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Krkonoše



THE KRKONOŠE TREE TOP TRAIL





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What is so amazing about The Krkonoše Tree Top Trail that its worth the try?

The trail shall give you a very rare view of the forest. The ground under the horizontal trail rapidly descends from the entry to the trail, but after 100 metres from the entrance it is however more than 23 metres above the ground. At the same time, you walk along a plane. You will be surrounded by 80-year old trees – spruce, fir and beech trees – and you will see into their crowns as if you were birds flying between them. The tower will get you above the tree tops of the tallest trees, which are growing in the area. On this trail, you will learn something interesting about the “healthy” local forest and in the underground exhibition you will in turn learn something about the soil. There are few words on the information signs. They rather contain images. The Krkonoše Tree Top Trail is a non-traditional nature trail, which will get you to places that you cannot visit and show you what you would not see otherwise.

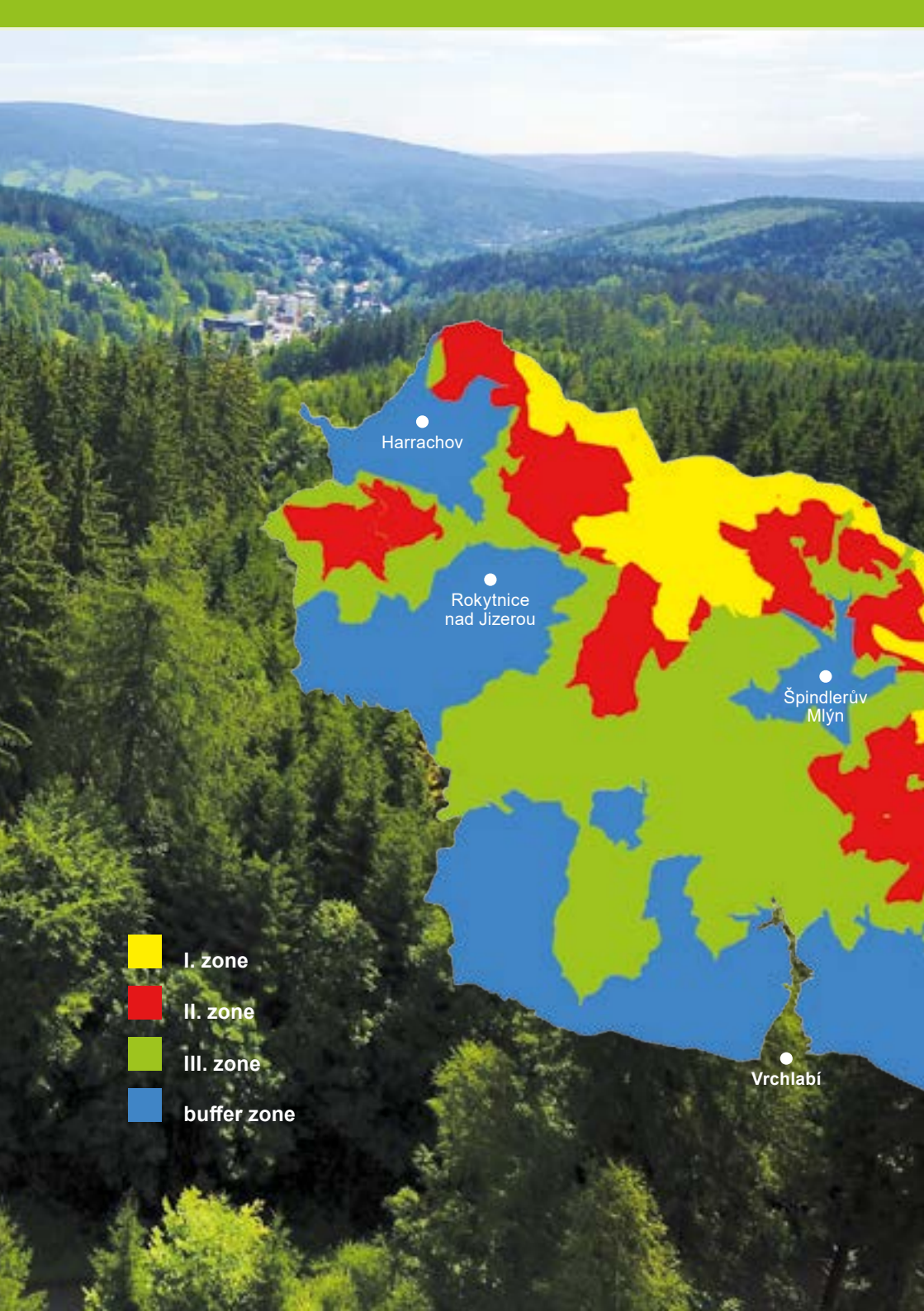
Why the Krkonoše National Park Administration is a partner of The Krkonoše Tree Top Trail?

