CFA Newsletter

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CFA Newsletter
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Keeping it natural

Atlantic forest, Sao Paulo, Brazil (Photo: WWF)

Changing times

Our trees and forests are now needed more than ever, to help our wellbeing, tackle climate change and help reduce biodiversity loss. National governments, local authorities and communities across the world must now join forces to protect and restore our trees and forests.

There is a real opportunity to do this in an economically viable way to help both economic and human health. The last few months have demonstrated how reducing human impact on the natural world can encourage nature to return and how essential it is for our wellbeing. Yet the current pandemic has also highlighted the relationship risks between pandemics and animal host populations. These risks are driven by deforestation and land use change, agricultural and livestock intensification and exploitation of wildlife. When we emerge from the current situation, we must not forget these learnings.

The pandemic means we must change for our own and our planet's health, turning around biodiversity loss and tackling the climate emergency. Critically we have 10 years to change course to decarbonise our economies and protect our natural environment.[1] Our trees and our forests have a critical role in this, providing livelihoods, homes for wildlife, storing carbon, protecting our soils and helping to drive water cycles. Yet deforestation continues and we are still losing an estimated 10 million hectares per year[2]. This ongoing destruction of nature will continue to impact us and must be stopped. There are solutions, and there is hope.

[1] UN Decade on Restoration and the evidence for change in the *Global Warming of 1.5°C, an IPCC special report*

[2] Global Forest Resources Assessment 2020

Protection

First and foremost, we must keep our existing forests standing, for once they are gone, they cannot be recreated. Securing the climate benefits of stable forests is an essential part of the climate solution and addressing the loss of biodiversity. Changing behaviours to protect our forests, stop deforestation, and forest degradation will require a concerted effort across societies, combining policy changes from governments and companies along with the practices of consumers.

Governments and financial institutions will need to play crucial roles in creating an environment where illegal and irresponsibly produced products and consumption are no longer tolerated. We need policies to stop deforestation and businesses must ensure they don't have negative impacts on people, the environment or wildlife. The impact of consumers, and their purchase decisions, will be key to the viability of products sourced from sustainable producers and supply chains. Consumers and Non-Governmental Organisations (NGOs) will have an increasingly important role to keep businesses and governments accountable.

No matter what causes deforestation and forest degradation there are routes to change, with programmes such as WWF's *Living Landscapes*. In the Malaysian State of Sabah using such an approach aims to protect remaining forests, but also ensures the sustainable production of agriculture and forestry goods, whilst restoring corridors and riparian reserves. Palm oil is a major commodity in the region and with demand still rising for vegetable oilsit is crucial to ensure production has minimal demand on land and the environment. The development of the *Roundtable of Sustainable Palm Oil* (RSPO) to support certified, sustainable, responsible palm oil, with approaches in with the new out with the old, is essential. This example, with a high demand product, highlights the importance of an integrated approach and that by thinking differently it is possible to help protect our forests. The Sabah example, where the State Government has committed to retain 50% of land as natural forest cover with 30% as fully protected, and a 100% RSPO certified oil palm production by 2025, aims to achieve a balance protecting Sabah's wildlife heritage and sustainable economic growth.

Looking ahead, long-term protection of forests, whether intact or newly restored, will sustain our impact and efforts of today. BirdLife International's *Forest Landscape Sustainability Accelerator* is advancing sustainable financing strategies at a landscape-scale, and is modelled on the innovation that powers start-ups in the technology sector. The Accelerator supports flagship landscapes with seed investment, connections, mentorship and training to tackle the sustainability challenge, for long-term protection and restoration of forests.

Right Trees, Right Places

As well as protecting our forests we desperately need to increase forest cover. We must bring some of our forests back. It is estimated we need to restore an area the size of Canada if we are to have any chance of tackling climate change. Forest restoration has great potential for additional carbon sequestration: restoring 350 million hectares of forest by 2030, as part of the Bonn Challenge[3], could sequester up to 1.7 gigatonnes of carbon per year.

[3] A global effort to bring 350 million hectares of the world's deforested and degraded land into restoration by 2030.

Workers tending seedlings of native trees for reforestation of the Atlantic Forest in Sao Paulo State, Brazil (Photo: WWF)

A sustainable future is key to our survival, and the survival and sustainability of our trees and forests is interlinked. The International Union for Conservation of Nature's (IUCN) principles of forest landscape restoration help to provide a framework for sustainable change. It is therefore so important to do this with the right trees in the right places.

There are three key routes to success, all of which need to be compatible with the rights and needs of local people, and recognising the impact of modifying ecosystems on human health and future pandemics:

1. Prioritise restoring natural forests, allowing natural regeneration where possible.
2. Plant trees where natural processes can't get the job done although blending approaches can lead to good outcomes.
3. Increase tree cover in agricultural landscapes through agroforestry and other approaches as this helps to increase carbon stocks in farmland, improves farm resilience to climate extremes, and offers economic diversification options for the farmers, which in turn can reduce pressure on standing forests.

Tree species are also key and where possible native species with genetic diversity should be the first choice. Where exotic non-native species are involved, they should be known and widely tested in the region and only planted if there is a clear socio-economic, cultural or ecological reason for doing so, with any potentially negative environmental impacts mitigated.

Natural Regeneration

Natural regeneration can play an increasingly important role in helping to reclaim areas for the world's forests, particularly in areas close enough to existing forests to benefit from the naturally biodiverse "seed bank". The richness in biodiversity and natural selection means the forest will regenerate well, and natural regeneration has an added benefit of often being inexpensive to implement.

The role of forests will come into their own in a warming world, especially in relation to water security and the ability of forests to help drive water cycles. Natural regeneration or assisted natural regeneration of forests can help with these roles

and have real value for landowners. It is often better for wildlife and people, promoting resilient, sustainable living landscapes and encouraging native plant diversity to thrive. So, keeping it natural can be a real win.

Governments and their policies will be crucial to helping assist natural regeneration efforts and ensure the future of our forests. With the right approaches and policies, increasing forest cover can benefit a country's people and its economy. Learning from successful approaches can inform policies promoting natural regeneration. An initial global map, estimating the extent, and enabling conditions, that help natural regeneration, has been supported by *Trillion Trees* and is due to be published in the summer of 2020.

Reimagining the future

Our health is inextricably linked to land use change, the way we produce our food, and the exploitation of our environment. Our trees and forests are an integrated part of that environment and key to our future. Therefore, considering a landscape approach and planning for the long-term, both economically and ecologically, to protect and restore our forests can have multiple benefits for people and nature.

From now on, we need to consider how we can keep our forests natural and balance the use of services they provide to help us in a sustainable way. We must keep existing forests standing and increase diverse native forest cover to help economies, with approaches that can enable us to produce food and timber sustainably, tackle climate change and ensure our well-being. Keeping it natural is a strategic choice and one where a reimagined future with forests and their true "value" will need to be at the centre of our decision making. We should embrace a new world order where we let nature into our thinking and allow it to take its course to regenerate naturally; as we also look towards regenerating our own lives in a different way.

Stuart Dainton
Head of Trillion Trees, WWF-UK, To find out more about Trillion Trees visit www.trilliontrees.org

Association News

Honouring the Life of Jim Ball (1940–2020)

Jim Ball on a CFA visit to Weston Park, UK, in 2006

It is with great sadness that we report on the passing of our past President, Jim Ball, who died in April of this year. Jim was not only a fine forester but also a warm-hearted and generous person who will be greatly missed by friends and colleagues around the world.

Jim was brought up in Troon, on the west coast of Scotland, although he went away to boarding school from the age of eight. His interest in nature and the outdoors was obvious from an early age, and he was delighted to be given his own self-assembly greenhouse at the age of ten. Being so close to one of the world's most famous golf courses clearly got into Jim's blood at a very early age and he went on to be a keen, and skilled, golfer.

Jim had a streak of independence and determination even as a boy. He would never claim to be at all musical, but at school he was keen to join the school orchestra. He observed that no one played the double bass in the orchestra, so although he was no great musician, he put his heart and soul into learning how to play.

Jim studied at Edinburgh University for his B.Sc in Forestry, graduating in 1962, followed by a post-graduate Diploma in Forestry (by research) at the University of Oxford the following year. Shortly afterwards he travelled to his first overseas posting, as District Forest Officer (DFO) in Uganda, from 1963 to 1969, where his duties included the management of natural forests and plantations, and the control of sawmills. Jim felt that forest management had suffered from lack of professional supervision in the immediate post-Independence years and he had to devote a significant amount of time to updating records, and revising and updating the Working Plans, as well as re-imposing the control of costs.

From 1969 to 1971 Jim held the post of Silviculturalist in the Research Division of the Uganda Forest Department, based in Entebbe but with national scope where his duties included responsibility for field trials and sample plots. He was also given the special assignment to update and revise the Standing Orders of the Uganda Forest Department, covering all aspects of a forester's duties from forest policy, through administration, law and all technical operations.

During this posting Jim undertook a work study of field operations and the revision of *The Standing Orders of the Uganda*

Forest Department, but more importantly he felt that he learned the "nuts and bolts" of a forest service, knowledge which was to stand him in good stead for the rest of his career.

Jim moved to the Kenya Forest Department in 1971 where as Silviculturalist, attached to the Research Division based in Turbo on a World Bank-supported pulpwood scheme, he was able to identify the cause of extensive death of *Pinus patula* which had been established on land formerly under wattle plantations, as shallow soil which did not hold sufficient moisture reserves to support this species over the long dry season.

Jim was recruited by the Food and Agriculture Organization of the UN (FAO) in 1974 as Plantations Specialist to a forest inventory and planning project. In 1977, however, the Project Manager was invalided out of Nigeria and Jim took over his post, later managing the successor project on forest management, combined with the role of Project Coordinator for the six projects which at that time made up FAO's forestry programme in Nigeria. As Project Manager (1980–83) of the forest management project Jim supervised specialists in forest inventory, forest management, work study, economics, fire protection and watershed management.

In 1983 Jim was reassigned by FAO to be Project Manager of the project Fuelwood Development for Energy, based in Khartoum, covering the northern half of the Sudan. There were a great many donor projects in Sudan, offering aid during the drought that affected the country at that time, with over one hundred in the forestry sector alone. The project that Jim ran was the largest of them in terms of staff and budget, and it became the vehicle for a multi-donor forestry sector development project, led by the World Bank, which transformed the traditional Forest Department into a Corporation. Jim was appointed Coordinator of the World Bank project, during which he led a team of specialists and consultants in forest plantations, savanna woodland management, firewood and charcoal stove development, economics and forestry extension.

As Coordinator Jim designed the World Bank project and led a team of short- and long-term consultants in administration, policy, law, sociology, finance and economics where the main achievement was the establishment of the Forest National Corporation, which still exists as a self-governing para-statal.

