

Structure, diversity, and environmental determinants of high-latitude threatened conifer forests

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Abstract

Pilgerodendron uviferum (D. Don) Florin is an endemic, threatened conifer that grows in South America. In the sub-Antarctic territory, one of the most isolated places in the world, some forest patches remain untouched since the last glaciation. In this study, we analyze the tree structure and tree diversity and characterize the environmental conditions where *P. uviferum*-dominated stands develop within the Magellanic islands in Kawésqar National Park, Chile. An environmental matrix using the databases WorldClim and SoilGrids and local topography variables was used to identify the main environmental variables that explain the *P. uviferum*-dominated stands. PCA was used to reduce the environmental variables, and PERMANOVA and nMDS were used to evaluate differences among forest communities. The results show that two forest communities are present within the Magellanic islands. Both forest communities share the fact that they can persist over time due to the high water table that limits the competitive effect from other tree species less tolerant to high soil water table and organic matter. Our results contribute to knowledge of the species' environmental preference and design conservation programs. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

Biodiversity indexes; Kawésqar National Park; Patagonia; *Pilgerodendron uviferum*; SoilGrids; Sub-Antarctic; WorldClim