Society of American Foresters

International Forestry Working Group Newsletter

Working Group B3

June 2013

Many thanks to Frank Wadsworth for his contributions to the research articles section of the newsletter. The vast majority of this month's summary of research articles come from the time he spends reading through journals and summarizing the abstracts.

Over the next several months, if you are working on a project that would be an interesting article for the newsletter please send it along. Depending upon your hemisphere, wishing you all a good winter or summer.

- Blair Orr, IFWG Chair
(bdorr@mtu.edu)

Obituary

Dr. Warren Truman Doolittle

Dr. Warren T. Doolittle, age 91, passed away on Wednesday, March 20, 2013 at Prince William Hospital, Manassas, VA. He was born in Webster City, IA July 24, 1921, son of Ed and Rhoda Leone Doolittle. He is survived by his wife of 70 years, Jane Anne (Beddow) Doolittle, daughter Linda Bushar, son-in-law Thomas Bushar, son Randolph Doolittle, daughter-in-law LaRae Doolittle, son Steven Eric Doolittle and daughter-in-law Vicki Doolittle. He is also survived by three granddaughters, one grandson, two great granddaughters and two great grandsons.

Warren was a veteran of both WWII and the Korean War. Serving with distinction, he received the Distinguished Flying Cross, the Air Medal with three oak leaf clusters, the European Theater of Operations with 5 Bronze Stars and the Korean Service Medal. He was a navigator trained in radar both for navigation and bombing, completing 29 missions in Europe and 17 missions in Korea. His planes were shot down several times but the crews survived as a result of heroic actions. During and after his military service Warren earned degrees from three Universities – Iowa State, Duke and finishing with a PhD in Forestry from Yale.

His professional career with the US Forest Service was distinguished as well, serving as Director of Research for the Northeastern United States and retiring as Associate Deputy Chief for Research after 38 years of service. After retirement Warren remained active, serving as president of the Society of American Foresters in 1986 and fifteen years as president of the International Society of Tropical Foresters. In 1990 Warren received the Duke University Charles W. Ralston Award for Distinguished Alumni and in 2005 he received the Distinguished Alumnus Award from Yale University.

Funeral services and burial were at the Arlington National Cemetery with full military honors. In lieu of flowers the family requests that donations be made to the Wounded Warriors Project, online at http://www.woundedwarriorproject.org/

Contributed Articles

The FORSYS international synthesis for innovative forest management and policy decision support

by José G. Borges[1], Ljusk-Ola Eriksson[2] and Harald Vacik[3]

[1]University of Lisbon, Portugal; [2]Swedish University of Agricultural Sciences, Sweden; [3]University of Natural Resources and Applied Life Sciences, Austria

The Conference FORSYS 2013 Decision support systems for Sustainable Forest Management (http://www-conference.slu.se/forsys2013/) took place in April 24-26, 2013 in Umea, Sweden. It was sponsored by IUFRO Division 4, the European Science Foundation (ESF) and the Swedish University of Agricultural Sciences. Its program encompassed 48 presentations and it involved 98 participants from 32 countries (Austria, Belgium, Brazil, Cameroon, Canada, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Morocco, Nepal, Netherlands, New Zeeland, Nigeria, Norway, Poland, Portugal, Russia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States). The Conference presented an original synthesis of multidisciplinary research efforts - developed under the COST Action FP0804 (FORSYS Forest Management Decision Support Systems (DSS)) – to provide an innovative world-wide quality reference for development and application of advanced computerized tools to support forest management and policy analysis. This was built from the experience and expertise reported in comprehensive country reports by 94 researchers from 26 countries in Africa, America, Asia and Europe and from the work recently conducted under FORSYS by over 120 researchers and stakeholders to address hot topics such as the **a)** the architecture and implementation of decision support systems (DSS), **b)** the models and methods

to support decision-making in DSS, **c)** the knowledge management techniques in DSS and **d)** the participatory processes to be supported by DSS. The need to involve decision makers in the design of DSS was discussed as critical success factor and became evident that research tries to consider the rising demands and needs of stakeholders with advanced techniques and models. The synthesis coming up from the COST Action and the final conference will be influential to improve management from a stand to a multiple-ownership landscape scale and to enhance forest policy analysis in general.