In 1991 Jim moved to the FAO headquarters in Rome as Plantations Officer where his duties involved the provision of technical advice related to forestry plantation development, including support to field projects worldwide. During this time Jim was able to introduce the estimation of forest plantation areas and the identification of trends as a separate topic in the Global Forest Resources Assessment (FRA), carry out the first study of mixed and pure forest plantations, carry out the first assessment of the importance of 'outgrowers' – farmers and smallholders who grow trees for industry, revitalize the International Poplar Commission, prepare a book on developments arising from the UNCED meeting in Rio, *The Challenge of sustainable Forest Management* which was translated into five other languages, serve three times as Secretary to the drafting committee of the FAO Committee on Forestry (COFO), and prepare the first *Strategic Framework* for FAO Forestry Department, incorporating inputs from COFO member countries and staff.

In 1999 Jim was appointed Coordinator, with a number of duties ranging from the National Forests Programme to communication, publications (including *Unasylva*), the Forestry Department website, relations with the forestry-related Conventions and the International Forum on Forests (later the UN Forum on Forests), secretary/rapporteur to the newly-established Collaborative Partnership on Forests, reports to Agenda 21 Chapter 11 (forests), and the organization of the Committee on Forestry (COFO).

Although Jim formally retired in 2001 he continued his association with FAO through preparatory work for the 2003 World Forestry Congress, held in Québec City, carrying out an evaluation mission to North Korea of an insect-control project, developing a database of sources of project funding, preparing the global overview for the 2008 Session of the International Poplar Commission, and various editing jobs through his role as an Emeritus member of the *Unasylva* editorial board.

Outside FAO Jim was appointed vice-chair of the Commonwealth Forestry Association in 2004, and was elected Chair in 2005, and President in 2010. During Jim's time with the CFA he helped transform the finances of the organization, chaired the Editorial Board of our journal, *The International Forestry Review*, and was a regular contributor to the CFA Newsletter. Jim was also the driving force behind the publication of *Commonwealth Forests 2010*, which remains the most comprehensive review of forests and forestry throughout the Commonwealth.

Jim was a stalwart of Commonwealth Forestry Conferences, attending many and being part of the peer-review process for voluntary papers for Conferences in Fremantle (2001), Colombo (2005) and Edinburgh (2010). Beyond the CFA Jim was also a Fellow of the Institute of Chartered Foresters (UK) and a member of both the Royal Forestry Society of England and Wales, and the Royal Scottish Forestry Society.

Although Jim made no secret of his feeling that his work was his hobby he also loved travel, photography, fine wines and was well-read and curious about most things going on in the world – the only reason he bought an i-Pad was so that he could get "The Economist" on a Thursday evening ahead of its appearance on newsstands on Friday morning.

Jim's vast experience of forestry gained though years of work in the field coupled with his high level of bureaucratic skills meant that he was held in great esteem throughout the forestry world, but Jim was also an exceptional character. He is fondly remembered by colleagues around the world as a person of great integrity, unfailing courtesy and good humour. His generosity with his time and experience meant that Jim was a great friend and mentor to many, and will be greatly missed.

Complied by Alan Pottinger with contributions from Jim's family, friends and colleagues

Forest Scenes

A new look at elm?

Large English elms dying of Dutch elm disease in the 1970s (Forestry Commission image)

Dutch elm disease probably remains one of the best-known examples of the 20th century of the devastation that can follow when an aggressive tree pathogen is accidentally introduced into a susceptible host population. Over the past century there have been two pandemics of Dutch elm disease, each caused by a separate introduction of divergent but related fungal species, now named *Ophiostoma ulmi* and *O. novo-ulmi* (Brasier, 2000). Between them, these pathogens have probably killed billions of elms during their destructive journey across the Northern Hemisphere, and essential to their extensive spread is an association with several bark beetle species which transmit the disease as they feed and breed on elms.

The two pandemics

During the 1920's and 1930's, Dutch elm disease killed many trees across Europe and the cause of that first pandemic has been identified as *Ophiostoma ulmi*. Forestry Commission's Chief Research Officer, Tom Peace, made a detailed study of the epidemic in Britain between the 1920s to 1960 and started to notice a marked decline in the number of trees affected by disease from the mid-1930s onwards. Indeed, by 1960 Peace considered that Dutch elm disease amounted to little more than sporadic flare-ups, with a similar decline also observed across mainland Europe.

However, as disease levels declined in Europe, the accidental arrival of *O. ulmi* from Europe into east coast USA in around 1930 initiated a new epidemic wave, and the native North American elms proved even more susceptible than many European elm species. As Dutch elm disease was now present in both Europe and North America, it was not anticipated that bringing shipments of elm logs from Canada to England in the 1960s would create any additional disease risk. However, these imports turned out to be the route for the introduction of another, more aggressive Dutch elm disease pathogen – later named *Ophiostoma novo-ulmi*. We now realise that this very virulent pathogen was a later introduction into North America probably during the 1940s. Unfortunately, its arrival went unnoticed alongside the damaging impact of *O. ulmi* in highly susceptible American elm populations. Over several decades, the work of Forest Research scientist Clive Brasier has provided vital insights into the origins and progression of both pandemics, including revealing that *O. ulmi* and *O. novo-ulmi* are anciently

divergent species which probably originate from different locations in East Asia and where, co-evolved with native elms, they do little damage.

Scolytus elm bark beetle on elm leaf (Forest Research image)

Resistant elms

In Britain, elm taxonomy has been fiercely debated for many years and recently 57 microspecies, separated by morphological characters, have been described by Sell and Murrell (2018). However, many floras recognise three elm species in Britain, *U. procera* (English elm), *U. carpinifolia* (smooth-leaved elm), and *U. glabra* (wych elm) but only the latter is considered a native. Alternatively, English and smooth-leaved are regarded part of the species complex *U. minor* (Field elm) which also includes many of the distinct varieties and clones dispersed across Britain (e.g. Cornish, Wheatley and Plot's elm).

Finding resistance to Dutch elm disease has been a goal for many tree breeders, with the Dutch getting the ball rolling in the 1920s. Sadly, this early work was undermined by the arrival of *O. novo-ulmi* and successful elm releases, which performed well against *O. ulmi*, were not resistant when exposed to the 'new' aggressive *O. novo-ulmi*. Other breeding programmes have since taken up the challenge of finding elms resistant to *O. novo-ulmi*, with some of the most influential and successful breeding programmes now operating in Italy, Spain and North America.

Asian elm species such as *U. parvifolia*, *U. pumila* and *U. wallichiana* tend to be the most resistant to *O. novo-ulmi*, whilst the most susceptible elms include North America species and the European species *U. glabra* and *U. laevis* (Martín et al., 2019). However, *U. glabra* and *U. laevis* often escape infection because they are less attractive to feeding elm bark beetles. For decades, breeding programmes have combined disease resistance of Asian elms with the local adaptability of European native species by crossing and then back-crossing selections. However, many resistant elms are adapted to the warmer regions of Asia, so have reduced growth and biodiversity value in northern latitudes compared to native or endemic species.

Some resistant elm cultivars have been available for decades. European releases Plantyn, Dodoens and Clusius date from the 1970s, whilst older American selections include Sapporo Autumn Gold and, since 1995, New Horizon which was relaunched in 2019. Other recent offerings from Europe include Nanguen (marketed as LUTÈCE), Plinio and San Zanobi. However, a major development is the selection and propagation of a series of European field elm (*U. minor*) cultivars from Spain that are highly resistant to *O. novo-ulmi*, including one named 'Ademuz' first planted in the UK in 2014.

Future of our elms

Half a century on since the arrival of a second and more damaging Dutch elm disease pathogen, the future of elms remains uncertain. There is no evidence that the pathogenicity of *O. novo-ulmi* has attenuated as the epidemic has progressed (Brasier & Webber, 2019), but although most mature elms have gone, young elms are plentiful, having suckered from the roots of *U. minor* clones or regenerated from wych elm seed. However, waves of disease continue to attack these young trees at 15–20 year-intervals when their stem diameter and bark thickness is sufficient to sustain breeding beetle populations (Brasier, 1996; Harwood et al., 2011), leading to intense, localised epidemics. This, in turn is followed by a crash in beetle numbers as suitable breeding material is exhausted, and then finally a recovery phase of elm re-growth until trees are large enough for the disease to return. These cycles of growth and death allow many young elms to remain disease-free in parts of the country, sometimes for up to twenty years before succumbing again.

Despite the continuing challenge from Dutch elm disease, there is a growing appetite to reconsider how to reintroduce elms, even if only on a limited basis. Elms with proven, durable resistance through crossing with Asian elms are available from reputable breeding programmes and offer many options for ornamental or urban plantings. Elms suitable for the wider landscape including hedgerows which will grow on into maturity are more limited, but the high level of resistance to *O. novo-ulmi* in *U. minor* cultivars such as 'Ademuz' could be part of the solution. Like English elm, they should be suited for at least southern Britain, and although clonal material is often criticised for lack of diversity, the naturalised and widespread disease susceptible *U. minor* in the form of English elm or other recognised varieties are already established as a series of clones that spread vegetatively.

We have yet to see if some of the resistant *U. minor* selections from elsewhere in Europe will thrive over decades under British conditions; cost may also influence how frequently they

can be deployed. However, some of the selections and other resistant elm cultivars form part of a series of trials initiated in 2000 by Butterfly Conservation in Hampshire to not only evaluate their potential as host plants for the rare White-letter Hairstreak butterfly, but their growth and visual appearance, together with tolerance of environmental stresses such as exposure, drought and waterlogging (Brookes, 2019). Information from these trials and other plantings of resistant elms in Britain (e.g. Kent Resistant Elms: Herling, 2014) could well play a critical part guiding the use of resistant elms in the landscape plantings over the next decade.

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Bangor University in Ghana – experiences and insights from recent study tours

Students and staff at the Form Ghana plantation in Asubima Forest Reserve, Central Ghana, July 2019 © James Walmsley

What do forestry programmes run by a university in North Wales, a former global empire, a small UK-based woodland charity and a small country in West Africa have in common? Very little, you might imagine. . .

Every other year, groups of ~25–30 students and 5–6 staff gather for two weeks in Ghana for Bangor University's bi-annual MSc Tropical Forestry study tour. But this is no ordinary study tour. The students attending have never met each other in person before; they are all part-time distance learning students,

typically coming from up to 18 different countries. Alongside their studies, these are professionals, typically working full-time in a wide range of fascinating roles, for example in plantation forest management in Zambia; forest reserve management in Rwanda; afforestation in Malawi, reforestation in Lestotho, forest research in Kenya, agroforestry in India, forest monitoring in Guyana. These students are exceptional – many of them in receipt of prestigious Commonwealth Scholarship Commission scholarships. The staff team members are equally diverse, including Professor Phillip Nyeko from Makerere University, a Bangor alumnus from 2001, and staff from Bangor with experience in The Gambia, Panama, Bolivia, Uganda, Canada, Portugal, Australia and Europe.

Gathering such a group together for two weeks leads to the most enriching learning experience. The itinerary for the study tour typically includes a week of 'traditional' study tour activities – guided visits to forest reserves, plantations, cocoa agroforests, sawmills, private farms and markets selling an incredible range of non-timber forest products (NTFPs). Yet it combines these visits with a very large element of student-focused activities, including several research projects, which culminate in a student-led research symposium at the Forestry Research Institute of Ghana headquarters in Kumasi.

