



SEVEN WONDERS OF KRKONOŠE



SPRÁVA KRKONOŠSKÉHO NÁRODNÍHO PARKU

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Ministerstvo životního prostředí



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Recommended Reading for Deeper Understanding

FLOUSEK J., HARTMANOVÁ O., ŠTURSA J. & POTOCKI J. (Eds) 2007: Krkonoše. Krajina, příroda, lidé (Krkonoše - Landscape, Nature, People). – Published by: Miloš Uhlíř – Baset, Prague: 864 pages.

KOCIÁNOVÁ M., ŠTURSA J. & VANĚK J. 2015: Krkonošská tundra (Tundra in Krkonoše). KRNAP Administration, 44 pages.

LOKVENC T. 1978: Toulky krkonošskou minulostí (Journey through the Past in Krkonoše). Kruh Publishers, Hradec Králové, 268 pages.

PILOUS V. 2001: Krkonoše skal a kamení (Rocks and Stones in Krkonoše). KRNAP Administration, 32 pages.

PILOUS V. 2015: Vodopády Krkonoš 1 a 2 (Waterfalls in Krkonoše 1 and 2). KRNAP Administration, 48 pages.

PILOUS V. 2016: Skály krkonošské tundry (Rocks on the Tundra in Krkonoše). KRNAP Administration, 48 pages.

PILOUS V. 2016: Vrcholy krkonošské tundry (Summits on the Tundra in Krkonoše). KRNAP Administration, 48 pages.

ŠTURSA J. 2009: Voda v Krkonoších (Water in Krkonoše). KRNAP Administration, 44 pages.

ŠTURSA J. 2012: Květena Krkonoš (Flora in Krkonoše). KRNAP Administration, 32 pages.

ŠTURSA J. 2013: Krkonošská encyklopedie. Krajina, příroda, lidé. (Encyclopaedia of Krkonoše - Landscape, Nature, People.) KRNAP Administration, 88 pages.

ŠTURSA J. 2014: Kouzlo Krkonoš (Magic of Krkonoše). KRNAP Administration, 44 pages.

ŠTURSA J. & VANĚK J. 2016: Klenoty krkonošské tundry (Jewels of the Tundra in Krkonoše). KRNAP Administration, 48 pages.

VANĚK J., FLOUSEK J. & MATERNA J. 2011: Atlas krkonošské fauny (Atlas of Krkonoše Fauna). Karmášek Publishers, České Budějovice, 386 pages

Krkonoše a Jizerské hory magazine, years 1–50 (1967–2017)

Opera Corcontica journal (Krkonošské práce – collection of scientific works from Krkonoše), years 1-55 (1963-2018)

www.krnep.cz

Krkonoše in figures

Area	631 km ² (Czech Krkonoše 454 km ² , Polish Karkonosze 177 km ²)
Difference in elevation	400 to 1,603 metres above sea level.
Highest mountain	Sněžka (1,603 m)
Climate	humid, highly changeable, – mean annual temperature +6 °C to 0 °C, – 800–1,600 mm annual precipitation, 150–300 cm snow, – snow lies on the ridges up to 180 days in the year
Main rivers	Labe, Bílé Labe, Úpa, Jizerka, Jizera, Mumlava, Kamienna, Wrzosówka, Podgórna, Łomnica and Jedlica
Most famous waterfalls	Labský, Pančavský, Mumlavský, Úpský, Pudlava waterfall, Szklarka, Wrzosówka, Podgórna, Kamieńczyk waterfall
Geological composition	granite, gneiss, schists, phyllite
Vegetational levels	submontane (between 480 and 800 m – deciduous and mixed montane forests) montane (between 800 and 1,200 m – spruce forests, montane meadows) subalpine (between 1,200 and 1,450 m – dwarf pine scrub, peatbogs, glacial cirques) alpine (between 1,450 and 1,603 m – lichen, grassy and rocky tundra)
Main tree species	sycamore, rowan, silver birch, Carpathian birch, grey alder, European beech, Norway spruce, dwarf pine
Number of flowering plant species	more than 1,300
Most famous of them	least primrose, alpine hawkweed, narcissus thimble-weed, willow gentian, Sudetic mountain pansy, matgrass, hare’s-tail cottongrass, golden cinquefoil, Bohemian bellflower, Sudetic rowan, cloudberry
Number of invertebrate species	240, of which 57 mammal species, 165 bird species

<i>Most famous of them</i>	roe deer, red deer, badger, fox, marten, meadow pipit and water pipit, crossbill, black grouse, buzzard, grey wagtail, adder, viviparous lizard, Alpine newt
<i>Rarest phenomena of abiotic nature</i>	glacial cirques, tors, frost-sorted soils, avalanches, waterfalls, potholes and giant kettles
<i>National Parks</i>	declared on the Czech side in 1963, on the Polish side in 1959
<i>KRNAP Administration</i>	Vrchlabí, Dobrovského 3, 543 11, Czech Republic
<i>KPN Administration</i>	Jelenia Góra-Sobieszów, ul. Chalubinskiego 23, 58–570, Poland
<i>KRNAP Administration Information Centres</i>	Pec pod Sněžkou, Vrchlabí, Špindlerův Mlýn, Harrachov
<i>KPN Information Centres</i>	Sobieszów, Karpacz, Domek Myśliwski, Szklarska Poręba
<i>Annual visitor numbers in Krkonoše</i>	4,8 million on Czech side, 2,5 million on Polish side
<i>Tourist trails</i>	800 km of marked summer and winter trails on the Czech side, 230 km on the Polish side



Labe Meanders at Pančavská jáma corrie

Wonders of the World, Czech Republic and Krkonoše

We are naturally competitive, so it is no wonder that, since time immemorial, we have tried to collect and compile into tables all that is the most beautiful, the most remarkable, the highest, and the most valuable of everything that surrounds us. Most of you can remember at least some of the Seven Wonders of the World, which was a selection of unique structures from the ancient world, which were built in the countries around the Mediterranean and in the Middle East by the hands of man. The Pyramids of Giza, Hanging Gardens of Babylon, Phidias's Statue of Zeus in Olympia...

