

the occurrence of chub (*Alburnoides bipunctatus*) and provides at the same time protection to other fish species, particularly the loach *Sabanejewia balcanica*. For pearly mussel *Margaritifera margaritifera*, e.g. Lužní potok stream in the Aš region has newly been included. In some cases, links to currently defined corridors have successfully been made. For example, the Jihlava river, upstream of the Nové Mlýny reservoirs, is connected to the presently defined Rokytna, intersecting SCI Mušovský luh and SCI Meandry Jihlavy, protected for the occurrence of white-finned gudgeon (*Romanogobio albpinnatus*) (see Fig. 3).

The regional corridors have been defined by staff of the regional offices of the Nature Conservation Agency or national park authorities based on certain criteria according to a uniform methodology displayed on www.vodnitoky.ochranaprirody.cz. For classification into this category, in contrast to national corridors, only species protection has been taken into account. Other criteria were number of migration barriers, hydromorphological and ecological quality of waterbodies, and connection to corridors of higher priority. This category includes among others the Ohře river with notable tributaries upstream of the Nechranice Dam, which prevents inclusion of the entire watercourse into the category of corridors of international priority (Fig. 4). In the areas concerned, also the occurrence of invasive crayfish species has been taken into account in order to prevent spread of the crayfish plague. For these reasons, the Conception does not include e.g. the Stroupinský potok stream in the Křivoklátsko Protected Landscape Area, where our native crayfish was affected by this fungal disease last year.

Financing of the proposed measures

Watercourses delineated as mentioned above will be prioritised in the subsidy policy of the Ministry of the Environment, particularly in the Operational Programme Environment (up to 100% of the expenses). The allocation of finances is still considerable. We expect a substantial increase in submitted projects (or requests), with regard to the demanding preparation of the actual measures as well as to the administration involved in subsidy requests, from a few per year at present to at least dozens next year.

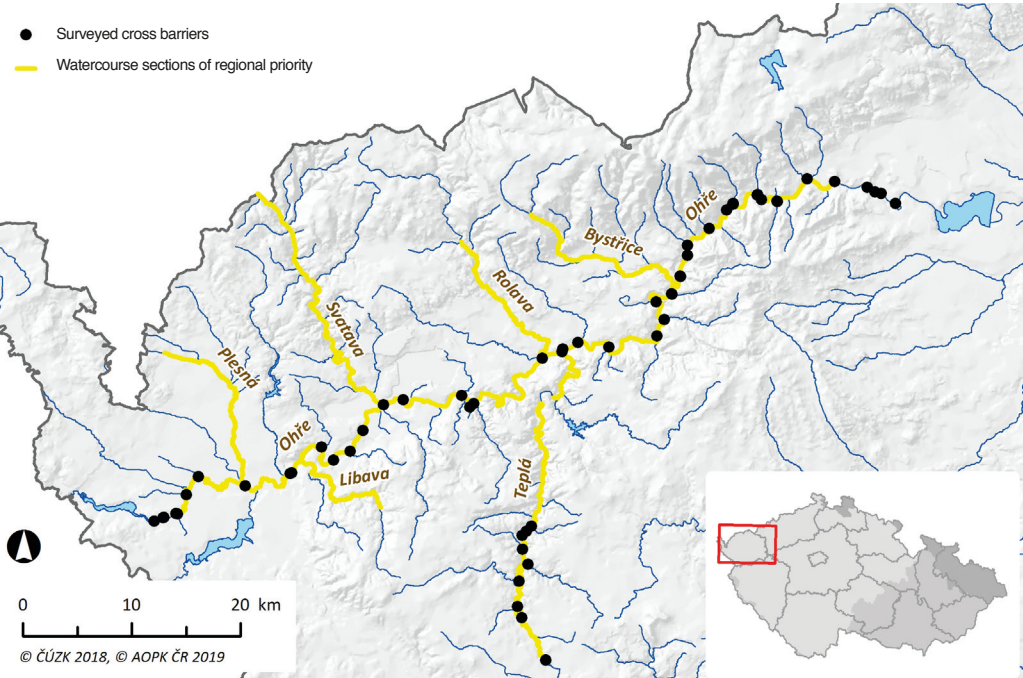


Figure 5. Classification of the Ohře river and selected tributaries upstream of the Nechranice Dam as a regional corridor. Compiled by Jan Vrba.

Table 1. List of fish, lamprey and bivalve species for the delineation of corridors of national and regional importance. Compiled by Zdeněk Vogl.