Having led this study tour on three occasions (2015, 2017 and 2019) something that has surprised me is the number of unexpected links that exist between Bangor University, Ghana, Woodland Heritage and the Commonwealth, which has prompted me to write this short article. Purely by coincidence, since 2014, several Bangor alumni have been in touch, unprompted, with their *alma mater*, reporting their various links with Ghana. For example, Martyn Baguley (BSc Forestry, 1960) got in touch and recounted a project he had worked on in Ghana in 1994 relating to the economics of teak plantations and their potential to supply national electrification projects – ideal historical context given renewed interest in plantation forestry as part of reforestation efforts. Martyn also shared information about a fellow Bangor graduate of 1960, Elias Afanyedi, who rose to number 3 in the Ghana Forestry Commission. Meanwhile, James Sandom (BSc Forestry, 1973) contacted the university and reported that he had worked on several forestry projects in Ghana – he was able to provide updates on the latest situation regarding rosewood harvesting in northern Ghana. There are many similar stories. On every study tour to Ghana we encounter more alumni, highlighting the long tradition in Bangor University of educating people who go onto make substantial contributions to forest research, management and conservation across the world, including West Africa.

The first stop of the study tour is to the excellent Aburi Botanic Gardens in the hills overlooking Accra. The Gardens introduce (in a gentle manner) the immense task of 'tree

Visiting the Grevillea robusta planted by Prince Charles

spotting' in a country where a single hectare of natural forest may host far more species than the United Kingdom! The Botanic Gardens have also hosted numerous visits by royalty and dignatories and, as you might expect, trees have been planted in their honour. It is here that the links referred to in the title of this article emerge once again. One of the ceremonial tree plantings is a *Khaya senegalensis* (Mahogany) planted by HRH Queen Elizabeth II in 1961. Queen Elizabeth II is the Head of the Commonwealth – a group of sovereign nations whose members are nearly all former territories of the British Empire. The Commonwealth Scholarship Commission, the organisation that generously supports so many of the MSc Tropical Forestry students at Bangor University, is a direct consequence of the Commonwealth: eligibility is confined to applicants from developing Commonwealth countries alone. It was established in 1959 to provide educational opportunities and exchanges amongst member countries: since 2011 it has generously supported over 100 scholars with their MSc Tropical Forestry studies at Bangor University. The study tour provides a unique learning experience for forestry professionals from many different corners of the Commonwealth, who come together and share their expertise, knowledge, ideas and culture insights, and form many life-long friendships in the process. Such inter-cultural experiences are vital as part of attempts to improve the management of forested habitats across the planet.

The other ceremonial tree planting of relevance to this article is a *Grevillea robusta (*silver oak or silky oak) which was planted at Aburi Botanic Gardens by HRH Prince Charles in 1977. Prince Charles has been patron of Woodland Heritage since 2005. This is where this story comes full circle: Woodland Heritage has been a loyal and unstinting supporter of forestry education and research at Bangor University since before I arrived at Bangor as a PhD student in 2004: the importance of this unstinting support is very difficult to quantify. It includes numerous Garthwaite Bursaries which have enabled students (and staff!) to attend international symposia, as well as subsidised places on the excellent 'Woodland to Workshop' and 'Irregular Silviculture' courses, plus several substantial research grants relating to vital Acute Oak Decline research. Most recently, Woodland Heritage provided invaluable advice and support to the Bangor Forestry Students' Association (BFSA), enabling students to host a European meeting of forestry students in North Wales in April 2019. On a personal note, had it not been for my work with Woodland Heritage, I would not have had the privilege to visit Buckingham Palace for a royal Garden Party in May 2019, which is, of course, the official London residence of the Head of the Commonwealth. The former BFSA president, Sarah Ellis, was also privileged to join.

Take from this story what you wish. What I have taken from these experiences is that the world is full of surprises. Organisations, institutions and indeed nations that at first appear to have little in common may in fact have many shared interests and overlapping histories. Recognising these and building on them is a rewarding and productive endeavour that can yield unexpected outcomes. At a time of great political change and environmental concern, these are surely as important as ever.

Further reading:

Various articles on this webpage: https://www.bangor.ac.uk/natural-sciences/courses/distancelearning/articles.php.en

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Commonwealth Scholarship Commission – http://cscuk.dfid.gov.uk/

Forestry Research Institute of Ghana – https://www.csir-forig.org.gh/

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Tree Cities of the World

At the Arbor Day Foundation, planting trees is at the heart of our mission "to inspire people to plant, nurture, and celebrate trees." We are now in our fifth decade of planting trees and forests, in rural areas, in cities and towns, across our country and around the globe. We know that trees can change people's lives and that trees, in fact, provide the necessities of life itself.

It makes sense, then, that citizens and community leaders increasingly value community trees. They know that trees and forests are vital components of healthy, livable, and sustainable communities. Urban forests define a sense of place and well-being where people live, work, play, and learn. The need for management of our urban and community forests has never been greater, all around the globe: cities are hotter than ever, air and water pollution affect millions of people, and the frequency and intensity of storms is growing. Insects, diseases, storms, and the constant pressures of urban growth claim more trees every year.

The Arbor Day Foundation has long aimed to build greener communities around the world through recognition programs like Tree City USA and Tree Campus USA. In 2019, with support

from the United Nations Food & Agriculture Organization (FAO), we launched our first international recognition: **Tree Cities of the World**. Our first Tree Cities of the World, announced in February 2020, include 68 cities across four continents, from major metropolitan areas like Paris, France and New York, USA, to small towns like Unley, Australia. These communities are united in their commitment to ensuring that their urban forests and trees are properly maintained, sustainably managed, and duly celebrated.

To earn this recognition, each city met five core standards for managing city trees and forests:

STANDARD 1: ESTABLISH RESPONSIBILITY
The community has a written statement by city leaders delegating responsibility for the care of trees within the municipal boundary to a staff member, a city department, or a group of citizens – often called a "tree board."

Our intent is to set the stage for professional management of community trees and forests. While interested citizens often play a part in holding city leaders accountable and filling necessary management roles in the smallest towns, we know that trained arborists and urban foresters are best suited to deliver a safe, healthy, and growing urban forest to residents.

STANDARD 2: SET THE RULES
The community adopts policies, best practices, or industry standards for managing urban trees and forests. These rules describe how work must be performed, where and when they apply, and penalties for noncompliance.

In the U.S., we have a legal system for adopting local laws and regulations, but we know that other systems may be in place internationally. The U.S. legal system is also underpinned by a fundamental separation of public and private property that may not exist elsewhere in the world. Therefore, we have chosen a highly flexible standard that includes the adoption of professional standards for safety and conduct, or the adoption of ISA Best Management Practices as ways to meet this standard.

Paris, a Tree City of the World

STANDARD 3: KNOW WHAT YOU HAVE
The community has an updated inventory or assessment of the local tree resource so that an effective long-term plan for planting, care, and removal of city trees can be established.

It is a time-honored saying that you must know what you have in order to manage it, so we have included this concept as a core standard. The manager must be able to report at least one of two key metrics: the total number of trees under city management, or the percent canopy cover for the municipality. Of course, those numbers should drive the goals of the city tree plan but having such counts of trees is the foundation of an effective tree plan. With the worldwide availability of free software tools, such as i-Tree Canopy, local leaders should be able to meet this standard without difficulty.

STANDARD 4: ALLOCATE THE RESOURCES
The community has a dedicated annual budget for the routine implementation of the tree management plan.

Annual budgeting by cities is hard, but it forces a discussion of priorities. By allocating any amount to community trees, city leaders have chosen the relative importance of this work. But we also know that some planting and tending tasks can be performed by residents, stretching budgeted resources to accomplish more. There are few other public works programs with a similar participatory component.

STANDARD 5: CELEBRATE ACHIEVEMENTS
The community holds an annual celebration of trees to raise awareness among residents and to acknowledge citizens and staff members who carry out the city tree program.

Celebrating accomplishments annually has been a hallmark of recognition programs offered by the Arbor Day Foundation since the very beginning. Positive reinforcement puts city trees and tree managers in the limelight for a moment, helping to raise awareness among both residents and political leaders of the importance of city trees and forests.

Local leaders may ask, "what do we get from this new recognition program?" One likely outcome of joining Tree Cities of the World is simply the benefits that healthy city trees and forests provide to the residents they serve, including reduced costs for energy, stormwater management, and erosion control. But annual celebrations such as Arbor Day or other festivals provide leaders a chance to show citizens that they care about the environment, and participation in the network builds connections to like-minded cities all around the globe.

For more information on the Tree Cities of the World program and to see how your city can become involved, please visit TreeCitiesoftheWorld.org.

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Marcus Wallenberg Prize: Model for forest growth during climate change

Joseph J Landsberg, Richard H Waring and Nicholas C Coops share the 2020 Marcus Wallenberg Prize for a model to predict forest growth in a changing climate. Satellite imagery offers the possibility to scale up the model to show how different environmental conditions affect the world's forests.

In the 1990s, Professors Joseph J Landsberg, from Australia, and Richard H Waring, from the USA, developed a model for forest growth that was based on simple plant physiological principles such as access to light, water, and nutrients. Professor Nicholas C Coops, then working in Australia, now in Canada, added advanced satellite imagery analysis to the model. The result is a powerful tool for predicting growth and assessing the risks to the world's forests posed by climate change. Joseph J Landsberg, Richard H Waring and Nicholas C Coops are awarded the 2020 Marcus Wallenberg Prize of two million kronor for their achievements.

A simple model for difficult calculations

Joseph J Landsberg and Richard H Waring became pioneers when they presented their Physiological Principles Predicting Growth, 3PG model, in 1997 to predict forest growth under changing environmental conditions. The model is also able to calculate how actions, such as thinning and fertilisation, affect forest growth and development.

Forest growth forecasts have traditionally been based on forest surveys of previous growth without the ability to include changes in silviculture or the surrounding environment. A process-based model such as 3PG can also include the effects of silviculture and environmental factors and give predictions of current and future forest production.

"Nowadays, we are extremely interested in the carbon balance of forests, how much carbon can be taken up by the forest via photosynthesis, how carbon can be stored in the forest in the short and long term, and how we can increase the forest's role in carbon binding with the aid of silviculture. 3PG serves as a bridge between traditional forest surveys and the large-scale, advanced carbon-balance calculations we need to carry out today", says Annika Nordin, Professor at the Swedish University of Agricultural Sciences and a member of the Board of the Marcus Wallenberg Foundation.

Nicholas C Coops has added satellite imagery analysis to the model to enable large areas of forest to be surveyed. Hence it is possible, among other things, to predict forest growth and carbon storage on a large scale, calculate how diversity of the forest landscape can be developed over time, and assess the risk of outbreaks of insects and large forest fires in inaccessible forest areas.

Used by both researchers and forest owners

From the start, Joseph J Landsberg, Richard H Waring and Nicholas C Coops have allowed researchers and forest owners open access to the model. This has contributed to its rapid dissemination and adoption.

3PG is now one of the world's most widely used models for assessing forest growth over large areas. Forest owners use it for purposes such as calculating volume, diameter and biomass development in fast-growing tree plantations. It can be applied to species as diverse as eucalyptus and pine, in monocultures and in mixed species stands, across different climates and landscape types from Australia and New Zealand to Europe and North America.

