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Tree Growth in Montane Forest Restoration Sites of the
Tropical Andes
Matthew Bare

The tropical Andes of Ecuador and Colombia, an ecologically unique high-altitude tropical ecosystem, has undergone extensive development and deforestation, and little native forest cover remains outside of protected areas. Through a combination of land abandonment, increased support for ecological restoration, and increased support for potentially ecologically friendly agroforestry systems, restoration sites have multiplied. As communities, local governments and NGOs continue to implement forest restoration activities, detailed silvicultural background and species growth information is necessary for effective project planning. This research measures the growth of native tree plantings in the in the Andean region of Colombia and Ecuador in a gradient of ecological conditions and soils. Approximately 900 trees were measured in 15 restoration sites. Tree growth will be compared with soil conditions including nutrient availability, organic matter, cation exchange capacity, acidity, and texture, in addition to ecological variables. Native tree growth rates in the restoration sites are compared with the literature on conventional native and exotic plantation species. Results will provide baseline information for tree growth rates and survival in varying soil conditions encountered in likely restoration sites. Overall, findings also provide an overview of the state of the art of restoration in the northern tropical Andes, offering insight into the scale and reach of active restoration projects in the context of current forest cover trends.

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Estimating Biomass and Carbon Stock in Malaysia for REDD+
Ainuddin Nuruddin and Syafinie Abdul Majid

Forest ecosystem is one of the important components in global carbon cycle. It provides ecosystem services by absorbing carbon dioxide and stores it in the form of fixed carbon in the biomass. The estimation of carbon storage in the forest ecosystem is also very important and is required in the national greenhouse gas accounting. In spite of this, accurate information about the aboveground carbon storage is lacking in Malaysia. One of the large source of uncertainty in all carbon stocks estimation of tropical forest is the lack of general model for converting tree measurements to aboveground biomass and carbon estimation. Here, we reviewed various methods in estimating carbon stocks mainly in Southeast Asia and other tropical countries. We applied existing models with some datasets. With this information, we hope to apply it to estimate carbon stocks in Malaysian forest and contribute in REDD+ process.

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Fixing a Broken Land: Efforts to Rehabilitate Afghanistan’s Pastoral Landscape
Charles Ruffner

The author spent the last year attached to a National Guard Agri-business Development Team (ADT) deployed to Afghanistan supporting NATO’s International Security and Assistance Force in its broad objectives of developing agricultural production opportunities for Afghan farmers and implementing soil conservation practices at the village level. The year-long deployment saw the ADT implement many village-level projects designed to improve the local farmer’s knowledge of the needs and issues related to watershed management, soil conservation, bee hive management training, irrigation system maintenance, and agronomic practices. Throughout the unit’s activities were hours of preparation, grant writing and mission preparation, as well as the intricacies of doing business with another culture in implementing the community-based natural resource decisionmaking process in these rural populations. Despite heavy investments in training and equipping soldiers and civilians to conduct such projects by the Coalition Forces, it is the local Afghans who will in the end be the test of these training and preparation activities. We trained Farmer’s Coops and Herdsmen groups on such topics as association development, pest management, grape and fruit tree pruning, watering cycles, seedling establishment and care and livestock health care issues. Our efforts to train and mentor these young Afghan land managers is akin to the responsibility taken on by the Greatest Generation in rebuilding the Depression-torn landscape of North America during the Works Progress Administration and its Civilian Conservation Corps or those efforts in rebuilding the war-torn areas of Germany and Japan following WWII.

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International Forest Carbon Projects: Assessing Forestry, Ecological, and Financial Impacts

Gabriel Thoumi, a,b Verl Emrick, c Rebecca Murray Schneider, c and Brian McFarland d

Public and private forest sector institutions need to understand key learnings regarding the sector’s international commercial experience, ecological, and forestry impacts. This will support commercial-based outcomes that address deforestation and degradation drivers at multiple scales while protecting right holders, protecting biodiversity, and ensuring long-term conservation of natural resources with a profit-generating framework. Four panelists will describe specific international forest carbon case studies demonstrating pros and cons. Graphic examples of cash-flows will be presented illustrating the business case for financing forest carbon and REDD+ as an approach to climate change mitigation. Special attention is given to the role of corporate REDD+ finance in support of institutional and public finance for REDD+ and REDD+ preparation, and the role that the voluntary REDD+ market can have in influencing the effectiveness, efficiency, and equity of domestic and global REDD+ policies. Case studies will be drawn from the presenters’ own forest experience developing and accessing projects, programs, and national forest carbon readiness. Case studies will be from Peru, Ecuador, Brazil, Belize, Indonesia, and Australia and will be drawn from projects and programs under various carbon accounting mechanisms and spatial scales.

