

CFA Newsletter



No.64

March 2014

ISSN 1750-6417

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CFA Newsletter

is the newsletter of the Commonwealth Forestry Association

Editor: Alan Pottinger

Contact: The Crib, Dinchope, Craven Arms, Shropshire SY7 9JJ, UK

Tel: + 44 (0) 1588 672868

Email: cfa@cfa-international.org

Web: www.cfa-international.org

The views expressed are not necessarily those of the CFA.

How much forest would there be if we did not know how much forest there has been?



Monitoring changes in forest cover has moulded conservation actions.

We often take for granted our global knowledge of forest area and forest resources. Yet it is only over the last 90 years that we have had any understanding of the global forest resource. That knowledge has changed the shape of how forests are viewed by the public – and it has clearly influenced the investment of vast sums of public and private money in forestry.

One could say that forests today are in part the way they are because we understand their extent, quality and potential. We know for example that if we were unaware of the rate of conversion of forest land into agricultural land we would have blissfully missed the implications for tropical broadleaf forest. We would not understand the important changes in terrestrial carbon stocks

related to climate change. Donors would not have been mobilized to invest in improving forest management in countries where forest resources are at risk – in part because the risks would be far less understood.

In today's world of readily available satellite imagery of the entire planet we often forget that as late as 1922 we did not have a good overview of the world's forests. In 1923 Rafael Zon and William Sparhawk provided the world with the first comprehensive assessment of global forest resources. In their two volume set of some 1 555 pages they described forest area, volumes, growth rates, policies and regulation, harvest rates, production and export. In the ashes of World War I (in a time when virtually all correspondence still travelled by land or sea) they assembled an amazing baseline for the rest of us to follow.

In the preface to the 1923 work a call was made for international attention to forest monitoring – something that came to pass as the next world war was ending. In 1945 a group of member countries of the new Food and Agriculture Organization called for a global forest assessment to understand whether there would be enough wood for global reconstruction. The next assessment was published in 1948 and has continued periodically since.

Stretching back to 1923 how does this chain of forest monitoring link to improved forest management? A few specifics:

- Detection of widespread forest loss in the tropics led to over 60 years of investment in improving forest management, slowing the rate of change and increasing efforts to sustain tropical forests.
- Declining global growing stock emphasized the need to expand the area of planted forest, which has increased dramatically over the last 90 years.
- Forest stock losses are an important part of greenhouse gas emissions – forest area and growing stock changes detected through monitoring over time provided improved understanding of the role of forests in the global carbon balance. This in turn has resulted in a variety of emissions mitigations measures at local, national and international scales.
- Earth observing satellites such as Landsat were designed to monitor changes in earth resources – including the addition of a consistent source of long-term data on forest health, condition and extent over time. Their unique

contribution in tracking forest change in the tropics adds to that knowledge that can at present only come from ground-based measurement.

Would forests be different had we not known how they are changing? Certainly. Not knowing would have led to piecemeal attempts to focus investments in improving forests. As a society we would not have known that tropical forests are rapidly declining in area and in content nor would we have been clear about the need to plant new forests to provide much needed goods and services. We would not have known that climate change is affected by forest change – thus we would not have known that forestry can be part of efforts to reduce greenhouse gasses in the atmosphere.

In short, if we had not been monitoring global forests over time – we would likely have far less forest and thus fewer forest products and services in service of mankind. Thank you Mr. Zon and Mr. Sparkhawk!

K.G. MacDicken

Senior Forestry Officer/Team Leader
Global Forest Resources Assessment
FAO Forestry Department, Rome

REFERENCE

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Association news

2014 Young Forester Award launches



2013 Young Forester Award winner, Tolulope Daramola, on his placement in Canada

We are pleased to announce the launch of the 2014 CFA Young Forester Award. The Young Forester Award is designed to support the professional development of foresters below 35 years of age through the provision of a short-term work placement in a country other than their own and consists of a designated placement combined with a bursary of between £1000 and £1500 to cover a stay of around three months with an established and renowned forestry organisation in order to meet their professional interest. The hosts share the desire to support the development of the next generation of foresters.

Applications for the Young Forester Award 2014 are invited from students and young professionals below the age of 35 years on 30 June 2014 who are nationals of Commonwealth countries. Anyone who wishes to apply for the Young Forester Award should submit the Application Form (download from our website) before 1st June 2014. The Selection Committee will discuss placement options with short-listed applicants who will then be asked to write up to 250 words on what they want to achieve on the placement. Applications should be sent via email to cfa@cfa-international.org

The CFA raises the profile of forests at the Commonwealth Games



The value of trees and forests to the Commonwealth will be highlighted at this year's Commonwealth Games in Glasgow through a partnership between the Games organisers and the CFA. We are working on three initiatives:

- a **photographic display** of images taken throughout the Commonwealth's forests to be held in a gallery in Glasgow throughout the summer (visit our website to see some of the best images at www.cfa-international.org/gallery.php),
- a **website containing short interviews** with people throughout the Commonwealth talking about the importance of trees and forests in their lives, and
- a **twinning programme** between Commonwealth countries and the 14 Commonwealth Woods being developed in and around Glasgow (visit www.commonwoods.org.uk for more details).

More details on these initiatives are available on our website.

CFA Young Scientist Research Award 2014

We are looking for applicants for the CFA Young Scientist Research Award which has the objective to provide financial support to students undertaking forest-related research in pursuit of

an academic qualification. So, if you are up to 35 years of age, and require up to £500 to assist you with your research then please visit our website at www.cfa-international.org/youth/ysra.php for details of how to apply.

Forest Scenes

Forestry research issues in Malaysia



The Minister of Natural Resources and Environment of Malaysia (Datuk Seri G. Palanivel), visiting the exhibition held in conjunction with the Conference on Forestry and Forest Products Research 2013, accompanied by DG FRIM (Dato' Dr. Abd. Latif Mohmod), DG Forest Department Peninsular Malaysia (Dato' Dr. Hj. Abd. Rahman Hj. Abd. Rabim).

Forestry research in Malaysia is mainly conducted at the Forest Research Institute Malaysia (FRIM) and to a smaller extent in some local universities. Research in FRIM is currently focused on a wide range of issues including sustainable forest management, climate change and REDD+, biodiversity assessment and conservation particularly of threatened and endangered species, ecotourism and urban forestry, forensic forestry, herbal product development, biocomposites, second generation biofuels and green technology, traditional knowledge.

Since 1993, the Forest Research Institute Malaysia (FRIM) has held a series of conferences under the title, Conference on Forestry and Forest products Research, more commonly referred to as CFFPR, on an approximately biennial basis. The main purpose of these conferences is to showcase the research and research results of FRIM's scientists. Over the years the conferences have evolved to also include research findings and presentations from other national, and on occasion, international scientists. Four international conferences in the series were held

between 2002 and 2007, jointly organised with various international agencies such as the Asia Pacific Association of Forestry Research Institutions (APAFRI), International Union of Forest Research Organizations (IUFRO), Asian Strategy and Leadership Institute (ASLI), National Institute of Environmental Sciences (NIES), Japan, and Netherlands Ministry of Agriculture, Nature and Food Quality.

This year a national level CFFPR was held on 11th and 12th November which was attended by more than 300 researchers, scientists, policy makers, students and other stakeholders from local universities, research institutions, government departments and private industries. This conference represented a significant highlight in the cooperation between FRIM and the Forestry Department of Peninsular Malaysia as this was the first time that this conference was jointly organised by the two agencies. A wide range of papers were presented under the three main session themes of Forest and Environment, Wood and Non-wood Resources for Future Wood-based Industries, and Biotechnology and Natural Products. The session on Forest and Environment focused on issues related to biodiversity assessment, conservation and sustainable forest management. Among interesting presentations was the development of a mobile application database for Malaysian fauna to raise awareness and support conservation efforts. Another presentation which elicited much interest, particularly from the Forestry Department, was the planting of selected indigenous host and nectar plants such as *Baubinia audax* and *Baubinia bidentata* var. *breviflora* to attract birdwings (large butterflies of the Swallowtail family), in particular the Raja Brooke's birdwing, *Trogonoptera brookiana*, which is one of the most beautiful and well known ecotourism icons in several parts of the country. In the session themed Wood and Non-wood Resources for Future Wood-based Industries, several presentations focused on laminated engineered products, including from oil palm trunk and bamboo. The Sesenduk (*Endospermum diadenum*) clone FRIMsrp001 was highlighted as a promising substitute for rubberwood, the most popular timber for furniture manufacture, which is facing a supply shortage. Other presentations discussed the properties of various wood and non-wood products and new processing methodologies. Numerous papers on various plant extracts, their activities, uses including by traditional communities were presented in the session themed Biotechnology and Natural Products. The more traditional topics of silviculture, tree breeding and pests and diseases were also covered as were some social and economic aspects of forestry and ecosystem services.