The trail can help the Krkonoše Mountains quite a lot. It attracts people to places, where the presence of many people does not matter. About three million people annually visit the Krkonoše ridges, especially Sněžka and the source of the Elbe.¹ That exactly where the people pose greatest danger to nature. The plants have only a short time to grow because the place is always cold. It is a highly frequented small area and every step off the trail is repaired by nature for a long time (and such steps off the trail are quite many!). The KRNAP Administration is not driving visitors out of the mountains – after all the visitors have been going to the Krkonoše Mountains for longer than they are visiting the mountains in the national park. The KRNAP Administration wants the people to enjoy the mountains and their nature, but not destroy nature in the process (the mountains, the rare flora and fauna were here a long time before the people).

The trail is a big attraction for the visitors. It is located in a place where there is no risk that the masses of people would destroy nature as they would on the ridges². On the trail, the KRNAP Administration has a great opportunity to impart something interesting to the visitors. Perhaps that it is making an effort to renew the “healthy” forest in the Krkonoše Mountains, which would be similar to the forests that would be in existence here if the people never engaged in lumbering.

1) The number of people who annually visit the Krkonoše is about 2–3 million and on average they spend 3 days here, i.e. about 6 million person hours. About half them come in winter to visit the Alpine skiing areas and the nature in the national park is of little interest to them. Off the winter season, the given 3 million people visit the Krkonoše Mountains. Most of them mainly visit the ridges. These are so crowded that the risk of destruction of fragile nature is high.

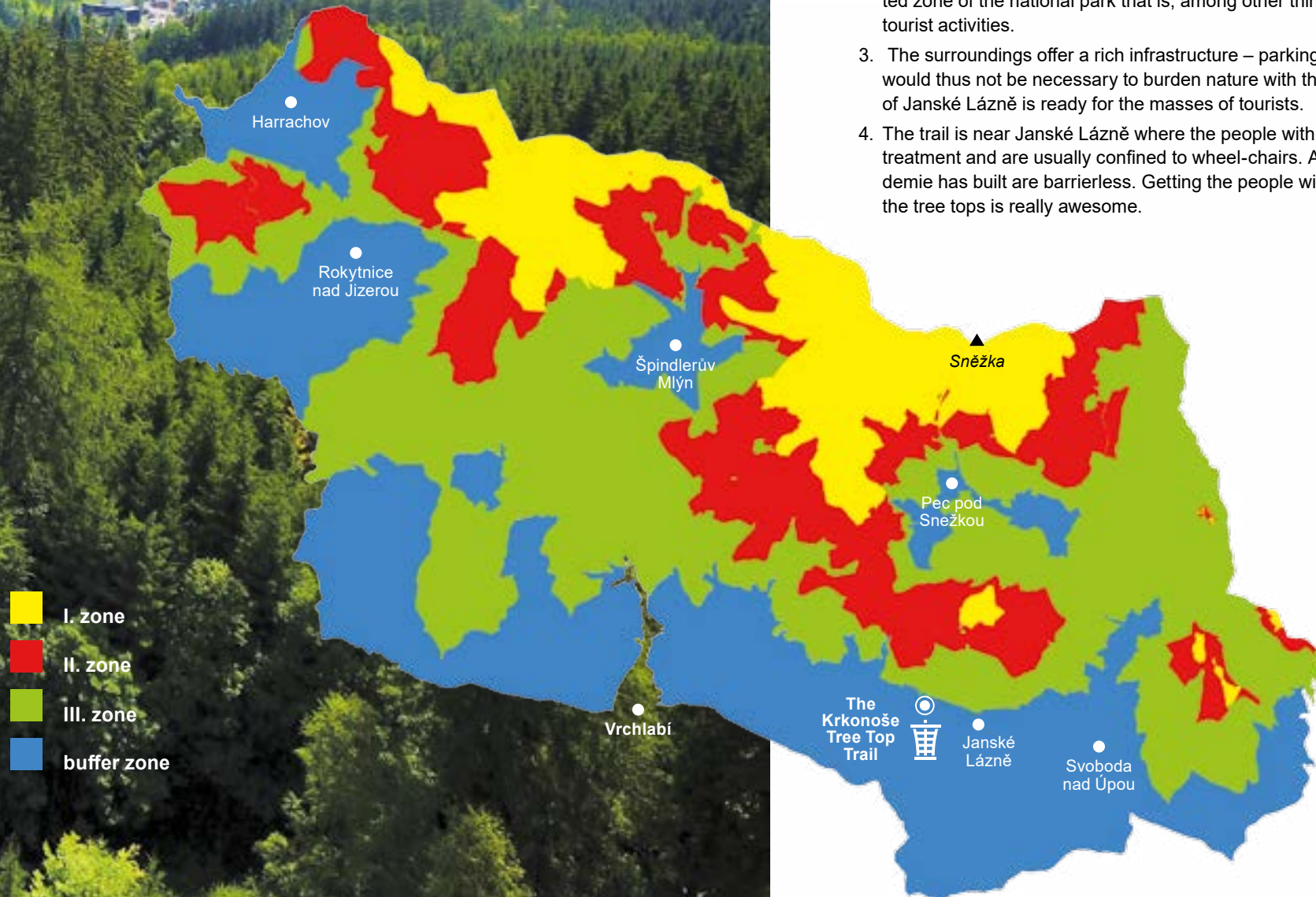
2) The visitors who observe the rules do not harm nature. But there are always a few among them who wilfully conduct themselves regardless of others. Well, you know that it always occurs that someone drives a car through a village at a speed above 50 kph although he knows that this is wrong.