Close-to-Nature Forestry: From Alternative to Mainstream?

W. Keith Moser, a,b Jurij Diaci, c and Jean-Philippe Schütz d

More than a century ago, close-to-nature forestry (CTNF) evolved in different parts of Europe as a reaction to the prevalent practice of clearcutting in forest management. Although some countries (e.g., Switzerland, Slovenia) complete adopted this approach early on, its proportion in the management of European forests grew rather slowly until the 1980s. Afterwards, the share of CTNF started to increase more rapidly for different reasons, including the impact of forest decline and other pollution damage, the growing sensitivity of the public towards nature conservation, increasing interest in forest recreation and aesthetics, declining economic returns from traditional forest management practices and, in recent decades, a response to climate change and a recognition of the role standing forests play in carbon sequestration.

Within the borders of Brazil lies a large part of one of the world’s most important ecosystems; the Amazon. Brazil will host two of the world’s most important international sporting events; FIFA World Cup in 2014, and the Summer Olympics in 2016. As a result of these major events, and the emergence of Brazil as a world economic power, natural resource tourism and outdoor recreation is expected to double over the next 10 years. Brazil’s supply of parks and protected areas is more than impressive, both in scope, in sheer beauty and diversity (Janer 2010). With more than 300 parks and protected areas, including 68 national parks, one could argue that Brazil has an adequate supply of natural resources available to its recreating public and tourists. As the potential for outdoor recreation activity-induced conflict increases, comparative studies on an international level can help to advance both science and practice of recreation management. We will discuss how parks and protected areas are classified and managed in other countries, the challenges they face, and how they deal with and solve management and planning problems. Alternative strategies may be implemented to reach similar results—better management of parks and protected areas. Additionally, we will focus on how agencies can use adaptive management and collaborative planning processes by providing best practice examples. We will examine and share various methodologies which can result in cross-boundary comparisons of not only problems/issues, but also how various solutions have been effective (or ineffective) in different places, and why.

Silviculture in Europe Making the Transition to Managing Ecosystems

Philippe Morgan a,b and Edward Wilson c

Pro Silva is the European society of Close to Nature forest managers promoting uneven-aged silviculture that hails back to the great pioneers engaging in the silvicultural debates of the 19th century. Modern society is now demanding integrated outputs and environmental safeguards and the cost-effective timber production uneven-aged silviculture specializes in delivering. Pro Silva has member groups in 17 countries in Europe and one in the USA. The Association Futtia Irri-galère (AFI), set up by members of Pro Silva, has for 20 years monitored and accumulated data from a network of forests across France and other European countries. The protocol for data collection from uneven-aged high forest stands records the dendrological factors and economic and environmental factors of the stand. Present research is looking at defining surrogates for monitoring biodiversity and carbon outputs and linking these with silvicultural treatments. The AFI measurement protocol is repeated on a 5-year cycle; it monitors and presents the physical and economic outputs from all the stands within the network. Biodiversity and carbon outputs provide a measure of ecosystem productivity. The AFI database is shared with other databases of nature conservation designated sites increasing the scope for exchange and quantifying ecosystem productivity. Offshoots from the software packages developed for data storage have provided training tools. The Marteloscope is a powerful training package to assess selection in uneven-aged stands. Trainees’ results from a virtual marking exercise can be set against different scenarios to quantify their performance and to illustrate the principles of uneven-aged silviculture.

