

**Publication****Cryptic population structure at the northern range margin of the service tree *Sorbus domestica*****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4657732**Author(s)** Armbruster, Georg F. J.; Lucek, Kay; Willi, Yvonne**Author(s) at UniBasel** [Willi, Yvonne](#) ; [Armbruster, Georg](#) ; [Lucek, Kay](#) ;**Year** 2022**Title** Cryptic population structure at the northern range margin of the service tree *Sorbus domestica***Journal** PeerJ**Volume** 10**Pages / Article-Number** e14397**Mesh terms** Trees, genetics; *Sorbus*, genetics; Forests; Genetics, Population; Rosaceae

Climate change has aroused interest in planting warm- and drought-adapted trees in managed forests and urban areas. An option is to focus on tree species that occur naturally, but have centers of distribution in warmer and drier areas. However, in order to protect the species pool of genetic diversity, efforts of planting and promotion should be informed by knowledge on the local genetic diversity. Here, we studied the macro- and micro-scale population genetic structure of the rare European fruit tree *Sorbus domestica* at its northern range margin, in western Switzerland. New microsatellite data were combined with published data from across the European distribution of the species. Analyses revealed the presence of mainly one of two species-wide ancestral clusters, i.e., the western European cluster, with evidence that it consists of two cryptic sub-clusters. Average pairwise  $F_{ST}$  of 0.118 was low across the range, and only allelic richness was reduced in the northern margin compared to more southern and southeastern areas of Europe. Based on our finding of considerable genetic diversity of the species in western and northern Switzerland, we suggest that a national propagation program should focus on collecting seeds from natural, high-density tree stands and propagate locally. More generally, our study shows that rare tree species in marginal areas of their distributions do not necessarily have low genetic diversity or heightened levels of inbreeding, and in those cases probably need no assisted migration in efforts to propagate them.

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