Why The Krkonoše Tree Top Trail is just above Janské Lázně?

The reasons why the trail is above Janské Lázně are several.

1. The forest in the vicinity of the trail is really nice.
2. The trail itself is not in the Krkonoše National Park, but very close to it in the protected zone of the national park that is, among other things, also intended for similar tourist activities.
3. The surroundings offer a rich infrastructure – parking, hotels, restaurants – and it would thus not be necessary to burden nature with this service. Moreover, the town of Janské Lázně is ready for the masses of tourists.
4. The trail is near Janské Lázně where the people with locomotion disorders undergo treatment and are usually confined to wheel-chairs. All the trails, which Erlebnis Akademie has built are barrierless. Getting the people with limited movement ability into the tree tops is really awesome.



How was the Trail built?

Quickly and for a long time. Obtaining all the necessary building permits for such an exceptional facility like The Krkonoše Tree Top Trail took about 5 years. In the meantime, German architect Josef Ströger designed the entire building and the designers elaborated his design. In autumn of 2016, lumbers felled 28 trees in the forest near Hoffmanova bouda, and heavy equipment could enter the forest.



The excavator tore out the stumps and ripped the soil at the points where it was necessary to transport heavy cranes into the forest. In these places the builders laid a special carpet, laid rough gravel on it and finally placed concrete panels



In spring when the snow melted, vehicles started transporting all the parts to the construction site and the Czech, German and Austrian companies assembled them on site as a huge kit

Already in autumn, they sunk the holes for the concrete footing and foundation for the underground exhibition under the tower and poured the concrete into the foundations before the first snow and left it to cure during the winter



The load-bearing pillars of the tower are 45 metres long. Each of the huge unique girders made of bonded Douglas-fir beams, which is lined with wooden facing boards and sheet-metal that protects the wood from rain. They were brought in from Austria by special trucks with separately steerable rear trailer axles



After 67 days of assembly, Trail was ceremoniously opened on Sunday, 2 July 2017 by the Hetman of the Hradec Králové Region Jiří Štěpán and architect Josef Ströger



During the winter, the wooden parts of the Trail were prepared in Austria. They are made from a special tree that is related to the fir tree – the Douglas-Fir. It is not common in the Czech Republic, but is suitable for similar buildings. It is highly resistant and burns poorly. The pavements themselves are made of larch tree beams

BOX

The trail comprises 1,900 m³ of wood. The wooden parts are not treated in any way against wood-destroying fungi or other organisms. Their life cycle is about 25 years. The foundation of the Trail consists of 115 footings. The builders built 75 micro-piles of total length 400 m for anchoring the trail and tower. 20.3 km of stainless steel cable were used on the guardrails. Local Free Wi-Fi is available on the Trail. The entire Trail is entirely barrierless.



