

GENERAL POSTER SESSIONS

IUFRO Division 6: Social Aspects of Forests and Forestry

Participation of stakeholders in community-based forestry in Cross River State, Nigeria. Abi, E. (*Forestry Research Institute of Nigeria (FRIN), Nigeria; eneabi2008@yahoo.com*), Babalola, F. (*University of Pretoria/University of Ilorin, South Africa; Fola.Babalola@up.ac.za*), Ibor, O. (*University of Calabar, Nigeria; otu_crs@yahoo.co.uk*).

Participation of stakeholders is pertinent to effective implementation of community-based forestry (CBF). This study therefore evaluated the participation of and working relationships between timber dealers and forestry officials in implementing CBF in Cross River State, Nigeria. Primary data were collected through administration of a structured questionnaire to the forestry officials in the local communities where CBF is practiced, as well as to the timber dealers involved in harvesting, transportation, and processing of timber resources obtained from community forests under CBF. As stakeholders in CBF, forestry officials are responsible not only for the utilization of timber resources but also for regulating and monitoring all activities. The highest economic benefit derived from CBF by timber dealers is timber extraction, which also leads to income generation and job creation for the rural dwellers. Plantation establishment ranked topmost among the CBF activities involved in by timber dealers; however, timber dealers are not involved in forest protection and the decision-making process. Introduction of CBF in the selected communities of the state has contributed to community development, improvement in the timber business, and cordial working relationships among the forestry officials, timber dealers, and rural residents. For effective participation in CBF, however, empowerment of stakeholders in the decision-making process has been identified as crucial.

Valuation of ecotourism potential of Olumo Rock, Abeokuta, Nigeria, using the travel-cost model approach. Akintunde, O., Olakunle, S. (*Federal University of Agriculture, Abeokuta, Nigeria; akol_ak@yahoo.com; olakunlesegun60@yahoo.com*).

This paper investigated the monetary value placed on ecotourism potential of Olumo Rock, Abeokuta, Nigeria, as perceived by visiting tourists. Open-ended questionnaires in a non-probability snowballing method were used to capture primary data from visiting tourists on ecotourism values of the resort. Descriptive statistics, multiple regression analysis, and the travel-cost model approach were used to analyze the data. Results indicated that most visitors were male (54%) and residents of Lagos State, Nigeria (60%). Thirty-eight percent of visitors were students, and 44% had some college education. Other results were as follows: 72% were visiting for recreational purposes, 26% encountered hill climbing as a problem, and 74% were fairly satisfied with the staff-visitor relationship and the site resources and facilities. Most (68%) came in their private vehicles. The vast majority (90%) indicated they wanted to return, but most (66%) were not saving for such a trip (66%). The travel cost analysis showed that visitors using private transportation incurred more expenses than those using public transport. The reduced model regression revealed that variables such as income, distance to site, and travel cost significantly influenced the visitation rate to Olumo Rock. Effective management of park resources and facilities and improvement in staff benefits were some of the respondents' recommendations.

Beyond individual plant yield: integrating diverse socio-environmental factors into estimates of commercial production of an Amazonian non-timber forest product. Alechandre, A., Melo, T. (*Federal University of Acre, Brazil; andreaalechandre@hotmail.com; tadeu.melo12@gmail.com*), Fonseca, F., Munaretti, A., Evangelista, J., Wadt, L.O. (*EMBRAPA Acre, Brazil; fernanda.fonseca@embrapa.br; alisson@florestal.eng.br; joziane.gestoramambiental@gmail.com; lucia.wadt@embrapa.br*).