Class	Species	Protection Category (Act No. 114/92 Coll.)	Habitats Directive
Fish	<i>Leuciscus aspius</i>	—	Annexes II and V
	<i>Gobio albpinnatus</i>	—	Annex II
	<i>Romanogobio kesslerii</i>	Critically threatened	Annex II
	<i>Leuciscus idus</i>	Threatened	—
	<i>Lota lota</i>	Threatened	—
	<i>Alburnoides bipunctatus</i>	Strongly threatened	—
Lampreys	<i>Lampetra planeri</i>	Critically threatened	Annex II
	<i>Eudontomyzon mariae</i>	Critically threatened	Annex II
Bivalves	<i>Margaritifera margaritifera</i>	Critically threatened	Annexes II and V
	<i>Unio crassus</i>	Strongly threatened	Annexes II and IV

Conclusions and expectations of the updated Conception

The updated Conception should serve as a document for the third water management planning period, running from 2022 to 2027. Its objective is to comprehensively define watercourses significant from the perspective of nature and landscape conservation, primarily securing the continuity (migration permeability) of these watercourses, thus implementing, among others, the ‘Water Framework Directive’. This requires, besides securing migration permeability, also the preservation or restoration of other stream functions like the stream load regime and self-purification functions. In accordance with these objectives, appropriate adjustments of the measures

should be chosen in the following order: (1) removal of cross barriers, (2) near-natural solutions such as boulder chutes, (3) fish ladders, optimally accompanied by revitalised watercourse sections linked to them, e.g. in the form of spawning grounds, distributaries, groynes, etc.

The document should further present the current measures and novelties in this particular field in a comprehensive way, including fundamental problems with solving migration permeability, especially on corridors of international and national priorities. The objective of updating the Conception is not only to delimit these corridors, but also to establish conditions to make them passable in a systematic and effective way.

Where is Šumava National Park heading?

Pavel Hubený, Martin Stary, Pavla Čížková

I believe in an authentic internationally recognized national park, but the path to it is thorny, slow and cautious... The hitherto maturing National Park can easily be compared to the life of a human being. Its birth was

full of enthusiasm and great plans developed by fathers, mothers, uncles and aunts, grandmothers and grandfathers – and each person had a different plan. But everybody agreed that it is necessary to put the best into the child's life.

Forest at Medvědice in spring. Photo Zdeněk Patzelt



Free-flowing youth

And so the National Park Authority got control over forests, minor watercourses, and the Ministry of the Environment even provided competences in land-use planning. But the parents got divorced. Land-use planning went to the Ministry of Regional Development, forestry management to municipalities. And all of a sudden, the child was supposed to grow up in alternating care and adapt to another relative in all aspects. It should conserve nature, implement the forestry act and develop the area sustainably. Then adolescence started and the National Park slowly began to understand its role in society. It distanced itself from parents and relatives, which caused problems. The desire to fulfil the dream of an authentic national park was impeded several times. One moment it looked like its future would be aligned with the life of its mother, Šumava Protected Landscape Area, and that National Park would just be its name, not its function. But now that it has already passed the age of 25, it knows that rebellion does not get you anywhere. At the same time, it has gained a clear idea of its future, at least until its midlife crisis, i.e. until its 45th birthday... This clear idea is what we would like to discuss today.

Wilderness – a nasty word

There were times when the word ‘succession’ (at least in the sense of spontaneous recovery of a forest on abandoned land) was popular with staff of the Šumava National Park Authority. Then there was a short period when ‘wilderness’ was very popular, but also this soon became a forbidden word. Well, everybody has a slightly different idea of wilderness. Some people see it as an untouched tropical virgin forest, others as a long-abandoned garden where people go and have a smoke. In our National Park, the second option rather prevails. We do not have many virgin forests. Although virgin forests still covered 70% of the National Park area in the early 19th century, only one century was needed to reduce this number to 15%. But why is it a national park at all? Because after felling of the virgin forests no cultural tree plantations were created, but tree offspring from the original forests grew up and aged here. Historical records speak of legions of young spruce trees growing in old forests. And until the 1960s, artificial restoration, if any, was mainly carried out by sowing



Mt. Blatný vrch. Photo Pavla Čížková

seed from local cones, out of which the seeds were extracted at local seed-extraction plants. Only about 35% of the present forests have its origin in a combination of natural and artificial restoration or have been planted on farmland. Yes, there are hardly any virgin forests in Šumava, but somewhere wilder, elsewhere less wild offspring of the original virgin forests grows here. And since 2007, nearly a quarter (23%) of the National Park area has been left to natural processes. In this area, we have once again released the reins of ‘wilderness’.