Roughly 200 times enlarged model of small snail at entrance

The small Snail – *Cochlodina dubiosa corcontica* – a snail that you will see only here

The small snail *Cochlodina dubiosa corcontica* is a pure gem of the Krkonoše because this is its only habitat. It is most numerous in the “healthy” forests about 2 km east of the Trail. In reality, its shell is only 12 mm long. It is quite inconspicuous – it was discovered by zoologist Jaroslav Brabenec in 1967. The Krkonoše Mountains National Park was established in the Krkonoše Mountains because it is the habitat of flora and fauna that is not found elsewhere. On the programme of the KMNP Administration The Mysterious *Cochlodina dubiosa corcontica* you get to know, for instance, why you will see it creep only upwards on the tree stems, and never downwards. Or that it is capable of copulating 24 hours in a row.



This is it – The endemic *Cochlodina dubiosa corcontica*



The Peep-hole Sign

There are 40 glass peep-hole signs on the guardrails of the entire Trail. They are quite inconspicuous and they will provide you with interesting facts about the forest around you. Perhaps the fate of all the wood from the Krkonoše forests. Or who feeds the forest and why the fir trees are rare in our country (although their numbers should be much larger). Its objective is not profound complex, erudite and sophisticated information about the forest. They rather resemble the narration of a local woodsman showing the forest he prides in, and they will perhaps even surprise you. Because his listeners are usually not forest experts and sometimes confuse a spruce tree with a fir tree, we attached the peep-holes to the guardrails. Just like the guide would show you when he is talking about, the peep-hole points at just what is described on the signs. Because the Trail is visited by the young and old, the peep-holes are installed one above the other on the guardrails.



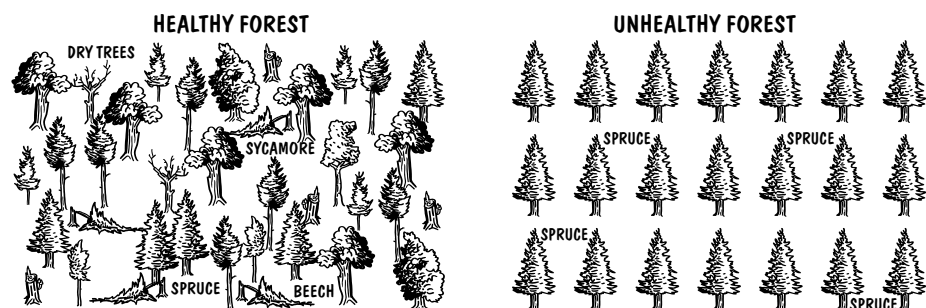
The peep-holes are pointers. You see what is described on the signs through the peep-hole

“Healthy” and “unhealthy” forest

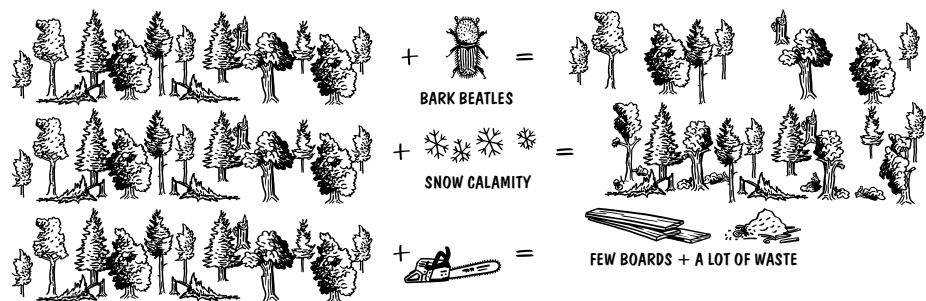
At three lookouts, you learn the meaning of a “healthy” and “unhealthy” forest. Three signs are installed at each lookout. On the first sign, you will see how to differentiate the two forests. On the second, you compare their advantages and disadvantages. The third, last sign, is a simple game. Around the first lookout is the interior of the “healthy” forest. From the second outlook, you see Janské Lázně and the Rýchor Ridge. The beautiful fir trees are within arm’s reach at the third stop. It is also inhabited by the millipede, which is a harmless animal that creeps in the forest waste. In reality, it is 2 cm long. Ours is about 100× larger.

“Healthy” forest – the mixture is good

Various species of trees, plants and fungi grow and many animal species live in the “healthy” forest at an elevation of about 780 m, which is the site of the Krkonoše Trail. It is a combined botanic and zoological garden.