Non-timber forest product estimates are one of the biggest challenges for sustainable forest management by Amazonian smallholders. Often, producers generate optimistic overestimates, which can have negative ramifications for buyers, who need to reliably satisfy market demand. Although *Euterpe precatoria* is an abundant, fruit-producing Western Amazonian palm with an established market, consistent production by smallholders is hindered by several factors: thin stems which must be skillfully climbed to reach crown fruits, rapid fruit perishability (after only about 48 hours without refrigeration), and often difficult access to sufficient fruit quantities. The authors analyzed production from one landholding, mapping 12 ha of 50-m riverine transects. Seventy percent of 772 individuals were scalable, yielding an estimated 7.6 tons of fruit based on 14 kg of fruit per plant. Nonetheless, poor fruit formation and bird predation diminished production to such low levels that the harvester did not enter the market. The authors conclude that smallholder productivity estimates must go beyond individual plant yield estimates to include wildlife interactions, harvest and transportation logistics, sales price, labor availability, and social organization to potentially group smallholder sales. Perhaps consideration of these multiple factors for production estimates would increase the likelihood of smallholder business success.

Stakeholders' perception as support for forest landscape planning in Ciliwung watershed, Indonesia. Alviya Abdul Manap, I., Suryandari, E., Muttaqien, Z., Maryani, R. (*Forest Research and Development Agency, Indonesia; iisalviya@yahoo.com; elvida_ys@yahoo.com; zahrul-m@indo.net.id; retnomaryani@hotmail.com*).

Forests play a vital role for people in both rural and urban communities. An important aspect of forest management is the addressing of perceptions of forest users towards forest practices. This paper aimed to illustrate stakeholders' perceptions about criteria for forest management and about current biophysical, socioeconomic, and institutional aspects of forest landscape management. Information was gathered through a survey instrument designed to identify the preferences, perceptions, and expectations of people with an interest in the general impact of ongoing management of Ciliwung watershed in Indonesia. Data were analyzed descriptively and quantitatively using a Likert scale. Respondents in government and upstream communities indicated the institutional aspect was the most important factor in forest landscape management of Ciliwung watershed. In contrast, communities of the middle watershed indicated biophysical and socioeconomic factors were the most important. Regarding biophysical aspects, respondents indicated reforestation and conservation of soil and water in the upper watershed were the most important programs to undertake. In socioeconomic aspects, compensation mechanisms from downstream communities

to upstream communities are needed in order to increase upstream community welfare because of the low incomes of upstream residents. In institutional aspects, stakeholders say there is still a need to increase interaction and coordination among stakeholders, law enforcement, and forestry managers to support the preservation of forest in the upstream watershed.

Assessing cultural ecosystem services and their association with other ecosystem services in a research forest in the western Cascade Mountains of Washington, USA. Ameyaw, L., Weir, E., Petri, D., Ettl, G. (*University of Washington, USA; lkameyaw@uw.edu; ellenf3@uw.edu; dianap@uw.edu, ettl@uw.edu*).

Field observations, interviews, and questionnaires were used to document visitor use at the 1 740-ha University of Washington (USA) research forest. The visitor use data were combined with maps of forest stand age, geologic features and waterways, and scenic vistas to describe the relative importance of provisioning and biotic ecosystem services to cultural ecosystem services (i.e., visitation for recreation and solitude). Visitors entered the forest primarily on foot or by horseback with most access happening along two state highways that border the forest. Most of the visitors lived within 20 miles of the forest entrance and had visited the forest more than 10 times in their lives. Analysis showed that visitor activity was mostly dog walking, horseback riding, observing/photography, or hiking/walking, or a combination thereof. Visitors most frequently visited one of the following locations: old-growth forest reserve, confluence of a medium and large river, a waterfall, several isolated trails, and the gravel road network. An analysis of visitor use data with other landscape and forest stand (age, tree size, reserves vs. production forests) attributes was used to examine the relative importance of forest management to the cultural ecosystem services provided by a working forest.

Amenity forestry and environmental sustainability: the example of Calabar Botanic Garden, Cross River State, Nigeria. Aya, F. (*University of Calabar, Nigeria; ayafelix@yahoo.co.uk*), Fidalgo Fonseca, T. (*University of Trás-os-Montes and Alto Douro, Portugal; tfonseca@utad.pt*).