Participants at the 2013 FORSYS Conference in Umea, Sweden, April 24-26 (photo by Mikael Ronnqvist)

The Community of Practice on Forest Decision Support Systems

The further research to innovate forest management and policy analysis processes will be supported by the Community of Practice on Forest Decision Support Systems (www.forestdss.org) which was constituted during the conference. This Community will build from the state-of-the art and the FORSYS experience, namely from a large repository of DSS projects that has been formally described in a semantic wiki (http://fp0804.emu.ee/wiki/index.php/Category:DSS) to further provide a solid expertise in applying models, methods, techniques and frameworks for developing and applying DSSs for forest management and policy analysis. A proposal for a session to further disseminate this work at the IUFRO 2014 World Congress (Decision Support for providing Ecosystem Services - Community of Practice of Forest Decision Support Systems) is currently being organized by IUFRO Units 4.02.07, 4.030.03 and 4.04.04.

Some Challenges With Controlling *Castilla elastica* (Panama Rubber Tree) in American Samoa

by: Jolie Goldenetz Dollar, PhD
Forestry Researcher, American Samoa Community College

Castilla elastica (Panama rubber tree), known in the Samoan language as "Pulumamoe," is a medium-sized tree (15-30 feet tall) native to Mexico, Central America, and northwestern South America. The species belongs to the Moraceae family and produces copious amounts of milky latex sap (rubber). The tree was intentionally introduced onto the islands of American Samoa decades ago for the purpose of using the latex to make balls for the game of kilikiti (Samoan cricket). Cricket was introduced to the Samoan Islands by English missionaries in the early 19th century. The game quickly spread throughout Polynesia and to this day is a very popular Samoan sport.

Photo captions: Hack-n-squirt herbicide application of *Castilla elastica* and latex oozing from fresh cuts.

Personnel working with American Samoa Community College Forestry Extension and the National Park of American Samoa are actively controlling this species throughout the main island of Tutu'ila. A number of characteristics of the Panama rubber tree makes control challenging. First, the tree produces sweet, red, fruit clusters, with many seeds. Therefore, hundreds of seedlings can often be found growing underneath adult trees. Secondly, birds and

bats are attracted to the fruit and move seeds long distances, oftentimes into the dense forests located on the steep cliffs of American Samoa's volcanic islands. Thirdly, the tree produces a liquid latex in sacs or canals called laticifers, which are generally found in the phloem (inner bark). When the bark is cut, this white latex escapes from the laticifers and oozes down the tree. Based on some field trials in American Samoa, the application of glyphosate with the hack-n-squirt method is not adequately effective, probably due to the latex oozing out of each cut. There are plans to test other herbicides, such as triclopyr, and other application techniques.

Please feel free to share any ideas about managing this invasive tree with Jolie Goldenetz Dollar, who can be reached at the following e-mail address: j.goldenetzdollar@amsamoa.edu.

Sources:
Tropical Biology Association:
http://www.tropical-biology.org/research/dip/species/Castilla%20elastica.htm
Pacific Islands Ecosystems at Risk (PIER):
http://www.hear.org/pier/species/castilla_elastica.htm

The International Society of Tropical Foresters (ISTF)

ISTF was founded in 1950 by SAF member Tom Gill, and others. One of the founding members, Frank Wadsworth, has been - and still is - a key figure in ISTF activities. He has served as Editor of ISTF News (the ISTF quarterly, bilingual newsletter) since 1980.

In addition to the quarterly newsletter, ISTF has offered a variety of services to its members. Most recently, it has had 1500+ members in over 100 countries. These services have included free publications, occasional conferences and exhibits, and specific information services. Co-located at SAF headquarters in Bethesda, Maryland, ISTF has always operated on a shoestring, relying mainly on a volunteer staff, with only one part time employee.

However, ISTF has struggled financially during the last two years, and had to go "dormant" as of January 1, 2013. The three ISTF Chapters at Bolivia, Yale University and North Carolina State University will continue, as they are financially independent. Once before, in the 1970s, ISTF went dormant when Tom Gill died. It was reactivated a few years later.

One day, perhaps when a new location, staff and funding all come together, it may be possible to reactivate again, with a mission appropriate to the new staff and membership of that time.

