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MAPPING LANDSCAPE CHANGES IN ŠUMAVA NATIONAL PARK (CZECH REPUBLIC) USING QUANTUM GIS

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The research territory is located in Šumava National Park (further ŠNP), Czech Republic (Fig.1). Since 1990 it has been the protected Biospherical Reserve of UNESCO (Bilek *et al.*, 1990), and the Natura 2000 protected area: the Bird EU Directive as well as the Habitat EU Directive. The components of the ŠNP represent is the largest (68,064 ha) terrestrial significant part of the Natura 2000 network in two countries: Czech Republic and Germany (Bláha *et al.*, 2013).

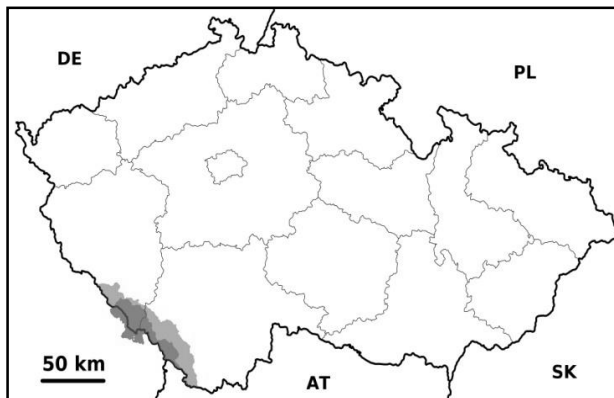


Fig.1 – Location of the Šumava National Park

It includes precious flora and fauna objects of protection. NP Šumava is the principal European division between the North and the Black Sea. Hydrologically it includes most of the drainage area to the North Sea, the Elbe River Basin with major rivers Vltava and Otava: springs and bogs, rivers, glacial lakes and artificial water works. A small part of the territory on the border falls within the catchment area of the Danube flows into the Black Sea. The whole Šumava National Park is included in the protected areas of natural water accumulation, which are implemented safeguards designed to prevent the reduction of the water potential, adverse changes in water quality and negative interference in natural conditions. It forms a unique protected forested area in Central Europe and one of the largest forested areas between the Atlantic Ocean and the Ural (Krenová and Hruska, 2012). The habitats of the ŠNP are represented by diverse biotops and host numerous rare and protected flora and fauna species. Climatic conditions, wetlands, peatlands and forests affect positively the accumulation of water in the area and their control runoff. Topographically, the ŠNP spreads from the northeast to the southeast. It is located at the heights between 600 m (Otava River valley at *Rejštejn*) and 1378 m (top *Plechý*, the highest mountain of the ŠNP). The highest peak on the Czech side of the Bohemian Forest sheets, the highest mountain in the Bavarian Forest Arber (1456 m). Geomorphologically, it covers *Šumava* plains, uplands *Železnorudsko*, *Boubínská*, *Želnavskou*, *Šumava* mountains, *Vltava* furrow (Barešová & Hanusová, 2010).