Conservation experiment

Since the National Park was established, it has been a legitimate opinion that leaving a forest to natural processes is an ‘experiment’ which nobody has ever tried out. Yet it was already rather well known that before the arrival of man, forests lived their own life and were uprooted by storms and attacked by bark beetles, and even also burned. From the perspective of historical forest descriptions and results of pollen analyses of lake and peat sediments, forest management rather than natural processes seemed to be an experiment. The way in which (predominantly spruce) forests react to thinning, following from natural processes, has evoked passion – and still does. Quite a number of people probably still believe that if the bark beetle had been fought by foresters, such a massive tree death would never

have occurred, despite what we already know today. Firstly, we know that in the time of the bark beetle outbreak in Šumava NP, forests where we had properly fought against the beetle neither remained protected. Secondly, it was shown that during both massive outbreaks in Šumava NP, the population density of bark beetles in intervention and non-intervention areas changed at the same speed, so that is was not demonstrated that harvesting of infested spruce trees had a real effect on bark beetle reduction. Rather the weather and pests were the reason for its decline. Thirdly, it can be seen in our entire country today that massive outbreaks can occur even despite large and uncompromising interventions. And fourthly, felling a forest is not the ideal start for natural processes. And it is natural processes in most of the National Park area which is our present objective.

Proposal for new zonation

The new zonation model is fundamentally different from the conventional one: whereas in the zonation delimited in 1992, Zones 1 were automatically open to the public on marked routes, and management interventions were not clearly limited in them, the new zones do not deal with public access, but define management regimes relatively strictly. Public access is not anymore limited by zonation, but by a different measure, the designation of Quiet Zones.



Kamenná hlava. Photo Pavla Čížková



Kamenné moře on Mt. Plechý. Photo Pavla Čížková

The ‘Natural Zone’ will be the wildest zone. We designated to areas where natural processes can be given a free hand already now. In truth, we are not completely revolutionary. This zone is kept in about the same territory as where natural processes have been allowed hitherto. The Natural Zone is proposed for 27.7 % of the National Park area. To this zone, a Near-natural Zone has been attached, including especially forest ecosystems of which we are convinced that they can be transferred to the Natural Zone – in other words, turned

into wilderness – in a rather short term. The natural processes here play a main role already today and we correct them just moderately or take action against the spread of spruce bark beetle to surrounding forests. The expert proposal also represents 27% of the National Park area, but after the hearings we are heading for 24%.

The largest proportion, 45% of the National Park area, is to be included into the Concentrated Management Zone. This is mostly forest-

or farmland where we will take care of nature in the following decades, concentrating on the preservation of unique, protected or threatened species or species of European interest and also habitats of European interest. After hearings with the municipalities, the Concentrated Management Zone could be expanded to almost 48%.

All settlements forming a spatially connectable whole, built-up areas and land intended to be built up in land use plans, have been included into the Cultural Landscape Zone. Although the smallest part of the National Park area (1%, 642 ha), it is important. Really built-up area (with gardens and yards connected to them) represents less than half of this area, so over 320 ha is still available for municipal development in the National Park. Besides, scattered in the other zones throughout the National Park, other buildings (mostly individual houses) are found which cannot be included in the Cultural Landscape Zone for their small size and seclusion. Also cottages are part of some of the remaining three zones, but exempt from zone regulations. They cover roughly another hundred hectares. It is important to note that the majority of legal restrictions in the most of the National Park area do not apply to areas which are or may be built up. One may camp, make fire or even salt roads or pavements here in winter.

Zones and Natura 2000

Now and then, the idea that zonation should especially secure the conservation of species and habitats of the Natura 2000 network pops up among conservationists. This is indeed one of the main tasks of a national park. It is therefore necessary to set up new zones in a way that natural processes take place mainly there where it does not ‘bother’ Natura 2000, and to include Natura 2000 habitats which demand our care into the Concentrated Management Zone. But also this approach has its shortcomings. For example, the minimum acreage of one Concentrated Management Zone segment is 2 ha, but non-forest Natura 2000 habitats are often just about 0.5 ha large. Natural Natura 2000 woodland habitats and peatbogs should be included into the Natural and Near-natural Zones, grasslands on secondary non-forest land rather into the Concentrated Management Zone. According



Morning at Želnavá. Photo Zdeněk Patzelt

to degree of naturalness, natural woodland habitats are for 44% situated in the Natural Zone and for 29% in the Near-natural Zone. In the next zonation delimitation (in 15 years) we will thus be able to leave a full 73% of woodland habitats to natural processes. Two-thirds of all forest bogs, raised bogs and transitional bogs are also included in these zones. By contrast, 85% of submontane *Nardus* grasslands are situated in the Concentrated Management Zone and Cultural Landscape Zone, just as 66% of X-coded habitats (strongly influenced or created by man).

