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## On the presence of *Pinus nigra* subsp. *pallasiana* in Romania

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### Abstract

The black pine populations from Romania had a controversial taxonomic position, some authors considering them as a distinct, endemic taxon. According to the present taxonomic knowledge they should be ascribed to *Pinus nigra* subsp. *pallasiana*. The distribution in Romania and the affinities with populations from the Balkan and Crimea are discussed. Several syntaxonomic treatments are also cited.

### Taxonomy of the populations of *Pinus nigra* ARNOLD in Romania

Populations of black pine from the SW. Romania were already known at the beginning of the last century, but their exact taxonomic situation was for a long time controversial.

ROCHEL (1828) and SCHWARZOTT (1831) first reported the presence of the black pine from rocky places of the Mt. Domogled, near Baile Herculane (= Herkulesbad) and from the valley of the Danube, near Sviñața under the name of *Pinus pinaster* auct. non AITON. Later on, HEUFFEL (1858) described the same populations as *Pinus laricio* auct. non POIRET.

Due to the peculiarities of these black pine populations, some authors separated an endemic taxon under the name of *Pinus nigra* ARNOLD var. *banatica* ENDL. ex BORB. The distinction of an endemic taxon was maintained by BELDIE (1952) in the Flora of Romania 1. He replaced this taxon at the subspecies rank under the name of *Pinus nigra* subsp. *banatica* (ENDL. ex BORB.) NOVÁK. According to GEORGESCU (1936), the populations of *Pinus nigra* from Romania should be treated as an independent species, which he named *Pinus banatica* (GEORGESCU & IONESCU) GEORGESCU & IONESCU.

Despite the geographic isolation of these populations, they have various similarities with the populations of *Pinus nigra* from Crimea. Based on these affinities, BORZA (1947) reconsidered the populations from SW. Romania, in Banat and Oltenia, and ascribed them to the subspecies *Pinus nigra* subsp. *pallasiana* (LAMB.) HOLMBOE. This taxonomic position was also followed by GAUSSEN & al. (1964) in the first edition of Flora Europaea 1, as well as in the second edition of this volume (1993). JALAS & SUOMINEN (1973), in the Atlas of the Flora Europaea 2 regarded

almost all populations of black pine from the Balkans as *Pinus nigra* subsp. *pallasiana*.

Nevertheless, there are several other systems adopted by various authors for the classification of the Romanian populations of black pine. FUKAREK (1958) considered four different microspecies within *Pinus nigra*, with a total of fifteen subspecies. In his taxonomic treatment the Romanian black pine is reconsidered as *Pinus pallasiana* LAMB. subsp. *banatica* (GEORGESCU & IONESCU) FUK. This taxonomic view was also shared by MEUSEL & al. (1965).

Relevant for the taxonomy of *Pinus nigra* in Romania is a study on the variability of its populations from Banat and Oltenia by DUMITRIU-TĂȚĂRĂNU & al. (1965). These authors underlined that the populations from Romania have two common characters with those from Crimea and other four with the Illyric ones. They considered these last populations distinct by eight characters.

### **Historical development of the populations of black pine in SW Romania**

The systematic differentiation of the populations of black pine in SW. Romania is difficult to explain. It seems unlikely that these populations migrated in the Post-glacial from Balkan refuges. However, a pollen diagram from sandy sediments in the valley of Cernea, published by BOȘCAIU (1971), shows a great increase of pine pollen in this time. The highest amount of pine pollen was recorded from the Atlantic period, when the pine reached 63% in the diagram. This high presence in the pollen diagrams might be explained by the extension of thermophilous populations of *Pinus nigra* subsp. *pallasiana*, which invaded rocky places, denudated by the pluvial climate of the Atlantic period.

The geographic isolation of the black pine populations from Banat and Oltenia, more likely suggests that they already existed in this region before the Würm period and survived there the latest glacial episode. This hypothesis may explain the affinities with both Illyric and Crimean populations. During the interglacial episodes, in the conditions of a xerothermic climate, the gene flow among these populations was favoured.

### **Distribution of *Pinus nigra* subsp. *pallasiana* in Romania**

The present distribution of *Pinus nigra* subsp. *pallasiana* in Romania is restricted to the SW part of the country. Populations of black pine are found in the region of Banat, on southern slopes of the Cernea Valley and the neighbouring mountains, such as Mt. Domogled, Șușcu, Arjană, Tricule in the Danube Valley, and some valleys in Oltenia. It ranges from 50 to 1000 m.

### Syntaxonomy

The study of plant communities with *Pinus nigra* has resulted in several syntaxonomic solutions. FEKETE (1959) described from the Mt. Domogled the association *Cariceto humilis-Pinetum pallasianae cytisanthosum radiati (domugledicum)* of the alliance *Syringo-Carpinion orientalis* of the order *Quercetalia pubescentis*. The association described by FEKETE has been reconsidered by RESMERIȚĂ (1972) as *Cytisantho radiati-Pinetum pallasianae*. This plant community consists mostly of taxa characteristic for the alliance *Syringo-Carpinion orientalis* and for the order *Quercetalia pubescentis*. This syntaxonomic approach is similar to that presented by JAKUCS (1961). This author placed the Balkan-Illyric association *Pinetum pallasianae* HORVAT 1946 into the alliance *Orno-Ericion carneae* HORVAT 1956 of the order *Orno-Cotinetalia* JAKUCS 1961.

COLDEA (1991) published a new syntaxonomic treatment. Following this author we consider that the communities of black pine from Romania should be placed into the association *Genisto radiatae-Pinetum nigrae* RESMERIȚĂ 1972, within the alliance *Seslerio rigidae-Pinetum* COLDEA 1972 of the order *Erico-Pinetalia* HORVAT 1959, which belongs to the class *Erico-Pinetea* HORVAT 1959.

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