"Joseph Landsberg, Richard Waring and Nicholas Coops are awarded this year's Marcus Wallenberg Prize for providing us with a unique tool that is able to predict forest growth with great certainty in different environmental conditions in forest areas of varying sizes. The model has created a bridge between science and practice in forestry and helps us to be better equipped for the future", says Johanna Buchert, Chairperson of the Marcus Wallenberg Prize Selection Committee.

King Carl Gustaf XVI will award the 2020 Marcus Wallenberg Prize to these three scientists during a ceremony in Stockholm, Sweden.

The prize-winners

Nicholas C Coops was born in Melbourne, Australia, in 1968 and received his PhD at the Royal Melbourne Institute of Technology in Australia in 1995. Until 2003 he was employed at the Commonwealth Scientific and Industrial Research Organisation, CSIRO, Australia, where he initially worked on the 3PG model with Joseph J Landsberg and Richard H Waring. Today he is a Professor at the University of British Columbia, Vancouver, Canada, where he holds a Canada Research Chair in remote sensing. His research has focused on the use of remote sensing techniques to gain an in‐depth knowledge of forest structure, health, biological function and diversity as well as further development and application of the 3PG model globally. He has published more than 460 scientific articles in joint authorship in scientific journals.

Joseph J Landsberg was born in Harare, Zimbabwe, in 1938. He graduated from the University of Natal and spent a number of years in agricultural research before moving to Scotland, then England. He obtained his PhD from the University of Bristol, UK. His research has focused on the interactions between climate, weather and forests around the world. He was Chief of the Division of Forest Research in the Commonwealth Scientific and Industrial Research Organisation, CSIRO, from 1981 to 1988 and has been Adjunct Professor at Charles Sturt University, Bathurst, and at the University of Queensland, Brisbane – all in Australia. He was a visiting professor at NASA between 1993 and 1994, and at the University of Helsinki, Finland, in 1998. He is an External Member of the Finnish Academy of Science and Letters and was the holder of a Visiting Erskine Fellowship at the University of Canterbury, Christchurch, New Zealand in 2002. He has published four books concerned with the physiological ecology of forests as well as more than a hundred articles, reports and chapters in books.

Richard H Waring was born in 1935 in Chicago, Illinois, USA, and received degrees in Forest Management and Botany from the University of Minnesota. After receiving his PhD at the University of California, he was a professor at Oregon State University. He has been a visiting researcher at many universities and research institutions around the world – The Ecosystems Centre in Woods Hole, Massachusetts, and NASA headquarters in Washington DC, both in the USA; the University of Western Australia in Perth, Australia; the Swedish University of Agricultural Sciences in Uppsala, Sweden; the University of Innsbruck, Austria; the University of Edinburgh, UK; the Commonwealth Scientific and Industrial Research Organisation, CSIRO, in Canberra, Australia; and the University of Waikato, New Zealand. He is now Distinguished Professor Emeritus of Forest Science at Oregon State University, USA, and has published more than 130 articles in scientific journals, along with three editions of a textbook on Forest Ecosystems and numerous book chapters.

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Global ambitions for new Australian forest research group

The largest forestry research group in Australia officially opens at USC in March, banding together 80 experts eager to protect and restore the world's precious forest resources.

Director of the new USC Forest Research Institute Professor John Herbohn said the collaboration came at a time that the world was becoming increasingly aware of the vital importance of forests for life on Earth.

"It's becoming more urgent by the day that we come together to find the best way to tackle bushfire management, rainforest degradation, take advantage of the carbon sequestration capacity of forests and sustainability of the timber industry, among other challenges," Professor Herbohn said.

The institute consolidates USC's existing Forest Industries Research Centre, the Tropical Forests and People Research Centre, and the National Centre for Timber Durability and Design Life.

"Forest research has grown exponentially at USC in the past five years, so the time is right to join forces," Professor Herbohn said.

"USC already has a critical mass that uniquely positions us to work with experts, government departments, industry and community members to tackle the complex challenges we face globally," Professor Herbohn said.

"Domestically we can see the issues with fire management, and globally we see the substantial degradation and deforestation,

particularly across the tropics and the urgent concerns this raises about the amount of carbon this puts into the atmosphere," Professor Herbohn said.

"In recent years, there has been a real push for reforestation, so the USC Tropical Forests and People Research Centre has been looking at better ways of doing that, how the trees can be protected after planting, as well as the role forests play in carbon sequestration.

"The Forest Industries Research Centre has notably been looking into biofuels and sustainable management of industrial plantations, while the Timber Durability and Design Life Group seeks to find better ways of using timber to reduce the need for replacement."

Professor Herbohn said forests were vital for sustainable agriculture and food security and more than a quarter of the world's population relied on forest resources for their livelihoods and energy.

"Forests are at the heart of a sustainable planet," he said.

"Our challenges include ending poverty and hunger, responding to climate change, building resilient communities, achieving inclusive growth and sustainably managing the Earth's natural resources."

The institute brings together 80 experts who will also help train the next generation of leaders and inform international forest policies.

Among those joining the institute is Research Fellow Dr Nestor Gregorio, whose work on low-cost forestry techniques and reforestation recently featured in the *Washington Post*.

Also on the team is Professor Robin Chazdon, an expert in tropical forest restoration, who recently published in *Nature* journal about the high potential for restoration in the Amazon, especially in areas that have fairly recently been cleared or burnt and have not been used for agricultural production.

USC Deputy Vice-Chancellor (Research and Innovation) Professor Roland De Marco said the institute had the immediate benefit of being based in Australia.

"Australia's forest and wood products industries are recognised among the most innovative in the world, and USC is delivering the latest research to support it," Professor De Marco said.

"We also have extensive networks and global partnerships with leading industry bodies, government agencies and forest and wood products companies."

The launch event included keynotes from internationally renowned speakers, presenting on various aspects of forests and forest research as well as research funding agencies and key Australian industry and government partners.

usc.edu.au

The hidden toll of lockdown on rainforests

With fewer planes in the sky and cars on the road, lockdown has brought many benefits to the environment. So why is it harming tropical rainforests?

You might be forgiven for thinking that the global lockdown measures keeping us all at home can only have been good for the environment. Pollution in cities has decreased, wild animals have increasingly been spotted entering urban areas, and many new cycle lanes have opened up worldwide.

But in the world's tropical forest regions, it's another story. Environmental agencies have reported an uptick in deforestation during lockdowns, as well as increases in poaching, animal trafficking and illegal mining worldwide. The trends are alarming, environmental experts say, and could be hard to reverse.

"This narrative of nature having been given a break during Covid, it's not entirely accurate. It's accurate in cities and peri-urban areas," says Sebastian Troeng, executive vice-president of Conservation International. "But unfortunately in the rural areas, the situation is almost the inverse."

Troeng says it's too soon for detailed data on the scale of the problem since lockdowns began, but their offices have been receiving almost daily reports of increased deforestation from around the world. Brazil and Colombia have seen an uptick in illegal logging and mining; the Philippines has also reported illegal logging and wildlife trafficking; Kenya has reported increased bushmeat and ivory poaching, as well as increases in charcoal production, which has been illegal since 2018; Cambodia has seen an increase in poaching, illegal logging and mining; and similar reports have come from Venezuela and Madagascar.

Concerns have also been raised in Malaysia and Indonesia, which have the highest deforestation rates in South-east Asia, while in Ecuador, indigenous and afro-descendent communities have reported increased illegal mining in the Choco and Amazon rainforests.

There are two main factors that could be driving these trends, says Troeng. The first is criminal groups and opportunists expanding their activities, taking advantage of lockdown and diminished forest monitoring and government presence. The second is that people living in these rural areas are facing increased economic pressures and are forced to rely more heavily on nature for food and income. In some cases, such as Madagascar and Cambodia, there has been a large urban-rural migration as people lose their jobs in the cities or return home to be with their families during quarantine, which has put extra pressure on local environments.

"What worries me is that we're seeing these emerging trends, and they're not going to be reversed when Covid measures are lifted because they're related to economic factors. So my anticipation is that we're going to have to deal with this for potentially months and years," says Troeng.

Destruction of the rainforest will have severe ramifications. For indigenous and other communities who live there, it means a destruction of their way of life and may lead to conflict with the criminals who encroach on their territory. Studies have also shown that destroying rainforest ecosystems raises the odds of new pathogens making the jump from animals to humans. It also harms our ability to deal with climate change, as tropical forests are a key component in absorbing carbon dioxide from the atmosphere.

Amazon losses

One of Troeng's biggest concerns right now is the Brazilian Amazon, which is seeing unprecedented levels of deforestation, increased illegal mining in indigenous territory and widespread cases of Covid-19 through Amazon communities.

"That's what worries me. It's the confluence of several bad things happening at the same time," he says.

Brazil confirmed its first case of coronavirus on 28 February, but while most of the economy has since come to a halt as state and municipal government implement lockdown measures, deforestation has not. In April, rainforest destruction increased 64%, compared with the same month last year, according to the country's space research agency, INPE. In the first four months of 2020, rainforest destruction rose by 55%, compared with the same time last year, clearing an area of 1,202 square kilometers (464 square miles).

"What we have seen with deforestation is that people are not afraid because they apparently think 'the government is distracted with this health crisis, they won't pay attention to us'," says Ane Alencar, science director of the Brazilian environmental organisation, IPAM. "It's an opportunistic thing."

In March, the country's two environmental enforcement agencies, Ibama and ICMBio, cut their forest monitoring services. The agencies said mobility restrictions impeded their ability to carry out their tasks, and they couldn't risk the health of their staff or indigenous communities by trying to continue regular service.

Alencar says the majority of deforestation in 2020 so far happened through land grabbing of public property. Data released by IPAM show that the first three months of this year, 53% of this destruction took place on undesignated public land, protected areas and indigenous territories, compared to 38% last year. This will likely be turned into cattle land, Alencar says.

Deforestation in Brazil has spiked since last year, when President Jair Bolsonaro took office. Shortly after being sworn in, he began promoting the development of the Amazon rainforest, including indigenous reserves, calling it necessary to lift locals out of poverty. Last week, Bolsonaro authorised the army to deploy in the Amazon to fight fires and illegal logging. But environmentalists say this will not solve the problems on the ground in the long term. Alencar, and other conservationists, say the president's own policies have helped bolster land grabbing, as well as illegal mining and logging.

Forest fires

Conservationists are concerned that the increased deforestation they are seeing in lockdown will lead to even bigger forest fires during Brazil's dry season than were seen last year. Forest fires in the Amazon generally occur during the dry season when people employ a slash and burn method to turn forest into agriculture land. In 2019, Brazil's forest fires increased by 84% compared with 2018. Smoke from the fires led to a public health alert, causing respiratory illnesses in people living in nearby cities.

Many of Brazil's hospitals are already overloaded as they try to cope with cases of Covid-19. In early May, the country was declared the new global epicenter of coronavirus.

"It's already a nightmare, but it's going to be a triple nightmare," says Alencar.