This research focused on the importance of amenity forestry in environmental sustainability. The study site was Calabar Botanic Garden, which is located in the city center of Calabar (4°57'0"N, 8°19'0"E), the capital of Cross River State, Nigeria. This location offers a rare situation: a natural habitat-of-choice where birds and other wildlife live freely within a highly populated human environment. Facilities for recreation and special events are also in place. Inventory of all tree species and selected species of shrubs, herbs, grasses, and fauna was carried out. A total of 302 tree species were enumerated, representing 171 (57%) and 131 (43%) indigenous and exotic species, respectively. The garden has a total area of 34 835 m². Tree crown cover was 10 731 m², of which 9 374 m² (87%) was from indigenous trees and 1 357 m² (13%) from exotic trees. Total mean wood volume of trees was 253 m³, to which indigenous trees contributed 238 m³ (94%) and exotic trees 15 m³ (6%). Total population density of tree species was 0.028 tree/m², with indigenous and exotic species contributing 0.016 tree/m² and 0.012 tree/m², respectively. In conclusion, the greenbelt status of the garden offers tangible and intangible benefits comparable to those of a natural forest.

Preparing forestry students for the labour market outside targeted sectors. Barianti Ahlberg, D., Lewark, E. (*University of Freiburg, Germany; dbarianti@yahoo.com; siegfried.lewark@fobawi.uni-freiburg.de*).

More than one-third of graduates with a degree in forestry find jobs outside forestry, forest-based industry, or natural resource management, according to recent analyses in Germany. These employment results indicate that forestry programmes need to prepare their graduates for career choices outside the targeted sectors. There is, however, limited information available on forestry graduates' successful employment in non-forestry sectors. This paper reviewed relevant literature on the employability skills of forestry graduates, their employment situation, postgraduate placement trends, and the challenge and experiences of transition from higher education to work, along with employers' and recruiters' views on hiring and working with forestry graduates in non-forestry sectors. It also reviewed factors determining the employment of forestry graduates and graduates of higher education institutions in general. The relevance of the skills gained in these studies for the world of work as perceived by graduates, employers, and recruiters was also explored using a signaling model and human capital theory. Findings from this review may shed light on the design of curricula that aim to educate future forestry graduates to fulfill alternative roles in non-forestry sectors.

Updated identification and evaluation of species produced by the Barreirinha Municipal Garden nursery in Curitiba, Paraná, Brazil. Batista, D.B., Araújo, D., Viezzer, J. (*Federal University of Paraná, Brazil; dbiondi@ufpr.br; damarislevita11@yahoo.com.br; jeviezzer@yahoo.com.br*).

Plants produced in municipal nurseries supply urban forests and should be evaluated in the context of the urban population and local ecosystem. Origin of species (exotic or native), toxicity, and invasive features (as nationally or regionally invasive exotic species) are some aspects that should be considered. Plants from municipal nurseries are used mainly for ornamentation, urban forests, recovery of degraded lands, and environmental education. The objective of this study was to identify and evaluate tree species produced by the Barreirinha Municipal Garden nursery, in Curitiba, Parana, Brazil, from 2008 to 2013. Methods were based on previous research conducted in 2008 that used the following variables: scientific name, popular name, family, life form, toxicity, species origin, invasive features, and use. The number of species produced was reduced from 165 prior to 2008, to 138 species. Of these, 44% were new species. Among them, 22% are exotic, including an exotic invasive (*Schefflera actinophylla*) and one with toxic sap (*Aphelandra squarrosa*). The adoption of this form of evaluation is recommended to maintain an updated production record, which can help in establishing criteria for the production of more suitable species for urban forestry in Curitiba.

Project Floresta-Escola: an interaction between elementary school students and the forest. Batista, D.B., Soldera, C., Perego, D., Bouças, G.C., Wassem, G.F. (*Federal University of Paraná, Brazil; dbiondi@ufpr.br; carolsoldera54@gmail.com; dioney_perego@hotmail.com; gabriele_calle@gmail.com*), Francisco, R.A., Candido, S., Melnik, C.S., Tokarski, A.A.B., Viezzer, J., Martini, A.