Contributed by Les Whitmore

Join an SAF Working Group

As a member of the Society of American Foresters you can join SAF working groups by going to the website:

http://www.safnet.org/workinggroups/join.cfm

If you want to join this working group, we are B3, the International Forestry Working Group. Pass this information along to SAF members who might be interested in joining a working group.

SAF World Forestry Committee News

The World Forestry Committee (WFC) has been active lately on a number of fronts. Perhaps the most exciting is gearing up for the joint IUFRO-SAF conference in Salt Lake City in 2014. For the 2103 SAF Convention in Charleston, the World Forestry Committee worked with the International Forestry (IF) Working Group to convene a panel on silvicultural opportunities and risks associated with managing Eucalyptus plantations. As done at past Conventions the WFC will co-sponsor a social reception in Charleston. Stay tuned for details.

The Gregory award program, which provides travel assistance for a non-US person to attend the annual SAF convention, continues to grow. This year the WFC received 27 applicants from all parts of the world. The number of candidates reflects the effort of members to promote the award through various contacts and networks around the world. The competition was tight, but the committee was pleased with the candidate selected as the 2013 recipient of the Gregory Award. The awardee is Ms. Ani Haykuni who is from Armenia and works with the Armenia Tree Project Charitable Foundation.

The WFC is addressing ways to not lose the connections and networking associated with the pending hibernation of the International Society of Tropical Foresters (ISTF). The committee put together a proposal for the new SAF Membership and Credentialing Task Force to consider that would offer ISTF the opportunity to access a portion of the information and material that comes with an annual SAF membership for a reduced cost. The memo was sent to the Task Force, and the WFC will continue to follow this issue.

Other activities the WFC are involved in include preparing commentaries for the Journal of Forestry, and updating the SAF global forestry website http://www.eforester.org/fp/globalforestry.cfm. Committee members recently completed a commentary on study aboard forestry education and are working on one on invasive species. If working group members have ideas for timely and important international-related topics for commentaries please let us know.

Submitted by Michael Jacobson (Chair) and John Barnwell
mgj2@psu.edu, barnwellj@safnet.org

Books for Instituto Tecnológico de la Zona Maya. *Contributed by Sheila Ward.*

Need for college-level forestry and basic science/math books in Spanish On a Fulbright fellowship for forest resources in Quintana Roo, Mexico, I have become involved in a research project with forest engineering students at the Instituto Tecnológico de la Zona Maya near Chetumal. This is the only forestry program in the state of Quintana Roo, and there is a great need for it. The program recently received accreditation and has enthusiastic students. But the budget for the Institute is very tight, and the library is in dire need of books in Spanish in the basic sciences and mathematics, as well as in forestry. Anything will be useful. Donations can be sent to:

Sr. Vicente Sansores May
Bibliotecario, Centro de Información
Instituto Tecnológico de la Zona Maya
Km 21.5 Carr. Chetumal-Escárcega
Chetumal, Quintana Roo
Código Postal 77617
México

Cell Phone Sr. Sansores: 001-44-983-753-3303
Email: visan256@hotmail.com

If you need more information, please contact Sheila Ward: mahoganyforthefuture@gmail.com.

The SAF 2013 National Convention – October 23-27. North Charleston, South Carolina

Home page for the convention:

http://www.xcdsystem.com/saf/site13/

Recent Publications

HYBRID POPLARS

NMSU Bulletin 805, "Ten Years of Poplar Research at NMSU's Agricultural Science Center at Farmington," by Michael K. O'Neill, Robert F. Heyduck, Samuel C. Allen, Kevin A. Lombard, Dan Smeal, and Richard N. Arnold

http://aces.nmsu.edu/pubs/research/horticulture/BL805.pdf

CHARCOAL IDENTITY FOUND IN BRAZIL

The anatomical structure of wood, in general aspects, is constant during the carbonization process using temperature of 450^{o}C. Vessel diameter was significantly different between wood and charcoal of Vatairea guanensis, Mezilaurus itauba, Calophyllum braziliense, Qualea acuminata, and vessel frequency in Vatairea guianensis, Manilkara huberti, Qualea acuminata, and Simarouba amara.
Graciela Ines de Bolzon de Muñiz and others, Charcoal anatomy of forest species, Cerne 18(3):471-477 2013.

