

of ecosystem services like regulatory services, recreation, biodiversity, sustainable wood production, water related services, and carbon sequestration we developed evaluation methods partly based on fuzzy logic and systematic studies with an ecophysiological model. The results of 100-year simulations reveal how strongly the initial forest conditions influence dynamics and management options even on the long run, as well as partly unexpected but plausible tradeoffs between ecosystem services under different management.

Novel business models and mechanisms for the sustainable supply of and payment for forest ecosystem services

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Research has identified Payments for Ecosystem Services (PES) as an important mechanism to close the gap between the demands of the society and the service providers (i.e., forest owners). Two main approaches can be identified: (i) payments to landowners to maintain or enhance services that an ecosystem provide and (ii) payments to mitigate and reduce pressures on ES, or prevent a change of land-use with potential negative impacts on service provisioning. In this contribution we will screen different business models and mechanisms to internalise the socio-economic value of forest ecosystems and combine public policy tools with business models for supporting the implementation of payments for forest ecosystem services (FES). Three types of business models will be considered a) private households or businesses companies directly pay providers for the provision of FES, b) Business companies pay providers for the FES and pass the costs to their clients, and c) government pays providers for the FES and pass the costs to consumers via taxes or fees. In implementing these business models, alternative mechanisms for the payments (e.g. voluntary payments, natural capital markets) will be explored. The demands for the provision of FES resulting from existing policies will be identified and the governance settings of successful business models will be discussed. This will help to facilitate the understanding of the importance of a target oriented sustainable management of forests.

D4p: FOREST ASSESSMENT AND ECOSYSTEM SERVICES

Local people's perceptions of forest and trees ecosystem services: case of managed Kalounaye classified forest

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Analysis of the relationships between communities at the peripheries of protected areas and their natural environments increasingly uses the notion of ecosystem services. Our study aims to identify the ecosystem services of the Kalounaye managed forest and woody species for the surrounding villages in the communes of Ouonck and Coubalan. To do that, surveys based on individual interviews and focus group discussions and field observations were carried out; 179 individual interviews and 12 focus group discussions were done. A semi-structured with free-listing approach was used to collect ethno botanical and ecosystem services data. The relative importance and the use of ecosystem services by rural people were assessed. The importance attributed to each category of ecosystem services and species was evaluated using use value (UV), informant consensus factor (ICF), citation frequency (CF) and fidelity level (FL). Local people considered Provisioning services characterized by a use value of 79% as the most important forest and trees function. Cultural services (13%) were the second most important ecosystem services provided by forest and trees followed by regulating/supporting services (8%). Among the provisioning ecosystem services, food, medicinal products, firewood and fodder were the most cited and used. A total of 27 species listed by the populations participated in the provision of three types of ecosystem services (provisioning, regulating/supporting and cultural services). However, the informant consensus factor for ecosystem services was greater than 80%. The Kalounaye managed forest is rich in very important species that provided provisioning, regulating/supporting and cultural services for the surrounding populations.

Improved model for semideciduous seasonal forest production of leaves and deciduousness

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The climate, mainly the water availability and temperature, drive the renewal of biomass in the seasonal forest ecosystem, and the greenness and leaf area of its canopy are responsive by climate variations. This study verified models to explain the phenomenon of leaf production and deciduousness, with LAI (Leaf Area Index), NDVI (Normalized Difference Vegetation Index) and climate variables, on the period 2011-2016. The data were obtained in satellite images and in plots installed at forest monitoring sites, visited monthly. The analysis incorporated the water balance. Three equations were compared, two already published and the equation that was adjusted in the last work. The model was improved and validated with new variables and data. It is possible to estimate the fall and renew of leaves biomass in semideciduous forests with reasonable precision.

Decline of giant trees in Brazil, the state of the art in Santa Catarina and the future

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The loss of large trees is a global problem due to the indiscriminate cutting of timber and the opening of new areas for various human uses. Brazil presents many tree species and extensive forest areas covering different biomes. The species nut brazil and kapok are the giant trees of the Amazon. The jequitiba tree and the brazilian pine are among the largest Brazilian trees in the Atlantic Forest. The decline scenario of the population of large trees can be compared with data from the National Forest Inventory (NFI) in comparison to specific surveys of each species in the regional and national scenario. Santa Catarina is the first state to finalize its forest inventory. Few large trees were sampled in the NFI by systematic sampling. Brazil has trees with diameters greater than 3 m and historical records of 5 m. Recognition of maximum tree growth is important for the ecological management and tourism potential of giant trees. New researches and public policies should be developed for the cataloging and management of these resources in order to avoid permanent loss.