

PROJECT INFORMATION

Project title: Establishment of a European information system on forest genetic resources

Project ID: 1

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PROJECT DESCRIPTION

A transnational network of genetic conservation units for forest trees was recently documented in Europe aiming at the conservation of evolutionary processes and the adaptive potential of natural or man-made tree populations. In this study, we quantified the vulnerability of individual conservation units and the whole network to climate change using climate favourability models and the estimated velocity of climate change. Compared to the overall climate niche of the analysed target species populations at the warm and dry end of the species niche are underrepresented in the network. However, by 2100, target species in 33–65 % of conservation units, mostly located in southern Europe, will be at the limit or outside the species' current climatic niche as demonstrated by favourabilities below required model sensitivities of 95%. The highest average decrease in favourabilities throughout the network can be expected for coniferous trees although they are mainly occurring within units in mountainous landscapes for which we estimated lower velocities of change. Generally, the species-specific estimates of favourabilities showed only low correlations to the velocity of climate change in individual units, indicating that both vulnerability measures should be considered for climate risk analysis. The variation in favourabilities among target species within the same conservation units is expected to increase with climate change and will likely require a prioritization among co-occurring species.

The present results suggest that there is a strong need to intensify monitoring efforts and to develop additional conservation measures for populations in the most vulnerable units. Also, our results call for continued transnational actions for genetic conservation of European forest trees, including the establishment of dynamic conservation populations outside the current species distribution ranges within European assisted migration schemes.