Changes in connectivity and vegetation cover in the Fechos Ecological Station surroundings, Minas Gerais State, Brazil

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Changes in connectivity can affect landscape ecological functions and compromise forest fragments sustainability on a long-term basis. This study aimed to verify the changes in the Fechos protected area surroundings regarding vegetation cover and natural vegetation connectivity. Geographic information systems, remote sensing techniques and Landsat TM images were used to generate the maps analyzed from the years 1992, 2001, and 2010. The results showed that in 18 years, there was an increase of over 100% of anthropogenic areas, comprised mainly of urban settlements and mining sites. The highest vegetation cover decrease occurred for grasslands that lost 27.2% of its previous area. The forest area was diminished by 2.5% but the reduction in connectivity among forest patches was around 40%. The findings indicated that forest law enforcement and conservation have been given higher priority than those for the grasslands. For grasslands, scarce knowledge and fewer protection laws might be jeopardizing that ecosystem. The smaller reduction of forest areas has been influencing the connectivity among patches, suggesting that a better planning for the region is needed, which considers the characteristics of the whole landscape.

Key words: change, connectivity, landscape, conservation, land cover.

Modelling the potential distribution of threatened plant species in Santa Catarina State, southern Brazil: a study case of *Ocotea odorifera* (Vell.) Rohwer (Lauraceae)

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Ocotea odorifera is a tree broadly distributed in southern Brazil. This species was an important source of wood and essential oil (safrole) and, as a consequence, was intensively exploited, especially in Santa Catarina where the species contains the highest concentration of safrole. Due to the illegal commercial exploitation, *O. odorifera* was included on the official list of Brazilian species threatened of extinction. Our objective was to model the potential distribution of *O. odorifera* in Santa Catarina, Brazil. Predictive models were fitted using GLM (generalized linear models) with occurrence data, obtained in 440 permanent plots of the Floristic and Forest Inventory of Santa Catarina, that were related to 21 environmental variables (WorldClim and DEM). The predictor variables were selected by the AICc and the predictive power of the models was evaluated using the method of cross-validation (10-fold) to calculate ROC-AUC and TSS for the training data set (90% of the original data) and test (10% remaining). The annual precipitation ($p < 0.0016$) and seasonal ($p < 0.019$) were the most important predictors for the distribution of the species. Despite its preference for well drained soils, *O. odorifera* is found mainly in the Itajaí river basin, where rainfall levels are high, and the sloped relief favors the species. The predictive power of the model was considered consistently for AUC (training=0.633±0.006; test=0.571±0.055) and TSS (training=0.812±0.011; test=0.801±0.019). The results obtained with the predictive models show its importance as a reliable tool in identifying and defining priority areas for conservation of *O. odorifera* in southern Brazil.

Key words: threatened species, conservation, generalized linear models, Brazilian Atlantic rain forest, southern Brazil.

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