

## Field site guide

### 1. Sumava mountains and Bavarian forest

The border area between Bavaria and southern Bohemia is characterised by large mountains made from geologically old granite and gneiss bedrocks. The area mainly known as “Bavarian forest” is one of less affected forested cultural landscapes in Central Europe. On the Czech site, the Sumava mountains consists of the largest national park in the Czech republic. During the ERASMUS IP Soil&Water a two-day excursion took place with long field trips through the core part of the Sumava National Park as well as to an interesting part of the Bavarian forest.

#### Sumava mountains

The history of human settlement in the Sumava region goes back to colonisation in the second half of the last millennium. This was due to exploitation of natural resources, mainly timber for local energy-consuming processes such as glass manufacturing but also for supplying cities like Prague downstream of the Vltava/Moldau river. Wast majority of the Sumava area was owned by the Schwarzenberg family, who introduced intensively managed man-made spruce forests, which replaced previous pristine mixtures consisting from fir (*Abies alba*), beech (*Fagus sylvatica*) and Norway spruce (*Picea abies*) and other broadleaves like sycamore (*Acer pseudoplatanus*). As a consequence of the second World War the Sumava area was de-populated with restricted access as a border zone between the eastern and the western block. After political changes at the end of the 20<sup>th</sup> century, Sumava national park took the chance to keep the low-impact zones. However, wind blow damage followed by bark beetle outbreaks in the wast spruce forests forced debates about the right future management.



*Figure 1: View on the Sumava area with de-forested parts*

Due to very high game densities and missing seed sources, it is a demanding and costly task to establish broadleaf trees in the Sumava mountains (see Figure 2). The deer is a problem in this area, leading to immense damage also on larger trees. It is obvious, that the National Park managers must control the deer population with the aim to substantially reduce game densities.



*Figure 2: Planted broadleaf saplings surrounded by fences*





*Figure 3: Standing and lying dead wood with dense forest regeneration*

The natural regeneration of the forest after the storm destruction and beetle attack in 2007 is therefore a major problem. However, young tree generation is appearing below the still standing dead trees, while the natural regeneration on clear-cut sites is much more delayed due to changes in soil and microclimate.



## Bavarian forest

The history of the Bavarian forest differs from that of the Sumava Mountains on the Czech side. While some parts of the Bavarian forest belonged to the bishop of Passau, large areas were owned by local farmers. This structure preserved mixed forests on large parts of the area and offers high potential for natural regeneration of high species diversity.

Characteristic are also old growth forest, where rare lichens species occur. They need over 100 years to establish on the bark or within a thick moss layer. The pristine character of the forest is obvious also from high quantities of dead wood, where some rare fungi species can be found on the dead wood of the silver fir. This is owed to the stable humid microclimate in the old-growth forest.



Figure 4: Intensive natural regeneration after storm damage

Such mixed forests are also much more resistant to disturbance. Between 2000 and 2008, wind-throw and bark beetle outbreak hit this part of the Bavarian forest. It created a lot of dead wood but within a short time heterogeneous plant community with high diversity established (Figure 4). Crowns protection of remaining trees allowed regeneration of frost-susceptible plants like beech and fir.

This part of Bavarian forest offers good examples of peat bog restoration. Peat bogs are parts of small



watersheds and were drained in the past to promote tree growth. Up to five meters deep drainages have been installed, but dams were constructed recently to stop the water flow in the channels. Still, it was not possible to restore the water level completely. A problem at the visited point was that the water channels could find the way around the dams (Figure 5).



Figure 5: Large ditches in peat bogs with dams to prevent water flow and drainage