EUCALYPTUS THINNING IN BRAZIL

Eucalyptus wood, used in Brazil chiefly for paper and energy production is becoming used for added value for panels, plywood, veneers and furniture calling for thinning to obtain larger tree diameters. Thinning was applied to plantations of Eucalyptus gunnii at the third year (20 m2/ha) and the fourth year (25m2/ha) to reduce their densities to 12, 14, and 16 m2/ha. Plantations thinned at age 3 to 14 m2/ha were able to recover the basal area of controls in 3 years.
Mario Dobner Jr. and others, FLORESTA 42(3):485-494, 2012

BIODIVERSITY IN AMAZON PLANTATIONS

Understory biodiversity was assessed in 35-year-old homogeneous plantations of the following native Amazon species: Simarouba amara, Dipteryx odorata, Bagassa guianensis, Jacaranda copaia, and Dipterix excelsa. All plantations except Jacaranda showed species richness near that of the primary Amazon forest. The results indicate that long-standing plantations can provide high levels of density and species richness in the understory.
Thais Almeida Lima & Gil Vieira, High plant species richness in monospecific plantations in the Central Amazon. Forest Ecology and Management 295:77-86, 2013

ELEPHANT DEPENDENCE IN THE CONGO

In evergreen lowland rain forest of the Congo elephants close to extinction are critical to dispersal of tree populations. Fourteen tree species do not recruit enough young for self-replacement, either under the parent of under other trees. There is no alternative partner for seed dispersal for a majority of the trees that are elephant-dependent.
David Beaune and others, Doom of elephant-dependent trees in the Congo tropical forest. Forest Ecology and Management 295:109-117 2013

FIRE RECOVERY IN THE ANDES

Woody forest recovery is strongly hampered by non-forest species. Forest density, species richness, and species composition increase with elevation. There is no evidence of seed-dispersal as a limitation for recovery. Forest recovery at higher elevations was apparently due to cooler and moister conditions. The most abundant forest species at deforested sites, Myrsine coriacea, is seen as a suitable species for montane forest restoration.
Denis Lippok and others, Forest recovery of areas deforested by fire increases with elevation in the tropical Andes. Forest Ecology and Management 295:69-76 2013

POST-BEETLE LODGEPOLE IN ALBERTA

Decayed wood and mineral soil were found better seedbed types than moss and organic surfaces. Recruitment rates were higher with increased level of disturbance, highest in salvage logged stands However these favorable seedbeds were rare, suggesting that future stand development will be hampered by a lack of recruitment. For restocked lodgepole forest silvicultural intervention will be required.
Anne McIntosh and Ellen Macdonald, Potential for lodgepole pine regeneration after mountain-pine beetle attack in newly invaded Alberta stands. Forest Ecology and Management 295:11-19 2013

POST-FIRE PINE REGENERATION IN CHINA

The approximate successional trend is from pine shrubland to pine forest to pine-evergreen broad-leaved forest to evergreen broad-leaved Castanopsis-Lithocarpus forest. In the early successional stage of Pinus yunnanensis there is lower floristic richness and species diversity that in later stages. Natural recovery is more efficient than plantations of the same species.
Cindy Tang and others, Regeneration, recovery, and succession of a Pinus Yunnanensis community five years after a mega fire in central Yunnan, China. Forest Ecology and Management 294:188-196 2013

MEGAFIRES IN THE MEDITERRANEAN

The megafires are driven by critical weather conditions that lead to a concentration of fires in time and space (fire clusters). These megafires occur independently of increased

preparedness in the countries where they take place. The simultaneity of fire ignitions and rapid spread prevent efficient initial fire attacks. They are set under control only when weather conditions improve and facilitate firefighting. Recommendations include fire prevention oriented management and increased public awareness of extreme fire events. Jesus San-Miguel Ayanz and others. Analysis of large fires in European Mediterranean landscapes: lessons learned and perspectives. Forest Ecology and Management 294:11-22 2013.