The conference recognised the need for a strong linkage between forestry and forest products R&D and policy and application for effective and meaningful implementation at the Science-Policy interface. Research is urgently needed on the impact of climate change on tropical forests and the role of forests in mitigating climate change in Malaysia. The conference recognised that sustainability and sustainable forest management needs to be cross-cutting, encompassing economics, environmental, social and other issues. In addition, the multiple uses of forests and payment for ecosystem services (PES) need to be fully recognised and forestry researchers need to "Look Beyond Trees".

As the research institution tasked with undertaking forestry and forest products research in Malaysia, FRIM tries its best to meet the many demands of its varied stakeholders for both upstream and downstream research. Unlike comparable local

research institutions in Malaysia which undertake research on rubber, oil palm and agricultural crops, FRIM does not have its own dedicated research fund. FRIM is placed under the Ministry of Natural Resources, Environment and Innovation which unfortunately does not have any allocation for research. Currently, funding for FRIM's research projects are derived from many different sources through a competitive bidding process. For 2013, approximately 60% of FRIM's research funds came from its internal management budget, 24% from the 10th Malaysia Plan allocation, 9% from a special development budget, 3% from the Ministry of Science and Technology, with the rest coming from various international funding agencies, such as APFNet, ITTO-CITES, BioAsia, and others. The Ministry of Science and Technology is the main source of research funding for the nation but unfortunately funds from this source only represented a very minor portion (3%) of the total funds that FRIM received for research in 2013. This is due mainly to the Ministry's policy of placing more emphasis on other areas of research rather than forests, such as biotechnology and nanotechnology, and particularly on projects that have commercialization potential. Indeed, FRIM strongly encourages its researchers to submit projects with applied aspects or outcomes and/or projects with potential for commercialization, but there is also a need to undertake fundamental science projects such as inventory and biodiversity studies, conservation, pest and disease monitoring and others which do not have commercialization characteristics. Such basic research is still very much necessary to assist Malaysia in the conservation of threatened and endangered species, ensure the health and sustainable productivity of the forests and to meet the requirements of her international commitments.

As alluded above, one of the main issues faced by forestry researchers in Malaysia is the competition for research funds. Local funding agencies expect much more than publications in refereed journals as outputs; the outputs and outcomes of the research are expected to be relevant and applicable to the nation's development aspirations and in particular, suitable for commercialization. In addition to the competition and high expectations, funding, if successful, is usually allocated for one to two years only. This makes it rather difficult for forestry and forestry related projects to produce meaningful outcomes in such a short time.

Highly significant outputs and outcomes with impact require many years of dedicated and in-depth research. One recent and excellent example is the High Temperature Drying System (HTD) developed by FRIM. Research on this drying system began in the 1980's but it was only in March and October 2013 that the US and Malaysian patents were granted respectively. The HTD system was initiated in direct response to calls by the European Union (EU) for certain wood treatment chemicals, particularly borates, to be assigned to the "Repro-toxic Category" under the Dangerous Substance Directive 67/548. Boric acid had been the primary preservative used in the processing of rubberwood which is the most important timber for locally produced wooden furniture. In 2012, more than 80% of the exported Malaysian wooden furniture was made of rubberwood, generating an export value of approximately RM 5 billion (≈ USD 1.5 billion). The HTD system developed by FRIM is a cost effective, environmentally-friendly, chemical preservative-free treatment process which utilises high temperature (>100°C) drying with a rapid turn-around time, just-in-time production of two days. The treated timber has enhanced qualities, i.e.

reduced warping, better dimensional stability, enhanced grain features, increased density and hardness. In addition, the production capacity per kiln per month is 210 tons (14 cycles/kiln) compared to the conventional process which produces 100 tons (2 cycles/kiln). The technology has been licensed to a local commercial kiln-drying operator with exclusive rights for Malaysia and Thailand.

There are many challenges to forestry research in Malaysia but these can be overcome with the direct and full engagement, commitment and involvement of all forestry and forestry related sectors including the researchers, policy makers, politicians,

and industry. To ensure this, the authorities have to be further convinced about the continued importance of forest science, particularly in the areas of basic sciences, such as biodiversity, conservation, zoology, botany and ecology, so as to ensure the conservation and recognition of forests and biodiversity, Malaysia's national treasure.

Lee Su See

Forest Research Institute Malaysia, Kepong,
52109 Selangor, Malaysia
leess@frim.gov.my

Difficult start to fire season for Forestry Corporation of NSW



Cumberland fire crew in Hunter region

The start of the annual fire season in the Australian state of NSW was marked by extraordinarily hot and dry conditions and devastating blazes, and the State's largest commercial native and plantation forests Forestry Corporation of NSW played a significant role on several fronts.

While Forestry Corporation of NSW's estate largely escaped damage from the bushfire emergency, the corporation had to carefully balance its contribution to the emergency response as a fire fighting authority with its responsibility to protect its assets and control fires on its own estate.

Chief Forester Ross Dickson said this dual role was an historical legacy that continued to deliver positive results for both the corporation and the State's coordinated fire fighting effort.

"Forestry Corporation of NSW was first established as the Forestry Commission of NSW in 1916. In its early days, the Forestry Commission was the State's premier fire fighting agency and its primary concern was protecting its substantial timber assets from fire damage, and preventing forest fires from threatening surrounding communities," Dr Dickson said.

"Over time, small volunteer brigades that developed to support local fire fighting efforts, formed the NSW Rural Fire Service and it has grown and developed into a highly skilled, professional fire management organisation, with a strong contingent of professional staff and trained volunteers."

While Forestry Corporation maintains responsibility for containing fires on its estate, which spans more than two million hectares, today the Rural Fire Service assumes primary

responsibility for fire fighting when a fire becomes uncontrollable and threatens life or property.

However, because bush fire emergencies call for an 'all hands on deck' approach, Forestry Corporation and other land managers such as National Parks and Wildlife Services have traditionally continued to provide crews and equipment to support the Rural Fire Service throughout fire emergencies, regardless of the fire's location.

"This close partnership has been delivering results for many years. If a fire is on or around Forestry Corporation's estate, fire fighting crews benefit from the detailed local knowledge of our land management staff. In turn, the corporation's fire fighting staff gains valuable experience to hone their fire management skills to improve responses to future fires," Dr Dickson said.

The benefits of balancing forest protection and supporting the State-wide fire fighting effort were realised during the October bush fire emergency in the Blue Mountains, west of Sydney, which followed the eighth-driest October on record and a mean temperatures several degrees above average.

In the weeks prior, Forestry Corporation had been involved in managing 131 fires that either impacted State forests or required additional resources on the fire front or in incident management centres, and many of these blazes were still burning when the fire emergency was declared.

"While the Rural Fire Service took the lead in managing the declared emergencies, Forestry Corporation deployed crews and equipment to assist at various fire fronts and in management support roles. At the same time, we were also deploying relief crews to help manage numerous other fires on State forests that had not been declared emergencies," Dr Dickson said.

"While it's clear that cooperating with the State-wide fire fighting efforts helps protect communities and limit loss of life, the additional benefits to the corporation were starkly highlighted when one of the fire fronts was rapidly contained after entering one of our radiata pine plantations on the edge of the Blue Mountains."

November rains have reduced the fire risk for the short term, but with several months still to run in the fire season, Forestry Corporation is continuing to build on its partnerships with the Rural Fire Service and National Parks and Wildlife Service ahead of the warm summer ahead.

Forestry Corporation of NSW

The International Conifer Conservation Programme



Monkey puzzle forest, Chile Photo: Martin Gardner

The International Conifer Conservation Programme was established at the Royal Botanic Garden Edinburgh in 1991 to help conserve threatened conifers around the world by integrating in-situ and ex-situ conservation. Since then it has worked to conserve conifers and their associated species through a programme of research, education and cultivation.

This work has included establishing a network of over 200 'safe-sites' – properties in the UK and Ireland which participate in planting programmes to conserve, ex-situ, a genetic resource of known wild origin. The International Conifer Conservation Programme (ICCP) now monitors over 12,000 living plants across this network of forests and gardens.

Globally, about a third of the world's c.615 conifer species are threatened in their natural habitats. This means that based on a World Conservation Union (IUCN) assessment they are recorded as Critically Endangered, Endangered, or Vulnerable. Many more conifer species are classed as 'near-threatened' meaning they are very close to qualifying for one of the three threatened categories.

This decline in the world's conifers is a significant cause for concern: conifers account for over one third of the world's forest cover, partly thanks to the vast expanse of boreal forest in the northern hemisphere.

Elsewhere, conifers are often keystone species in the ecosystems in which they occur, supporting a wealth of other biodiversity. These forests also play an important role in helping to stabilise local and global climates through their role in carbon sequestration and regulating the water cycle.

As if all that wasn't enough, conifers have proved to be an incredibly important group of plants to humans. They account for the majority of the world's timber supply, and have yielded Taxol, one of the most potent anti-cancer compounds ever found in nature.

On local levels, conifers are often an important source of firewood and their seeds are sometimes eaten, for example 'pine nuts' and monkey puzzle seeds.