Most were destroyed long ago, but we still admire the pyramids today. Then a table of the Seven Wonders of the Natural World was published, where we included the Amazon Rainforest and Amazon River, Iguazu Waterfalls, Komodo Island... Competitiveness has not abandoned us, so we chose seven New Wonders of the World in 2007, and a table of the most remarkable places in the Czech Republic was also published. After the winning Charles Bridge in Prague, second place was taken by the highly controversial structure of the Dlouhá Stráň pump-storage hydroelectric generating plant in the Hrubý Jeseník Mountains. This structure is unmistakable from above, but whether it was necessary to cut off half a mountain to build the hydroelectric plant, is a question which probably still divides us into two camps with conflicting opinions.

Then the Krkonoše National Park had the idea of asking the fans and lovers of Krkonoše to choose the Seven Wonders of Krkonoše from the natural phenomena occurring on both sides of the border. In 2013 the votes were

counted and the order of the seven best was published. These seven localities in Krkonoše won the most votes (among those who sent in their vote) in the following order:

1. Obří důl glacial valley
2. Mumlavský waterfall
3. Labe meanders
4. Pančavský waterfall
5. Mt. Kotel
6. Rýchory primeval forest
7. Modrý důl glacial valley

This order is extremely subjective, as some people seek out beautiful views from mountain summits, while others sought the colours of the autumnal landscape, the atmosphere of the montane primeval forest, the sound of water, the monumental nature of the rocky cliffs and so on. When such a vote is repeated later, I am convinced that the order of the first seven will probably be different. But for now, let us read about the Seven Wonders of Krkonoše on the pages of this little booklet. And you can choose which of these places you will visit in the Krkonoše Mountains.



Obří důl – Jewel of Krkonoše

Few places in the Krkonoše Mountains contain such diverse mountain scenery, lush countryside and the testimony of the bustling history of the colonization of our highest mountains. The noble-sounding attribute of the landscape underneath Sněžka is justified.





The carling of Mt. Sněžka with a view of the snowbeds on the upper rim of the Úpská jáma corrie

The deepest valley in the Czech Republic, with its 600-metre elevation from valley bottom to the summit of Mt. Sněžka creates an unrepeatable high-mountain landscape. On its slopes, primarily reshaped by Quaternary glaciers, river erosion, avalanches and landslides, we can find a diverse mosaic of rocky cliffs, rocky talus, frost-sorted relief forms and the diverse flora and fauna of the montane spruce forests, rich alpine meadows and arctic-alpine tundra on the summits of Mt. Sněžka and Mt. Studniční hora.

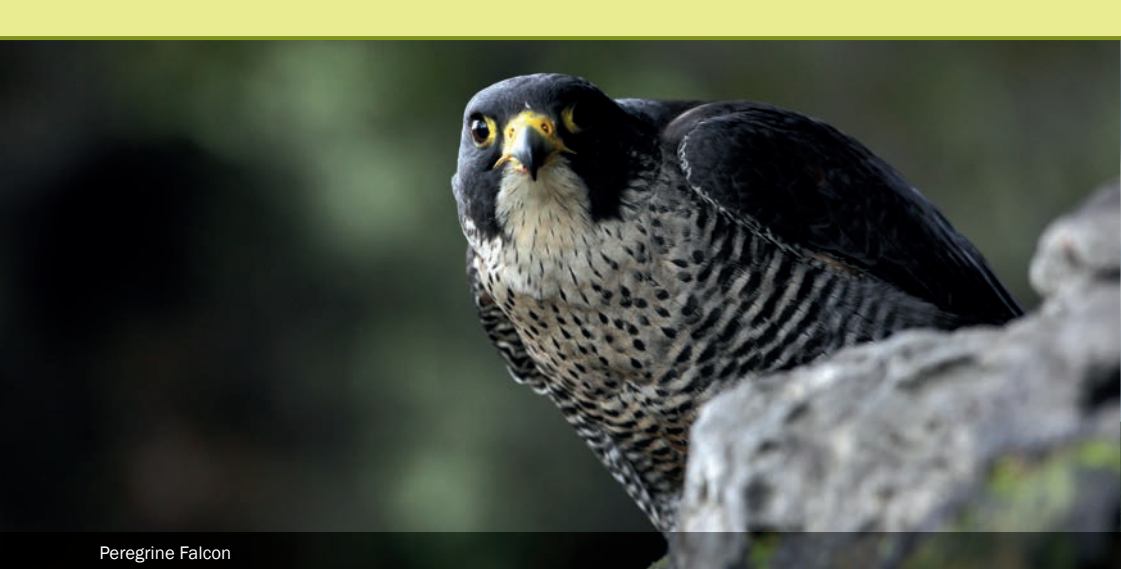
The Obří důl valley was carved out by the powerful forces of nature – ice, snow, water, wind and frost. They left their calling cards in the form of diverse relief forms (trog-shaped valley, carling type of Mt. Sněžka, frost-sorted soils on the summits of Mt. Sněžka and Mt. Studniční hora, glacial cirques and moraines). We can also find visible evidence of avalanches and landslides, diverse geological conditions, where the differing properties

of the granite massif and the schist-gneiss rocks are revealed, the imposing Horní and Dolní Úpský vodopád waterfalls or evidence of the braided channel of the Úpa river below the Rudný potok stream.