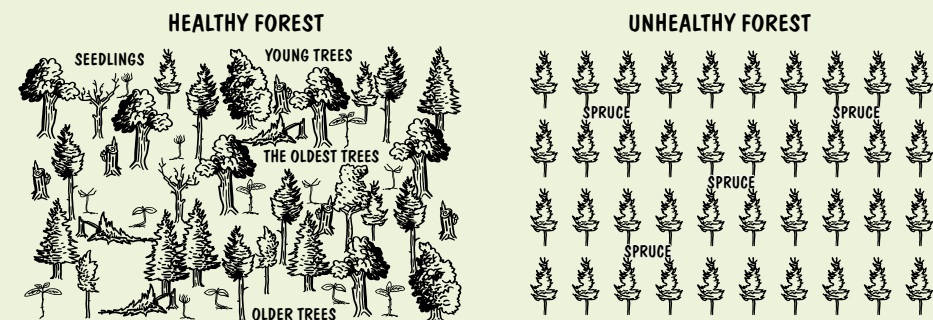
The “healthy” forest brings many advantages. When the bark beetle attacks the spruce trees and kills them in a forest where spruce, fir, beech, maples and other woody plants grow, then although the spruce trees shall not be seen for a few years, but the other



trees will remain there. When the snow calamity fells grown beech trees, something will always grow there. On the other hand, when you fell grown trees in the healthy forest, you get a lot of branches and waste. The grown tree shall not be too many because the “healthy” forest also has a younger generation of trees that the timber men shall fell only after some years when they are grown. The “healthy” forest is like a refrigerator in which you are keeping vegetables, bacon and cheesecake. You certainly do not eat everything at once, but you gradually take out what you want to eat from the refrigerator.

“Healthy” forest – the young and old belong there

In the “healthy” forest, you find all generations of trees, from the smallest seedlings to the ageing and dying trees. There is not much free space between the adult trees in the “healthy” forest because it is filled by the younger trees. Although it is difficult to walk through the “healthy” forest because there are obstacles everywhere, but again such a forest lasts a long time. When the wind blows, the thick vegetation slows it down and prevents it from hitting the highest tree crowns, from breaking and tipping them over. The thick forest lifts the wind above the tree crowns and it thus does not harm the forest. In the “healthy” forest, the timber men select the biggest trees and fell them. When then would they fell small trees? Use of the “healthy” forests are never exploited entirely and it is still a living forest. Only the oldest generation of trees disappear from the forest.



“Healthy” forest – dead wood – living forest

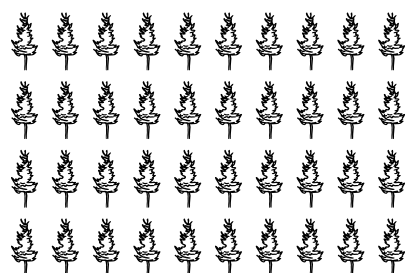
Dead wood, that is broken branches, stumps and overturned trees afflicted by wood-destroying fungi are a huge supply of nutrients, which are released from them very slowly. It is like a refrigerator from which you take only as much food that you can take for dinner. The “healthy” forest thanks to the nutrients, which are in the soil also regenerates itself. The adult trees produce seeds and these have adequate nutrients from the dead wood to establish a new generation of trees. Dead wood feeds the living trees thanks to which that forest is living.

In a “healthy” forest, the dead wood ratio per hectare should be about 60 m³. This is about 60 dry grown spruce trees! The most thoughtful of you could object that dead wood is actually not dead at all. They are right. Lots of fungi, insects, mosses and other organisms, which do not like living wood live in/on dead wood. 80% more species of all sorts live in a forest with dead wood than in a forest without dead wood. If the woodsmen really want a living forest, then the dead wood must be in the forest.

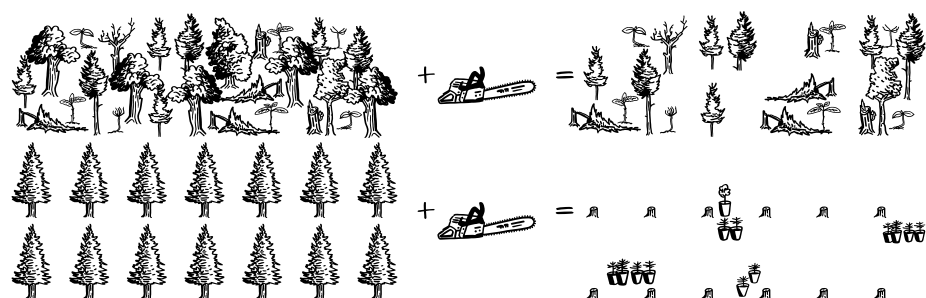
HEALTHY FOREST



UNHEALTHY FOREST



When a woodsman shall manage a “healthy” forest, he can only fell the selected, best trees. He shall sparingly pull them out of the forest using a horse. He shall leave the ill and dry trees in the inaccessible areas. The trees that are doing best give the best seeds and the forest shall regenerate itself thanks to the dead wood.