Neighbouring Colombia has already seen an uptick in forest fires in the first months of 2020. In March, the country registered 12,953 hot points – thermal anomalies that indicate higher risk of forest fire – in Colombia's Amazon rainforest, according to the Amazon Institute for Scientific Research, SINCHI. This is almost three times more than the 4,691 hot spots indicated last year during the same month. While hotspots don't necessarily turn into fires, they are a close indicator; scientists say 93% of registered hot points are later confirmed as forest fires.

Miguel Pacheco, natural resources and livelihoods coordinator with WWF-Colombia, says quarantine measures have not been the cause of this increase in hotspots, but they could exacerbate the problem. Since Colombia went into lockdown in late March, monitoring flights by the armed forces that normally circle the region have significantly reduced. This could allow armed groups to take advantage of this lack of environmental control and continue to clear the area for cattle, coca plantation or other crops, as long as these quarantine measures persist, he says.

Environmental authorities also reported an increase in illegal logging, wild animal trafficking and poaching of large cats since quarantine began, says Pacheco.

In Colombia, lockdown poses the next in a long line of social changes that have fuelled deforestation. The destruction of rainforest has been a major concern since 2016, when the FARC guerrillas and the Colombian government signed a peace agreement. When the guerrillas demobilised from their holding areas in the jungle, it left the regions open to exploitation. In many areas, that meant armed groups and other organised crime cleared the forest for cattle and pasture land, particularly the Amazon states of Caqueta, Meta and Guaviare, some of the most affected.

The country's lockdown has brought to a halt all post-conflict development and conservation programmes with communities in these remote jungle regions, most of which also lack access to schools, hospitals or other public services. This has created another vacuum of other forest monitoring bodies like NGOs and government institutions.

"Everything is kind of on standby right now, and I'm sure that this will be reflected later on when the data reveals what actually happened in these territories," says Carolina Gil, northwest Amazon regional director with the Amazon Conservation Team in Colombia, who has been continuing her work from her home in Bogota during lockdown. Gil says even before lockdown, she received reports that park rangers in the Amazon national parks and protected areas had been receiving death threats from armed groups, warning them to leave their posts.

The way back

The solution to the ongoing deforestation and illicit activities is not so easy, says Gil. It involves better forest monitoring by governments, a crackdown on organised crime, and more programmes developed to understand and support communities in the rainforest. It also involves people in cities and overseas, helping them to understand the role they play in the deforestation of tropical forests, she says, by reflecting on how their consumer habits – from beef to cocaine – could be supporting it.

"We have to have a bit more judicious and rigorous reflections about deforestation, which does not necessarily end in the jungle. It can also happen in the centers where economic decisions are made," says Gil.

In the long term, conservationists agree that the solution to saving the world's tropical forests involves working closely with local communities, empowering them to be active conservationists in their own territories.

In some cases, this includes supporting traditional indigenous lifestyles of living with nature. In others, it involves developing sustainable alternative revenue streams that go beyond ecotourism projects. The latter has become a popular conservation strategy over the years, but, as the current global health and economic crisis indicates, is not always reliable, says Troeng. One option, he says, is for governments to pay local communities to work as forest rangers, take on reforestation projects, or work with them to develop sustainable forest products, like honey or bamboo harvesting.

In Colombia, Pachecho says deforestation hot spots reduced by up to 70% in 2018, and have stayed low, in areas where local communities have been involved in forest and landscape management programmes in the Amazon states of Guaviare and Caqueta.

But in the short term, it's important that governments make tropical forest areas a priority, and remain focused on enforcement activities, says Troeng. He cites two examples where this is happening. In the Philippines, after learning about increased illegal logging, wildlife trade and fishing in the country, the government stated publicly that it would not tolerate such activities and began to crack down on these crimes. In Peru, the agency that monitors protected areas is still in the field, and conducting patrols and enforcing environmental regulations when necessary, despite Covid-19, which is "encouraging", Troeng says.

It's also important for decision makers globally to be aware of these dynamics moving forward, as they begin to think about investing resources to kickstart the economy again. "I think there's definitely an opportunity," he says. "Let's figure out how we can reverse these negative trends because we're going to need it in the battle against climate change."

This ramped-up deforestation is not likely to go away when lockdown is lifted; the same economic pressures will still be there, as well as the opportunities to exploit the rainforest. Illegal economies often work faster than governments' and NGOs' ability to formalise and implement conservation strategies, says Gil. Of course, the longer these illegal activities are left to expand in tropical forest areas, the harder it will be to reverse the damages to these ecosystems and rainforest communities. This increases the urgency to think about new ways to tackle deforestation, both in the tropics and abroad.

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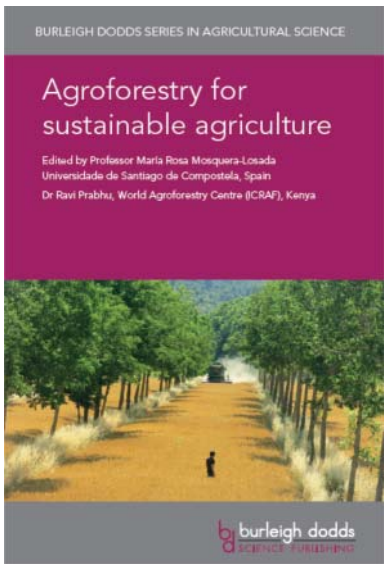
Publications

Agroforestry for sustainable agriculture

Edited by María Rosa Mosquera-Losada and Ravi Prabhu

bdspublishing

This volume reviews the latest research on the role and implantation of the main types of agroforestry, understanding and assessing the ecosystem services that can deliver and techniques for optimising agroforestry practice. The collection will be a standard reference for forestry and agricultural scientists in universities, government and other research centres in agroforestry.



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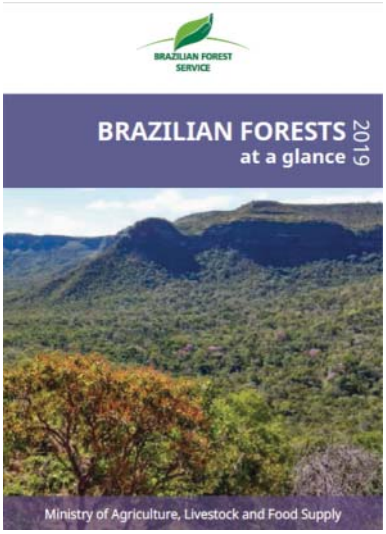
BRAZILIAN FORESTS at a glance 2019

Ministry of Agriculture, Livestock and Food Supply, Brazil

From the introduction by Valdir Colatto, Director General of the Brazilian Forest Service



The Brazilian Forest Service's (SFB) mission is to promote knowledge, sustainable use and expansion of forest cover, aiming to make the forest agenda strategic for the economy and the development of our country. Since its foundation, in 2006, SFB has strived to collect and update data and information, available from several national sources and produced by the main actors involved in management, use, conservation and restoration of our forests, in a concise way, in order to simplify data consultation.

Considering the challenges faced by our forested areas, offering reliable, relevant and updated data that can help the decision-making process and foster better forest resource managing is crucial. With this in mind, we launch this new edition of Brazilian Forests at a glance – 2019, that encompasses data from 2013 to 2018.

This publication serves anyone interested in the matter, and the information within it reveals the dimension and importance of natural and planted forests. For this, we offer society the forest information system, so they can face the challenges and embrace the opportunities for protection and sustainable production of forest goods and services.

Free to download at **http://www.florestal.gov.br/publicacoes/1737-florestas-do-brasil-em-resumo-2019**

Around the World

Rwanda: To restore forests, first start with a seed

How did Rwanda manage to restore more than 800,000 hectares – almost half of its original pledge – in less than a decade?

In 2011, when Rwanda committed to restoring 2 million hectares of land in a global effort to restore 150 million hectares of degraded and deforested areas by 2020 – it seemed like a big ask. The densely populated and geographically small African nation had many limitations which could stand in the way of this as well as a commitment to achieving forest cover increase of up to 30 percent of total land area by 2030 as part of the Bonn Challenge.

Aside from limited land availability – Rwanda's land area only encompasses 2.4 million hectares or 24,000 square kilometres – the country's terrain did little to support the efforts. The country's topography includes steep slopes, and it is the country with the highest mean soil erosion rate, according to the Food and Agriculture Organisation of the United Nations (FAO).

There were other factors too:

- A majority of the population – some 98 percent – were using trees as an energy source and the situation was not expected to change soon;
- 70 percent of the land was used by smallholder farmers, and the diversity of tree species was also low, with limited quality seed available.

But by 2018, Rwanda, along with South Korea, Costa Rica, Pakistan and China, was considered one of the lead countries in the world with its successful restoration programme. How did the country manage to restore more than 800,000 hectares – almost half of its original pledge – in less than a decade?

Part of the answer lies in the restructuring and strengthening of the country's National Tree Seed Centre, located in Huye, in Rwanda's Southern Province, some 133 kilometres from the country's capital. The centre is tasked with centralising the supply of tree seeds across the country, including establishing new seed sources, improving trees with growth deficiencies, and collecting and certifying seed. Until 2014, the Rwanda Agriculture and Animal Resources Development Board (RAB) managed the centre. But farmers complained that they were unable to grow plants from almost 90 percent of the seeds from the centre.

Emmanuel Nsabimana, a casual labourer at the National Tree Seed Centre, has worked planting trees around Huye for over 40 years. He remembers the attitude of local farmers and communities.

"Farmers were always bitter towards the centre because they thought that it was incapable of providing them with adequate seeds," he recalls. "Many would return the seeds."

But in 2014 the centre shifted from RAB to become a unit of the Rwanda Forestry Agency. In 2016, the International Union for Conservation of Nature (IUCN) – one of the founders and Secretariat of the Bonn Challenge, along with the German Government – stepped in to become one of the most significant contributors to the restoration of Rwanda's National Tree Seed Centre. IUCN also partnered with the Rwandan Government, the Belgian Development Agency (ENABEL) and the University of Rwanda (UR) to strengthen the centre.

IUCN supported capacity building, including the training of staff, providing equipment to the centre, upgrading and developing infrastructure like greenhouses, maintenance of the seed stands where seeds are collected form, and rehabilitation of seed store where seeds are kept before they are distributed, Jean Pierre Maniriho, Forest Landscape Restoration Officer at IUCN, tells IPS.

"Before partners came in, many things were not going well. For example, we did not have a cold room, which was bad for seeds. We were only two staff, and the stock was also old. But we have steadily improved until now," Floribert Manayabagabo, the production officer at the National Tree Seed Centre, says. His job is to make sure the seeds harvested at the centre are ready for market.

Manayabagabo thinks that the centre's success story is thanks to a combination of great partnerships that ensured the centre now has good infrastructure that includes nurseries, a laboratory, a modern cold room and five full-time staff. Maniriho says seed quality and quantity are essential to ensure sustainability and to meet demand.