Obří důl is the naturally most valuable valley in our republic, an example of a glacial valley – a trog. Its U-shaped cross section provides evidence of Quaternary, and earlier, glaciation, when massive glaciers

The Dolní Úpský vodopád waterfall stands near the legendary Čertova zahrádka Back Garden where the rare peregrine falcon nests (which is why there is no entry all year round!)





Peregrine Falcon

flowed from the slopes of the Úpská jáma and Studniční jáma glacial cirques and Modrý důl valley for more than 5 kilometres down to the upper edge of the town of Pec pod Sněžkou.

The famous Čertova zahrádka Back Garden spreads across the Obří důl valley and in the upper part of the Úpská jáma corrie we can find the Krakonošova zahrádka Back Garden, two jewels of natural science with diverse flora and fauna, which were discovered long ago by renowned natural scientists. These included Thaddeus Haenke, who recorded and described the natural wealth of the Obří důl valley and the surrounding sections of Krkonoše as early as 1786. The diverse flora of the Čertova zahrádka Back Garden is due to the occurrence of the mineral-rich porphyritic rock. On the other hand, the diverse flora of the Krakonošova zahrádka Back Garden is under the command of avalanches, which, for thousands of years have prevented the Úpská jáma glacial cirque from becoming overgrown by montane spruce forest or the twisted dwarf pine scrub, which grows all around the cirque.

Our ancestors had utilised the natural riches of the Obří důl valley ever since medieval times. They built a series of log-built mountain chalets here. On the flat valley floor they grazed cattle and harvested the montane meadows, mined for metal ore and rare minerals in the depths of Mt. Sněžka, and cut timber in the montane spruce forests. Numerous historical pictures and etchings provide evidence of their activities. Much evidence of the presence of the former residents can be found on the slopes of Mt. Sněžka. This physically demanding mining can best be understood by visiting the unique underground museum in the Důl Kovárna mine, which recreates the atmosphere of the old mineshafts. In the chapel in the upper part of the Obří důl valley there is a miniature exhibition of natural disasters from the end of the 18th century, when great floods and landslides affected the fate of our ancestors. We have even managed to reconstruct the location and the former reservoirs on the upper reaches of the Úpa, which the local people used to float timber down the river to lower elevations.

Mt. Studniční hora and Úpská jáma corrie



Sudetic mountain pansy is a rare guest
on the Krkonoše montane meadows



The porphyrite walls of the Čertova
zahrádka Back Garden are colonised by
the striking bright scabious





Surprisingly, the endemic Krkonoše bellflower, is not named the Krkonoše bellflower, but the Bohemian bellflower



Mumlavský vodopád waterfall

Perfect testimony of the power of water flowing on mountain slopes. The roar of an impressive waterfall, rapids, giant kettles and potholes are a year-round magnet for lovers of the western Krkonoše Mountains.



More than one hundred waterfalls of varying sizes, from the tiny to the monumental, are known in Krkonoše, and their dynamics, colours and sounds are unique demonstrations of the diverse Krkonoše landscape and nature. The Mumlavský vodopád waterfall in western Krkonoše is one of the most popular with tourists. It is probably the most powerful waterfall in the Czech Republic, with a mean flow rate of around 750 l/s, and is easily accessible for tourists. It falls over smooth granite rocky plates and the powerful flow of the Mumlava stream has carved out a remarkable pair of giant kettles, which are easily the largest in our country. The nearest similar evorsion forms can be found in the Eastern Tatras, Alps and in Scandinavia.

The Mumlavský vodopád waterfall can be found in the lower part of the Mumlava valley and its origin was influenced by the unusual tectonic conditions in this part of Krkonoše. During the Tertiary, and probably Quaternary, period the tectonics contributed to activating the erosive strength of the Mumlava stream, which began its headward erosion in the granite basement, depending on the hardness and jointing of the rock, to carve out a series of cascades, rapids and

waterfalls. The Kotlový vodopád (upper) and the main Mumlavský vodopád (lower) waterfalls are among the most attractive of them.

In mountain river channels and gorges the strongly turbulent water is able to rotate with the pebbles and sand that it carries and to carve out potholes and giant kettles in the granite bedrock. Around 550 of these potholes have been mapped in Krkonoše, especially on the Jizera, Labe, Úpa or Kotelský

One of the unmistakable pair of giant kettles. The powerful flowing water has been shaping and deepening it for millennia





The autumnal atmosphere around the Mumlavský vodopád waterfall is one of the most beautiful...



...although the frozen icy kingdom is also delightful to see

potok. This is a process known as evor- sion, whereas the waterfalls are often the products of headward erosion. Between the rapids (above the waterfall) and the pool (below the waterfall) there is a reverse eddying of the water flow, which abrades the bedrock backwards, against the flow of the river. And this process increases in speed as the bed- rock above the waterfall is less resist- ant and more prone to erosion. Thanks to headward erosion over thousands of years mountain valleys may be eroded all the way back towards the spring.