This local use of conifers has sometimes led, though, to species becoming threatened as such activities become unsustainable.

Threats to conifers are many and varied. Unsustainable logging is one of the greatest threats and this has led to many species around the world becoming threatened. The Alerce (*Fitzroya cupressoides*) from Chile, named after Captain Fitzroy who captained HMS Beagle on Darwin's voyage of discovery, and the monkey puzzle (*Araucaria araucana*) have both suffered from over exploitation in the past.

Chile has been a strong focus of the ICCP's work. When the project was launched it was thought that Alerce might be an important species to focus on, although it was represented in cultivation throughout the British Isles. Working with the University of Edinburgh, genetic analysis was undertaken on samples of cultivated Alerce from collections across the UK and Ireland. It was actually found that all the plants in cultivation were the very same clone.

This result prompted a targeted programme of collecting Alerce from the remaining native populations in Chile, work which continues to this day, in order to increase the genetic base of Alerce in cultivation. Resulting plants have been distributed around appropriate sites in the network of safe-sites, adding significant scientific and conservation value to these collections, which act as a sort of living gene-bank – a resource for future forest restoration projects in Chile.

A common question of ICCP is why not just store seed in seed banks? Banking seed is an important weapon in the conservation armoury, but doing this alone doesn't afford an opportunity to learn how to grow these plants.



Young Cilician fir in the nursery at the Royal Botanic Garden Edinburgh Photo: Tom Christian

Threatened conifers, and threatened plants in general, are often difficult to propagate or establish, and by propagating these threatened species in the nurseries at the Royal Botanic Garden Edinburgh (RBGE) and distributing them around the safe-site network, ICCP has the opportunity to tap into the extraordinary horticultural knowledge and heritage that exists in the UK and Ireland, to ensure that the all important knowledge of 'how' is documented as part of the process.

In 2006 the RBGE and ICCP published a book on the threatened plants of central and south Chile, detailing their distribution, conservation issues, and protocols for their cultivation. This book, published in English and Spanish editions, reflects the valuable knowledge gleaned from the approach ICCP has taken to the ex-situ conservation element of its work, and provides an important resource to conservationists in Chile.

Knowledge sharing and capacity building is an important component of in-situ conservation. A Darwin-Initiative funded project in Vietnam in the late 1990s led to the collaborative publication of the very first checklist and conservation assessment of the country's conifers, and resulted in the introduction of a new species to cultivation in 2002. In neighbouring Lao, regional work on the conifers of SE Asia led to the first formal training in plant taxonomy to be delivered in the country, based on the MSc in the biodiversity and taxonomy of plants which is run at the RBGE.

This internationally renowned course has provided an opportunity to develop links between the RBGE and countries where ICCP has worked. An endowment left to the ICCP specifically to help train taxonomists and conservationists from Chile has afforded many Chilean students the opportunity to travel to Edinburgh to study for an MSc, with some going on to achieve PhDs and making significant contributions to the understanding of Chile's flora.

More recent activities have seen the ICCP develop a new web-based resource on the threatened conifers of the world <http://threatenedconifers.rbge.org.uk/> This is based on the research into the conservation status of threatened conifers undertaken by the ICCP and collaborators around the world since 1991.

Being web-based, this information can easily be updated as our knowledge of these conifers increases, which reflects the often very fluid situation they are facing in the wild.

Elsewhere, new collaborations with botanic gardens in the SE USA have made it possible to establish ex-situ conservation collections of tropical and sub-tropical species it is simply not possible to cultivate outdoors in the UK and Ireland.

This has provided a home for materials collected on research trips to the island of New Caledonia, which is one of the world's hotspots of conifer diversity. 13 species of monkey puzzles (*Araucaria* spp.) are endemic to the island. They are highly threatened though due to open-cast mining, and RBGE has been actively researching the diversity of this group for many years.

The New Caledonia monkey puzzles, along with various other tropical and sub-tropical conifers including members of the Cupressaceae and Podocarpaceae families, have now been established in ex-situ conservation collections through the new collaborative project with Atlanta and Montgomery Botanic Gardens.

Closer to home, a new project in Perthshire, Scotland, promises to make a significant contribution to ICCP's ex-situ conservation efforts. The iCONic project www.iconictrees.org is a collaborative project between ICCP and the Perthshire Big Tree Country initiative. It aims to establish 10,000 trees of known wild origin in conservation collections throughout Perthshire in the next 10 years, and so far has participated in collecting expeditions to Bosnia, Lebanon, Chile and Japan.



*Collecting Serbian spruce in Bosnia
Photo: Tom Christian*

The Japan trip in particular was an important opportunity to renew our knowledge of the various threatened conifer species which occur there. Observations from the trip, together with the input of Japanese collaborators, will lead to updated, more accurate listings for these species on the threatened conifers of the world webpage and the IUCN redlist.

Future priorities for the ICCP include fieldwork to regions including the Caribbean and central America, the Pacific Islands and northern south America. Our current knowledge and understanding of the conifers native to these regions is relatively poor and field-based research is urgently needed to address this.

Tom Christian

Project Officer – National Tree Collections of Scotland and
the iCONic Project
Royal Botanic Garden Edinburgh



*Destruction caused by open-cast mining in New Caledonia
Photo: Martin Gardner*

How do you define smallholder benefits from commercial plantations on community land?

Like many donors supporting forestry projects in developing countries, the Australian Centre for International Agricultural Research (ACIAR) looks to find ways to enhance the benefits to communities and smallholders that come from adopting forestry systems innovations. In many situations this involves helping farmers or communities to improve the growth of their trees or plantations or to find ways of enhancing their income from various timber and non-timber forest products. Recently on a visit to West Kalimantan in Indonesia, I came across a different system of community forestry that is clearly providing significant benefits to the local communities but which is quite different from the more traditional concepts of providing benefits from commercial forestry.

ACIAR's forestry project FST/2009/051 is researching ways to increase productivity and profitability of smallholder plantations in Indonesia, particularly in South Sumatra, Riau and West Kalimantan where large-scale plantations of *Eucalyptus pellita* and *Acacia mangium* are being grown on short rotations for pulpwood. Under the Indonesian Government's policy much of the future expansion of plantations is to occur on land allocated to communities under one of four different models for implementing Community-Based Commercial Forestry. So it is important that we understand how best to ensure that benefits from forestry can be optimised and how the farmers want to interact with the forestry companies. Under the system operating in West Kalimantan, smallholder farmers receive a range of benefits from allowing a large Indonesian forestry company to implement plantation forestry on their community land.



ACIAR Project leader Daniel Mendham and Indonesian researcher Dwiko Permadi in 3 year old stand of *Eucalyptus pellita*

In the traditional community forestry model, we support the development of practical systems where the farmers can grow and manage the trees on their land and then sell them to the companies. In the system that operates in West Kalimantan, the farmers lease areas of community land to the companies and receive royalties based on the plantation yields (which relate to

management and productivity) when the trees are harvested. But most importantly they receive other benefits from the company, which from the farmer's perspective are more important than the royalties from timber production and which result in substantially higher livelihoods and other benefits than would just arise from direct involvement in plantation forestry.

At Peta Sebaran Tamanan HTI in the Sintang district, Finnantara (a subsidiary of Sinarmas Forestry) has a 45 year lease for plantation forestry from the Indonesian Government. However, the company had to negotiate access to land from 73 village communities as all of the plantations occur on community owned land. The company has been working in this area since 1995 and some plantations are now in their third rotation, although some others in relatively remote locations are now well beyond their intended harvest time due to poor road access.



Dayak women working in Sinarmas forestry nursery with *Acacia* seedlings and *Eucalyptus* cuttings

Under this model of Community Based Commercial Forestry, the company covers all the costs of establishing and managing the plantation on the community land and then pays the community members a royalty for the timber harvested (currently IDR15,000/m³) after 7–9 years. The company allows the farmers to plant 7.5% of the area with rubber and provides them with improved quality rubber clones. The company has also assisted the farmers to plant rice on appropriate sites and provides a road network, where previously the only access was via the river.

In one community we visited (Tangang Batas sub village of Sumundai village – which is 80% Dayak and 20% Malay ethnic groups), each of the 102 households now has 3–4 hectares of rubber that they manage, from which they can harvest 60–80kg/ha/month of rubber latex which is sold to middle men for around US\$1/kg. Since 2003, this community has also earned IDR 1 billion in royalties from the timber harvested from the 1200 hectares of community plantations. Some of the royalties have been used to install electricity infrastructure and other community development needs and the balance is paid to individual households. While the company offers opportunities for the villagers to gain employment in plantation forestry activities, most farmers would prefer to grow rubber because they can make significantly better returns from this use of their labour. The community leaders also commented on the benefits that have come to the village from the company's roads that provide access to the regional city of Sintang. Prior to the company's operations, the only access the villagers had to Sintang was by river or a very difficult walk through the tropical forest.