Currently, 30 percent of the seeds come from the nearby 90-year-old, 200-hectare Arboretum of Ruhande, which surrounds the University of Rwanda. The seeds from the arboretum include 207 exotic and indigenous species, explains Emmanuel Niyigena, a field officer at the centre. The remaining 70 percent come from the outside of the centre, with a significant amount of seeds sourced from nine agro forestry-related cooperatives within Rwanda, and the remaining seed being imported from Kenya.

It's Eric Kazubwenge's job to make sure that the seeds from the centre never disappoint. He is in charge of seed inspection and regulation at the centre.

"We normally do a physical inspection to make sure that they are not damaged. Then we proceed with laboratory testing before we conduct other testing in the nursery where seeds are conserved to make sure they will not resist soil plantation."

He adds that multiple tests are continually carried out to ascertain how long a seed can grow in a nursery or how much moisture they need to survive.

Kazubwenge learnt many of these skills in Kenya, where he was trained through an IUCN partnership.

While Kazubwenge's training was highly technical, members of cooperatives involved in seed supply chain also received training. Kazubwenge tells IPS that previously it was very difficult for the cooperatives to supply to the centre the good seeds as they couldn't distinguish good from bad quality seeds. The Tree Seed Centre was also unable to test and prove the quality of seeds due to lack of equipment (seed laboratory was not well equipped). This combination of limitations meant only a handful of seeds provided to the forest growers before 2014 had been fruitful.

"Our stock is (now) full of good seeds in terms of quality and quantity, thanks to cooperatives that were trained in seed collection and selection through IUCN partnership," Janviere Muhayimana, who is in charge of the seed stock, tells IPS.

The centre also ensures farmers and the community are given the necessary information about the planting of the improved seeds. Nsabimana concurs: "There are no more complaints (from farmers) as the seeds respond well to the soil."

The researchers are optimistic about the future. Kazubwenge's vision for the centre's future involves advanced technologies that will allow him to "carry out genetic assessment and analysis because it gives us deep knowledge about the compatibility of seeds according to their origins".

Maniriho sees Rwanda on a good path to become a regional seed hub.

"Deforestation is a global challenge. What we have in Rwanda is what exactly is happening in Burundi or Malawi. We are importing seeds from Kenya today, but tomorrow others may be importing from us. We can make those connections that can encourage and strengthen the reciprocal partnership in seed supply and keep us from sending money overseas to only import seeds that we are sometimes capable of producing."

Rwanda's successful steps towards meeting its reforestation pledge proves a powerful example of how nature conservation can support livelihoods ahead of the IUCN World Conservation Congress, which will be held in France in January 2021. Held every four years, the Congress is a meeting of conservation experts and custodians, government and business representatives, indigenous peoples, scientists, as well as other professional stakeholders, who have an interest in nature and the sustainable and just use of natural resources. One of the major issues addressed will be the managing of landscapes for nature and people.

ipsnews.net

Urban forest webmap released

Treeconomics announced the launch of its brand new online tool – the Urban Forest Webmap. The Webmap displays the composition and values of a city's urban forest for the people who live and work there (see *CFA Newsletter* 82 – September 2018).

The Webmap is interactive, and displays results in a way that the non-arboricultural community can understand. Residents can see how much air pollution trees are removing, how much storm water is being diverted, how much carbon is being stored, percentage of canopy cover, the general condition of their trees, and also the amenity value of the trees. Furthermore, the site also show potential plantable spaces.

The Webmap was piloted in the London Borough of Islington in 2019, to complement an i-Tree Canopy and and i-Tree Eco Survey that Treeconomics had recently undertaken there.

Jon Ryan, Arboricultural Manager for Islington's Tree Services team, said "As a result of the i-Tree studies and Webmap, the borough was able to obtain political support and a substantial amount of funding for the planting and maintenance of new trees. It's great to see the results graphically rather than trying to tease the results out of data".

Chartered Forester

Pakistan: City to have 12 urban forests using Japanese method

Parks and Horticulture Authority (PHA) of Lahore has planned to create 12 urban forests in the provincial metropolis using the Japanese method Miyawaki.

Miyawaki is a technique pioneered by Japanese botanist Akira Miyawaki that helps to build dense, native forests especially in urban areas. The approach is supposed to ensure that plant growth is 10 times faster and the resulting plantation is 30 times denser than usual. It involves planting dozens of native species in the same area and becomes maintenance-free after the first three years.

In Lahore, work on four Miyawaki forests has been started. These four projects included Miyawaki urban forestation at Botanical Gardens Jallo where a total of 1,700 different plants were planted on a total area of 1.5 kanal, second is urban forestation at Greater Iqbal Park where 2,550 plants were planted on 2.25 kanal land, third is Miyawaki forest at Faisal Town C-Block Park where 1,350 trees were planted and fourth is Quainchi stop where over 1,000 trees were planted.

PHA Lahore Director General Muzaffar Khan while talking with The News said that the authority would create artificial tree plantation "Miyawaki" at 12 different locations in the city.

"We are creating artificial forests based on climatic conditions in which we are planting 16 types of trees, including jamun, mango, sage, mulberry and bamboo," he said adding trees are an invaluable gift of nature and their presence is equally important to humans, animals and birds alike. He said that different types of trees in the artificial forest would be useful in removing hazardous chemicals from the atmosphere. He maintained that employees of the authority especially field staff deserved special congratulations on creating Miyawaki in the city in such a short time.

thenews.com.pk

Global: Ecosystems the size of Amazon 'can collapse within decades'

Large biomes can break down like Jenga bricks once tipping point reached, research finds

Even large ecosystems the size of the Amazon rainforest can collapse in a few decades, according to a study that shows bigger biomes break up relatively faster than small ones. The research reveals that once a tipping point has been passed, breakdowns do not occur gradually like an unravelling thread, but rapidly like a stack of Jenga bricks after a keystone piece has been dislodged.

The authors of the study, published in the Nature Communications journal, said the results should warn policymakers they had less time than they realised to deal with the multiple climate and biodiversity crises facing the world.

To examine the relationship between an ecosystem's size and the speed of its collapse, the authors looked at 42 previous cases of "regime shift". This is the term used to describe a change from one state to another – for example, the collapse of fisheries in Newfoundland, the death of vegetation in the Sahel, desertification of agricultural lands in Niger, bleaching of coral reefs in Jamaica, and the eutrophication of Lake Erhai in China.

They found that bigger and more complex biomes were initially more resilient than small, biologically simpler systems. However, once the former hit a tipping point, they collapse relatively faster because failures repeat throughout their modular structure. As a result, the bigger the ecosystem, the harder it is likely to fall.

Based on their statistical analysis, the authors estimate an ecosystem the size of the Amazon (approximately 5.5m km^2) could collapse in approximately 50 years once a tipping point had been reached. For a system the size of the Caribbean coral reefs (about 20,000 km^2), collapse could occur in 15 years once triggered.

The paper concludes: "We must prepare for regime shifts in any natural system to occur over the 'human' timescales of years and decades, rather than multigenerational timescales of centuries and millennia.

"Humanity now needs to prepare for changes in ecosystems that are faster than we previously envisaged through our traditional linear view of the world, including across Earth's largest and most iconic ecosystems, and the social-ecological systems that they support."

The paper says this could be the case in Australia where the recent Australian bushfires followed protracted periods of drought and may indicate a shift to a drier ecosystem. Scientists were already aware that systems tended to decline much faster than they grew but the new study quantifies and explains this trend.

"What is new is that we are showing this is part of a wider story. The larger the system, the greater the fragility and the proportionately quicker collapses," John Dearing, professor in physical geography at the University of Southampton and lead author of the study, said.

"What we are saying is don't be taken in by the longevity of these systems just because they may have been around for thousands, if not millions, of years – they will collapse much more rapidly than we think."

Dearing said he was concerned that one of the possible implications of the study was that complete destruction of the Amazon could occur within his grandchildren's lifetimes.

"This is a paper that is satisfying from a scientific point of view, but worrying from a personal point of view. You'd rather not come up with such a set of results," he said.

A separate study last week warned the Amazon could shift within the next decade into a source of carbon emissions rather

than a sink, because of damage caused by loggers, farmers and global heating. Experts said the new findings should be a spur to action.

"I think the combination of theory, modelling and observations is especially persuasive in this paper, and should alert us to risks from human activities that perturb the large and apparently stable ecosystems upon which we depend," said Georgina Mace, professor of biodiversity and ecosystems at University College London, who was not involved in the studies.

"There are effective actions that we can take now, such as protecting the existing forest, managing it to maintain diversity, and reducing the direct pressures from logging, burning, clearance and climate change."

These views were echoed by Ima Vieira, an ecologist at Museu Emílio Goeldi in Belém, Brazil. "This is a very important paper. For Brazil to avoid the ecosystem collapse modelled in this study, we need to strengthen governance associated to imposing heavy fines on companies with dirty supply chains, divestment strategies targeting key violators and enforcement of existing laws related to environmental crimes. And we have to be quick."

However, the methodology was not universally accepted. Erika Berenguer, a senior research associate at the University of Oxford and Lancaster University, said the regime shifts paper relied too much on data from lakes and oceans to be useful as an indicator of what would happen to rainforests.

"While there is no doubt the Amazon is at great risk and that a tipping point is likely, such inflated claims do not help either science or policy making," she said.

The authors said their study was not a forecast about a specific region but a guide to the speed at which change could occur.

theguardian.com

India's wildlife is stepping into the open as forests stay tourist-free

When the lockdown was in full force, an eerie silence fell upon even our busiest cities. Deep in our forests, the situation has been much the same. "There is a cool breeze every morning and evening. With no vehicle movement on forest roads, everything is absolutely still," says N Naveen Kumar, a Forest Range Officer in Attakatti. "Animals roam freely, since they do not sense vibrations from vehicles on the road," he adds.

Naveen has been witness to some rather unusual sightings as a result. "I was able to spot animals in broad daylight; I saw the shy jungle fowl, the sighting of which requires luck, by the road." Birds such as wood pigeons have plucked up the courage to wander along forest roads. "I also saw hare, that usually venture out only when there are no people around. There is visible change. Animals are at ease," he says.

Around the early 2000s, V Ganesan, who has since retired as Field Director of Anamalai Tiger Reserve, says he saw a panther by the road in Anamalai during the day. "We were closed for a few months for maintenance. Animals can get a sense of what is happening around them; the moment they realised there was no disturbance, they started coming out," he recalls. "The situation is similar now, since there are no tourists visiting our tiger reserves and sanctuaries."

Elephants and *gaur* are also trundling about fearlessly now. Sachin Bhosale, Wildlife Warden, Meghamalai Division, reports spotting them along the Theni – Meghamalai road.

In the Nilgiris, sloth bears and leopards are happily roaming past estate bungalows, according to conservationist N Arun Shankar. Elsewhere in Uttarakhand, conservation biologist Bivash Pandav recently spoke, over a Zoom call, about a couple of elephants he spotted along the edge of Rajaji Tiger Reserve. (You normally need to drive deep in to spot wild animals.)

"Animals always keep some boundaries that they do not cross," says award-winning wildlife photographer Senthil Kumaran, adding that now, they are rethinking those boundaries. Another positive outcome of the lockdown, for wildlife, is the considerable reduction in the number of animal roadkills. "Along the Kallar corridor national highway, 8,000 vehicles pass by on one day," he points out. "A number of small animals get run over by these vehicles every day. Even bigger ones like pythons become road kill. Why, a few years ago, an elephant was hit by a bus in Hosur." With fewer vehicles plying through the forests, crossing the road is not a suicide mission for animals any more.