The surroundings of the Mumlavský vodopád waterfall are covered by mixed montane forests, which are dominated by spruce, beech and rowan. Their

colour transformations during the seasons, together with the changeable colours of the algae, moss and herbs in the river channel, the sparkling water flow and the icy blue waterfalls are the main reasons why this place is so popular with tourists. This has been a top destination ever since tourism in Krkonoše began. Count Jan Harrach had a tourist chalet built by the waterfall in the late 19th century, which, along with its location right next to Harrachov, gradually made the Mumlavský vodopád waterfall one of the most popular of all waterfalls. The series of historical postcards, as well as the throngs of modern-day tour- ists flocking here, are evidence of this popularity.

One of dozens of historical
postcards sent from Mumlava to
places all over Europe



Riesengebirge

Der Mummelfall 728 m

An aerial photograph of a meandering river flowing through a valley. The river is a light brown color, winding through a landscape of snow-covered ground and dense evergreen forests. The trees are dark green, with some catching the golden light of the sun, creating a warm glow. The overall scene is serene and natural.

Labe Meanders

Like a silvery snake, the Labe winds across the floor of the Pančavská jáma corrie. In no way does it remind us of the mighty European river it will become as it flows towards its mouth in the North Sea, more than a thousand kilometres away.





The slow-flowing water in the meanders does not remind us of the turbulent and erosive flow in the spring or after heavy rain

On our travels from Špindlerův Mlýn to the Labská bouda chalet, at the very head of the Labský důl valley the wonderful panorama of the three glacial cirques – Harrachova jáma, Pančavská jáma and Navorská jáma – will be revealed to us, as well as the silvery ribbons of two great Krkonoše waterfalls – the Pančava waterfall and the Labe waterfall a little higher up. The spring of the Labe is hidden on the nearby montane plateau and this humble mountain stream, which does not remind us in any way of the great European river it will become, falls

into the Labské jámy corries, and on the floor of the middle one – Pančavská jáma corrie, it has carved out a remarkable series of meanders. These are only visible from the tourist trail between the Pančavský vodopád waterfall and the Labská bouda chalet, but they are unmistakable, as such meanders are rather uncommon on the upper reaches of rivers. Here it was possible thanks to the deep sediment layer on the flat floor of the Pančavská jáma corrie, but also due to ancient natural processes which took place here.

Rocks, clay and organic materials have continually fallen from the steep slopes of the Pančavská jáma corrie for many thousands of years and the flat floor of the cirque was gradually covered by a deep layer of sediments. The latest research provides evidence of the existence of a shallow glacial lake, which has not survived and was completely filled with rocky sediments. The high level of the ground water also allowed for the formation of peat deposits several metres thick. It was the detailed palynological analysis of these deposits that provided evidence of the existence of a lake, even though it was much smaller than the lakes in the eastern part of Polish Karkonosze Mts.. The turbulent flow of the Labe gradually eroded through the peat basement to create meanders up

to two metres deep. During heavy rains their appearance often changes, as from time to time the grassy overhanging banks break off, and the clayey, sandy or rocky sediments on the Labe riverbed change their shape and distribution. The floor of the Pančavská jáma corrie is also filled with a different kind of lake – a lake of cold and humid air, which, in certain climatic conditions, flows down the slopes into the valley, where it gathers, supporting the creation of more peat and influencing the flora there.

Meanders are most common on the lower reaches of rivers in the lowlands. However, the unusual natural conditions in the Pančavská jáma cirque allow this to happen at an elevation of 1,046 metres.

The Labe Meanders are best seen from the Ambrožova vyhlídka vantage point on the rim of the Pančavská jáma corrie



The Pančavská jáma corrie is one of the biological jewels of Krkonoše. The rare montane herbs and shrubs which grow around the meanders in the Labe stream in early summer include the blue-flowering monkshood, pink Hedge-leaved Adenostyle or the yellow groundsel *Tephrosia crista* in early summer. Our largest weevil – *Liparis glabrirostris* – lives on the massive leaves of the butterbur. An abundant population of American brook trout, which were introduced to Krkonoše in the early 20th century, has found sanctuary in the meanders. It is a hardy fish and survived in the highly acidification of waters during the air pollution calamity which affected Krkonoše Mts. in the late 20th century, unlike the native brown trout, which disappeared from most of Krkonoše's mountain rivers and streams.

From the Harrachova cesta trail, which passes nearby, the meanders on the

flat floor of the corrie are not visible at all. Because of the statute of the KRNAP First Zone the only possibility for tourists to see the meanders is from the upper rim of the Pančavská jáma corrie, either from the vantage point by the Pančava waterfall or from the Ambrožova vyhlídka vantage point. The name of the enlightened Count Jan Harrach is connected with many places in Krkonoše, as he was very active in promoting tourism and had quality mountain trails built. He also had this trail built to connect Špindlerův Mlýn with the Labská bouda chalet and Harrachov (1879). Later the trail was named after him. According to some historical sources the grassy floor of the Pančavská jáma corrie was sometimes utilised for cutting and drying quality hay. In the past our ancestors also visited the Labské jámy corries to gather the fruit of the rock redcurrant, medicinal herbs and to catch brown trout in the Labe Meanders.

Near the Labe Meanders we can find the Schustlerova zahrádka Back Garden – the richest botanical locality on the Czech side of Krkonoše





Willow gentian – the symbolic flower of
the Krkonoše National Park



The peace and quiet in the Pančavská jáma corrie suit the black grouse – the wild knight of the Krkonoše Mountains



The spring snowbeds on the avalanche slopes in the Krkonoše cirques play host to peculiar fibrous algae, which are the reason for the variety of colouration of the surfaces of the snowbeds



Pančavský vodopád waterfall

This mountain brook falling over granite rocks into the depths of the Pančavská jáma corrie has been a popular destination for tourists for centuries. During the spring thaw or after heavy downpours it creates an amazing outdoor theatre.