ACIAR Project staff meeting village leaders in Tanjung Batas, West Kalimantan



Sijambu village in West Kalimantan and ACIAR Project staff meeting with community leaders

At Sijambu sub village of Nangasigarak village, there are 107 households that are involved in plantation forestry. This community has 750 hectares of plantation established both through leasing of community land and leasing private land to the company. The company has been providing rubber clones, infrastructure and has established a credit fund that the villagers can access. Members of the community told us that from 5 hectares of rubber, they can produce 500 kg of latex per month working for 20 days. While the farmers are offered work in maintaining the plantations, the wage rate for plantation work has not changed since 1997 and farmers can make more money each day harvesting rubber. Many of the farmers use the income from rubber to send their children to universities in other parts of Indonesia. The villagers told us that they are concerned about the declining productivity in the plantations in the second rotation (which they perceive to be related to lower management of the plantation, especially control of competing vegetation) and therefore they are supportive of research being conducted on how to maintain plantation productivity.

At another village, Ratu Damai, we met farmer Pak Sumardin, who with the company's assistance began planting rubber in 1996. He now has 11 hectares of good quality rubber plantation, from which he is harvesting 1.5–2.0 tonnes of latex per

month, which generates his family an income of about IDR 11–12 million each month (approx US\$1,000/month). He has four children at university, has adopted some other children to help with the rubber harvest, and has now established another 10 hectares of young rubber plantation. He indicated that for him the greatest benefit from community forestry was the ability to establish and expand his own livelihood through harvesting and selling rubber.

Conclusion

This form of Community Based Commercial Forestry practiced in West Kalimantan clearly provides the members of various communities with a wide range of benefits, including income from timber harvesting royalties, livelihoods from their own rubber plantations, opportunities for paid employment, the provision of road and electricity infrastructure and the establishment of credit facilities. Most importantly, the farmers have choice in the nature of the benefits they receive and by having the support to develop and expand their rubber enterprises they are clearly better off than if all the benefits provided related to traditional commercial forestry enterprises.

Tony Bartlett

ACIAR Forestry Research Program Manager,
Canberra Australia

Meeting local and global challenges in forestry: XIV World Forestry Congress in Durban, South Africa, September 2015



The 2015 World Forestry Congress will be an excellent opportunity for all the world's foresters, stakeholder and decision-makers to engage in sharing the latest forest knowledge and exchange views and thereby further strengthen the nexus between forestry and sustainable development from local to national and international levels. It is hoped that the Congress will increase the visibility of the work of the FAO member countries and other partners on forestry – worldwide. The FAO Forestry Department is playing a catalytic role, strengthening its cross-sectoral partnerships and championing the role of forests and trees in a sustainable future that is free from hunger.

This Congress is unique – it is the first World Forestry Congress in the continent of Africa. It will be hosted by the Government of the Republic of South Africa in Durban from 7 to 11 September 2015. The Department of Agriculture, Forestry and Fisheries (DAFF) serves as the focal point for the preparations

at the national level. This will give the Congress a unique opportunity to highlight the role of forests, trees outside forests, rangelands and wildlife in the African continent, in the Southern African region and of course in South Africa. The Food and Agriculture Organization of the United Nations (FAO) provides technical and administrative support. The Congresses have been held under the auspices of FAO since the establishment of the Organization in 1945.

Further details about the World Forestry Congress, including registration and when to submit abstracts will be published on the FAO website in March.

Tiina Vahanen

Associate Secretary-General of the
XIV World Forestry Congress at the
Forestry Department of the Food and Agriculture
Organization of the United Nations (FAO), Rome, Italy

How Prepared is the UK to combat current and future threats to forests?

Two years ago (February 2012) a consignment of ash trees sent from a nursery in the Netherlands were confirmed to be infected by the fungus causing ash dieback, *Chalara fraxinea* was found in a nursery in Buckinghamshire. By October 2012, it had been confirmed by scientists from the Food & Environment Research Agency (FERA) to be present in the woodland sites within the natural environment. The story was quickly picked up by the national press and other media. Stories about the severity of the disease and our inability to control it spread proliferated very quickly, and the UK government quickly set up the Tree Health and Plant Biosecurity Expert Taskforce in November 2012 of which I became a member, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200428/tree-taskforce-tor.pdf. The Taskforce was an independent, multi-disciplinary group of scientists and social scientists drawn from the academic community. Our remit was to “provide advice on the current threats to tree health and plant biosecurity in the UK and make recommendations about how those threats could be mitigated”. What surprised and puzzled us was the interest and emotional responses that ash dieback generated amongst the general public. Some years previously another one of our iconic tree species, oak, was under threat by another fungal disease, the so called Sudden Oak Death, *Phytophthora ramorum*, which despite its potential threat to cause landscape level changes comparable to those caused by Dutch Elm Disease resulted in far less press and public attention. It is possible that the *Chalara* outbreak, now country-wide (Figure 1) was the final straw that broke the camel’s back as people had become *sensitised* to forestry due to what seemed to be a constant stream of stories of threats, both man-made, such as the proposed sell-off of parts of the Forestry Commission’s estate by the UK government in and natural, such as Sudden Oak Death and other pests and diseases.

The Tree Health Taskforce did not just consider ash dieback; we reviewed the whole range of threats, both current and future and highlighted a number of areas that we felt had contributed to the problems and made recommendations as to how these could be rectified. In essence, how could we stop yet another ash dieback scenario occurring. Our report was published in May 2013 <https://www.gov.uk/government/publications/tree-health-and-plant-biosecurity-expert-taskforce-final-report>. One of our major findings was that the UK as a whole lacked, or would shortly lack, enough trained personnel able to recognise and respond to threats to our forests and woodlands from native and alien pests and diseases. One of the more immediate outcomes of our report was the commissioning of research to determine how serious the situation actually was.

The results of this research were published by Defra on February 5 TH0115 *Strategic Analysis of Capability and Capacity to undertake Tree Health Research and Evidence Activity in the UK*. The report highlighted research and evidence themes identified by key policy stakeholders and forest researchers from the university sector, research institutes and forest industry.



Figure 1 Current distribution of ash dieback in the United Kingdom and Northern Ireland (source Forestry Commission, <http://www.forestry.gov.uk/chalara>)

Ten themes were identified – *Horizon scanning, Pathways and trade, Pest and pathogen biology and epidemiology, Detection and surveillance, Ecological patterns, Control and Management, Adaptation and resilience in forests and forestry, Governance and contingency planning, Economic evaluation and analysis and finally Public engagement, communication and citizen science.*

Three of the themes – *Pest and pathogen biology and epidemiology, Control and management and Adaptation and resilience in forests and forestry,* were identified as areas where existing research providers lack current capability and/or capacity in one or more types of expertise.

The report further highlighted that there are serious skills shortages in the UK in mycology, plant pathology and entomology, especially in relation to forest health. For example, in the university sector there are only two forest entomologists and one forest pathologist. When these key personnel retire who is going to be able to train the next generation of entomologists able to recognise and respond to invasive pests such as the Asian longhorn beetle (Figure 2)?



Figure 2 Asian long-horned beetle, *Anaplophora glabripennis* (<http://www.ars.usda.gov/is/graphics/photos/feb98/beetle.jpg>)

The report highlighted the widespread concerns about the lack of undergraduate and even more critically, the lack of MSc and PhD opportunities in forestry and tree health in particular.

Much of this has been a result of universities replacing specialist niche degrees with more broadly-based subjects perceived to be more attractive to students, and not replacing staff with whole organism forest-health related skills when they retired, even when suitable candidates were available with a consequent loss in those specific skills pertaining to forest health. A key recommendation of the report is that funding needs to be put in place to support postgraduate level teaching

and training support. This is to ensure a new generation of individuals capable of working in the area of tree health, assisting a smoother and more efficient transition from broad-based undergraduate biology degrees to PhD level research.

Another recommendation from the report is that a virtual *Centre for Tree health Science* should be created. This would be created by linking together those organisations currently active in the field and with appropriate training provision available.

Although research funding specifically targeting tree health has now been set aside and more is promised, it is to be hoped that the committees who decide on where the funding actually goes, take note of the findings of the reports discussed above and fund appropriate whole organism field-based research rather than continue to mainly fund molecular laboratory-based studies.

At Harper Adams University we are ideally placed to respond to the issues raised in the report. We run the only UK-based MSc degrees in Entomology, and are planning to launch exciting new developments in Plant Pathology and Nematology from September 2014. We also run a forestry-related MSc course in Conservation & Forest Protection and we are also planning to launch an MSc in Forestry Management from September 2014.

In addition, our undergraduate degrees in Countryside and Environmental Management and Wildlife Conservation and Natural Resource Management, both have significant woodland and forest-related elements. A number of recent key appointments and the recently launched multidisciplinary Centre for Integrated Pest Management (CIPM) mean that we at Harper Adams University are also in an excellent position to undertake research in this area.

