

Soil Cover of Šumava National Park and Protected Landscape Area

Půdy Národního parku a Chráněné krajinné oblasti Šumava

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Abstract

The main soil units represented in the Šumava National Park and Protected Landscape Area are as follows: *Lithosols*, *Rankers*, *Dystric Cambisols*, *Cambic Podzols*, *Podzols*, *Dystric Planosols*, *Stagno-gleyic Planosols*, *Fluvisols*, *Gleysols* (very often *Histic Gleysols*) and *Histosols*. Outstanding phenomenon of Bohemian Forest (the Šumava Mts.) is an extensive occurrence of semihydromorphic and hydromorphic soils (especially *Histosols*) at relatively high elevations (on the plateau-like central parts of the mountains). Altitudinal zonality of soils is quite distinct, but the individual vertical belts are situated higher than in other mountains of Czech Republic. The impact of mesoclimatic factors is assumed to be the reason of the above mentioned phenomena.

Key words: Bohemian Forest, natural conditions, soil types, vertical zonality

Introduction

In spite of its generally mountainous character and predominance of acid rocks, the studied territory has some specific environmental features which differ from other mountains of Czech Republic. These features obviously affect the soil cover of the area. The relatively high elevation of Bohemian Forest, which descends only rarely below 600 m excludes the occurrence of the soils of lowlands. The plateau-like relief of the culminating parts of the mountains is another specific feature. This factor has an important influence on development and distribution of the semihydromorphic and hydromorphic soils. In comparison with the other Czech mountains, the milder character of the climate is also very significant. The climatic features are probably influenced by more southern position of Bohemian Forest, and especially by warmer winds coming from the south (an effect caused partly by the neighbouring Alps). A little changed altitudinal soil zonality with individual belts situated at higher elevation is a result of this climatic difference.

Overview of individual soil types

Among the automorphic soil types the following units are most important:

Lithosol

An azonal soil type developed „in situ“ on physically weathered outcropping rocks, especially on elevated landforms. Metamorphic or intrusive rocks are the predominant parent ma-

terial. *Lithosols* are common component of habitats of relict pine woods and dwarfed spruce stands.

Ranker

An azonal soil type, predominantly formed on physically weathered, transported parent rocks, i.e., on loamy debris. On the territory of Bohemian Forest, these soils frequently occur on steep slopes but seldom cover large areas. Various scree-woods have been the original plant cover of habitats with rankers. The present-day forests display a high primary productivity.

Distric Cambisol at medium altitude

This soil type possesses a zonal character. It occurs in larger areas of the lower parts of the territory, predominantly up to the altitude of 600 m above sea level. Medium, deeply weathered solid rocks are their common parent material. Herb-rich beech forests, locally also fir-oak forests were the original plant cover. Currently, this soil belongs to agricultural lands, and partly remain as substratum of human-induced forest plantations.

Distric Cambisol at higher altitude

This soil occurs in the altitudinal belt between 800 and 1000 m. On the lower periphery of its occurrence, there is a transition towards the foregoing soil unit. Along the upper boundary, a gradient towards the *Cambic Podzols* can be observed. Medium deep solid rocks are usually the parent material of this soil. The herb-rich beech forests were the predominant original vegetation. The area of this soil is the most elevated zone of continuous agriculture land, but cultivated forests are also frequent.

Cambic Podzol (*Spodo-dystric Cambisol*)

This soil type creates a more or less continuous altitudinal belt between 1000 and 1200 m. Surprisingly, this belt occurs by 200 m lower than in the mountains of northern Bohemia. At the upper part of this belt, the *Cambic Podzol* alternates with the typical *Podzol*. The soil-forming substrata are the medium deeply weathered solid rocks which usually contain a high portion of skeleton. The original plant cover were mainly acidiphilous mountain beech forests.

Podzol

Podzols make a continuous soil belt above the 1200 m altitude, in some places with suitable microclimate; they occur also at lower elevations. The belt of *Podzols* is also about 200 m higher in Bohemian Forest than in mountains of northern Czech Republic. Their parent rocks are the weathered solid rocks with a high content of skeleton. Original vegetation were mountainous spruce forests. The water-logged spruce forests are found in the places with semihydromorphic development of *Podzols* (peaty forms of humus).

There are also very important localities of intrazonal semihydromorphic soils of a polygenetical origin, which are usually connected with the terrain depressions with the fillers of pleistocene deposits. Periodical stagnation of water is a typical feature of this soil group.

Dystric Planosol

The occurrence of this soil unit is closely connected with the bottom and adjacent mild slopes of terrain depressions and in river valleys. The moister formations of relevant vegetation belt were the original soil cover. *Dystric Planosol* is an intrazonal soil unit; it is widespread on the whole territory.

Stagno-gleyic Planosol

It is a more hydromorphic form of *Planosol*. The localities of its occurrence have a very poor natural drainage. The alder carr is a typical vegetation for this soil.

Intrazonal hydromorphic soils are developed in connection with water-logged localities in floodplains and distinct terrain depressions.

Fluvisol

Alluvial deposits are the parent material of these soils forming flat floodplain. The degree of hydromorphism is lower than in the subsequent soil units. Also this soil type is not connected with a particular altitudinal belt. Nevertheless it occurs more frequently at the lower elevations. Various kinds of the floodplain forests are the original plant cover.

Gleysol

This soil type occurs, often developed as a peaty subtype, on alluvial deposits or fluviodeluvial sediments. It displays the highest hydromorphism among all soils within the region. The alder carrs were the original vegetation.

Histosol

This is a very typical phenomenon of Bohemian Forest. This soil occurs in three subtypes: fen-peat, transitional fen-peat and bog-peat. Fen-peats and transitional fen-peats are concentrated predominantly in the river valleys and in the terrain depressions. The bog-peats occur usually on the plateaux or on mild slopes at higher altitudes. Various types of mires with mosses, sedges and/or woody species overgrow this soil type.

Conclusion

Investigation into the bedrocks, landforms and soils on the territory of Šumava National Park and Protected Landscape Area has broadly been accomplished. Particular soil types are described in international terms and enable further reference to vegetation units, environmental management and biological conservation.

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