

THE KŘTINY ARBORETUM AND ITS ROLE IN THE ECOLOGICAL EDUCATION

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ABSTRACT

The Křtiny Arboretum is known as the collection of exotic trees. A nature trail called “Native trees” is an important part of the Arboretum. It was inaugurated in 1996. At present, the collection includes about 140 taxa. This nature trail is quite exceptional both in the Czech Republic and in Europe and the majority of indigenous and thus autochthonous species can be seen in it. Each of the species is marked by an information table. A guide has been published for the trail. Visitors can compare the growth of native and introduced trees.

The Křtiny Arboretum is known to the professional public as the collection area of exotic trees. It is situated in the Czech Republic, about 20 km north of Brno, in close vicinity of the Moravian Karst Protected Landscape Area, in the area of the Křtiny Training Forest Enterprise (TFE) “Masaryk Forest”, Mendel University of Agriculture and Forestry (MUAf) in Brno. Over 1000 woody species from different parts of the world are concentrated in the area of 23 ha.

This unique collection was established in the period 1928–1929 by professor August Bayer who was the founder of the Dendrological Institute of the Faculty of Forestry of the newly established University of Agriculture. It was originally intended particularly for the instruction of students and research purposes. The basic material came from the seeds obtained by the activity of the Czechoslovak Dendrological Society which managed the extensive collection of a considerable scientific value in Průhonice at that time. Many valuable trees and shrubs were obtained by professor Bayer thanks to his numerous journeys throughout Europe. Also at present, the Arboretum is professionally managed and administered by the Department of Forest

Botany, Dendrology and Typology (former Dendrological Institute), Faculty of Forestry and Wood Technology (FFWT), Mendel University of Agriculture and Forestry in Brno.

The extensive collection of woody species occupies particularly forest slopes of an eastern aspect at an altitude of 450 to 500 m and neighbouring meadows along a stream. Part of the area consists of a small water body. As for climate, it is a medium warm zone with mean annual temperatures 6°C, the warmest month July with its mean temperature 16°C and the coldest month January with its mean temperature –4°C. Minimum temperatures fall down to –31°C. Mean annual precipitation amounts to 640 mm but recently there have been small deficits. In a valley going from north to south, frosts and circulation of humid air are of great importance. Snow cover occurs there for a long time. Sandstones sporadically overlaid by loess loams are a parent rock.

In the Arboretum, various assortment usual in dendrological collections has been gradually gathered. From the beginning of the Arboretum establishment, the assortment has increased by its own means from the seeds obtained by collection or exchange. In addition to indigenous forest species other older trees did not occur there and so almost all specimens of the collection came from plantings. Inside forest stands, glades with exotic species have been created. Of great importance are some conifers and lianas which are probably the biggest in the Czech Republic (*Cryptomeria japonica*, *Tsuga diversifolia*, *Chamaecyparis pisifera* and *Ch. obtusa*, *Aristolochia macrophylla* – one of the largest trees in Europe etc.). The collection of willows (*Salix* spp.) is especially extensive, viz about 100 species, hybrids and cultivars. One of the largest groups of *Thuja occidentalis* ‘Malonyana’ in the CR growing near a small