The hunt is on

Bivash is now documenting wildlife "in the vicinity of a section of National Highway 307 leading to Dehradun [linking it with Saharanpur in Uttar Pradesh], that is proposed for expansion" using camera traps.

He says that the lockdown has discouraged the organised gangs of poachers as well. "A complete ban on public transport and strict vigilance by the police on the movement of private vehicles has affected the mobility of poachers," he says, adding, "No major episodes of tiger, leopard and elephant poaching have been recorded during the lockdown period."

However, smaller animals such as black-naped hare are not having it that easy. "In Dindigul [Tamil Nadu], we have recorded around six cases in which animals were hunted for meat," says Arun Shankar, who was the former vice president of Palani Hills Conservation Council. "This can be related to the price of mutton and chicken going up and the difficulty in accessing them."

Sachin notes that he has documented eight cases of wildlife offences over the past two months alone. "Theni district is home to poachers," he points out, adding, "A lot of people have come back to their home towns and are hunting as a hobby and for meat. We are having a tough time, but are keeping vigilant."

Meanwhile, the safari animals of Top Slip, such as Mariappan, are finally getting a chance to put their feet up, since their routine of ferrying noisy tourists for a small trip in the forest, has now been put on hold. The tourists will surely be back, and in full force in all probability. But for now, it is eat-stroll-sleep-eat-stroll-sleep for Mariappan.

thehindu.com

Australia: Logging returns to NSW native forests hit by bushfires

Government logging has resumed in fire-damaged forests in NSW despite warnings that devastated bushland and endangered wildlife are too fragile to withstand further disruption.

Newly released documents from the NSW government's logging agency – the Forestry Corporation – reveal that at least 85 per cent of harvestable native hardwood forests in the south coast region was burnt in the fires. Despite this, in a letter to wood supply contract holders – released during budget estimates – the corporation said it remains "optimistic" it can meet its supply entitlements.

Independent NSW MP Justin Field said the government was acting as if the devastating fires had never happened. He said communities were "devastated to see logging return to burnt and unburnt forests across NSW."

NSW Environment Protection Agency mapping shows about 92 per cent of the area set for logging was burnt in the fires.

A NSW Forestry Corporation spokesperson said the state-owned logging company had worked with industry regulator the EPA to develop "appropriate mitigation measures" for post-bushfire logging, including conditions specific to each site, which "substantially increase the area of habitat protected".

In Victoria, that state's government logging agency, VicForests, has revealed plans to log 3500 hectares of forests burnt during the summer fires in the next few years, saying salvage logging will occur in areas where "most of the standing trees have been killed".

The agency's chief executive officer, Monique Dawson, has also levelled extraordinary criticism at internationally-regarded Australian ecologist Professor David Lindenmayer, saying the agency "does not accept his . . . opinions".

Conservationists, including Professor Lindenmayer, say salvage logging has a lasting effect on wildlife. They also say logging forests after bushfires increases future fire risk, damages soil and waterways.

"Salvage logging will have devastating consequences for forests and wildlife impacted by the fires," said Chris Schuringa, spokesman for the Goongerah Environment Centre in East Gippsland. Post-fire logging has already begun in a state park north of Dargo, in East Gippsland.

In March, the Goongerah Environment Centre wrote to VicForests head Monique Dawson to inquire about logging in fire-affected forests, referring to research by Professor Lindenmayer on the impact of salvage logging.

In her response, Ms Dawson said: "We do not accept the published opinions of Professor David Lindenmayer as reflective of evidence and do not consider him to be an authority in these matters."

Professor Lindenmayer, a researcher at the ANU and one of the world's most cited forest ecologists, described Ms Dawson's comments as "outrageous".

smh.com.au

Europe: Forests are crucial for building resilience in a post COVID-19 world

We all know the impact of COVID-19 will be wide reaching and ripple for decades. With health and people's livelihoods of central concern, how we build a more resilient and fair planet – with well-being at its heart – will be a key topic of conversation as we navigate the virus' impact.

While the exact cause and transmission of COVID-19 remains unknown, we do know that biodiversity is a vital factor in safeguarding against zoonotic diseases that pass from animals to humans. This highlights the intangible value of nature and biodiversity in its own right – its true value cannot be 'costed', in the same way its destruction cannot be offset.

Today, we see a new marker in the move towards a recovery that will prioritise this crucial role biodiversity plays in rebuilding a resilient planet, and making it a fairer one for people across the globe.

The European Commission's Biodiversity Strategy, published this morning, places a strong emphasis on the role of nature in the path to recovery. While this must always be aligned with the preservation of human and community rights, it is encouraging to see this narrative. Alongside health and wellbeing, the strategy also underlines how important biodiversity is for our recovery for two key reasons.

One: the economy.
The recent crisis has shown that companies that perform better on environmental and social factors typically fare better in economic downturns, especially those exposed to 'emerging economies' – ie. the countries where environmental damage of crucial biodiversity hotspots like tropical forests are most likely to occur.

Given that the IMF now estimates COVID-19 will cost the global economy $9 trillion, this raises the question of what precisely we're willing to gamble – in terms of potentially unleashing new pandemics – in order to continue damaging biodiverse-rich forests, landscapes and wetlands.

Two: our supply chains.
Many people might not have thought about the global supply chains behind products on the supermarket shelf until they disappeared from sight in recent months.

Not only that, but prioritisation of large supply chains in lockdown has hit smaller and peasant farmers – from France to

Honduras – hard. And this is despite the well-known evidence that shorter supply chains are more resilient and sustainable. To build a resilient economy in recovery, we must create fairer, more sustainable supply chains – ones that preserve biodiversity and do not go back to business as usual.

And a significant key to help tackle these biodiversity challenges? The protection of our tropical forests.

Our tropical forests are not only critical in halting climate breakdown, but they are also vast hotspots for biodiversity that are being destroyed at astonishing rates. Addressing the epic rates of deforestation, often driven by agricultural commodities like palm oil, beef and soya imported into the EU and fueled by funding from EU based financial institutions including household name banks, is vital to preserve the biodiversity we so badly need.

That's why it's encouraging to hear early soundings in this Biodiversity Strategy that measures on corporate governance may take the form of a legislative proposals addressing duty of care from businesses – and why it has been great to see the recent commitment from Justice Commissioner Reynders to bring in a new cross-sectoral EU law on mandatory sustainable due diligence. Together, this shows that the Commission recognises the need to ensure companies are held accountable for their environment, human rights and governance impacts.

Mandatory due diligence, where companies are required to identify, mitigate, prevent and report on environment, social (including human rights), and governance risks, could also play a crucial role in tackling the EU's global deforestation footprint – but only if it sets strong standards alongside effective enforcement.

It's important that we don't stop now. We must take this important new strategy and recent moves on due diligence as the starting shot. If we are to build a fairer and more resilient planet, with biodiversity at its heart, creating effective mandatory measures on due diligence for protecting our forests is a must.

The introduction of mandatory due diligence to tackle deforestation would be a clear signal that the EU wants to reward those countries and companies innovating on deforestation-free supply chains.

Critically, it would also be a clear act in support of the forest communities and grassroots organisations that are leading the fight to safeguard the world's climate-critical forests, who are often acutely aware of the profound hardship forest destruction will have on their local livelihoods, food systems, quality of life and culture.

Indeed, as our recent statement shows, the threats facing many indigenous people and land and environmental defenders during the lockdown highlight how any action to stop biodiversity loss and degradation *must* have a holistic and human rights-based approach.

COVID-19 has shown us that the risk of inaction in the face of global challenges is often bigger than the risk of actually taking action. If we are to take the driving force from today's Biodiversity Strategy and make it count, protecting our forests and doing so swiftly is essential for a fairer, greener, more resilient future.

euractiv.com

UK: London Plane crowned urban tree world champion

The iconic London Plane has been crowned the ultimate urban tree, after winning the final of a 32-tree tournament in which over 16,000 votes were cast, sparking lots of debate, plenty of #TreeTrashTalk, fun and learning.

Fans agreed that Plane was a fitting champion, as a large species which thrives in towns and cities all over the world. While Dawn Redwood supporters were left disappointed by a final score line of 62%–32% after seeing their team march unexpectedly to the World Cup final with a surprise win against Silver Birch.

The tournament was launched by the Arboricultural Association to provide some much-needed entertainment during the worldwide Covid-19 lockdown and fill the void left by the cancellation of sporting events across the globe. Since beginning on 8th April, it has sparked debate and discussion focused on trees, as well as educating many through species selection guides which included detailed infographics with each tree to help inform voters.

Like any classic world cup there was a mixture of thrillers and thrashings, as well as some heated debate among arborists and the tree community. There was even some 'tree trash talk' as fans fervently supported their favorite trees throughout the competition, with early calls for Oak to be disqualified on the grounds of eligibility, while the Monkey Puzzle tree was labelled a 'glorified pipe cleaner' by rival fans.

The first shock of the tournament came in the Round of 16 when the Oak, so often a winner of countless tree competitions, came unstuck against the underdog Tulip Tree losing by 8 percent. Later on, the Giant Sequoia faced Dawn Redwood in a Quarterfinal that proved to be the most thrilling encounter of the world cup; with Redwood producing a stunning last-minute comeback to win by just nine votes overall, after 750 were cast on the match.

The biggest thrashing was administered by Giant Sequoia which dumped the Tree of Heaven out by an 84%–16% score line, while the Tulip Tree v Silver Birch quarterfinal was the 'most watched' match of the tournament drawing in 1,592 votes.

In celebration of the first ever Urban Tree World Cup winner, a London Plane tree will be planted in the grounds of the Arboricultural Association in Autumn 2020.

trees.org.uk

Australia: 'They define the continent': nearly 150 eucalypt species recommended for threatened list

Scientists' call follows national assessment that finds gum trees in Western Australia wheat belt suffering worst rate of decline

An iconic Western Australian eucalypt, known for the size of flowers, is among almost 150 eucalpyt species scientists have recommended be listed as threatened under national environment laws.

The eucalyptus macrocarpa, commonly known as mottlecah, has the largest flowers of all eucalypt species. The bright red flowers can measure up to 10cm in diameter.

It is one of 147 eucalypt species that a team of scientists has recommended be added to Australia's national threatened species list.

Eucalypts in the wheat belt of Western Australia were identified as having the worst rate of decline, with about 60 species in this region identified by the researchers as qualifying for a listing as either vulnerable, endangered or critically endangered.

Rod Fensham, an associate professor at the University of Queensland, led the research that used maps of eucalyptus distribution and maps of land use to measure which species were in decline.

"Eucalypts are just fundamentally Australian. They define the continent, really," Fensham said. "Everywhere you are in Australia there will be a gum tree, and the gum tree will tell you something about where you are."

The scientists assessed all 822 eucalypt species found in Australia and determined 193 (23%) were threatened. Before the research, 89 eucalypts were listed as threatened under national laws. The paper suggests that 32 of these species could be removed from that list.