Professor Simon R Leather

Professor of Entomology, Department of Crop and Environment Sciences, Harper Adams University Edgmond Newport Shropshire UK

News from Guyana

The Guyana Forestry Commission (GFC) has a legal obligation to lay annual reports and audited accounts in the National Assembly (parliament). For many years, possibly decades, the GFC has failed to comply but in early November 2013 eight sketchy and incomplete reports for 2005–2012 were among 41 reports from government corporations and agencies at last laid in the National Assembly. Professional accountants were appalled at the poor quality of the summary accounts and the formulaic checks by the Auditor General¹. The annual reports were evidently not written immediately after the close of each year, because some refer to events taking place long after the reported year.

The reports focus on process rather than performance, like most documents from the GFC, and reproduce chunks of the Forest Sector Information Reports which are carefully aggregated summaries of production and trade data. The summaries conceal, for example, the rapid trend towards commercial

extinction of dark, heavy, impact-resistant tropical timbers which are favoured for furniture and flooring in China and India. Guyana exports such timbers as unprocessed logs, contrary to approved national policies. The reports say almost nothing about the increased holding of logging and exploratory concessions by Asian-owned transnational enterprises. By mid-October 2013, Asian-owned companies controlled at least 79 per cent by area of medium- and large-scale logging licences and 75 per cent by area of exploratory permits.

It is the responsibility of the National Assembly to scrutinise the performance of the Ministries and their government agencies. The Assembly is just overwhelmed by this flood of 41 reports issued at one time. The Sectoral (= Select) Committee on Natural Resources has no supporting technical staff or secretariat but should deal with the also-delayed reports from the Guyana Geology and Mines Commission, the Guyana Lands and Surveys Commission and the Environmental Protection Agency. A partial commentary on only the eight GFC reports was prepared for the National Assembly. Problems common to the eight reports were treated in a series of five articles published

¹ [see <http://www.chrisram.net/?p=1456>]

by the independent newspaper *Stabroek News* in January 2014². The newspaper took up the questions surrounding two large concessions issued to a High Street coffee retailer based in India (Café Coffee Day) which had no known prior experience of tropical forest logging³. The Ministry of Natural Resources and the Environment and the GFC have yet to provide a technical reply.

This should be surprising because the Ministry and GFC are involved in international processes which place emphasis on better governance, improved public consultation and greater transparency. However, the GFC annual reports each year mention a high rate of staff turnover. Although the GFC runs training courses every year, it is not clear that these courses are geared to addressing the high turnover. Also, the many allegations of selective implementation of law and regulations and administrative procedures and of the prevalence of corruption are not particular to the GFC but are made across the whole spread and up to the apex of government. Each one of the international processes – such as the EU-FLEGT voluntary partnership agreement, the Extractive Industries Transparency Initiative, and the Forest Carbon Partnership Facility’s REDD Readiness Preparation coordinated by the World Bank – have requirements for public consultations which just do not fit with the traditional secretive command-and-control approach of the ruling Peoples Progressive Party.

² [<http://www.stabroeknews.com/2014/features/01/22/national-assembly-hold-public-hearings-guyana-forestry-commission/>
<http://www.stabroeknews.com/2014/features/01/23/national-assembly-hold-public-hearings-guyana-forestry-commission-2/>
<http://www.stabroeknews.com/2014/features/01/24/national-assembly-hold-public-hearings-guyana-forestry-commission-3/>
<http://www.stabroeknews.com/2014/features/01/30/national-assembly-hold-public-hearings-guyana-forestry-commission-4/>
<http://www.stabroeknews.com/2014/news/stories/01/31/national-assembly-hold-public-hearings-guyana-forestry-commission-5/>

³ [<http://www.stabroeknews.com/2014/news/stories/02/02/evidence-national-policy-followed-vaitarna-forest-licence-issue-experts-say/>

It is not a question of money – even the abbreviated accounts show that the GFC has a huge cash float each year and has been transferring surplus into a Cabinet-controlled slush fund instead of the Consolidated Fund which is mandated by law. In addition, there are over US\$ 60 million unspent in a trust fund administered by the World Bank for the Norway-Guyana MoU (November 2009) for which the Government of Guyana is not writing project proposals.

What the GFC and its associated international consultants in Winrock International and Wageningen University have focused on is MRV – monitoring, reporting and verification of areas and changes in areas of forest and non-forest, as surrogates for stocks and flows of sequestered forest carbon. It is unclear why such effort is being placed on forest carbon, when the reference level agreed by Norway and Guyana for annual deforestation has been set so high that there is little incentive to implement long-standing environmental regulations for forestry and mining to reduce casual loss and degradation. Moreover, the past President repeatedly assured gold miners and large-scale loggers that it would be ‘business-as-usual’ with no restrictions ‘unless international monitors so required’; nothing about the obligation to comply with the laws or regulations.

It is small comfort that these problems are not peculiar to the forest sector. The entire government is in disarray, with the US Government concerned about the laundering of profits from drug smuggling and gun running in Guyana and the Guyana Government unwilling to take action about its dubious business colleagues. A one-seat margin places the combined Opposition parties in the National Assembly ahead of the Peoples Progressive Party which has been in executive power for 21 years and is not accustomed to being challenged in any respect. A technically inept judiciary means that constitutional crises are ever looming. And rising sea levels are increasingly threatening the empoldered coastal plain which lies below sea level, and where 90 per cent of the population lives on 5 per cent of the land; and the drainage system is a shambles. Not a happy country just now.

Janette Bulkan

CFA Governing Council

New developments in the conversion of woody fibre to fuel

The subject of the potential processes for the conversion of woody fibre to fuel was discussed in 2008 in *Biofuels from dedicated tropical plantation forests: it is time for detailed studies of the lignofuels options* by Gabus and Hawthorne (International Forestry Review, 10 (4) 563–572). Woody material, especially wood waste, as a source of renewable energy has been topical for some time, with frequent new developments occurring in the conversion process. Recently, an article in the June edition of *The Garden*, the journal of the UK Royal Horticultural Society entitled *Huge possibilities from a giant grass* (James Wong) described the potential of *Miscanthus* grass as a source of renewable biomass energy. With its frothy plumes of flowers and lofty habit, *Miscanthus* has

usually been known as a garden plant established as a backdrop in garden displays. But now a new sterile hybrid of two eastern Asian species, *M. x giganteus* can grow up to 3½ m yearly – even under UK conditions. Its sterile nature means that this hybrid cannot become an invasive species and it can grow on marginal land not suited to food production.

The leaves of the grass can be fermented for ethanol, and it is already being used in its untransformed state, mixed with coal, in conventional power stations, while the UK government has plans to fuel one in eight power stations with this new crop over the next twenty years.

Miscanthus is being used now, but developments with enzymes derived from wood-eating “gribble” – the tiny insects

called *Limnoria* which attack the wooden piling of piers – offer an even more exciting possibility for the future. Currently, to create liquid fuel from woody biomass the polysaccharides which make up most of these materials have to first be broken down to simple sugars, which are then fermented to produce ethanol, currently a prohibitively expensive process. But as reported in *Tree Frog: daily forestry news alert* on 4th June (see info@treefrogcreative.ca) researchers from the Universities of York and Plymouth in the UK, and the National Renewable Energy Laboratory in the USA have determined the structure of key enzymes used by gribble to digest wood, with a view to developing an industrial process to synthesise them. Similar enzymes, called cellulases which convert cellulose into glucose, have been found in fungi but those from gribble are believed to be so robust that they could be used in conjunction with sea water, which would lower processing costs and their robustness

would allow them to be used for longer and to be recovered and re-used. Presently the work is at the research stage, but as the chief executive of the programme said of the work so far: “This is an exciting step in realizing the potential of these important enzymes. It’s a double bonus; avoiding competition for land for food production as well as utilizing unused materials from timber and agricultural industries”.

It is interesting that the report on *Miscanthus* and that on the potential of enzymes derived from gribble stress that they would not compete with food crops for land – an attribute not possessed by, for example, maize or sugar cane which are presently used for the production of ethanol for renewable energy in the USA and Brazil respectively.

Jim Ball
CFA President

National trees

In January 2014 the Forestry Commission Scotland announced in a press release that the people of Scotland had chosen the Scots Pine (*Pinus sylvestris*) as the national tree of Scotland. The Forestry Commission Scotland ran a three-month consultation to choose it, involving over 4,500 people, of whom 52% chose Scots Pine as their favourite. Second was rowan (*Sorbus aucuparia*) with 15% and third was holly (*Ilex aquifolium*) with 7%.

The news led me to wonder just how many other countries have their own national tree, and I discovered from Wikipedia (see http://en.wikipedia.org/wiki/List_of_national_trees) that in fact there are 77, of which 16 chose one species or another of the genus oak (*Quercus*), followed by olive (*Olea europaea*). Italy has chosen both the oak and the olive as its national trees! Most national trees have been officially adopted, but a few are unofficial.

