

ENVIRONMENTAL AND STAND CONDITIONS OF PRAGUE'S PERIURBAN FORESTS

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Orographical position of Prague's surrounding is specific. This area stretches around a contact of several geographical units (Czudek et al., 1972) - Benešovská pahorkatina [highland] (subunit Dobříšská pahorkatina, IIA-1A), Pražská plošina [plateau] (with Říčanská plošina, VA-2A, and Kladenská tabule, VA-2B), Brdská vrchovina [highland] (Hřeben, VA-5B), and Středolabská tabule [plain] (with division into Mělnická kotlina, VIB-3C, and Českobrodská tabule, VIB-3E). Units Hořovická pahorkatina (Hořovická brázda, VA-4A) and Křivoklátská vrchovina (Zbizožská vrchovina, VA-3A; Lánská pahorkatina, VA-3B) stretch only on western border of the delimited area. Altitude in selected area ranges between 155 m a.s.l. by Labe near Kelské Vinice and approx. 570 m. a.s.l. in Brdská vrchovina. Geological construction of the area is complicated with many fractures. Width spectrum of rocks spreads over scale from ultrabazic to acid ones: they are Palaeozoic rocks—folded, unmetamorphosed (schists, grey-wackes, quartzites, limestones), orthogneisses, granulites and migmatites (anatexites), granodiorite to diorite (tonalite suite), granites (granitoid suite) and Proterozoic to Palaeozoic volcanic rocks partly meta-morphosed (amphibolites, diabases, melaphyres, porphyries). The plain is covered by Quaternary sedimentary rocks (soils, loess, sand and gravel) alternating with Mesozoic rocks (sandstone, claystone). Temperature in January range between -2 and -4 °C. July temperature reach 16 to 19 °C. Rainfalls in vegetation season vary between 350 and 450 mm.

Geobotanical reconstruction units as a result of foregoing features combination are main category impacting contemporary conditions of natural forests. Area of periurban forests contains 8 vegetation units. Main of them are oak-hornbeam woodland (alliance *Carpinion betuli*) with mosaic of subxerophilous thermophilous oak woodlands (*Potentillo-Quercetum*, *Lithospermo-Quercetum*) and flood-plain woodlands. Second most distributed unit is acidophilous oak woodland (*Quercion robori-petraeae*). Natural vegetation (potential vegetation in the sense of Tüxen) was mapped by Moravec et al. (1991) only within the area of all cadasters of Prague. The legend of this map contains 18 units. Environmental conditions of forests within whole area of our interest are resumed in forest typological maps. These maps were constructed on theoretical basis of the Czech stand-typological concept summarizing climate and edaphical conditions within combination of categories of forest altitudinal belts and edaphical categories. Last version of these maps is available in the regional forest development plans.

Both geographical and environmental conditions are reflected by biogeographical classification of the area. There are several types of this classification, three of them are most important: (1) biogeographical division published by Culek et al. (1996), (2) phytogeographical division prepared by Skalický et al. (1988), and (3) natural forest regions which are used by forestry praxis. Each of them shows the area of Prague's periurban forests as a transitional region between lowland of Labe river on north and east and highlands and (sub)mountains on south and west. It is reflected by concentration of forests and recreation in the highland area.

Contemporary forests growth in the landscape with dense human settlement. It results in strong fragmentation of forests. The fragmentation is reflected in different tree species composition of small forest slices. Forest fragment covering a continuous area (or area with separating band of breadth to 20m) are named "*forest complexes*". Each complex was identified and described by shape indices derived from area and perimeter of the complex. The main parameter is mean diameter of the complex. Undermentioned analysis are relevant for own periurban forests within assessed boundaries (forest complexes of 71 043 ha in total). Four classes of complexes with mean diameter up to 65.3 m (class A representing complexes with area less then 1 ha approximately), up to 326.5 m (B), up to 1632.5 m (C) and above this last limit (D) were ordained. Area of forests within complexes of class A to D represents 1.0% of all forests, 12.8%, 75.2% and 11.0% respectively. Distribution of number of complexes show different shape with shares 60.7%, 34.8%, 4.4% and 0.1% respectively.

Natural composition of tree species was identified for each forest site-typological unit (group of forest types). Comparing these set with relevant contemporary tree composition is a basis for future management of periurban forests under circumstance to take into account recreational potentials of natural and managed forests.

Composition of tree layer in sense of species diversity concept is not frequently used within forestry theory but it is common in ecology. This paper compare total diversity computed as Shannon-Wiener's index of both natural and contemporary managed forests. Number of tree species in natural forest in surrounding of Prague ranges between 3 and 11. Total diversity expressed in values of the Shannon-Wiener's index range between 0.6 and 2.7. The lowest values are founded by groups of forest types (GoFTs) 0Z, 0M, 0K, 1I, 1T, 4K, 5O, 2N, 2M, 1M. These stands are extremely poor and/or dry. On the other hand, we can see the highest values by GoFTs 3P, 3U, 3J, 2V, 4F, 2A, 4Q, 1L, 4V and 1U. They represent wet and nutrient rich stands. Tree diversity changes according to forest altitudinal belt (FAB) - maximum of this diversity is founded in 3rd FAB. Maximal average tree diversity in managed forests was found by GoFTs 2X, 4A, 5J, 0X, 2Z, 1P, 3C, 2W, 3A and 4C - on stands where cultivation of the most fecund species would be problematic. Total tree diversity in stand is up to 0.5 by 25% of total analyzed area of all forests, between 0.5 and 1.5 by 44%, above 1.5 by 31% of total area. Tree diversity depends on shape and size of the forest complex. Average diversity changes from 0.81 to 0.96, 1.03 and 1.04 for complexes of diameter in class from A (smallest) to B, C and D, respectively. Maximal tree diversity can be observed in partly fragmented stands of class B in order to an edge effect.

Human activities raise effect of varying environmental conditions which result in diverse forest state within selected area of the Prague's periurban forests.

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