

## PROJECT INFORMATION

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**Project title:** Mistletoe effects on tree growth and forest dieback

**Project ID:** 36

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## PROJECT DESCRIPTION

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It is expected that the recent global change cause shifts in the distribution of species in a large-scale, especially in those with a high temperature sensitivity. The macro-climatic stress like a regulator of species distribution is one the most important factors in the presence or absence of one specie in a specific location. However, it is not the unique factor implicated, there are other important elements and not so explored and studied like the optimal climatic conditions. Biotic relations are an important element in the community functioning, and may determinate the abundance of one species. These relations could be complex and could favour the presence (facilitation) or by the contrary to be perjudicial (competition) of one species. Especially important are these relations in those pathogens species that develop their vital cycle in a host. Mistletoe (*Viscum album*) is an aerial hemiparasitic plant which takes water and carbohydrates from host trees. Mistletoe has a high number of hosts, although, mainly conifers. Its distribution is wide, being presence in all central-south part of Europe. This species is related with the loss of vigour in numerous forests, but mistletoe is also a keystone species for maintaining biodiversity since their fruits feed several bird species during the winter. The forecast increase in temperatures could expand the distribution of the species. Despite of its huge importance, there are not studies about the biogeographical distribution of this hemiparasitic plant. This species still conserve important biogeographical questions without answer. We have detected forest areas with similar dominant species and climatic conditions, and one infested by the specie and the other without presence. These facts, make think about, at least at local scale, the biotic relations are important in the mistletoe distribution. In this way, we propose evaluate the biogeographical distribution pattern to determinate the main climatic and biotic factors involved in the distribution of the specie. For that, we used ICP Forest data and information about the distribution of the main host species, as well as climatic, topographic and edaphic variables. First, we will create information about the potential niche of the specie in Europe. Second, we will determinate the main climatic and biotic factors in the potential distribution of the species. Finally, we will use sensitivity analysis to evaluate where and how much the predicted distribution varied under current and future climates.