EUCALYPTUS BETTER IN MIXTURE

Mixtures compared were within species of Eucalyptus that naturally coexist: E. grandis and pilularis, monospecific vs. mixtures. The study showed not only enabling of the mixture but increased yields of 10 to 30%. There was a lower proportion of small trees. The effects were consistent with stand development, indicating utility for biomass and solid wood products. It is suggested that mixtures of other co-occurring species may improve yields.
David Forrester& Geoff Smith, Faster growth of Eucalyptus grandis and Eucalyptus pilularis in mixed species stands than monocultures. Forest Ecology and Management 286:81-86 2012.

WHOLE-TREE HATRVESTING AND SITE PRODUCTIVITY

Using priority indicators of soil pH, P, K,Ca, Mg, and tree diameter, an analysis of 86 studies of whole-tree versus stemwood only harvesting showed a mean decrease of the former of 13 to 60%. The results showed that the risk level of change in ind9icators of site productivity following clear-cutting with whole tree harvesting might justify a need for mitigating measures. Following thinning with whole-tree harvesting the risk levels are lower in comparison with clear cutting and mitigation measures may not be needed. Antti Wall, Risk analysis of whole-tree harvesting on site productivity. Forest Ecology and Management 282:175-184 2012.

DUNG BEETLE REGENERATION IN THE CONGO

Dung beetles are ubiquitous and play an important role in the dispersal of tree seeds in animal dung. They bury the seeds at proper depths for germination, protected from rodents and surrounded by organic fertilizer said to increase seedling growth rates.

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David Beaune and others, Dung beetles are critical in preventing post-dispersal seed removal by rodents in Congo rain forest. Journal of Tropical Ecology 28(5):507-510 2012.

ANTS AND LITTER IN COSTA RICA

Two months of litterbag experiments showed a loss of 23.5% without ants and 30.9% with ants, supporting the role of litter-dwelling ants in accelerated litter decomposition in lowland tropical rain forests.

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Terrence McGlynn & Evan Poirson, Ants accelerate litter decomposition in Costa Rican lowland tropical rain forest. Journal of Tropical Ecology 28:437-441 2012

FOREST WOOD DENSITY AND CLIMATE

The woods of the evergreen forest, the semideciduous forest, the savanna woodland, typical savanna, and deciduous forest of Minas Gerais, Brazil averaged the following significantly different wood densities: 0.502, 0.561, 0.585, 0.612, and 0.675 g/cm^3. The relationship is clear and consistent.

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Gabriel Marcos Vieira Oliveira and others. Environment effects on wood density of vegetation types in Mina Gerais State – Brazil. CERNE 18(2):345-352 2012.

CARBON SEDIMENTATION IN CHINESE MANGROVES

Two species of *Sonneratia* are widely used to reforest mangroves in China. The native *S. caseolaris* and the non-native *S. apetala* are planted in monocultures and in mixture. In monocultures of *S. caseolaris* biomass accumulation is greatest. But despite this, in mixtures a relative advantage is sequestering more carbon in sediment, the better option.

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Luzhen Chen and others, Comparing carbon sequestration and stand structure of monoculture and mixed mangrove plantations of *Sonneratia caseolaris* and *S. apetala* in southern China. Forest Ecology and Management 284:222-229 2012.

PAULOWNIA FOR AGROFORESTRY IN INDIA

Leaf extracts of *Paulownia* were tested against germination of maize and wheat and found, unlike those of *Poplar*, to be only mildly allopathic. Nor did the leaves of *Paulownia* have any significant negative effect on the growth of maize and wheat. Accordingly, *Paulownia* appears to have a great potential in agroforestry with these crops.

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Charan Singh and others, Allelopathic effects of *Paulownia* and *Poplar* on wheat and maize crops under agroforestry systems in Doon Valley. The Indian Forester 138(11): 986-990 2012.

LIANA PERSISTENCE IN ARGENTINA

A ten-year study involved three plots with all lianas cut and three control. In the control plots during the 10 years liana basal area increased 50% and the proportion of trees infested increased from 69% to 83%. In the treated plots the incidence of lianas was 60%

after 10 years, indicating rapid liana colonization after the treatment. Liana infestation on tree saplings was the same in all plots, but sapling growth was more rapid under treatment, suggesting slightly enhanced growth as one result.

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Paula Campanello and others. Liana abundance, tree crown infestation, and tree regeneration 10 years after liana cutting in a subtropical forest. Forest Ecology and Management 284:213-221 2012.