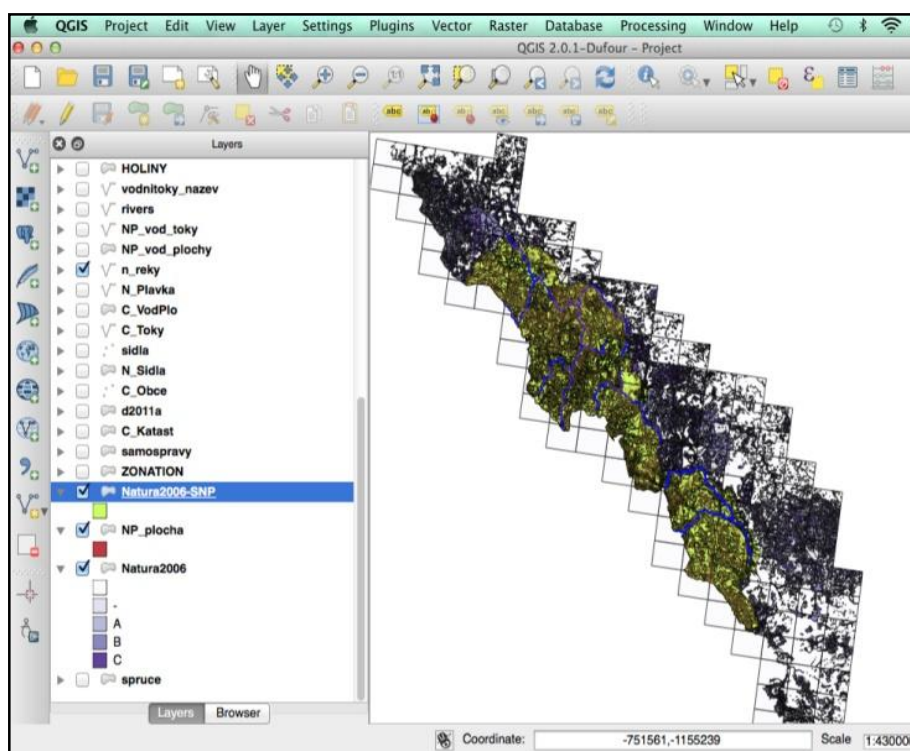


Fig.2 – Fragment of the GIS visualization in Quantum GIS

The GIS analysis has been used to test the importance of the natural and human-induced land used changes for survival of the important floristic locations in several case studies. Thus, landscape level predictors of commons (their location, size, borders) are evaluated using geospatial data: vector GIS layers and aerial images. The information received from these data includes digital model of the terrain (altitudes), vertical heterogeneity, slope, topographical related moisture index, heat load index and solar radiation index. The information on local geology and soil conditions (based on soil profiles), history of the colonization of the study area, and borders of land cadasters and private properties is taken from the auxiliary data. The land cover structure is calculated using Patch Analyst function embedded into the ArcGIS used to describe various aspects of landscape heterogeneity, habitat diversity and fragmentation. Habitat diversity is computed as a number of habitat segments per study site and area. Historical maps and aerial photographs were used to understand land cover transition and habitat diversity on the landscape level.

The GIS based mapping was performed as a spatial analysis of the whole area and overlay with Landsat TM image, synthesis of individual components, masking and generalization of the map of ŠNP. This research demonstrated current distribution of the spruce and mixed forests in the study area, visualized biogeographic areas, e.g. raised bogs, springs, fens, transitional mires and distribution of valuable biotopes within the ŠNP. The results include cartographic and textual data.

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ПОЛУЧЕНИЕ ЖЕЛЕЗООКСИДНЫХ ПИГМЕНТОВ ИЗ ОТРАБОТАННЫХ РАСТВОРОВ ТРАВЛЕНИЯ ЧЕРНЫХ МЕТАЛЛОВ

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Мировое производство синтетических железоксидных пигментов составляет порядка 550 тыс. т/год и значительно превышает производство других цветных пигментов.

В настоящее время потребности белорусских предприятий в железоксидных пигментах обеспечиваются, главным образом, за счет импорта. Данный факт объясняется дефицитом на белорусском рынке железоксидных пигментов отечественного производства. Одной из причин этого является отсутствие собственной сырьевой базы для производства пигментов из природного сырья.

В данной работе исследовалась возможность получения железоксидных пигментов из отработанных травильных растворов гальванического производства.

Известно, что окраска железоксидных пигментов обусловлена присутствием в их составе одного из оксидов железа.

Между химическим составом и цветом железоксидных пигментов существует следующая зависимость: желтые пигменты являются гидратированными оксидами железа (III), красные – оксидами железа (III), коричневые – гидратированными оксидами железа (III) или смесью желтых, красных и черных пигментов, черные - Fe_3O_4 .

В отработанных травильных растворах железо присутствует в ионной форме, поэтому для получения пигментов необходимо осуществить