The highest waterfall in the Czech Republic and in all of the European Middle Mountains was named after the Pančava stream (Pantsche in German, which is derived from the local dialect word, meaning "splash"). The whole cascade falls from the upper rim of the Pančavská jáma corrie from an elevation of 1,298 metres to 1,150 metres, the main branch of the waterfall measures 148 m and the weaker southern arm falls 162 m. The Pančava stream drains part of the arctic-alpine tundra in the flat depression of the Pančavské rašeliněště peatbog, which has been included on the Ramsar Convention list, protecting the most important wetlands in the world, since 1993.

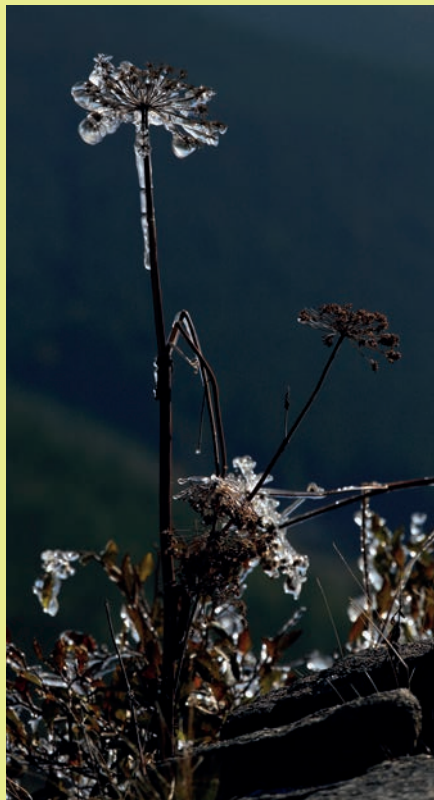
Who could resist coming close to the precipitous upper rim of the Pančavský vodopád waterfall at around 1,300 metres above sea level? The vantage point by the Pančavský vodopád waterfall makes it possible



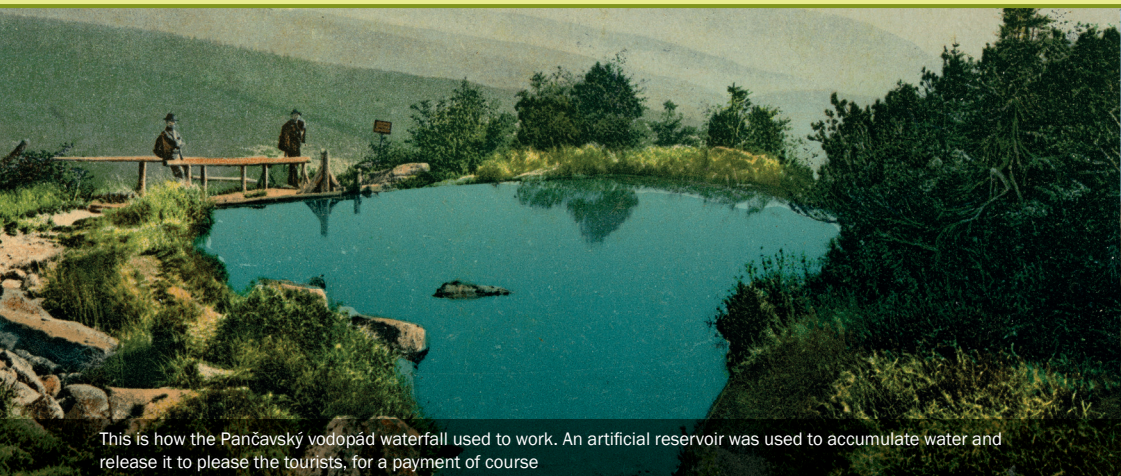
This is a waterfall of the Scandinavian type, the most perfect in our country and in all of central Europe. The granite bedrock with distinctive block faulting contributes to the monumental nature of the waterfall. It is divided into four distinct levels of 36, 39, 23 and 20 metres in height, which especially during the spring snowmelt (usually in the first half of May) or during torrential rains in the summertime, creates an extraordinary optical and sound atmosphere in the Pančavská jáma corrie. However, during drier parts of the year the branched waterfall is reduced to a series of narrow, silvery ribbons, which decorate the steep slopes of the glacial cirque. During occasional black frosts the water spray may be blown by the wind to create delicate ice decorations around the upper part of the waterfall, which are then the subject for dozens of photographers.

The Pančavský vodopád waterfall divides the Pančavská jáma corrie into two sections. The more northerly contains the renowned Schustlerova zahrádka Back Garden, the most botanically diverse locality on the Czech side of Krkonoše. This Back Garden is named after the geobotanist František Schustler, who utilised his comprehensive knowledge of the nature in Krkonoše to produce the first proposal to declare Krkonoše a national park in 1923. The colourful gallery of rare plants on the slopes of Schustlerova zahrádka include the most memorable woody plant in Krkonoše – the endemic Sudetic rowan. This is also the first place where the occurrence of “red snow”, the colour of which is provided by the presence of snow-loving algae, was described. The first records of snow pinnacles in the Czech Republic – peculiar snowforms caused by sublimation, known from the high mountains around

the world – were also made in this place. The avalanche slopes are covered with hardy shrubs and bizarrely-shaped crooked forests, while the autumnal palette of colours here is unmistakable. Peregrine falcons returned to the Pančavská jáma corrie more than 20 years ago. The Pančavský vodopád waterfall and the imposing Pančavská jáma cirque are best seen from the valley trail to the Labská bouda chalet. However, do not leave this trail, as you are on the territory of the most strictly protected Zone of Krkonoše National Park!