WIND DAMAGE IN THE PANTANAL

Strong winds occur during the rainy season from September until April. After a strong wind the semideciduous forest lost 6% of its basal area and volume, chiefly due to uprooting of *Xylopia*. In the forested savanna the basal area and volume loss was 10%, with 69 trees uprooted per hectare, mostly of *Copaifera*. The trees lost were taller than those left. Species with high wood density were uprooted, whereas those with light woods lost branches.

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Suzana Maria Salis and others, Changes in the structure due to strong winds in forest areas in the Panatanal, Brazil. CERNE 18(3):387-395 2012.

MOONLIGHT ACTIVITY OF WILD DOGS AND CHEETAHS

Among African carnivores subordinate species coexist through temporal partitioning of habitat. Wild dogs and cheetahs are considered to be diurnal and crepuscular. Radio-collar studies exposed unexpected overlap among wild dogs, cheetahs, spotted hyenas, and lions. Unexpected nocturnal activity of wild dogs and cheetahs was found and it was directly related to the intensity of moonlight. Activity of the hyenas and lions was not so affected.

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Gabriele Cozzi and others, Fear of the dark or dinner by moonlight? Reduced temporal partitioning among Africa's large carnivores. Ecology93(12):2590-2599 2012.

DRIP-TIPS ON TROPICAL LEAVES

There are many theories for drip-tips on tropical leaves: to accelerate drainage, reduce susceptibility to leaf-residing organisms, enhancement of transpiration, and to help prevent splash erosion at the base of trees. In 130 plots in the Amazon rain forest about one third of the species have drip tips. They were significantly more common in the Central East Amazon than in other regions. They were also associated with trees of the understory with smaller height and diameter than the average. Their presence was associated also more strongly where there are wettest three months than with annual rainfall.

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Ana Malhado and others, Drip-tips are associated with intensity of precipitation in the Amazon rain forest. BIOTROPICA 44(6):728-737 2012.

LEUCAENA RECOVERS DRY FORESTS IN PUERTO RICO

Dry forests, after almost complete disappearance in 1940 from southwestern Puerto Rico are returning. Forest fragments, even less extensive than a hectare, retain former species. However, dominant in mixture with them and wherever deforestation had been complete is *Leucaena leucocephala*, an introduced species.

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Ian A. Ramjohn and others, Survival and rebound of Antillian dry forests: Role of forest fragments. Forest Ecology and Management 284:124-132 2012.

LIDAR PREHARVESTING PROPOSAL FOR AUSTRALIA

This article reviews how tree size and undergrowth affect the efficiency of clearfelling operations, and explores the application of remote-sensing technology to harvest planning. It is concluded that using remote-sensing to evaluate the interactions between the factors could optimize harvesting systems, and better selection of machinery.

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Muhammad M. Alam and others. Improving the productivity of mechanized harvesting systems using remote sensing. Australian Forestry Journal 75(4):238-245 2012.

ACACIA THINNING IN VIETNAM

Thinning at 2 ½ years was explored to accelerate sawlog dimensions of 15 cm small-end under bark. On a site capable of >25 m^3/ha/yr with 871 trees /ha, thinning to 600 stems/ha produced notable effects in 6 months and by 5 years from planting had produced 20% of the volume in log-sizes.

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C.L.Beadle and others, Thinning increases saw-log values in fast-growing plantations of *Acacia* hybrid in Vietnam. Journal of Tropical Forest Science 25(1):42-51 2013.

CHARCOAL IDENTIFIED IN BRAZIL

The anatomical structure of wood, in general aspects, is constant during the carbonization process using temperature of 450°C. Vessel diameter was found significantly different between charcoal of *Vatairea guanensis, Mezilaurus itauba, Calophyllum braziliense, Qualea acuminata*, and vessel frequency in *Vatairea guianensis, Manilkara huberti, Qualea acuminata*, and *Simarouba amara*.

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Graciela Ines de Bolzon de Muñiz and others, Charcoal anatomy of forest species, Cerne 18(3):471-477 2013.

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long-standing plantations can provide high levels of density and species richness in the understory.

