early as in 1858 to study natural forest development. Long-term databases of ecological data are available (though not all of them computerised). National parks serve as extremely attractive control areas for ecosystem research, especially for scientific long-term monitoring, because they represent permanently protected ecosystems in a process of near-natural development [24]. A transboundary long-term research platform is now being prepared, which should cover most of transboundary ecological and sociological research activities conducted in the region. The most successful recent common research projects include GPS lynx and deer telemetry. Currently, several new transboundary INTERREG projects have been launched, such as (1) biodiversity on the elevation gradient, (2) effect of climatic change on local water regime and (3) effects of forest structure changes on viability of grouse (capercaillie, black grouse, hazel grouse) populations. Results of the regional research are being published in the *Silva Gabreta*, a peer-reviewed journal jointly published since 1996.
- **Project 'Europe's Wild Heart':** In 2009, both parks agreed on common management guidelines for a transboundary wilderness area called 'Europe's Wild Heart' [25]. Guidelines for uniform management of the united core zone (present project area of 13,060 ha),



guided tours into the wilderness area, cross-border monitoring and research projects and the establishment of a training and research centre are being prepared. The project [26] has been jointly presented at several international conferences, most recently at the World Wilderness Congress (WILD9) in Merida, Mexico (December 2009). However, Europe's Wild Heart's activities were frozen after 2010, when the new director of the ŠNP was appointed. He introduced not only 'NO-wilderness' concept of NP management, but also allowed salvage logging in the core zones and supported various development projects. For several years, not only the common wilderness project has been stopped, but also other joint activities were scarce. The contemporary director of the ŠNP, appointed in spring 2015, supports common activities and works hard on improvement of the Czech-Bavarian cooperation.

## 7. Benefits and challenges

There exist two serious political problems in the Šumava NP, compared with the situation in the Bavarian Forest NP. First, unlike BFNP in Germany, ŠNP never received full political support from the Czech government. This is well illustrated by the fact that there have been as many as 11 directors of ŠNP over a period of 25 years! In contrast, there have been only three directors of the Bavarian Forest NP over the nearly 50 years of its history. Thus the position of the Czech directors is likely to have been untenable. In consequence, both the vision and long-term strategy for the Šumava NP remain uncertain and unclear, whereas its budget has largely depended on the sale of timber.

Second, as a result of heavy lobbying by private owners and foresters, the Czech Parliament approved direct restitution of all the former municipal forests in national parks, which resulted in the Šumava NP losing control over 9.2% of its area (Šumava NP Authority 2013—management plan). Although the new owners are receiving financial compensation for bark beetle damage, they are becoming increasingly vocal about the 'unjust bark beetle control' in surrounding NP forests. Unfortunately, these municipalities manage their forests in a way that does not conform to nature conservation standards [27]. Currently, they are arguing that their forests should not be included in the nature zone or even in the NP.

One of the biggest challenges for both NPs has been the acceptance of natural disturbances (windstorms followed by bark beetle outbreaks), which significantly affected spruce forests in this area. While the Bavarian politicians supported the BFNP managers to follow their NP's motto 'Let Nature be Nature' and intensively supported non-intervention management as an appropriate management in the national park, the same situation has almost threatened the existence of the ŠNP. Since the very beginning of the ŠNP, decisions about its management have been bogged down in never-ending discussions about whether bark beetle infestations should be controlled, or whether a strict 'non-intervention' policy should be adopted. After the Kyrill windstorm (January 2007), the Czech politicians allowed salvage logging in the core zones and only the public blockade and protests of NGOs, scientists, and international conservation community stopped this. Some local representatives and lobbying groups also tried to

open the ŠNP area for different development activities (e.g., ski resorts and new accommodation facilities in the core zone, privatisation of state properties, etc.).