Some, like the Scots Pine, are obvious from the English name – for example the Cedar of Lebanon (*Cedrus libani*) is the Lebanese national tree, Brazilwood (*Caesalpinia echinata*) that of Brazil and Honduras Mahogany is the tree of Belize. Others are associated in peoples’ minds with the country, such as the Maple (*Acer*) with Canada, the Monkey Puzzle (*Araucaria araucana*) with Chile, the banyan (*Ficus benghalensis*) with India, or the Coconut Palm (*Cocos nucifera*) with the Maldives. Yet others are a little surprising – the rhododendron, which is an introduced weed in many countries, is the national tree of Nepal!

Here is a list of the national trees of Commonwealth countries. We would be interested to know any national trees, official or unofficial, that are missing.

Country	National tree	
	English name	Botanical name
Antigua & Barbuda	Whitewood	<i>Bucida buceras</i>
Australia	Golden wattle	<i>Acacia pycnantha</i>
Bahamas	Lignum vitae	<i>Guaiacum sanctum</i>
Bangladesh	Mango	<i>Mangifera indica</i>
Belize	Honduras mahogany	<i>Swietenia macrophylla</i>
Canada	Maple	<i>Acer</i>
Cyprus	Golden Oak	<i>Quercus alnifolia</i>
England	Pedunculate oak	<i>Quercus robur</i>
India	Banyan	<i>Ficus benghalensis</i>
Jamaica	Blue Mahoe	<i>Talipariti elatum</i>
Maldives	Coconut palm	<i>Cocos nucifera</i>
Malta	Gharghar	<i>Tetraclinis articulata</i>
Nepal	Rhododendron	Rhododendron
New Zealand	Silver fern	<i>Cyathea dealbata</i>
Pakistan	Deodar	<i>Cedrus deodara</i>
Scotland	Scots pine	<i>Pinus sylvestris</i>
South Africa	Real yellowwood	<i>Podocarpus latifolius</i>
Sri Lanka	Na	<i>Mesua ferrea</i>
Tanzania	African Blackwood	<i>Dalbergia melanoxylon</i>
United Kingdom	Pedunculate oak	<i>Quercus robur</i>
Wales	Sessile oak	<i>Quercus petraea</i>

Jim Ball
CFA President

Obituary

John D. Brazier 1927–2013



led, firstly, to his award of the 'Silvicultural Prize' of the Society of Foresters of Great Britain and secondly the award of 'Doctor of Science' from the University of Wales, Bangor.

John, a Fellow of the British Institute of Wood Science, also made a major contribution to the education of wood science in Britain, being Chairman of the Education Committee of the Institute for many years, as well as developing a series of courses which led to Institute qualifications. He travelled widely throughout the world giving presentations at conferences, and providing specialist assistance to a large number of timber Institutes and laboratories.



John Brazier was appointed to the Wood Anatomy section of the Forest Products Research Laboratory at Princes Risborough in 1948 and became its leader in the late sixties. Initially, he worked under the late Bernard Rendle on the structure and identification of hardwoods. He was to develop this area into a speciality while working on the new tropical hardwoods that were being imported into Britain at that time, particularly within the *Dipterocarpaceae*. He was to become a world authority in this area which led to his election to Fellowship of the International Academy of Wood Science in 1979. His expertise was to expand to cover plywood, especially that manufactured from tropical hardwoods, and he was to make a significant contribution to the derivation of the British and later the European Plywood Standards.

He devoted a large part of his professional life to the establishment of relationships between wood structure and tree growth in both softwoods and hardwoods and published widely in this field. He was closely associated with the British Forestry Commission in their selection of softwood 'Plus Trees' for breeding purposes by contributing to the characterisation of such trees in terms of desired anatomical features that would characterise high wood quality. This outstanding work

He was also closely associated with the Commonwealth Forestry Association being a member since 1951 and serving with distinction as both Chairman and on its Executive Committee.

John retired from what had become the Princes Risborough Laboratory of the Building Research Establishment in 1987, was awarded the Imperial Service Order for his contribution to wood science, and continued to take a keen interest in wood science education, gardening, and long-distance walking.

John died on the 24th November after a long illness which he bore with dignity.

John Dinwoodie
Princes Risborough

Publications

Afforestation and Reforestation Projects under the Clean Development Mechanism – A Reference Manual

UNFCCC secretariat

This manual aims to assist stakeholders in developing afforestation and reforestation (A/R) projects under the clean development mechanism (CDM).

It synthesizes the requirements with respect to the project cycle, project documentation, project validation and registration, and monitoring and verification of A/R project activities. The manual is also intended to serve as a reference guide as it brings together in one place the rules and



regulations applicable to CDM A/R projects and integrates the procedural, methodological and technical aspects of those projects.

This manual is not only a reference tool, but also an accessible guide for readers who are not familiar with the rules and regulations of the CDM, and wish to learn about it. The manual is complete and therefore can also be used as resource material in training and capacity building activities. You can access the manual at: cdm.unfccc.int/newsroom/factsheets/index.html

Indian Forestry Abstracts

Indian Forestry Abstracts (IFA) is a new venture of KFRI to present a comprehensive bibliography of current forestry literature published in India, along with an abstract for each citation. No such abstracting service exists for Indian forestry literature, although International ones like Commonwealth Agricultural Bureau Information system (CABI), AGRIS (FAO) and AGRICOLA (USDA) are widely consulted. With due respect to the international abstracting services, it must be noted that they do not adequately cover Indian forestry literature. Nearly 60% of Indian forestry research is unnoticed and hence lost from world forestry

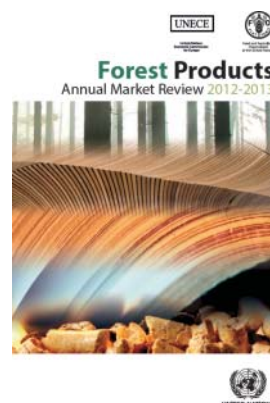


research. The purpose of IFA is to ensure that Indian publications get their due attention from the national and international academic community. A large country like India, with its unique forest types and practices need a country specific listing of research publications to make them more inclusive of Indian forestry, Indian institutions and independent researchers working in India. IFA is an endeavour to reach Indian forestry research to a wider national and international audience. Printed version of IFA can be had from Librarian, Kerala Forest Research Institute (KFRI), Peechi, 680 653, Thrissur, Kerala.

www.indianforestry.org

Forest Products Annual Market Review, 2012–2013

The UNECE/FAO Forest Products Annual Market Review, 2012–2013 provides general and statistical information on forest products markets in 2012 and early 2013 in the UN Economic Commission for Europe



region (Europe, North America and Eastern Europe, Caucasus and Central Asia).

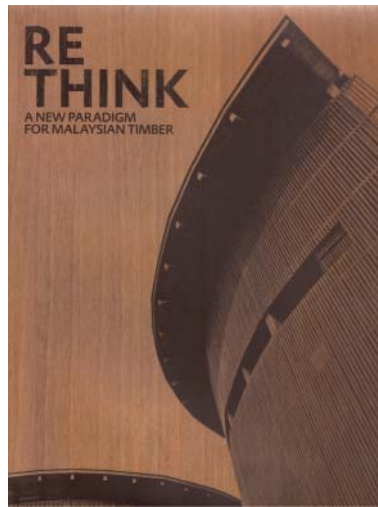
The publication is available for download in PDF format from www.unece.org/fpamr2013.html.

ReThink: A New Paradigm for Malaysian Timber

MPH Group Publishing

ReThink: A New Paradigm for Malaysian Timber is a carefully crafted collection of structures, buildings and interiors enhanced by the use of Malaysian timber. It provides an insight into Malaysian timber's creative presence in projects in Malaysia, Singapore, Mauritius and the Maldives, showcasing the beauty and durability of Malaysian timber.

Architecture is an endless journey to create and re-create man's relationship with the elements around him. This book is about man's constant dialogue with an age-old material: timber. Projects featured showcase the use of timber not just in expected forms,



but also in seductive contours and configurations, as well as in designs with traditional elements or twenty-first century expressions.

With perfect thermal-insulating properties, timber is the material for all seasons. Its low carbon footprint, perpetual renewability and other green credentials make timber the most eco-friendly material for one's building aspirations. Timber has also repeatedly risen boldly and ingeniously to design and engineering expectations, in ways that no other material has.

ReThink: A New Paradigm For Malaysian Timber is a call to get to know Malaysian timber with confidence and assurance of its durability, renewability, workability and above all, its breathtaking beauty.

Mapping for Rights

The Rainforest Foundation

The Rainforest Foundation UK's new Mapping for Rights web platform heralds a new era for forest governance in the Congo Basin. **Mapping for Rights** is an online platform which brings together expertise in the fields of participatory mapping, geo-spatial technologies and policy development concerned with community and indigenous land rights and improved forest governance in the Congo Basin. An initiative of the Rainforest Foundation UK (RFUK), the website provides policy makers, NGOs, the private sector, researchers and communities with easy access to accurate geographical information about the presence, land use and

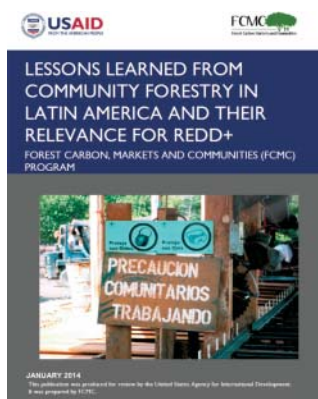


rights of indigenous peoples and other forest-dependent communities in the Congo Basin. It is a repository for participatory mapping data and other work that has been carried out by various organisations in the region over the last decade.