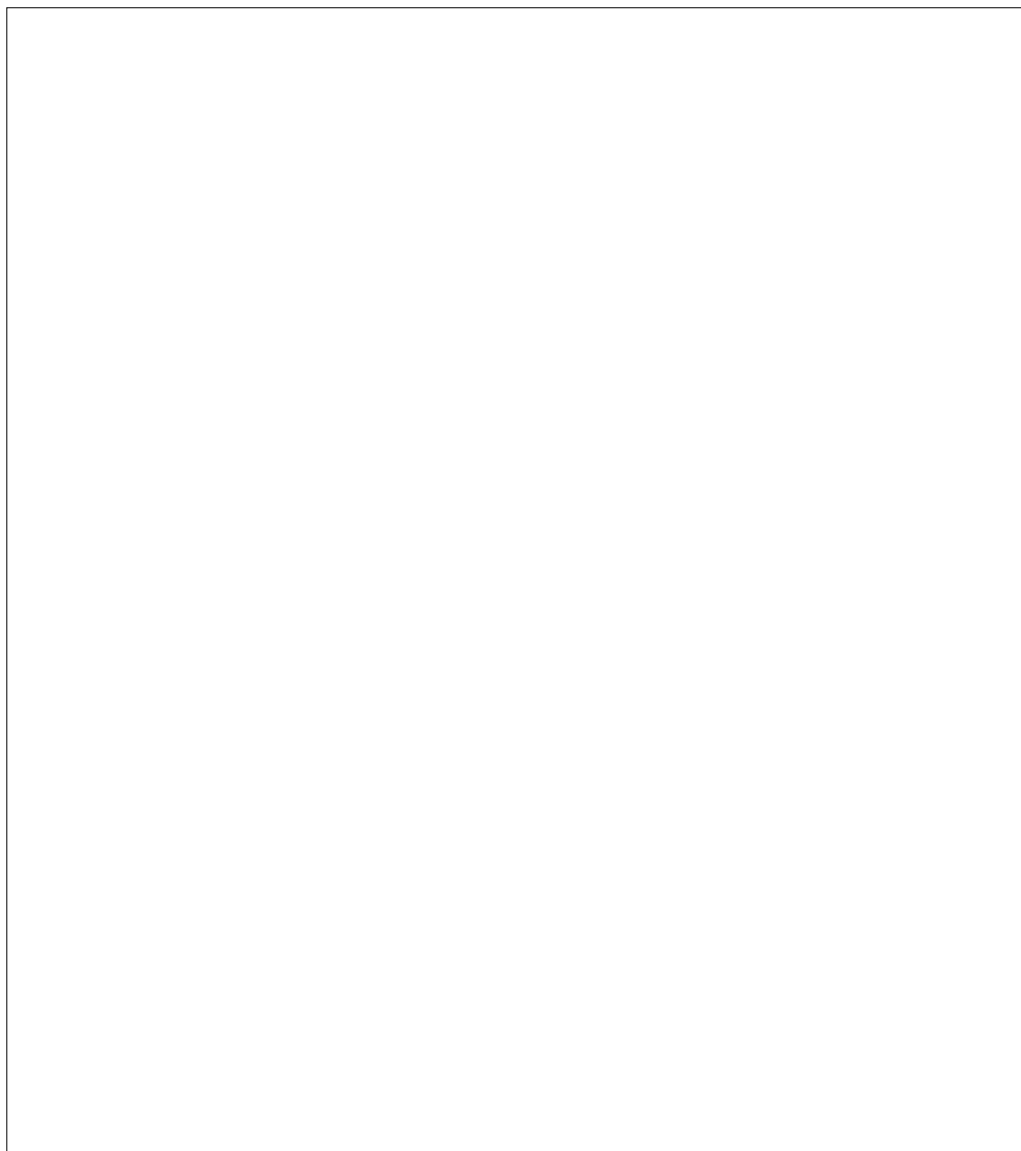


Fig. 1. The Křtiny Arboretum and the “Native trees” Nature Trail

pond is also very scenic. *Cercidiphyllum japonicum*, *Osmaronia cerasiformis*, *Halesia monticola*, *Quercus libani*, *Aesculus turbinata* etc. rank among rare fruit-bearing broadleaved species. Other interesting taxa are eg *Tripterigium regelii*, *Carpinus turczaninowii*, *Zelkova serrata*, *Stewartia pseudocamelia*, *Cornus kousa* etc. At present, the general inventory of woody species is being carried out.

A “beech virgin forest” is also part of the Arboretum. It is a close-to-nature 170-year-old beech stand with interspersed oak and silver fir of an area of 3 ha. It has been preserved there as the illustration of species composition of original forests in the region, viz typical beech forests, which occurred there before man began to manage the forests intensively.

In addition to woody species, there are also nice communities of floodplain meadows with a number of protected herbs (*Trollius altissimus*, *Dactylorhiza majalis*, *Colchicum autumnale*, *Iris pseudacorus* etc.).