Eucalypts are long-lived species and the scientists measured their trajectory over 10 generations.

"Ten generations is quite a long time," Fensham said. "But there are many species, including ones that were recommended for listing, that are showing such a steep rate of decline through the course of European history that that's their trajectory, that they'll be extinct in 10 generations."

Fensham said this included relatively common species that drivers would be used to seeing along highways on the east coast between Sydney and Melbourne.

The greatest threat to eucalpyts by far was conversion of land by the agriculture industry for cropping or pasture. That was followed by urban development.

Species such as the mottlecah in WA's wheat belt were under particular threat because intensive land use was occurring over a large area where there was also a high number of eucalypt species.

"The No 1 conservation measure is stop land clearing, stop clearing habitat," Fensham said. "It always is and we still haven't managed to do it in Australia."

Late last year, the International Union for Conservation of Nature's updated Red List reached similar results, finding almost a quarter of the world's eucalypts were threatened with extinction.

theguardian.com

Global: Forests provide sustenance for 90% of world's 'extremely poor' – Report

The report was produced by Food and Agriculture Organisation (FAO), in partnership with United Nations Environment Programme (UNEP), and technical input from the UNEP World Conservation Monitoring Centre.

According to the report, "those living in extreme poverty, over 90 per cent are dependent on forests for wild food, firewood or part of their livelihoods." Of these, eight million extremely poor, forest-dependent people live in Latin America alone, it said.

Forests continue to play an important role in biodiversity and climate change, although, the rate of environmental degradation and biodiversity loss worsens future pandemics like the coronavirus, scientists say.

The State of the World's Forests 2020, highlights that since 1990, 420 million hectares of trees have been lost to agriculture and other land uses.

The COVID-19 crisis has thrown into sharp focus the link between peole's health and that of the ecosystem, underscoring the importance of conserving and sustainably using nature.

"Deforestation and forest degradation continue to take place at alarming rates, which contributes significantly to the ongoing loss of biodiversity," the FAO Director-General, QU Dongyu, and Executive Director of the UNEP), Inger Andersen, jointly said.

"Protecting the world's biodiversity is entirely dependent on the way in which we interact with the world's forests. And as they harbour most of our terrestrial biodiversity, safeguarding woodland holds the key," the report said.

The report shows that forests contain 60,000 different tree species, 80 per cent of amphibian species, 75 per cent of bird species, and 68 per cent of the earth's mammal species.

Conservation and sustainable use can work together to protect plants, animals and livelihoods, it added.

According to the report, a special study from the Joint Research Centre of the European Commission and the US Forest Service, found 34.8 million patches of forests in the world, ranging in size from one to 680 million hectares.

It said this illustrates that greater restoration efforts are urgently needed to reconnect forests that have fragmented over time.

As FAO and UNEP prepare to lead the UN Decade on Ecosystem Restoration in 2021, both officials expressed their commitment to increased global cooperation in the race to

restore degraded and damaged ecosystems, combat climate change and safeguard biodiversity.

Millions of people around the world depend on forests for their food security and livelihoods, they argued.

"To turn the tide on deforestation and the loss of biodiversity, we need transformational change in the way in which we produce and consume food," Mr Dongyu said.

"We also need to conserve and manage forests and trees within an integrated landscape approach, and we need to repair the damage done through forest restoration efforts," Ms. Andersen added.

The report notes that the target to conserve at least 17 per cent of the earth's terrestrial areas by 2020 has been achieved.

It acknowledges that much still needs to be done despot the progress.

"One study conducted for this report shows that the largest increase in protected forest areas were in broadleaved evergreen forests, typically found in the tropics. Furthermore, over 30 per cent of all tropical rainforests, subtropical dry forests and temperate oceanic forests, are now located within protected areas," it said.

premiumtimesng.com

Global: No break for nature? Here's how Covid-19 crisis is harming the world's forests

Trees are more likely to be felled for food and fuel as a third of the world's population still depend on wood to cook. The Covid-19 lockdown could exacerbate this.

With most of the planet locked down due to the Covid-19 crisis, experts believe this could be the time when nature finally takes a break amid low human activity and get into a healing mode. However, a latest report suggests that coronavirus lockdown may have a detrimental effect on the planet's forest cover. A report published by the World Economic Forum (WEF), in collaboration with news agency Thomson Reuters, says that the Covid-19 lockdown has put the world's forests at a risk.

According to the report, poor people who have lost work or are temporarily out of work in the wake of the coronavirus pandemic cut down trees for fuel and other purposes.

Many people depend on forests for livelihood, food and shelter. Millions who have lost casual work in cities amid the coronavirus crisis are returning to their native places in rural areas, the report states.

Around the world, 1 billion people depend on wild foods and 2.4 billion use wood for cooking, while more than nine out of 10 people living in extreme poverty depend on forests for at least part of their livelihoods.

Mette Wilkie, director of the forestry division at the UN Food and Agriculture Organization (FAO), said that trees are more likely to be felled for food and fuel as a third of the world's population still depend on wood to cook. The Covid-19 lockdown could exacerbate this.

UN FAO's 'State of the World's Forests 2020' report links the rise of infectious diseases, such as Covid-19, to forest loss.

According to the report, the planet has lost an estimated 420 million hectares of forest since 1990 - more than three times the size of South Africa.

There is a misperception that nature is getting a break during the Covid-19 pandemic, the WEF states in another report. "Many rural areas in the tropics are facing increased pressure from land-grabbing, deforestation, illegal mining and wildlife poaching," the report reads. Outside urban areas, the picture in rural regions paints a different scenario with an increased pressure on nature and resources.

The coronavirus pandemic has infected over 5.5 million people across the globe while more than 3.4 lakh people have succumbed to death due to Covid-19. More than 2 million patients have recovered from the contagion globally.

hindustantimes.com

Global: FAO and UNEP to launch the first joint edition of The State of The World's Forests

The State of the World's Forests 2020 has been produced by the Food and Agriculture Organization of the United Nations (FAO) in partnership with the United Nations Environment Programme (UNEP) for the first time.

As FAO and UNEP prepare to lead the United Nations Decade on Ecosystem Restoration from 2021, the report looks at the need to protect the vast numbers of plants and animals found in the world's forests, which are home to the majority of terrestrial biodiversity.

Forests also have a direct impact on human survival, providing more than 86 million green jobs and supporting the livelihoods of many others.

The report emphasizes the need for large-scale forest restoration efforts and notes that solutions that balance conservation and sustainable use of forest biodiversity are both critical and possible.

scoop.co.nz

Canada: Wood pellets from clear-cut, old-growth forests may not be carbon neutral

Clear-cutting old-growth forests to produce wood pellets to replace fossil fuels in electricity generation would release more carbon into the atmosphere than it would save "for many decades," according to a new scientific study.

The findings raise questions about the wood pellet industry's claims that their product is "carbon neutral" and that switching from burning coal to burning pellets would reduce "100 per cent" of greenhouse gas emissions. Greenpeace Canada, which partially funded the study, said it has "huge implications" for Canadian policy.

But the Forest Products Association of Canada (FPAC), a group representing timber, pulp and paper producers, said the study is based on a "hypothetical" scenario that doesn't represent the sector's current practices and commitments, including to sustainable forest management and the low-carbon transition.

The manufacturing of wood pellets, made by compacting together wood material, has been embraced by B.C. Premier John Horgan as a way to create "good jobs" while turning "waste" into "clean, renewable electricity." Pellets are one of several bioenergy sources being examined as fossil fuel alternatives. Canada is now the second-largest wood pellet exporter worldwide, and Vancouver is home to the third-largest global supplier.

In a study published April 11 in the peer-reviewed scientific journal *Climatic Change*, Jay Malcolm and Paul Piascik from the University of Toronto and Bjart Holtsmark from Statistics Norway looked at the emissions of harvesting and processing timber, the pellet manufacturing process, transportation to a power plant and combustion for fuel, and measured it against other elements such as carbon savings from coal, forest regrowth and wildfires.

The researchers found that clear-cutting undisturbed, or "primary" boreal forests for material to make wood pellets, in order to replace fossil fuels in electricity generation, is "unlikely to be useful in mitigating climate change in the near term" – and, in fact, would be likely to "exacerbate carbon dioxide emissions for many decades."

While it would ultimately help reduce carbon pollution in the atmosphere compared to continuing to use fossil fuels, the study says that, even under a best-case scenario where the forest is left to regenerate for a century, it would not reach the point of carbon neutrality for more than 90 years.

Malcolm said this is because old-growth forests are a "carbon-rich landscape" that can't be easily replaced. "When people think about forests and carbon, they tend to get fixated on the fact that, as trees grow, they absorb carbon out of the atmosphere. So people get fixated with this idea of, 'Oh, we want to have lots of young, active, fast-growing trees,'" he said.

"You can't forget about the fact that forests, as they are right now, store a lot of carbon that's not in the atmosphere. You don't want to liberate that carbon, you want to keep it in the landscape...if you want to help the climate, you shouldn't be doing clear-cutting of unmanaged forests, or primary forests."

The team studied a slice of northern Ontario for their research, in the area around Lake Abitibi that straddles the Quebec border. The research was funded by Greenpeace Canada and by a discovery grant from the Natural Sciences and Engineering Research Council of Canada.

"I think this has huge implications for Canada in terms of policy with forestry," said Greenpeace Canada nature and food campaigner Reykia Fick. "What we need to be doing is moving towards focusing on disturbed forests, or already-harvested forests, and moving towards longer harvesting periods and lighter harvesting techniques. It just illustrates the importance of these forests from a climate perspective, and the importance that we should be placing on protecting them."

In a statement sent May 10, Robert Larocque, senior vice president of FPAC, the forest products industry group, said the scenario being evaluated in the study was "hypothetical and atypical." He said an examination of a "more real-world situation of a portfolio of wood products," instead of one that zeroed in on wood pellets, was "strangely absent in the discussion."

The forest products sector has a "commitment to waste reduction and advancing a lower carbon economy," said Larocque, and he argued that "most" pellets produced in Canada are from "wood waste," or leftover material from sawmills such as sawdust or small tree branches. The industry uses "what would otherwise be wood waste to make products we need like word pellets, toilet paper, medical masks and hospital gowns, sanitary wipes, and paper towels," he said.

Not all wood pellet manufacturing comes from waste, however. The B.C. government told *National Observer* on April 27 that timber harvesting has "evolved" and that the industry now sends logs not suitable for manufacturing due to age or fire damage to facilities such as pellet mills.

Larocque also argued that in Canada's managed forests – the areas used for logging, fire management and parkland, which represent about 65 per cent of Canada's total forested area – the activities of the industry and the wood products harvested from them represent a carbon sink.

Environment and Climate Change Canada's National Inventory Report, released last month, says the net balance of "managed" forest land amounted to 150 million tonnes of carbon dioxide removed in 2018, while emissions from wood products coming from managed forests was 125 million tonnes that year. But the bottom line, said Malcolm, "is that the standard way we harvest wood in the boreal forest in Canada is not a good idea if you're trying to help the atmosphere."

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