Even during the 'bad' post-Kyrill period, transboundary cooperation and sharing of experience between BFNP and ŠNP were very important and supported conservation targets in the region. Indeed, even when the principles of nature conservation in the Šumava NP have been eroded and the ŠNP Authority has not been very open to transboundary projects, the Bavarian Forest NP has guarded the national park's mission. The BFNP representatives have always behaved very correctly and never entered national affairs. Instead, they transparently declared their conservation principles. It was a very important support for the Czech NGOs, scientists and general public, acting for the Šumava NP. This principle stance of the transboundary partner has buffered some development activities and management proposals threatening the Šumava NP. Recently, a new Nature Conservation Act has been adopted in the Czech Republic and the hope is that this new legislation will prevent similar excesses and will support stability in the ŠNP.

Both the Czech and the Bavarian sides have learned a lot during these 25 years of cooperation, including various lessons they received from both nature and human symbiosis/communication. There are many positive results indicating the strengths of and showing broad benefits from the existence of the transboundary area. These include Natura 2000 sites and their management, understanding the importance of the cross-border perspective of nature protection and research, joint work of rangers, junior ranger programme and environmental education. National park employees, local partners, NGOs, trainees, and volunteers of both countries are involved in many joint activities, including professional projects and various cultural events.

The main obstacles in cooperation of transboundary partners are economic differences between the regions, language barriers, and different policies and laws. Unfortunately, the management strategy of the ŠNP is not yet stable and political turbulence and development pressures are seriously threatening the ŠNP and the transboundary cooperation.

In good years, transboundary cooperation catalyses good things. Projects are better if they are conducted together with partners. Ideas are smarter when prepared with friends. In this region with long and uneasy history, cooperation is very important. There is only one common ecosystem of mountain forests, common populations of lynx, capercaillie or bark beetle in the Bohemian Forest and partners have to learn, how to share their common responsibility for the future. Step by step, the transboundary cooperation is improving, which is very important in good years but maybe even more important in bad years. The principle stance of the transboundary partner can buffer threatening in the neighbouring national park and support recovery when the crisis is over.

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## References

- [1] Hušlejn M, Kiener H. Natura 2000 – Europas Wildes Herz/Divoké Srdce Evropy. Grafenau/Vimperk (in German and Czech): Natura 2000; 2007
- [2] Dickie I, Whiteley G, Kindlmann P, Křenová Z, Bláha J. An outline of economic impacts of management options for Šumava National Park. *European Journal of Environmental Sciences*. 2014;**4**(1):5-29
- [3] Svoboda M, Wild J. Historical reconstruction of the disturbance regime in a mountain spruce forest landscape. In: Lingua E, Marzano R, editors. *Natural Hazards and Natural Disturbances in Mountain Forests – Challenges and Opportunities for Silviculture*; 18–21.9.2007; Trento, Italy. Vol. 2007. p. 50
- [4] Jonášová M, Prach K. The influence of bark beetles outbreak vs. salvage logging on ground layer vegetation in central European mountain spruce forests. *Biological Conservation*. 2008;**141**:1525-1535
- [5] Jelínek J. Větrná a kůrovcová kalamita na Šumavě z let 1868 až 1878 [Wind- and bark-beetle calamity in the Bohemian Forest from 1868 to 1878] [thesis]. Brandýs nad Labem: Lesprojekt; 1988. p. 50
- [6] Kindlmann P, Matějka K, Doležal P. Lesy Šumavy, lýkožrout a Ochrana přírody. [Forests of Šumava, Bark Beetle and Nature Protection. In Czech]. Karolinum: Praha; 2012. p. 325
- [7] Grodzki W, Jakuš R, Lajzová E, Sitková Z, Maczka T, Škvarenina J. Effects of intensive versus no management strategies during an outbreak of the bark beetle *Ips typographus* (L.) (Col.: Curculionidae, Scolytinae) in the Tatra Mts. In Poland and Slovakia. *Annals of Forest Science*. 2006;**63**:55-61
- [8] Müller JB, Bušler H, Goßner H. The European spruce bark beetle *Ips typographus* in a national park: From pest to keystone species. *Biodiversity and Conservation*. 2008;**17**:2979-3001
- [9] Bláha J, Romportl D, Křenová Z. Can Natura 2000 mapping be used to zone the Šumava National Park. *European Journal of Environmental Sciences*. 2013;**3**:57-64