At first glance it may seem that there will not be as much money from the “healthy” forest as from the “unhealthy” forest. This may be, but need not be true. A huge tree combine harvester can run into an “unhealthy” forest where all the trees are the same and cut all the trees and take them out of the forest at once. But if the woodsman does not leave enough dead wood in the clearing (and why should he leave any since all the trees in the “unhealthy” forest are of same age, and there is no tree among them that

would be older and dry), the quantity of nutrients in the soil of the “unhealthy” forest shall decline and it shall weaken and more poorly regenerate. Such a clearing will also have to be reforested. This means that it shall be necessary to plant about 3,000 small trees on 1 hectare. In 2017, such a small spruce or beech tree cost CZK 5–10, a small fir tree cost CZK 15. It shall be necessary to take care of the small trees – weed them to prevent them being suffocated by the grass, and it will also be necessary to make an enclosure around them to prevent the deer and roe deer from nibbling them. If the forest shall be purely a spruce tree forest, there is the risk that it shall be afflicted by the Spruce Bark Beetle³ that shall kill all the spruce trees. In an older forest of same age, there is a lack of smaller trees, which protect the forest against strong wind. Although the woodsman gets a lot of money in one year from a forest managed in this manner, however, he must also invest a lot of money during its growth.

HEALTHY FOREST



+5 € LESS TIMBER, -1 € BARK BEETLE DAMAGE
-1 € WEATHER DAMAGE, 0 € EXPENSIVE SEEDLINGS
+ 3 € NUTRIENTS FROM DEAD WOOD

HOW MUCH PROFIT?

UNHEALTHY FOREST



+10 € LESS TIMBER, -3 € BARK BEETLE DAMAGE
-3 € WEATHER DAMAGE, -2 € EXPENSIVE SEEDLINGS
+ 1 € NUTRIENTS FROM DEAD WOOD

HOW MUCH PROFIT?

BOX

The landscape below the horizontal pavement of the Trail rapidly drops up to 23.8 metres below it. Before reaching the tower, you will walk 440 metres and plunge into it. You climb a further 890 metres up to its peak. If you do not take a short-cut (and do not accelerate it) by the toboggan, you will walk a further almost 800 metres of the Trail before you get to the final horizontal leading to the building at the end. This measures a further 110 metres. Without the toboggan, you thus walk 2,240 metres from the entrance turnstiles to the exit. It is the longest Trail that Erlebnis Akademie built until 2017.

3) Several species of bark beetles exist – for instance, the Spruce Bark Beetle (*Ips typographus*) and others. It belongs to the bark beetles subfamily.



The soil – the invisible component of the forest

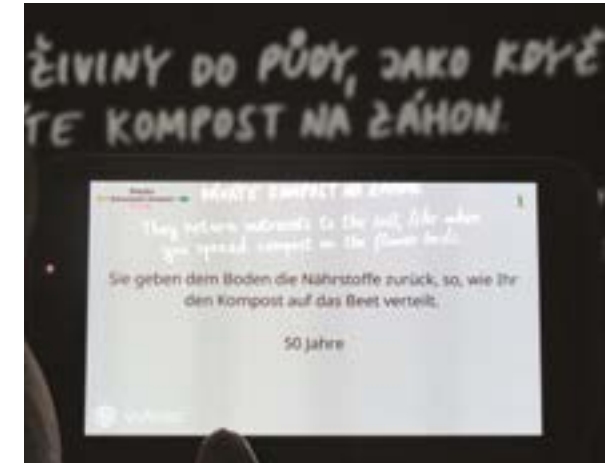
Over the horizontal footbridge you get to the foundations of the tower. It is dark there, no colours, real roots are hanging from the ceiling with a heap of local stones below them and crunching sounds are audible. It looks like the underground in the vicinity of the Trail – there is also no light there, the beetles do not see each other so they need not be coloured. The biggest root at the middle is from a spruce tree and the rock under it is phyllite – ancient mud, which had settled on the sea bottom, was gradually compacted, heated, melted, cooled and solidified again.

