

An Off-the-scale and Turning Fire in the České Švýcarsko/Bohemian Switzerland National Park

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On Sunday 24 July, a fire broke out in the České Švýcarsko/Bohemian Switzerland National Park (northern Bohemia) which due to its extent will go down in the history of not only this National Park. Mainly dry Norway spruce (*Picea abies*) monocultures having been damaged by a European spruce bark beetle (*Ips typographus*) outbreak burned down, but also valuable ecosystems and a part of the village of Mezná were affected.

The fire was preceded by dry and warm weather with record temperatures of up to 36 °C. At the time of writing this contribution, more than a thousand firefighters had been extinguishing seats of fire for 16 days, which is too early for an evaluation of various aspects. It has however already been obvious that the event will become a turning point in the attitude to forests in the Czech Republic.



Below Křidelní stěna/Wing Wall Hill. The first vegetation has appeared a week after the fire there. Beech seeds and fruits are visible at the surface. © Zdeněk Patzelt

How and why did the fire start – the most important question?

It is agreed that the fire started in the morning of Sunday 24 July 2022. There is also agreement that it started in Malinový důl/Raspberry Gorge, which is situated east of the town of Hřensko and leads to a road with a tourist trail from where large crowds of tourists head towards the Pravčice/Prenischtor Rock Gate. The question is whether the fire started, as is assumed in the media, in Malinový důl/Raspberry Gorge where entry is prohibited, or if it was caused by e.g. a butt thrown on a hiking trail. NASA satellite images show initial outbreaks even by the road with the tourist trail. It will therefore be interesting to know what conclusion the investigators reach about the cause of the fire.

The dynamics of the fire are obvious: it travelled 10 km in 4 days. Outbreaks were isolated and the fire skipped over by air over hundreds of metres. Sunday's information spoke of an area of up to 3 hectares in Malinový důl/Raspberry Gorge and rapid localisation was assumed. Unfortunately, that did not work out and by Monday the fire had already got out of possible control. However, its extent was still optimistically estimated at 3 to 10 ha, on Tuesday morning still only about 30 ha (incident commander: "The fire is about 30 hectares in size. If the weather does not get worse, especially if the wind does not increase, firefighters could bring the flames under control today." – source: <https://globe24.cz/>, 26–7–2022). However, at that moment already hundreds of hectares between the town of Hřensko and the village of Mezná and in parts of Saxony and Kamenice Gorge have been affected. Thus, in the early stages of the fire, rele-



Progress of fire outbreaks day by day according to NASA satellite tracking (source: <https://firms.modaps.eosdis.nasa.gov/>)

vant information about its true extent and spread may have been missing.

The area of the fire largely coincides with that of extensive clearings. These were created in the National Park before 2019 resulting from interventions against the European spruce bark beetle. It is obvious that the clearings did not prevent the fire from spreading but rather helped it, however illogical that may seem. The area is based on extremely desiccating sandy soils where the temperature of the soil surface of south-facing clearings and exposed rocks rises to 60 °C in summer. The main causes of the fire date however hundreds of years back. Due to human activity, the forests have a very

unnatural composition there. Out of the main tree species, the European beech (*Fagus sylvatica*) is only represented for 9.29% compared to a natural 56.95%, the silver fir (*Abies alba*) for 0.38% vs 19.58%, and the Norway spruce, on the other hand, is represented for 59.57%, while 5.29% would be natural (source: www.npcs.cz/lesy). It is a natural pattern that unnatural expansion or overpopulation of species leads sooner, or later to decay. In this case it was particularly the record drought and heat in 2018, with a precipitation of only 69% of the mean and a temperature of 1.5 °C higher than normal in the Ústí Region (source: Czech Hydrometeorological Institute) which accelerated the European spruce bark beetle outbreak. Today's fire is thus to a great extent also the result of extreme climate fluctuations. The bottom line is that if the trend continues, nothing good awaits the forests as we know them now: a significant part of them will most likely burn down.

Unwanted publicity

The hitherto unknown extent of the fire also evoked a corresponding media response. A number of comments rate the fire as an opportunity to restore the ecosystems (e.g. ADÁMEK 2022, HRUŠKA 2022, SEDLÁČEK 2022), while other ones deal with the causes of the fire. They often criticise that deadwood from bark beetle outbreaks had not been removed, and reflect a low awareness of the correctness of this practice in National Parks. This was partly caused by the fact that, conversely, the Park Administration intensively intervened until 2019, as is evident from the large clearings well visible in aerial photographs



Pravčice/Prenisch Gorge, 11 August 2022. © Zdeněk Patzelt

of this part of the National Park. After finding out that not even extreme clear-cutting can stop the bark beetle, interventions were left out. In the adjacent German Sächsische Schweiz/Saxon Switzerland National Park no interventions took place, which meant a fundamental management mismatch. Leaving stands attacked by bark beetle without intervention must be accompanied by fire prevention measures, especially around settlements. If such measures are not taken or are insufficient, this may lead to lower tolerance of the non-intervention principles by the general public and municipalities, and – as will probably soon be shown – also to e.g. a decrease in the willingness to designate Křivoklátsko or another suitable area in the Czech Republic a National Park.

Damage or not?