Will Quiet Zones bring peace?

They certainly will, although there will certainly be a lot of fuss around them before their designation. As already stated, Quiet Zones are not regulated by management – that is the task of zonation – but by visit rate. Freedom of movement is one of the basic civil rights, enshrined in the Charter of Fundamental Rights and Freedoms, so it can only be limited in justified cases. Our Quiet Zone proposal tries to get to the core. This means that Quiet Zones, which are according to law accessible only by routes and paths reserved by nature conservation authorities, cover 16.7% of the National Park area and represent only the most sensitive and threatened minimum. We concentrate especially on animal species, exceptionally also plants and peatbogs which are protected and easily disturbed. Conservation of the western capercaillie (*Tetrao urogallus*) will be the highest priority of the National Park in this. The sensitivity and population density of this bird has been dealt

with in No. 1/2019 of this magazine. For its conservation we want to create, in collaboration with Bavarian Forest National Park, a compact joint area on both sides of the border to which the same rules will apply. We aim at maximum protection of the real core of the capercaillie population in the area of the Modrava moors and the border ridge between Prameny Vltavy (Vltava Springs) and Plesná. This area will have time-limited access and the density of access roads will be minimal. At the same time, hunting and forestry interventions will be banned on both sides of the border.

The second largest Quiet Zone area has been dedicated to the protection of the Eurasian black grouse (*Tetrao tetrix*). Its population is markedly smaller than that of the capercaillie and the situation is not yet improving. Grouses are not concentrated in a coherent territory, but inhabit plains in marginal parts of the National Park which are rather remote from each other. This fragmentation of its populations may be a great problem in preserving the species in the long term. At the moment, a DNA analysis of individuals, based on collected dung, is being completed. This year for the first time we will obtain detailed information on the real grouse population numbers, on relatedness of individuals and also on the question how far individual birds fly. Protection of its courting grounds and nesting habitats is today linked to the protection of nesting grounds of common crane (*Grus grus*), whose numbers in Šumava have slightly increased over recent years. We also have a plan to protect three



Světlé hory. Photo Pavel Hubený

territories which are permanently inhabited by reproductive lynx females. These areas are sufficiently varied, rocky and inaccessible, and have game concentrations which lynxes use for hunting. The territories include parts of the Vydra and Křemelná canyons and the scree forest at Medvědice. We further want to dedicate some small-scale quiet areas with limited access restricted to the spring months to the protection of peregrine falcon (*Falco peregrinus*). Moreover, the quillwort *Isoëtes echinospora* in lake Plešné jezero will be protected by disallowing entry into the lake, similarly to the protection of some peatbogs and wetlands situated close to paths where visitor numbers are extremely high.

The 2017 amendment to Act No. 114/1992 has brought really revolutionary changes. The separation of management, connected with the system of Nature Conservation Zones, from visitor regulation, which involves a system of Quiet Zones, is still strange and new. This has led to the creation of areas without human intervention which are however free to visit, and on the other hand, managed areas with temporarily limited access to visitors (historical courting grounds of black grouse on meadows). This change in the way nature is managed brings us closer to Western Europe, where this approach is common, and enables us to unify the practical approaches on the Czech and Bavarian side of the state border, making Šumava National Park and Bavarian Forest National Park speak a common language again.

Tree veteranisation, pollarding and girdling vs tree conservation

Selected issues of practical protected area management

Pavel Pešout, Jan Šíma, Linda Stuchlíková

We are currently observing changes in the landscape at an unprecedented rate. We do not have in mind here the often mentioned impacts of climate change, but particularly the consequences of changes in land use by man. A century ago, when a third of the inhabitants of the Czech Republic still made a living from agriculture and forestry and the average farm size did not even exceed 5 hectares

(Kučera 1994), the landscape was in many ways exploited more intensively, but at the same time in a much more mosaic way. At present, only a tenth of them participate in land management, while industrialised farming takes place in large, consolidated areas and the management of economically marginal areas and traditional, more labour-intensive forms of farming have been abandoned.

Tree girdling has been maintained until today and is applied in many European countries. This traditional technology is now gradually being applied in the Czech Republic again, not only by nature conservationists in special interventions for the benefit of saproxylic species, but in certain situations also by foresters. Photo Karel Kříž