The exhibition itself is very simple. You do not spend more than 7 minutes in it. On days when the Trail is visited by 4,000 visitors per day, the more time-demanding exhibitions would be overcrowded and nobody would enjoy anything.



Someone complained that he did not learn much. Yes, it is not a comprehensive encyclopaedia. It is a simple and summary explanation of what the soil is and when it is live. At the end of the exhibition, the visitor should think about what can happen when the nutrients are depleted from the soil. Don't be afraid, the information is not complicated. It is simple, evokes thought and surprisingly human at some points. There is a question and answer against each figure. This suffices. We did not want to bother you with many bare facts.

The texts are in Czech and English. Because we do not forget our neighbours from Poland and Germany, we created the Multilingua mobile translating application. When you download it into your smart phone, you get a Polish or German translation of the texts in the exhibition when you point the lens at the panels. You access the application via the QR code, which is at the Trail ticket office or on the slip, which every visitor who buys a ticket and does not speak Czech also gets.



The size of the Multilingua translating application is about 20 MB and it is hidden under this QR Code.





BOX The height of the Trail Tower is 42.7 metres. The structure is supported by 12 arched columns, which give the tower the shape of the Gentian flower, the flagship plant of the Krkonoše National Park. At the foundation its outer diameter is 26.7 metres and the diameter of its peak is 40.0 metres. Because the tower has a circular footprint, it is very strong and will not move much or collapse during a wind storm. The path from the underground to the peak is 890 m long. Just like on the horizontal section of the Trail, the tower is also barrierless and the wheel-chair ridden people also get to its peak. Each part of the tower has a small horizontal path section and the wheel-chair ridden people and families with prams can rest. The columns of the tower are bonded from many beams, lined with metal-sheeting and wooden facing panels. It would be incessantly complicated to finish the surface of the entire column, facing is the most advantageous. The columns were made in Austria and subsequently transported to the Krkonoše Mountains on special trucks. In order for the entire, almost fifty-metre long rig to run through the sharper bends and roundabouts, its rear section could be steered remote independent of the tractor in front.

The Tower

From the underground of the Krkonoše Forest, you climb up a spiral staircase to above the peaks of the tallest spruce trees of the Krkonoše Mountains. The trees around the Trail are about 80 years old and 35 metres tall. The tower has a substantially larger diameter at the top than at the foundation, it thus expands upwards. For this reason, you will see the nearest trees from above as if you were looking at them from a helicopter. The tower shall take you through all the vegetation layers of the surrounding forest – the lowest on the ground is the moss layer. It is only a few centimetres in height, but it is inhabited by many tiny beetles. Because this is the contact point between the soil and the above-ground part of the forest, the largest number of organisms is here. Only a few centimetres higher is the herbaceous vegetation layer. Here, you will find everything larger than moss and smaller than small trees. The small trees and shrubs are already in the next layer. Perhaps you will recognize the fir trees, which unlike the small spruce trees love the shadows. Their needles are darker than the spruce tree needles, and for this reason the hills on which the firs were growing looked darker. When you crush a few fir needles with your fingers, you should smell lemons. You will climb longest through the tree layer. You very rarely see it just like from the tower of the local Trail. From its top, you will see the spruce forests on the southern slope of Černá hora. The spruce trees mainly do well there because it has an adequate elevation, after all the Černá hora peak is 1,299 m above sea level. The climate there is so cold, humid and windy that the deciduous trees do not grow very well on Černá hora. This is on problem for the spruce trees, on the contrary – they love the mountains. It is only the people who planted the spruce trees in the lowlands and foothills because they grow quickly and it is possible to get a lot of planks and beams from their straight stems. But the lowlands are hot for the spruce trees and they poorly access groundwater in deep soils because they have shallow roots. They are thus thirsty, weak and cannot cope, for instance, with the tiny bark beetle.