Controlled burning is certainly a useful management tool, but only when many necessary conditions are met. In No. 6/2021 of this journal an article appeared on a new methodology regulating this issue (PEŠOUT 2021). Flattering ourselves that the fire did not cause the National Park wildlife any damage is problematic, to say the least. Frankly said, we would be lying to ourselves. The fire will undoubtedly have a favourable effect on sites with dead spruce monocultures and nature will manage to restore. The fire also suitably covered the clearings made by interventions against the bark beetle. However, also little tiny shrub communities on rock edges and forest stands with a natural species composition have been affected to a large extent. Examples are relic Scots pine (*Pinus sylvestris*) forests on rock spurs and beech forests on the slopes near the Gabriela's Trail, but the true extent of this damage remains to be recognised. That is really a pity, since these ecosystems are among the most valuable ones and are the subject of protection in the National Park (www.npcs.cz/predmet-ochrany). The fire will also have a strong impact on the twenty-year long efforts to restore the representation of the Silver fir. It is therefore definitely out of place to talk about the fire as almost the best thing that could have happened to the National Park.

The efforts and costs connected with firefighter intervention are a chapter apart. As stated by General Vladimír Vlček, commanding the fire brigade, the deployment of firefighter units cost up to 20 million CZK (EUR 850,000.00) a day. A single fire is then comparable in costs to the 20-year National Park's existence. However, we can certainly not agree with General Vlček in everything. His statements about the inappropriate litter layer and disappointment and frustration with the state of the non-intervention zone (Novinky.cz, 6 August 2022) must be rejected, as the National

Park forests will never be an ideal environment for fire prevention. It is neither evident on the basis of which fire brigade powers prevailed over those of the National Park to the extent that heavy machinery created non-forest strips throughout the National Park still after localising the fire. This is an unprecedented situation which will have far-reaching impact on the NP. Its justification is questionable because the spread of the fire was not even stopped by large clearings. With regard to the situation at Mezná, where three houses burned down, we must agree with General Vlček's statement that "in a situation when we do not have fire partitions and access roads, and we have no water for extinguishing, it cannot look good" (Novinky.cz, 6 August 2022). Environment minister Anna Hubáčková made a similar comment about leaving dead vegetation around settlements.

And what next?

To evaluate the causes and consequences of the fire, it is first necessary to assess all the aspects unbiasedly. They should not be overstated nor understated. Only then can the right starting points for the future be found and will the same mistakes not be repeated. Fires of such an extraordinary extent should definitely not become a common part of forest development in České Švýcarsko/Bohemian Switzerland. The development after the 2006 fire at Havraní skála/Rook Rock, where a new forest has emerged, is favourable. The present fire, however, closely followed up on bark beetle decay of the forest, destroying the undergrowth of saplings which had already formed, whereas in large areas very few fruiting seed trees have remained. One can only hope that no more disturbances such as torrential rains accompanied by erosion will take place, but climate models/scenarios assume them to happen to an increasing extent. Despite all possible unfavourable factors, it is however clear that forests will restore spontaneously. Under the natural conditions in the Czech Republic this would happen practically anywhere and fire sites add particularly suitable conditions to that. It is only a question of how quickly and in what form it will proceed. Already now, grasses and ferns can be observed rising from the ashes.

No one can be left in doubt anymore that yesterday was already too late for a quick start of a massive conversion of the Czech forests to stands with prevailing broad-leaved deciduous trees. Typology maps corrected by a climate change factor must become a binding document in forest planning, and further planting of locally inappropriate trees must become an issue of the past. Forest managers who do not understand this need to be replaced. Absolute priority must be

given to restoration of water retention in forests, cancelling of land reclamation, restoration of peat-bogs and other wetlands, and a return to the tradition of building fire tanks can be doubly useful. In České Švýcarsko/Bohemian Switzerland it will also be important to cope with the adverse effect of high game numbers on forest development, as a new seat of fire will not be so easy to fence off as at Havraní skála/Rook Rock in 2006. At least in the case of the silver fir, spontaneous restoration is not expected to take place, unless we want to wait perhaps thousands of years.

The intention to strictly refrain from intervening in the spontaneous restoration of the burnt site in the České Švýcarsko/Bohemian Switzerland National Park may therefore not be completely optimal, even if it looks tempting. Intervention is not only a logger with a chainsaw or artificial planting. Today, the global effects of a disturbed climate, accompanied by for example invasions of non-native species, are more significant interventions we also have to face in National Parks. In the České Švýcarsko/Bohemian Switzerland National Park more fires will inevitably occur in the future, although probably not on such a scale – humidity and terrain conditions in the eastern part of the NP are more favourable. The resounding demands for removal of all deadwood from the whole NP must definitely be rejected, as this would not help anything. However, the reasons for this need to be explained clearly. A complete ban on interventions is also not possible. Especially measures around settlements and infrastructure are necessary. After all, complete non-interference has never been intended there. Non-intervention should therefore not be a bogeyman, as it certainly does not mean doing nothing in places where intervention is necessary.

After the deadline:

The latest sources indicate that the fire had already started on 23 July 2022 at around midnight, near a car park above the town of Hřensko (HAVRÁNEK 2022).

The police have requalified the fire in České Švýcarsko/Bohemian Switzerland and now treat it as a deliberate public safety threat (ct24.ceskatelevize.cz, 16 August 2022).

General Vlček: "The Minister of the Interior and I are even ready to prepare a kind of strategic document for the State Security Council, in order to discuss whether ecology has priority over security or vice versa." (<http://www.facebook.com/radiozurnal/videos/43869711607736>, 16 August 2022). ■

The list of references is attached to the online version of the article at www.casopis.ochranaprirody.cz