- [10] Křenová Z. Ochrana lesa v chráněných územích. [Protection of forests in protected areas. In Czech]. In: Jakuš R, Blažienec M, editors. Princípy ochrany dospělých smrekových porastov pred podkôrným hmyzom. [Principles of Protection of Spruce Stands from Bark Beetles. In Slovak]. Zvolen: Ústav ekológie lesa, Slovenská akadémia vied; 2015. p. 279-192
- [11] Jonášová M, Matějková I. Natural regeneration and vegetation changes in wet spruce forests after natural and artificial disturbances. *Canadian Journal of Forest Research*. 2007;**37**:1907-1914
- [12] Šantrůčková H, Vrba J, Křenová Z, Svoboda M, Benčoková A, Edwards M, Fuchs R, Hais M, Hruška J, Matějka K, Rusek J. About Mountain Spruce Forests from the Bohemian Forest. A Guide to the National Parks' Forest Ecosystems. Šumava NP: Vimperk; 2015. p. 145
- [13] Anděra M, editor. Šumava: příroda, historie, život [Šumava: Nature, History, Life - In Czech]. Havlíčkův Brod: Miloš Uhlíř – Baset; 2003. p. 800
- [14] Křenová Z, Vrba J. Just how many obstacles are there to creating a national park? A case study from the Šumava National Park. *European Journal of Environmental Sciences*. 2014;**4**(1):30-36
- [15] Haber W. Gutachten zum Plan eines Nationalparks im Bayerischen Wald, im Auftrag des Deutschen Rates für Landschaftspflege. *Schriften d Deutschen Rates f Landespflege*. 1968;**11**:8-23
- [16] Anonymous. National Park Plan. Main Volume, Concept and Objectives. Grafenau: BFNP Administration; 2010. p. 27
- [17] Křenová Z, Kiener H. Europe's wild heart – Responsibility for Europe. In: Vasilijevic M, Pezold T, editors. Crossing Borders for Nature. European Examples of Transboundary Conservation. Bern - Zagreb: IUCN; 2011. pp. 42-45
- [18] Müller J, Noss RF, Bussler H, Brandl B. Learning from a "benign neglect strategy" in a national park: Response of saproxylic beetles to dead wood accumulation. *Biological Conservation*. 2010;**143**:2559-2569
- [19] Heurich M. Progress of forest regeneration after a large-scale *Ips typographus* outbreak in the subalpine *Picea abies* forests of the Bavarian Forest National Park. *Silva Gabreta*. 2009;**15**:49-66
- [20] Job H, Mayer M, Woltering M, Müller M, Harrer B, Metzler D. Die Destination Nationalpark Bayerischer Wald als regionaler Wirtschaftsfaktor (Nationalpark Bayerischer Wald Wissenschaftliche Reihe, Sonderheft) [thesis]. Grafenau; 2007
- [21] Rall H, editor. The Bavarian Forest National Park—An Important Component of the Regional Economy (A Summary). Grafenau: BFNP; 2008. p. 18
- [22] Křenová Z, Hruška J. Proper zonation – An essential tool for the future conservation of the Šumava National Park. *European Journal of Environmental Sciences*. 2010;**2**(1):62-72
- [23] Kindlmann P, Křenová Z. Protect Czech Park from development. *Nature*. 2016;**531**:448

- [24] Heurich M, Beudert B, Rall H, Křenová Z. National Parks as model regions for interdisciplinary LTER: The Bavarian Forest and Šumava National Parks underway to transboundary ecosystem research. In: Müller F et al., editors. Long-Term Ecological Research. Between Theory and Application. Dordrecht: Springer; 2010. pp. 327-344
- [25] Křenová Z, Kiener H. Europe's wild heart – Still beating? Experiences from a new transboundary wilderness area in the middle of the old continent. *European Journal of Environmental Sciences*. 2012;**2**(2):115-124
- [26] Meyer T, Kiener H, Křenová Z. Wild heart of Europe. *International Journal of Wilderness*. 2009;**15**(3):33-40
- [27] Zýval V, Křenová Z, Kindlmann P. Conservation implications of forest changes caused by bark beetle management in the Šumava National Park. *Biological Conservation*. 2016;**204**:394-402

