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Region During Late Pleistocene and Holocene**
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Spatial genetic structure in Swiss stone pine suggests a region-specific population history of the species along the Carpathian range

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Recently reported evidence supports the existence of ancient populations of cold-tolerant boreal forest species in the upper ranges of the Carpathians. Studies on allele length polymorphism designated several glacial refugia for Norway spruce (*Picea abies*) in the South Carpathians. Former molecular studies performed on live remnant populations of Swiss stone pine (*Pinus cembra*) and Scots pine (*Pinus sylvestris*) suggest that the Carpathians are important in terms of accumulation of genetic diversity. Moreover, the population genetic structure of Swiss stone pine reveals contrasting post-glacial histories of the Carpathian stone pine populations compared to those from the Alps. The Retezat Mountains and the High Tatras, which preserved a rich gene pool, may thus represent a glacial refugium from where Swiss stone pine presumably colonized the ecotones towards the Eastern Carpathians. Accordingly, the tackled multiple refugia and colonization routes reflects a region specific population history for Swiss stone pine in the Carpathians. Here, we show how two types of molecular markers with differential types of inheritance and degrees of polymorphisms reveal the spatial genetic structure of *P. cembra*, a keystone species of the timberline ecotone. Our current findings reveal an ambivalent position of the Retezat populations; UPGMA clustering based on nuclear microsatellites positioned Gemenele apart from all the other populations, even from those of the South-Carpathians. However this position was not supported by paternally inherited chloroplast microsatellite evaluation. At the same time both markers studied indicate that UPGMA clusters are not correlated with the geographic position of the populations. In the time of the fast changing climate conditions, the results of population genetic studies, indicative of past processes, can provide valuable information for better understanding the response of populations to the major directions of community dynamics.