Authorised users will be able to view community occupation and forest usage alongside other claims on, and users of the forest, such as logging activities, REDD+ projects, palm oil plantations, mining and gas permits, infrastructure projects and strictly protected areas. The map also contains embedded multimedia content which provides insights into the culture, livelihoods and concerns of the communities. Visit the website at www.mappingforrights.org

Lessons Learned from Community Forestry in Latin America and Their Relevance for REDD+

Lessons Learned from Community Forestry in Latin America and Their Relevance for REDD+, a report and issues brief produced by the Forest Carbon, Markets and Communities program is now available on the FCMC website at www.fcmcglobal.org/documents/CF_Latin_America.pdf.



The report reviews lessons learned from decades of community forestry experiences in Latin America and generates recommendations and conclusions for REDD+. It is one of three regional reports on Africa, Asia and Latin America that FCMC is commissioning, as well as a global synthesis.

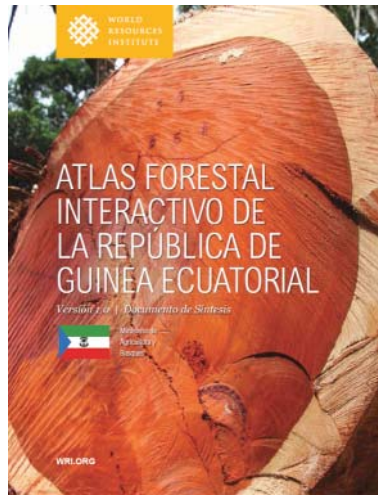
Interactive Forest Atlas of Equatorial Guinea

World Resources Institute

The Interactive Forest Atlas of Equatorial Guinea provides the most comprehensive and accurate overview of the African country's forests to date. WRI have published a blog post summarizing the findings of the report which can be found online at: www.wri.org/blog/equatorial-guinea-increases-protected-forests-63-percent-shows-new-atlas

The findings include the following:

- **Protected Areas in Equatorial Guinea Have Increased, while Forest Concessions have Decreased.** Protected areas increased by 63% between 1997–2013. Forest concessions decreased by 126% during the same time



- **The Overlap Between Forest Concessions and Protected Areas has Decreased.** The overlap between forest concessions and protected areas decreased from 130 hectares to 11 hectares (a decrease of 1,056%).
- **Foreign Companies Operate the Majority of Larger Forest Concessions.** Companies from Malaysia, Lebanon, Korea, and China represent the largest shares of logging concessions.

The Atlas allows users to view these trends using an interactive mapping application showing the allocation of forest land in the country, including forest concessions, protected areas, and community forests.

Around the World

Global: WWF and Mondi to sustain ecosystems through responsible business practices

WWF and Mondi Group announced that they will work together in a three-year strategic partnership that focuses on increasing environmental stewardship in the packaging and paper sectors. The partnership, which links one of the largest packaging, pulp and paper producers in the world with the world's largest conservation organisation, sends a strong signal that addressing environmental sustainability makes good business sense.

The partnership will focus on minimising the impacts of Mondi's operations on forests, climate and water, and encouraging sustainable practices in the industry.

The work programme will cover three main areas –

- **Ecosystem Stewardship** – building on the successful Mondi Wetlands Programme in South Africa, this work will focus on protecting high conservation value ecosystems in Russia and other regions and increasing the value and resilience of multi-functional production landscapes in South Africa.
- **Manufacturing Stewardship** –further reducing the water and climate footprint of Mondi's operations and promoting resource efficiency, recycling and longevity of

products, including the cascading use of wood and forest products where appropriate.

- **Product Stewardship** – further enhancing the environmental performance of Mondi's products through; among others – credible certification and efficient life-cycle use of materials in their paper and packaging products.

“As population grows and competition for land increases, forest-based industries that rely on renewable resources can play an important role in protecting and managing vital ecosystems,” says Jim Leape, Director General of WWF International. “Companies like Mondi that choose to contribute to sustainable resource use and nature conservation are ensuring their own long-term viability, while contributing to the well-being of people and the planet today.”

David Hathorn, Group CEO Mondi says, “Mondi and WWF have a successful association working together on projects. This international partnership enables us to join forces on a larger scale. Sustainable development is integral to our business, and we are very pleased to be working with WWF as we continue to reduce our footprint and share responsible practices across our industry and beyond.”

Mondi Group and WWF

China on track to meet 2020 forest targets, but concerns linger

China is on track to meet its 2020 target for expanding the nation's forests to cover 23 percent of its landmass to combat climate change and soil erosion, the State Forestry Administration (SFA) said recently. But some observers are critical of the massive reforestation, saying China is focusing on plantation forestry and ignoring the restoration of natural forests, which are still being lost.

Since 2008, China has planted 13 million hectares (130,000 square kms) of new forests, roughly the size of Montenegro, taking total forest coverage to 208 million hectares (two million sq kms) or just over 21 percent of its landmass. "We have completed 60 percent of our task to meet the target for forest coverage and aim at 23 percent (of the landmass) by 2020," Zhao Shucong, the director of the SFA, told reporters in Beijing.

China launched its reforestation programme in 1998, after devastating flooding of the Yangtze river was blamed on the loss of trees, which previously had acted as flood barriers. Large-scale deforestation in northern China has contributed to loss of topsoil, causing huge storms that sometimes carry sand and dust as far as eastern Canada. By regrowing its forests quickly, they now help conserve 581 billion cubic metres of water each year, while storing 8.4 billion tonnes of carbon dioxide

equivalent that otherwise would be released into the atmosphere, according to the SFA.

Reforestation has also contributed to the growth in China's domestic timber industry. But some experts question the sustainability of China's forestry programme, arguing it focuses almost exclusively on plantation forestry and ignores restoration of natural forests.

"The SFA only looks at forested land, but they forget the full picture," Xu Jianchu, a professor at the Kunming Institute of Botany, Chinese Academy of Sciences, told Reuters. He said most of the new forested land was low-quality, and pointed out that while new trees are planted rapidly, data shows that forest loss in many areas of China is increasing.

Local authorities often choose to plant non-native species such as fruit trees and rubber in order to maximise economic benefits, instead of opting for trees naturally suited to local areas. In arid and semi-arid regions, this has often worsened soil erosion and water scarcity instead of solving it, adding to food production problems. "They should also look at agriculture, and treat the ecosystem as a whole," said Xu.

uk.reuters.com

China's rubber boom obliterates southern forests

A major increase in sales of car tires in China is being driven forward by a burgeoning middle class. Many of the tires are made from local rubber. That's good for business, but bad for the environment.

A generation ago, Xishuangbanna was mainly tropical forest, but today more than a fifth of its land area is planted in rubber. Many of Xishuangbanna's country roads are now flanked by towering rubber trees, and no one here disputes that the rubber boom has helped many local farmers rise out of poverty. "Life used to be very difficult in this village," says Yu Zuai, a farmer in the village of Mandian. "But of the 70 families here, more than half of us have purchased cars. Our living standard has improved a lot and it's all because of the rubber plantations." The rubber boom began in Xishuangbanna in the 1960s and has accelerated since the 1990s. Yu says the average household in Mandian used to struggle to grow enough rice and corn to survive, but it now earns about the equivalent of a 20,000 euros (\$27,140) per year.

Rubber is native to the Amazon basin, and it was imported to Asia in the late 1800s. Xishuangbanna's farmers began planting it in the 1960s under orders from China's communist government, which wanted to establish a domestic rubber source for its growing industries. But although rubber has helped to pull many here out of poverty, it has also taken a heavy environmental toll. Xishuangbanna's forests used to be world-famous for their tropical biodiversity, and scientists say rubber plantations are a growing environmental threat. "Rubber monocultures have no other plants covering their surface and once the rains come

it just washes away the topsoil," explains Zhuang-fang Yi, a researcher at the World Agroforestry Centre, an international conservation organization with an office in the Chinese city of Kunming.

China accounts for about 6 percent of global rubber output, most of which is consumed domestically. And because rubber tends to be more valuable than exportable crops like rice or bananas, many in Xishuangbanna are still rushing to convert local forests and farmland into rubber plantations. But Zhuang-fang says the conversion of forests to rubber has had drastic effects on Xishuangbanna's trees, plants, soils and watersheds. And, because rubber is far more water-intensive than native plants, it is sucking water out of Xishuangbanna's tropical atmosphere too.