The arrival of the first frosty days creates a remarkable icy kingdom sprayed on the rocks around the Pančavský vodopád waterfall



This is how the Pančavský vodopád waterfall used to work. An artificial reservoir was used to accumulate water and release it to please the tourists, for a payment of course

The Pančavský vodopád waterfall and the nearby Labský vodopád waterfalls have inspired artists from the distant and recent past, meaning that there are countless depictions of them in engravings, paintings, photographs and period postcards, some showing great artistic licence, while others are brutally realistic. Neither of these waterfalls is among the most powerful, which is why smaller water dams were built and used to strengthen their flow during the golden age of tourism in Krkonoše, giving pleasure to tourists and profit to the dam operators. A small hut was built on the rim of the

Pančavská jáma cirque to house the personnel and offer refreshments. The other stood along the trail through the Labský důl valley. When sufficient tourists gathered at the bottom and paid the fee of 10 Krejcars per person, a trumpet sounded from below and the water collected in the reservoir was released to rumble down the Pančavský vodopád waterfall. It was a wonderful attraction, even if it was abandoned long ago. If you want to experience such moments, come to the Labské jámy cirques early in spring when the snow cover melts. You will not need Krejcars and you can enjoy the spectacle.

The endemic Sudetic rowan, which grows on the avalanche runs, near the Pančavský vodopád waterfall, has a completely different life story



The rocky outcrop near the vantage point by the Pančavský vodopád waterfall is a textbook example of the block faulting of granite due to frost weathering





Mt. Kotel

While in the eastern Krkonoše Mountains the forested massif of Mt. Černá hora is unmistakable, residents or visitors to western Krkonoše cannot miss the views of Mt. Kotel and the nearby Mt. Lysá hora.





The Malá and Velká Kotelní jáma corries give evidence of the presence of glaciers and the modelling power of regularly falling avalanches

For the inhabitants of the Jilemnice area and the whole of western Krkonoše Mts. the silhouette of Mt. Kotel (previously known as Kokrháč) is a more important symbol of Krkonoše than the much higher Mt. Sněžka in the east of the range. This is not about local patriotism, but about landscape value, as its distinctive 1,435-metre summit and the pair of glacial cirques – Velká Kotelní jáma and Malá Kotelní jáma – are unmistakable from a distance at all times of the year (which is not entirely true of Mt. Sněžka). Although Mt. Kotel is only the eighth highest peak in the range (1) Sněžka, 2) Luční hora, 3) Studniční hora, 4) Vysoké kolo, 5) Violík, 6) Stříbrný hřbet, 7) Malý Šišák), the history of the wider surroundings of this dominant of the western part of the Český hřbet ridge offers much to catch our interest.



Mechové jezírko lake below the Kotelní jámy corries – the only surviving glacial lake on the Czech side of Krkonoše Mts.

The glacial cirques – Velká Kotelní jáma and Malá Kotelní jáma – are among the most perfectly formed in all of Krkonoše. Even though they do not continue into distinctive glacial valley (trough) as in the case of the Obří důl and Labský důl valleys, nevertheless, the effects of Quaternary glaciation are easily visible. Evidence is given by the ground and lateral moraines that helped to create the Mechové jezírko lake, which is now hidden in the forest and is the only surviving glacial lake on the Czech side of Krkonoše. The two cirques are divided

by a sharp rocky ridge, in the upper part of which we can find the highest elevated mine workings in Krkonoše, and in the whole of Bohemia. Copper ore was mined here in the second half of the 19th century but today we can only find short mineshafts to remind us of the previous industrial activity. This skarn seam was formed at the contact between acidic minerals with limestone and intercalations of calc-silicate rocks, the presence of which exceptionally enrich the flora of both of the Kotelní jámy corries.



The Harrachovy kameny rocky outcrop (tor) on the upper rim of the Velká Kotelní jáma corrie forms part of the unmistakable silhouette of this place

The Kotelní jámy corries are filled with remarkable vegetation, which is mainly due to the presence of mineral-rich calc-silicate rock (a type of metamorphosed limestone), which enriches the talus and soil on the slopes of the corries as it breaks down. Several of the Krkonoše endemic or rare plant species, such as the rock sedge and the Krkonoše sedge *Carex derelicta* and the endemic subspecies of Field Scabious *Knautia arvensis* ssp. *pseudolongifolia* also grow here.

The parsley fern grows abundantly on the rocky talus and the flower-rich alpine

meadows are lit up by the flowers of foxgloves, monkshood, larkspur and blue-sow-thistles. Both of the corries are part of frequent avalanche runs, so in places they are only covered by hardy crooked forests, along with Rock Cherry, which is unmistakable when it blossoms. In addition to the common mountain birds, the presence of the beautifully coloured alpine rock thrush was recorded here, probably during its migration. The rare alpine accentor and wheatear also live in the cirques.

Mt. Kotel and the Kotelní jámy corries are places where we can find two of

the renowned Krkonoše Back Garden Kotelská zahrádka Back Garden lies in the Velká Kotelní jáma and is overflowing with botanical rarities. Růženčina zahrádka Back Garden lies on the northern slope of Mt. Kotel, and there are many theories and legends on how and why it came to exist. It is a striking rocky mound in the shape of a polygon, which fringes part of the alpine meadows above the trail around the northern foot of Mt. Kotel. However, it is not a botanical garden but the work of human hands, the shape of which reminds us of the stylized flowers of a rose and may be connected to the name Rosa/Růžena, who was the wife of Alois Harrach, the owner of the estate.