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Thais Almeida Lima & Gil Vieira, High plant species richness in monospecific plantations in the Central Amazon. Forest Ecology and Management 295:77-86, 2013

MOSO BAMBOO CARBON IN CHINA

Of 500 native species of bamboo native to China, moso (*Phyllostachys*) is the most important in terms of distribution and timber value. It contains from 4.7 to 5.9% of China's carbon, ranging from 70 to 85 Mg/ha in the middle subtropical regions and from 35 to 45 Mg/ha in the southern subtropical regions. With quick and low-cost regeneration, rapid growth and short rotation, occluded carbon, and high economic and ecological values, moso can be an important carbon sink for China.

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B. Wang and others, Biomass and carbon stock in moso bamboo forests in subtropical China: Characteristics and implications. Journal of Tropical Forest Science 25(1): 137-148 2013.

POST-FIRE PINE REGENERATION IN CHINA

The approximate successional trend is from pine shrubland to pine forest to pine-evergreen broad-leaved forest to evergreen broad-leaved *Castanopsis-Lithocarpus* forest. In the early successional stage of *Pinus yunnanensis* there is lower floristic richness and species diversity that in later stages. Natural recovery is more efficient than plantations of the same species.

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Cindy Tang and others, Regeneration, recovery, and succession of a *Pinus Yunnanensis* community five years after a mega fire in central Yunnan, China. Forest Ecology and Management 294:188-196 2013

AMAZON FIRE EFFECTS

A study of forests affected in 10 years by one, two, and three fires was based on 50 plots in Roraima. Forests affected by one low-intensity fire showed only slight evidence of alteration of composition. Heavily impacted forests lose their primary forest characteristics. Their structure and composition shift to those of successional forests.

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Haron Abraham Magalhaes Xaud and others, Tropical forest degradation by mega fires in the Northern Amazon. Forest Ecology and Management 294:97-106 2013.

STRUCTURAL PROPERTIES OF MALAYSIAN TIMBERS

The properties of Malaysian timbers have been based on only small clear samples, not structural sizes for which they may be used. For selected commercial species modulus of

elasticity was found to be consistent between the two sizes of samples. However, bending strength showed a weak correlation, suggesting a need for testing structural sizes.

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Mohd Jamil and others, Relationship between mechanical properties of structural size and small clear specimens of timber. Journal of Tropical Forest Science 25(1):12-21 2013.

FIRE RECOVERY IN THE ANDES

Forest recovery is strongly hampered by non-forest species. Forest density, species richness, and species composition increase with elevation. There is no evidence of seed-dispersal as a limitation for recovery. Forest recovery at higher elevations was apparently due to cooler and moister conditions. The most abundant forest species on deforested sites, *Myrsine coriacea*, is seen as a suitable species for montane forest restoration.

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Denis Lippok and others, Forest recovery of areas deforested by fire increases with elevation in the tropical Andes. Forest Ecology and Management 295:69-76 2013

CARBON IN REMAINING SINGAPORE FORESTS

Primary and 60-year-old secondary forests remain in the Bukit Timah Nature Reserve in Singapore. In the primary forest on the hilltop and upper slopes above-ground carbon was 168 MgC/ha. In the secondary forest on lower slopes and valleys the above-ground carbon was 104 MgC/ha. In the primary forest half the carbon (biomass) was above ground but in the secondary forest only 38 percent was there, most of the rest in the soil.

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Kang Min Ngo and others, Carbon stocks in primary and secondary tropical forests in Singapore. Forest Ecology and Management 296:81-89 2013.

NATIVE RESTORATION IN PLANTATIONS IN CHINA

In a 12-year-old *Acacia* plantation treatments included thinning, and thinning and underplanting. Shade tolerance of native species was the most important characteristic in the response to treatment. Thinning increased natural colonization of native species. These under openings formed dense thickets preventing other species from entering, suggesting that thinning should be moderate.

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S.F. Yuan and others, Can thinning of overstory trees and planting of native tree saplings increase the establishment of native trees in exotic *Acacia* plantations in South China?. Journal of Tropical Forest Science 25(1):79-95 2013.

The International Society of Tropical Foresters' web site is still up and running, at least for the time being, and twenty special reports can be found there:

http://www.istf-bethesda.org/specialreports/document_list.htm

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