

C1r: PRODUCTION FORESTRY - III

Temporal variation in species composition, diversity and regeneration status along altitudinal gradient and slope: the case of Chilimo Dryafromontane forest, Central Highlands of EthiopiaMehari A Tesfaye¹, Oliver Gardi², Tesfaye Bekele¹, Jurgen Blaser²¹EEFRI, Addis Ababa, Ethiopia; ²HAFI-BERN, Bern, Switzerland (meharialebachew25@gmail.com; oliver.gardi@bfh.ch; tebean77@yahoo.com; juergen.blaser@bfh.ch)



The aim of this study was to investigate temporal variation in species composition, diversity and regeneration status of Chilimo dry afromontane forest, Central Highlands of Ethiopia. A total of 35, 20 m x 20 m permanent squared sampled plots were established. Two times inventory in 2012 and 2017 were conducted. Three subplots, 5 m x 5 m and 1m² were laid out inside main plots for saplings, shrubs and seedlings data collection. However, biometric and stump data were collected in the main plots. Spp composition, diversity, IVI and regeneration data were analyzed using appropriate formulas. Data analysis and graphics were performed using R software. A total of 31 Spp of trees and shrubs, representing 25 families were recorded, 20 (64.52%) were trees and 11 (35.48 %) were shrubs. The 5 most dominant tree Spp were: *Juniperus procera*, *Podocarpus falcatus*, *Olea europea*, *Olinia rochetiana* and *Allophylus abyssinicus*. Growth and regeneration were significantly varied among the Spp, altitudinal gradient, forest patch and slope. The mean annual increment was ranged from 4.223 to 0.228 m³ ha⁻¹ yr⁻¹ and the basal area increment was ranged from 0.85 to 0.020 m² ha⁻¹ yr⁻¹. Ten Spp had fair, 5 poor and 14 no regeneration.

Chronological change and resilience of oak forests in areas occupied by autochthonous broadleaf forests of the Northwestern IberianDíaz-Maroto Ignacio J.¹¹University of Santiago de Compostela, Lugo, Spain (ignacio.diazmaroto@usc.es)

The present ecosystems are the consequence of a mixture of anthropogenic involvement and vegetation dynamics in the last glacial-interglacial cycle, and their progression can be describe by different methods (dendrochronology, isotope dating, palynology,...). In the Northwest Iberian there is confirmation of the presence of *Quercus* species since the Cretaceous and their diversification in the Tertiary. The decline of broadleaved forests began in prehistoric period and coincided with the increase of human activity and the establishment of crops and pasture. The expansion of agriculture and cattle breeding began between 4000-5000 years BC. Other causes were the expansion of the naval industry, extraction of wood and firewood for domestic/industrial use and forest fires. All the actions have caused a diminution in the area occupied by woodlands until the middle of the 19th century, without make any management action to allow the natural regeneration. The forests were either not managed at all or were subjected to inappropriate silviculture, such as pollarding and felling of the best trees. In the second half of the century there was an increase in the area occupied by broadleaved species. This grow was due to the abandonment of certain activities such as the use of firewood, agriculture and extensive pasture, and the reduction in the shipbuilding. Much of smallholder farms have recently disappeared, and have been replaced by protection forests, reforestation with fast growing species and unproductive land. As a result, in the last decades, there has been an important increase in the area occupied by natural forests.

Growth and sustainable management of *Cedrela fissilis* Vell. in the Atlantic Forest in Southern BrazilRafael Schmitz^{1,2}, Luciano Farinha Watzlawick³, Patricia Póvoa de Mattos⁴ ; Evaldo Muñoz Braz⁴ ¹Universidade Federal do Paraná, Curitiba, Brasil; ²Instituto Federal de Santa Catarina, Florianópolis, Brasil; ³Universidade Estadual do Centro-Oeste, Iriti, Brasil; ⁴Embrapa Florestas, Colombo, Brasil (schmitz.efd@hotmail.com; farinha@unicentro.br; patricia.mattos@embrapa.br; evaldo.braz@embrapa.br)

This study aimed to determine the annual diameter increment and the time passage between diameter classes of *Cedrela fissilis* Vell. in a remnant of the Deciduous forest in the Atlantic Forest biome, near the border between Brazil and Argentina. We also aimed to adjust diameter growth models according to age, to develop the basis of management and conservation plans. The assessment was in traversal tracks in 41.9 h. All *C. fissilis* trees were sampled for dendrochronological analysis, using increment cores. We found 126 trees with diameter varying between 11 and 82 cm. The maximum mean increment was 0.62 cm yr⁻¹ (170 years old with DBH = 81.9 cm) and the minimum 0.29 cm yr⁻¹. Schumacher growth model presented better adjustment to the species growth pattern. It was observed that the optimum moment for interventions, considering the increment in diameter, occur, in the class of 25 cm of DBH, in cutting cycle of 21 years. This would allow the maintenance of the population under sustainable management system in the studied forest remnant.

Phytosociological structure on edaphic aspects of an Atlantic Forest fragment in Southern BrazilRafael Schmitz^{1,2}, Luciano Farinha Watzlawick³, Patricia Póvoa de Mattos⁴ ; Evaldo Muñoz Braz⁴ ¹Universidade Federal do Paraná, Curitiba, Brasil; ²Instituto Federal de Santa Catarina, Florianópolis, Brasil; ³Universidade Estadual do Centro-Oeste, Iriti, Brasil; ⁴Embrapa Florestas, Colombo, Brasil (schmitz.efd@hotmail.com; farinha@unicentro.br; patricia.mattos@embrapa.br; evaldo.braz@embrapa.br)

In this work an analysis of the floristic, phytosociological and soil characteristics aspects was carried out in a remnant of Deciduous Seasonal Forest in the extreme west region of Santa Catarina, Southern Brazil. We aimed to provide information for the understanding of biogeographic patterns and to add subsidies to the determination of priority areas for sustainable management in fragmented forest formations; The study area presented 41.9 ha of Deciduous Seasonal Forest in the Atlantic Forest Biome near the border between Brazil and Argentina. The surveys were carried out in 30 circular sample units with a variable area. All trees with circumference at 1.30 m from the soil \geq 10 cm were identified. Soil samples were collected for chemical and physical analysis. There were 94 tree species, distributed in 33 families. From those, 33 species are considered important for timber production (representing 14 families). The families Lauraceae, Meliaceae, Myrtaceae, Rutaceae and Papilionodaceae represented 52.1% of the total species identified. The Shanon Diversity Index was 3.96 and three subareas were differentiated by soil and species frequency in the forest remnant. Organic matter, phosphorus, pH, calcium and clay basically defined the subareas. These results, in the exploratory context of the Atlantic Forest biome, indicate that the remnant still presents high diversity and also of timber tree species, therefore, the forest resources could be sustainably managed for use or conservation.