The Arboretum is also cited in the list of European botanical gardens and arboreta ranking among the best-known areas of the so-called forest-park type in Central Europe. It was also selected into the international project of IPG phenological observations controlled by Humboldt University in Berlin.

A nature trail called "Native trees" is important part of the Arboretum. It is of basic importance for ecological education. The trail originated thanks to the co-operation of the Department of Forest Botany, Dendrology and Typology of the FFWT, MUAF in Brno, Endowment Fund of Prof. A. Bayer, Training Forest Enterprise (TFE) Křtiny and under the support of the Partnership foundation. It was inaugurated in 1996 (Úradníček, 1998). At present, the collection includes about 140 taxa. This nature trail is quite exceptional both in the Czech Republic and in Europe and the majority of indigenous and thus autochthonous species can be seen in it. The trail met with the exceptional interest of specialists as well as non-professional public. Each of the species is marked by an information table with its Czech and scientific name, description of morphology, ecological requirements, distribution and use including the map of its natural range and the depiction of foliage of a flowering or producing shoot. A guide has been published for the trail including a detailed description of the trail and its plan and alphabetical list of domestic woody species where species protected by law are marked (Kolibáčová et al. 1996). The total length of the trail is about 3 km. The trail is gradually complemented by other species.

The main objective of the founders of the nature trail is to increase and improve public knowledge of trees and shrubs in the landscape as well as in the town residential area because trees are one of the most important components of the landscape biota. The impact the Arboretum might have on visitors should lead to the improvement in the field of woody species protection in the open landscape because we can protect only what we like and on the other hand, we can like only what we

know. Thousands of visitors look for instruction in the Arboretum in the course of the year. Students of the University find it within excursions and practical lessons. As mentioned above, the Arboretum serves particularly as a demonstration and education area for the students of the Faculty of Forestry and Wood Technology, MUAF in Brno. There, they meet with various woody species used particularly in forest and woodworking practice as sources of wood raw material as well as with species which are less frequent and rare in our country. Of course, well-known woody species are not missing there as well as species protected by law.

In the area, there are also various thematic fields according to the interest of visitors because it is rather time-consuming to pass through the trail, to stop at each of the specimen and read some information on it on the table. Rounds intended for schools are most important due to the high didactic value of the trail. According to the study programme, there are trails intended for the first and the second grade of elementary schools and for secondary schools which include all the woody species which should be known by students. As a matter of fact, particularly children from large cities (for example Brno) are without any contact with nature and they often learn in natural science about organisms they have not seen or met. Thus, they have an extraordinarily suitable opportunity to acquaint themselves with all the tree and shrub species which are the subject of instruction. A trail has also been prepared with a selection of trees which should be known by students of primary schools participating in biological Olympiads. A trail with endangered and protected tree species can be of interest eg for workers of nature protection as well as for the public.

Within practical lessons, students learn to determine particular taxa and to name them according to scientific terminology. They also learn to understand a tree as a living organism in relation to its environment, which means understanding ecological relations of trees and knowing their site requirements. Students can compare the growth of trees under given conditions or to compare it with the growth of trees of the same age in other areas of the Křtiny TFE or the Botanical Garden and Arboretum (BGA)

of MUAF in Brno-Černá Pole. Thus, students with a keen interest in dendrology can prepare their theses referring to the evaluation of the growth of particular species occurring in the Arboretum.

The nature trail and Arboretum are an excellent didactic means for teachers of primary schools, grammar schools, secondary forestry schools and other types of schools of biological character. After the inspection of the trail it is possible to visit the Moravian Karst and caves situated in the vicinity of the nature trail.

Pleasant surroundings of the Arboretum and its vicinity serve to tourists as relaxation and recreation in the sophisticated, aesthetic and healthy environment in the middle of green vegetation. The area is suitable for family eco-tourism, education and relaxation. In spring, the Arboretum can pride itself on flowering rhododendrons and azaleas, in summer it provides

a refreshing shade and in autumn it is ablaze with colours. Therefore, please allow me to invite you to visit our Arboretum and nature trail.

Translated by B. Horák

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