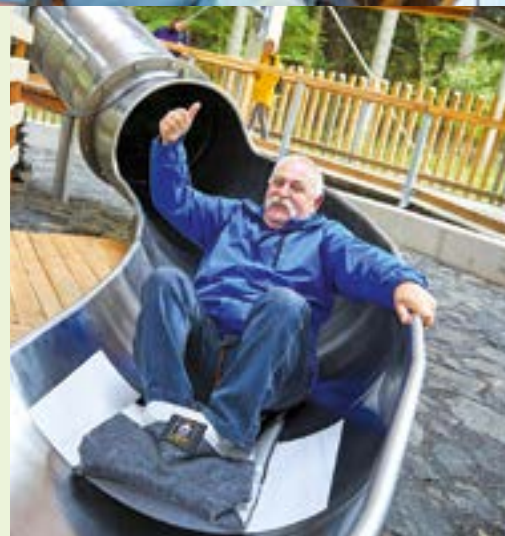


The tower top takes you above the surrounding forest. The landscape opens and the small direction signs provide you with information about what you can see in good weather, including important places in the broad surroundings. Do not expect a circular panoramic view of Hradec Králové and Sněžka. The objective of the tower is to take you through the forest horizontally and vertically – from the roots to above the tree crowns. And it perfectly fulfils this. If you want to enjoy the view of Sněžka and Hradec, take a trip by cable way to Černá hora. The Panorama lookout is on one of the peaks and from there you will see the landscape, but not into the forest. The Trail takes you through the forest and does so thoroughly.



Toboggan

The tube of diameter one metre is 80 metres long. It was initially intended for the children, but all the visitors use it quite a lot, often also the seniors. In good weather, the ride takes 11 seconds; in bad weather, water condenses on the inside of the toboggan and the ride would take only 3 seconds. But then the dead bodies of people literally fired from the tube would amass below the toboggan and for safety reasons, the operator does not allow the people to use the toboggan when it is wet. The first Trail through tree crowns in Neuschönau does not have a toboggan. This was available at the Trail in Lipno because the Czech fire standards required the tower to have a metallic escape staircase. Wrapping a toboggan around an escape staircase was not such a big problem and the attraction was born.



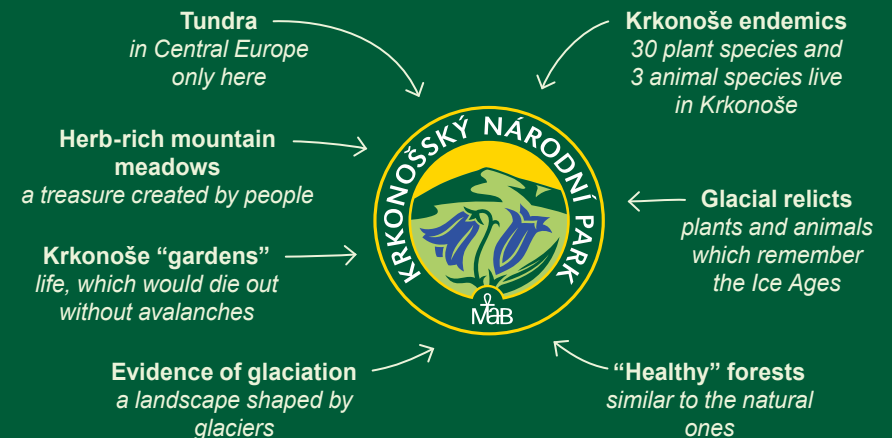
In the toboggan you race at a speed of about 30 km/h. If the inside were moist, you would risk your life at 80 km/h

Is the Trail safe?

It is. It fulfils all the safety regulations that apply to it. The guardrails are 120 cm high and it has a steel escape staircase. The Trail is closed in strong icing conditions (this happened once in the first 5 years on the sister trail in Lipno), during a storm (only for a few hours) and in strong wind. Although the Trail shall not collapse in such conditions, but something could fall on it. Note that the spruce trees closest to the Trail are tied with steel cables to the other trees so that not even a wind storm cannot bend them and they thus do not damage the Trail. For assurance, they could be felled, but it would be a pity, after all it is a Tree Top Trail, not a Trail above a clearing.

Why the Krkonoše has a national park

The nature of the Krkonoše Mountains is unique. What you see in the Krkonoše Mountains is something that you will not see elsewhere at all or in some other place 1,000 km distant.



The Krkonoše Mountains National Park Administration ensures that the local nature is preserved for future generations. It protects rare flora and fauna, maintains the flowery mountain meadows, maintains the roads, builds footbridges, nature trails, takes care of the forest to ensure that it is "healthy" and supervises observance of the laws in the KRNP. It also prepares hundreds of programmes for the public and the schools. Through them, it is capable of bringing a herd of deer to the visitors, find the very rare *Cochlodina dubiosa corcontica* or offer the Gentian.



The Krkonoše Tree Top Trail

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