A recent study by the Asian Development Bank found that one hectare of rubber-plantation in Xishuangbanna loses more than 20 tons of soil to erosion each year. The plantations also lose more than a hundred tons of water as rain fails to penetrate the soil and refill groundwater tables, it found. "If there's no consideration of forest protection, then in the next 25 years Xishuangbanna is going to be much drier," Ms. Zhuang-fang says. Xishuangbanna's forests were also once home to rare species like Asian elephants and white-cheeked gibbons, but scientists say their habitat is fast disappearing.

The natural rubber industry is now a 22 billion euro industry in China, with 70 percent of the rubber being purchased for car tires. The country consumes about 4.5 million tons of rubber each year. In 2012 the government passed a five-year plan aimed

at turning under-performing rubber plantations back to natural forest. The plan also called for planting trees along stream beds to prevent erosion and restore animal habitats.

But rubber is still a main source of income for many farmers here, says 66-year-old Zhou Fabei, a retired agronomist who moved to Xishuangbanna in the 1960s from central Hunan province at a time when much of Xishuangbanna was still covered in dense jungles.

After working on rubber plantations for four decades, Mr. Zhou is now comfortably retired. Xishuangbanna's rubber boom hasn't come without an environmental cost, he admits, but it has also provided the foundation for his family's financial security. "Rubber is the main industry in Xishuangbanna," he says. "It's the key reason why people here are getting rich."

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UK woodland carbon goes on sale for first time

The first units of carbon dioxide set to be sequestered, or removed from the atmosphere, by woodlands validated under the UK's Woodland Carbon Code have been notified for sale for the first time as National Climate Week gets under way.

The Woodland Carbon Code (WCC) is the standard for woodland creation projects in the UK which generate verifiable Woodland Carbon Units (WCUs). These are measurable amounts of carbon dioxide (CO₂) removed from the atmosphere by the growing trees. The Woodland Carbon Code was a finalist in the Climate Week Awards 2014 category 'Best Initiative from Government or Public Services'.

Now, businesses seeking to compensate for their greenhouse gas emissions can buy 'Pending Issuance Units' (PIUs) from the woodland project owners. PIUs represent 'promises to deliver'

Woodland Carbon Units in the future once the trees have grown and the carbon sequestration has been verified.

Once verified, PIUs can be converted into WCUs and used to report against emissions. Verified WCUs will begin to come on stream when the longest-established WCC-certified woodlands are verified in 2016.

Dr Vicky West, climate analyst with the Forestry Commission, which administers the Woodland Carbon Code, explained, "PIUs represent units of woodland carbon to be sequestered in the future, and can only be used to report against emissions after they have been verified. However, buying them now allows companies to plan their compensation for future emissions while helping to tackle climate change and contributing a wide range of other environmental and social benefits."

forestry.gsi.gov.uk

Global: Forest change mapped by Google Earth

A new high-resolution global map of forest loss and gain has been created with the help of Google Earth. The interactive online tool is publicly available and zooms in to a remarkably high level of local detail – a resolution of 30m.

It charts the story of the world's tree canopies from 2000 to 2012, based on 650,000 satellite images by Landsat 7. In that time, the Earth lost a combined "forest" the size of Mongolia, enough trees to cover the UK six times. Brazil's progress in reducing deforestation was more than offset by losses in Indonesia, Malaysia, Paraguay and Angola, according to a study in the journal *Science*.

"This is the first map of forest change that is globally consistent and locally relevant," said Prof Matthew Hansen of the University of Maryland, who led the project team which developed the map. "What would have taken a single computer 15 years to perform was completed in a matter of days using Google Earth Engine computing."

Their study reports a number of key findings on forest change from 2000–2012 – based on the satellite imagery. The Earth lost 2.3 million square kilometres of tree cover in that period, due to logging, fire, disease or storms. But the planet also gained 800,000 sq km of new forest, a net loss of 1.5 million sq km in total.

Brazil showed the best improvement of any country, cutting annual forest loss in half between 2003–04 and 2010–11. Indonesia had the largest increase in deforestation, more than doubling its annual loss to nearly 20,000 sq km in 2011–12.

In the United States, the "disturbance rate" of south-eastern forests was four times that of South American rainforests – more than 31% of forest cover was either lost or regrown. Paraguay, Malaysia and Cambodia had the highest national rates of forest loss.

Overall, tropical forest loss is increasing by about 2,100 sq km per year, the researchers said.

The map will be updated annually and could be used to assess the effectiveness of forest management programmes. It could also help environmental groups monitor the impacts of deforestation – including biodiversity threats, carbon storage and climate change.

"This new monitoring approach can for the first time provide – on a global scale – transparent accountability for monitoring progress toward achieving real declines in deforestation," said Daniel Zarin, of the Climate and Land Use Alliance.

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Global: Smell of forest pine can limit climate change

New research suggests a strong link between the powerful smell of pine trees and climate change. Scientists say they've found a mechanism by which these scented vapours turn into aerosols above boreal forests. These particles promote cooling by reflecting sunlight back into space and helping clouds to form. The research, published in the journal *Nature*, fills in a major gap in our understanding, researchers say.

One of the biggest holes in scientific knowledge about climate change relates to the scale of the impact of atmospheric aerosols on temperatures. These particles form clouds that block sunlight as well as reflecting rays back into space. They can be formed in a number of ways, including volcanic activity and by humans, through the burning of coal and oil.

According to the Intergovernmental Panel on Climate Change (IPCC), they "continue to contribute the largest uncertainty to estimates and interpretations of the Earth's changing energy budget. If you go into a pine forest and notice that pine forest smell, that could be the smell that actually limits climate change".

One of the most significant but least understood sources of aerosols are the sweet-smelling vapours found in pine forests in North America, northern Europe and Russia. These aerosols have confounded climate models as scientists haven't been able to accurately predict how many of the particles form.

Now an international team of researchers say they have solved the chemical mystery by which the rich odours become reflective, cooling particles. They've long understood that the smell of pine, made up of volatile organic compounds, reacts with oxygen in the forest canopy to form these aerosols. The scientists now found that, in fact, there is an extra step in the process, what they term a "missing link". They've discovered ultra-low volatility organic vapours in the air that irreversibly condense onto any surface or particle that they meet.

"These vapours are so crazy in structure from what we had known before," said one of the authors, Dr Joel Thornton, from the University of Washington. "It turns out that this level of craziness is what gives them the special properties to stick to those smallest particles and help grow them up in size to become aerosols."

The scientists say that having a clear understanding of the way in which forest smells become aerosols will improve

the accuracy with which they can predict the ability of these particles to limit rising temperatures. "It's certainly crucial for explaining the response of the boreal forest to a changing climate," said Dr Thornton. "It's thought that the vapours being emitted from the vegetation in the pine forests are contributing roughly half of the aerosols over the forest," he said. "We've found the reasons how the vapours get converted into particles, so we are basically explaining around 50% of the aerosol particles."

The authors believe that this is playing a significant role in reducing the impact of rising temperatures. They argue that this effect is likely to strengthen in the future. "In a warmer world, photosynthesis will become faster with rising CO₂, which will lead to more vegetation and more emissions of these vapours," said lead author, Dr Mikael Ehn, now based at the University of Helsinki. "This should produce more cloud droplets and this should then have a cooling impact, it should be a damping effect."

The researchers sampled the air in the forests of Finland and carried out experiments at an air chamber at the Julich Research Centre in Germany. They believe that the discovery was down to a combination of technique and technology. "One very important thing is that before now, people haven't had the instrumentation to detect these ultra-low volatile compounds," said Dr Ehn. "When you pull them through a metal tube into your instrument they come into contact with the tube walls and they are lost, you won't detect them. We have an instrument that is as wall-less as can be, we have a very high flow of air and a very short inlet line so that it is almost sampled right from atmosphere."

The scientists stress that the new understanding is not a panacea for climate change as forests will stop emitting vapours if they become too stressed from heat or lack of water. However, Dr Ehn believes the vapours could have a significant impact in the medium term. "If you go into a pine forest and notice that pine forest smell, that could be the smell that actually limits climate change from reaching such levels that it could become really a problem in the world."

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Amazon: Optical trick made Amazon seem to grow more when dry

It always seemed odd. A decade ago, NASA satellite data suggested that the canopy of the Amazon rainforest grew faster during a drought. Apparently, this was just an optical illusion. In 2003, remote sensors showed that the forest canopy reflects more near-infrared light during a drought. Because young leaves are greener – and reflect more infrared light – than old foliage, analysts assumed that this was evidence that rainforests grew better during dry years.

A new study suggests otherwise. Douglas Morton of NASA's Goddard Space Flight Center and his colleagues, used

alternative sensing methods such as lidar to demonstrate that NASA's sensors were not seeing a greener canopy during droughts at all. It was a trick of the light – perhaps because fresh foliage growth casts more shadows in the canopy and so absorbs more infrared light.

"Seasonal moisture availability governs the balance between photosynthesis and respiration in Amazon forests," says Morton. In other words, rainforests thrive in the rain.

newscientist.com