The Harrachs visited this spot in 1743, which is one of the potential explanations of the origin of the name. On the other hand, the small concrete bunkers known as "řopíky" tell a simpler story, reminding us of the sad historical times

in our republic before the outbreak of World War II. The fate of the former Jestřábí boudy chalets, which were built as a Czechoslovak army garrison in connection with the construction of the line of fortifications on the Krkonoše mountain ridges, is also connected to the wartime period.

A German research station operated here during the war years and the German scientists Herdemerten and Knöspel carried out various observations to compare the tundra conditions in Krkonoše and in Scandinavia. Later the buildings were used to train German military units.

The very busy Krakonošova cesta trail leads from Horní Mísečky through both of the Kotelní jámy carries on its way to Dvoračky and on to Harrachov, or across the saddle between Mt. Lysá hora and Mt. Kotel back to the ridge of western Krkonoše.

Avalanches and landslides tirelessly shape the trees and bushes on the avalanche slopes. This is how the "twisted forests" - bizarre tree formations which include the Carpathian birch, are formed



A photograph of a forest in autumn. The ground is covered in fallen yellow and brown leaves, with patches of bright green moss. Several large, dark tree trunks are visible, some with gnarled, twisted shapes. The background is hazy and misty, with more trees and yellow foliage. The overall atmosphere is serene and mysterious.

Rýchory primeval forest

The twisted trunks of beeches with fruit bodies of polypores attached, colourful transformations, fragrant aroma and mysterious sounds are how all photographers of Krkonoše perceive the autumnal aspect of the montane beechwoods on the Rýchory ridge.





Old age and youth – the never-ending battle for living space in a montane forest

In fact, the bizarrely shaped montane beechwood on the flat crown of the Rýchory massif is not a true primeval forest, but because it has not been the subject of commercial forestry for at least two centuries, its appearance closely reminds us of an ancient forest. The twisted trunks of the ancient beeches are the result of the harsh climatic conditions at elevations around 1,000 metres above sea level. Especially in foggy weather the Dvorský les, which is the real name of this locality, becomes an attractive destination for all photographers of Krkonoše.

Rýchory has been aptly described as Krkonoše in miniature. It is the easternmost promontory of the mountain range and a trip from the foot to the crown of the Rýchorský hřbet ridge (1,033 m) is a tour through the diverse nature of each vegetation altitudinal belt in Krkonoše. From the foot, where we can find herb-rich beechwoods and submontane meadows which have been farmed sensitively for centuries by our ancestors, we move up through mixed montane forests with beech, spruce, fir, sycamore and rowan, before continuing to the crown area, which at elevations above 800 metres in the main Krkonoše range would be covered by shady, montane spruce forest. Here things are different and the only small enclaves of montane spruce forest stand on the highest parts of the ridge. This can be explained by the relatively

favourable climatic conditions on the whole Rýchory massif, its greater diversity of rock types and soils, as well as by the historical usage of Rýchory by generations of our ancestors.

The interior of the Dvorský les forest is predominantly formed of the twisted trunks of old beech trees, which are enriched by growths of various mosses and the variety of coloured fruit bodies of many species polypores. Observant visitors are sure to notice that the old beeches often have several trunks, seeming to grow from one place. This is a relict of the former cultivation methods, when a group of shoots started to grow from the stump of the felled tree. In forestry this is known as *coppece* forest management and the free grazing



Numerous species of polypores are part of the life cycle of a primeval forest

of cattle and sheep in the forests in the distant past also contributed to the current appearance. The cattle often chewed on the young shoots, which led to the denser shape of the regenerating stumps. Now it is the red deer and roe deer which like to chew on them.

Rýchory is also the Bartův les at its foot. This contains evidence of medieval gold mining





The air at Rýchory is cleaner and cleaner, which is shown by the return of certain sensitive lichen species, especially old man's beard (*Usnea*) lichens

The crowns of the old beeches and spruces also carry visible signs of regular damage caused by strong winds and frequent snow icing, but they are capable of regeneration and create such bizarre crowns. Here the beeches are only several metres in height, even though they are hundreds of years old, which confirms that the living conditions are exceptionally difficult here. All you have to do is descend a few metres lower and to the east, where the beeches rapidly change into tall and monumental trees which dominate the forest.

The Rýchory massif is not only worth visiting for the mysterious atmosphere of its primeval beech forests, but also for its turbulent history. Gold was panned and mined at many places around the foot of the ridge (from where the older names of Rýžhory – Gold Panning Mountain or Zlaté hory – Golden

Mountains) were derived. The former settlement of Sklenářovice on the south-eastern slopes of Rýchory had a rich history. Although the older settlement of Suchý důl below the Rýchorská bouda chalet disappeared in the dense, post-war spruce plantings, the evidence of its existence are the places in the forest where the orange-lily still grows. This was grown by our ancestors as a decorative plant and despite not being native to Krkonoše, it survives in many places on Rýchory to the present day, just as the white spring crocus still grows in Horní Albeřice. However, the martagon lily, which grows abundantly around the Maxovka vantage point, is a native species here. Until 1946 the mountain chalet of the same name stood here. There are wonderful views of the panorama of eastern Krkonoše, Mt. Světlá and Mt. Černá hora from the vantage point on its foundations.



We are still not certain if the orange-lily is native to Rýchory, or if it was brought here to Krkonoše by the first colonists from the Alps



Modrý důl valley

At the end of the school holidays, the mountain meadows and old spruce forests are lit up by the blue colour of hundreds of thousands of flowering willow gentians. Perhaps that was why this valley near Mt. Sněžka gained its name long ago.