Building Natural Resource Capacity through Benchmarking: A Brazil Case Study

Robert Burns, a,b Jasmine Moreira, c and Thomas Fish d

Within the borders of Brazil lies a large part of one of the world’s most important ecosystems; the Amazon. Brazil will host two of the world’s most important international sporting events; FIFA World Cup in 2014, and the Summer Olympics in 2016. As a result of these major events, and the emergence of Brazil as a world economic power, natural resource tourism and outdoor recreation is expected to double over the next 10 years. Brazil’s supply of parks and protected areas is more than impressive, both in scope, in sheer beauty and diversity (Janer 2010). With more than 300 parks and protected areas, including 68 national parks, one could argue that Brazil has an adequate supply of natural resources available to its recreating public and tourists. As the potential for outdoor recreation activity-induced conflict increases, comparative studies on an international level can help to advance both science and practice of recreation management. We will discuss how parks and protected areas are classified and managed in other countries, the challenges they face, and how they deal with and solve management and planning problems. Alternative strategies may be implemented to reach similar results—better management of parks and protected areas. Additionally, we will focus on how agencies can use adaptive management and collaborative planning processes by providing best practice examples. We will examine and share various methodologies which can result in cross-boundary comparisons of not only problems/issues, but also how various solutions have been effective (or ineffective) in different places, and why.
Transforming the Culture of Silviculture in British Forestry
Edward Wilson\textsuperscript{a,b} and Philippe Morgan\textsuperscript{c}

Forestry in Britain is undergoing a period of profound change and reassessment. At the forefront of our thinking is recognition that the global climate is changing and that many current practices need to be adapted to make our woodlands more resilient into the future. Also, recent developments in plant health, not least the impact of imported pests and diseases, have reinforced widespread concern about the need to find new strategies for diversification of both our productive tree species and the silvicultural systems we employ in sustainable forestry. Continuous Cover Forestry (CCF) is now recognized as an important approach that has the potential to create diverse, resilient and robust forest systems. However, the transformation from largely even-aged stands to more complex and irregular (CCF) structures remains a challenging area of professional practice. There is continuing demand for a stronger evidence-base and practical demonstration of CCF systems. Success depends on the development of practical and operational skills, and applying new methods for quantifying the transformation process. We need appropriate tools to assess success and guide future management interventions. This paper reviews the rationale for continuous cover forestry, and explores the cultural and professional challenges associated with transforming woodlands through the adoption of new silvicultural systems. Scientific knowledge and technical proficiency are not enough in themselves to effect change. In order to adopt new paradigms, the human dimensions of forest management, including attitudes to risk and uncertainty, and modes of peer communication, must also be addressed and embraced.

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Global Forest, Park, and Protected Area Capacity Development
Thomas Fish\textsuperscript{a,b}, Eick von Ruschkowski\textsuperscript{c} and Robert Burns\textsuperscript{d}

Capacity development for multiobjective resource conservation is a global priority. Forests, parks, and protected areas support a variety of conservation objectives, including habitat protection and restoration; sustainable multiple-use and economic development; cultural and historic resource preservation; research and education; and delivery of ecosystem services. While unit designation and areal extent of protected areas continues to increase, the ability of such areas to achieve stated objectives is often limited by lack of capacity in key competency areas. Development of capacity for partner engagement and community involvement; generation, access and use of information; policy development; sustainable financing; planning and implementation; and monitoring, and evaluation are all essential to effective protected area management. This session will include an overview of the capacity development life cycle (e.g., assessment, development, implementation, and evaluation), with examples drawn from innovative programs in several international geographies. The session will invite active engagement and dialog from participants within the arena of capacity development and internationalization of teaching and training to support well-informed managers and decisionmakers.

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Capacity Building for Coastal Protected Area Forest Conservation and Restoration
Thomas Fish\textsuperscript{a,b} and Anne Walton\textsuperscript{c}

Marine protected areas and networks support natural and cultural heritage conservation and foster collaborative learning to address a number of sustainability goals. Protected areas represent a spectrum of categories based on specific management objectives. Effective management to achieve these objectives requires a complex suite of knowledge, skills, abilities, and institutional arrangements. Capacity development is a global priority within the protected area community, with ongoing establishment of regional protected area networks in many parts of the world prompting a growing need for capacity development across a wide range of competency areas. The International Marine Protected Area Capacity Building Program works with partners at a “seascape” scale in multiple geographies to develop capacity for regional protected area networks; assisting managers and decisionmakers to better engage stakeholders, identify conservation targets, define threats and impacts, establish objectives, and select appropriate management applications. Working at a seascape scale requires consideration of a complex range of subnational, national, and transnational relationships, regulatory frameworks, conservation programs, social dynamics, skill sets, and levels of commitment. Ongoing evaluation actions inform training program elements to address changing regional priorities and learner needs, and support long-term capacity development. This presentation will include an overview of program capacity building efforts for coastal protected areas, with examples from implemented community-based mangrove forest restoration projects in Vietnam and Cambodia.

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