The Modrý důl valley, Mt. Studniční hora and Mt. Sněžka – the most attractive destinations for visitors to eastern Krkonoše

This distinctive valley in the eastern part of Krkonoše can be admired by visitors as they hike along the Slezská cesta trail between Výrovka and the Luční bouda chalet. This trail offers distant views into the Úpa river valley, to the Rýchory massif, often as far as the Orlické hory mountains or Mt. Králický Sněžník. In early summer most tourists are amazed by the view of the “Map of the Republic” – the last snowbed to melt in all of Krkonoše. The autumn months sometimes bring inversion weather, when the whole Bohemian Basin is filled with low cloudiness and the highest parts of Krkonoše emerge as isolated islands from the white sea of clouds.

This valley is distinctly asymmetrical, with the higher left side formed by the slopes of Mt. Studniční hora (third highest in Krkonoše, 1,554 m) and the right side by the much lower Široký hřbet ridge. During the Quaternary glaciation a glacier flowed down the Modrý důl valley and at the confluence of the Modrý potok stream and Úpa river it joined the glacier flowing from the Obří důl valley. The ancient presence of the glacier is only revealed by the wide U-shaped cross section of the valley. The accumulation of large quantities of snow cover on the southern slopes of Mt. Studniční hora is unusual, but is the result of the direction of the air flows, in the form of a side branch of the Bílé Labe anemoro-graphic system. Although the majority of strong winds fall over the rim of the Úpská jáma corrie, some of them also flow across the saddle between Mt. Studniční hora and Mt. Luční hora and the masses of snow are deposited on the leeward, southern slope. Accurate measuring has confirmed that

the snowbeds which form here are up to 15 metres deep, often not melting completely until July. At a certain time the snowfield (snowbed) is the shape of the First Czechoslovak Republic, including Carpathian Ruthenia (hence the name “Map of the Republic”). This melts first, followed by Slovakia.

Both natural scientists and visitors enjoy visiting the Modrý důl valley in Krkonoše. But they must not come here when the Mountain Rescue Service declares an avalanche risk. Stories from the distant past and from recent years (2015) are more than enough. In

autumn the Modrý důl valley is illuminated by fields of flowering willow gentian and maybe there is some connection between the abundance of this flowers and the name of Modrý důl – Blue Valley. Early in the spring we can find flowering pasqueflowers, mountain pansy, the purple monkshood or the yellow flower heads of spotted cat’s-ear. On the southern slopes of Mt. Studniční hora a geomorphologist will admire the extensive rocky talus, a forester will be pleased by the dark green growths of the hardy dwarf pine scrub and historians will find evidence of the earlier settlement of Krkonoše – permanently

The medicinal mountain arnica grows quite abundantly on the meadows in the Modrý důl valley



forest-free enclaves with picturesque log-built chalets.

The entire massif of Mt. Studniční hora, including the Modrý důl valley, offers excellent snow conditions for lovers of a wide range of winter sports activities. This is confirmed by the organisation of the very popular and prestigious May Race (Liberation Race) in the last century, which was held on the slopes of the Úpská jáma corrie, but primarily by the long fight between nature conservationists and the former totalitarian government. In the 1960s megalomaniac

plans were made to build a winter sports centre, which could play host to world-class competitions in downhill skiing and other winter sports, in the wonderful surroundings of the Modrý důl and Obří důl valleys, Mt. Studniční hora and Mt. Luční hora. This project was very close to being implemented. Nevertheless, in the end the great protests by scientists, conservationists and the general public led to the rescue of the Modrý důl valley from massive devastation. We should give great thanks to all of those who contributed to the uneven fight against the former regime.



Candidates for Further Selection

Dear readers, please do not perceive the heading as a prompter to help you in deciding what to nominate and in which order, if another competition is held to declare seven more wonders of Krkonoše, but just as an invitation to visit further places, which are certainly worth seeing, as is all of the Krkonoše Mountains.

Sněžné jámy (Śnieżne Kotty) corries

This monumental pair of glacial cirques lies in the western part of the Polish side of Krkonoše.

Černohorské rašeliniště peatbog

This extensive forested peatbog lies between Mt. Černá hora and Mt. Světlá hora in eastern Krkonoše.

Mt. Sněžka

For centuries the highest mountain in Krkonoše (1,603 m) has been the best-known pilgrimage site in the whole mountain range.

Úpské rašeliniště peatbog

This arctic peatbog lies on the extensive plateau between the Luční bouda chalet and the Úpská jáma cirque.

Těsný (Klausový) důl valley

This narrow and romantic valley, or ravine, on the Černohorský potok stream between the Pardubický Boudy chalets and Janské Lázně contains a series of beautiful waterfalls, which have attracted the attention of photographers of Krkonoše for many years.

Pevnost tor

On the ridges of Krkonoše we can find isolated rock formations, mostly known as tors or castle koppies.

Čertův důl valley

Many places in Krkonoše are connected with the Devil, a mythical creature which, along with the Giant Krakonoš, played an important role in the lives of the local inhabitants.

Mt. Černá hora

The distinctive summit reaches a height of 1,299 metres above the spa resort of Janské Lázně and is visible from a great distance as the entry silhouette to eastern Krkonoše.

Mt. Žalý

Just like Mt. Černá hora in eastern Krkonoše, the double summit of Mt. Žalý stands above Vrchlabí and welcomes visitors to central Krkonoše.

Kocioł Matego Stawu

This glacial cirque lies to the west of Mt. Sněžka.



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